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TIBBLE FORK DAM

PHASE II EVALUATION AND ANALYSIS

UTAH DIVISION OF WATER RESOURCES
MAY 2011

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Tibble Fork Dam

Evaluation and Analysis

I. INTRODUCTION

A. Purpose and Scope

On April 10, 1996 the Utah Division of Water Rights, Dam Safety, sent a letter to the North Utah County Water Conservancy District (NUCWCD) regarding a "Minimum Standards" evaluation of Tibble Fork Dam and Reservoir, pursuant to Section 73-5a-502, Utah Code. Following this letter, the owner commissioned a geotechnical investigation of the site by Terracon, which was done in two phases. The initial investigation was begun in September, 1996, and additional holes drilled in October, 1998. The final report was submitted on March 8, 1999. A response to the geotechnical report from the State Engineer dated December 10, 1999 accepted the report and concluded that the dam met Minimum Standards in the geotechnical area.

The purpose of this report is to provide further examination of the geotechnical issues previously examined, as well as other areas that were not addressed in the Terracon report. It includes: a review of available files, review of the 1999 Terracon geotechnical report, review of piezometer and seepage records, evaluation of the dam and foundation, seepage analysis, new static and preliminary dynamic analyses, and hydrological examination. The Division of Water Resources (DWRe) entered into a cooperative agreement with the Natural Resources Conservation Service to prepare this report. It represents a cooperative effort, as Ana Vargo of the NRCS prepared all of the geological sections and the hydrological section was primarily prepared by DRWe, with considerable input from Nathaniel Todea of the NRCS. All other sections of the report were prepared by DWRe. In the fall of 2010 additional drilling was done at the damsite to determine the extent of the liquifiable zones and a sediment survey was performed to determine the amount of sediment in the reservoir. The results of this work are included in this report. Recommendations for proposed provisions to upgrade the structure to meet minimum standards, including a preliminary cost estimate, are also presented.

B. Project Description and Construction

Tibble Fork dam and reservoir are located on American Fork Creek, near the confluence with Deer Creek, about eight miles upstream from the mouth of American Fork Canyon. The dam was constructed beginning in August, 1964, and was completed in May, 1966. Location of the dam and reservoir are shown in Figure 1. The dam was constructed by Wasatch Construction Company of Salt Lake City.

The principal features of the dam and reservoir include a 44-foot high, zoned earthfill embankment, a 166 acre-foot reservoir at the principal spillway crest and 250

acre-foot at the emergency spillway crest, and a 30-inch reinforced concrete outlet pipe with ten concrete cutoff collars spaced at 20 feet on center, located right of the spillway. Both spillways discharge through the same thirty foot wide concrete chute. The principal spillway consists of an ungated concrete box with a crest length varying from 14 feet to 37 feet depending on submergence, drained by three 27-inch diameter, reinforced concrete pipes, discharging into the front wall of the emergency spillway, with a longer emergency spillway crest of 100 feet. Figure 2 presents the locations of these features and Figure 3 shows a representative cross-section of the dam.

The primary purpose of the Tibble Fork Dam was initially to provide flood control and be a debris basin, but prior to construction the use was changed to include water storage. It is operated by the North Utah County Water Conservancy District.

A brief summary of the pertinent features and data of the dam and reservoir are included in Table 1.

C. Performance

Following completion of the dam in 1966, initial filling of the reservoir began. There were some problems with unanticipated seepage at the downstream toe, and additional tile drains were installed in the late 1966. An examination of the available records indicates this additional drain was designed and installed by the Soil Conservation Service (SCS). In general, the dam has performed well since it was constructed. There were some maintenance problems, primarily with removing dead trees from the spillway inlet and removing root balls from the drain line (2001), but in recent years the owners have been doing a better job, and no major maintenance problems have been noted. The existing seepage collection systems are shown on Figure 4.

When the first round of drilling was performed, from 1996 through 1998, six piezometers were constructed in the dam embankment and foundation. These piezometers were installed to monitor pore pressures in the embankment and foundation materials. Laboratory analysis of the materials encountered during drilling was performed, and the results used in the analysis for this report.

Figure 1. Tibble Fork Dam and Reservoir Location Map

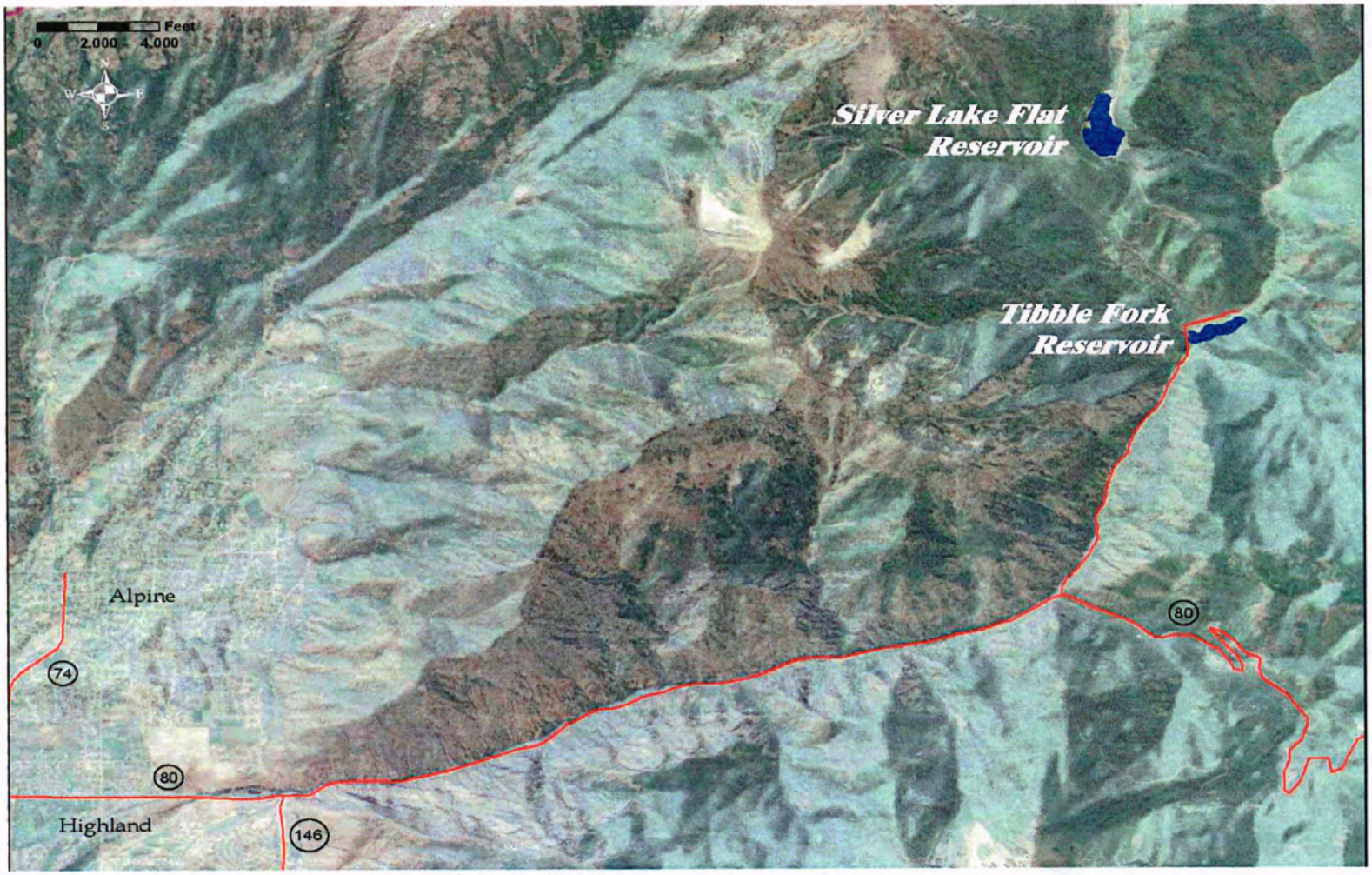


Figure 2. Plan View of Dam and Appurtenances

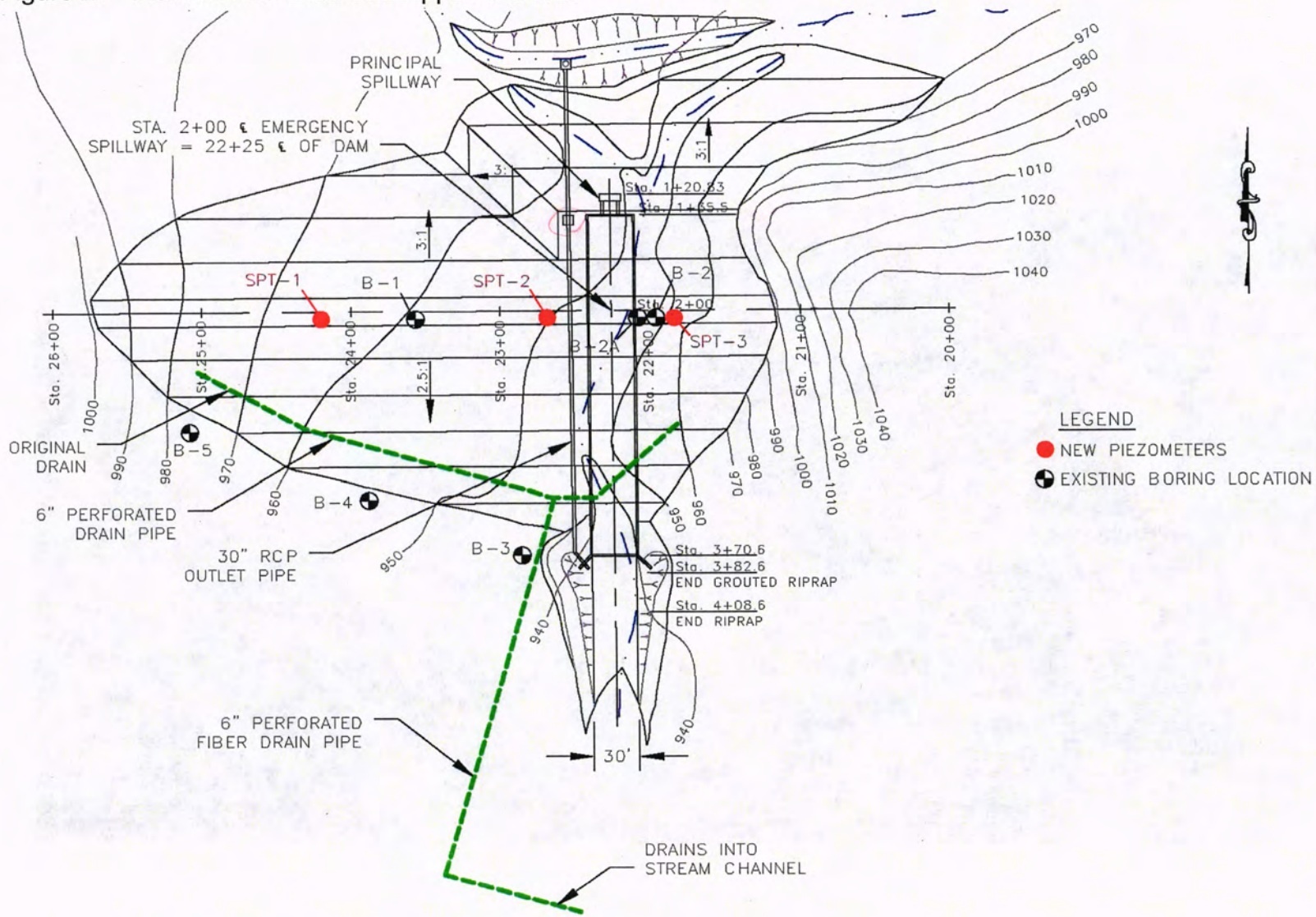


Figure 3. Maximum Cross Section of the Embankment Dam

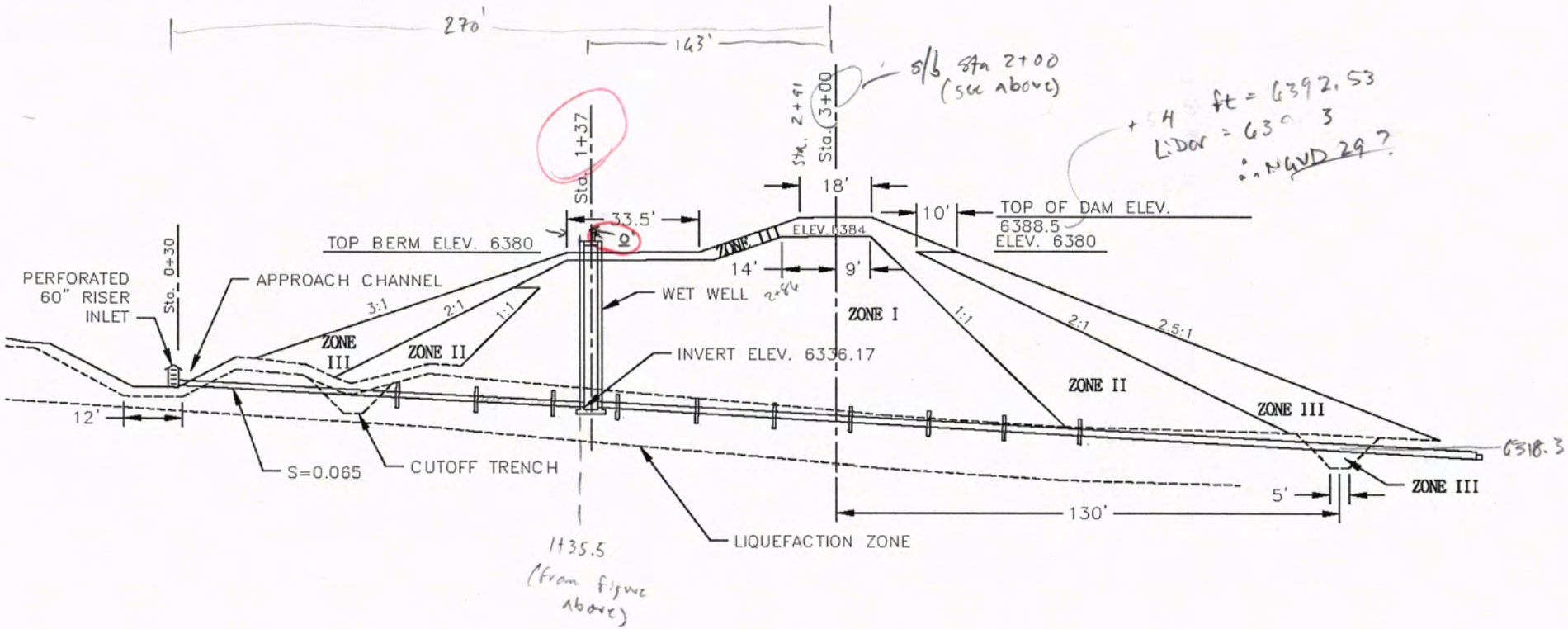


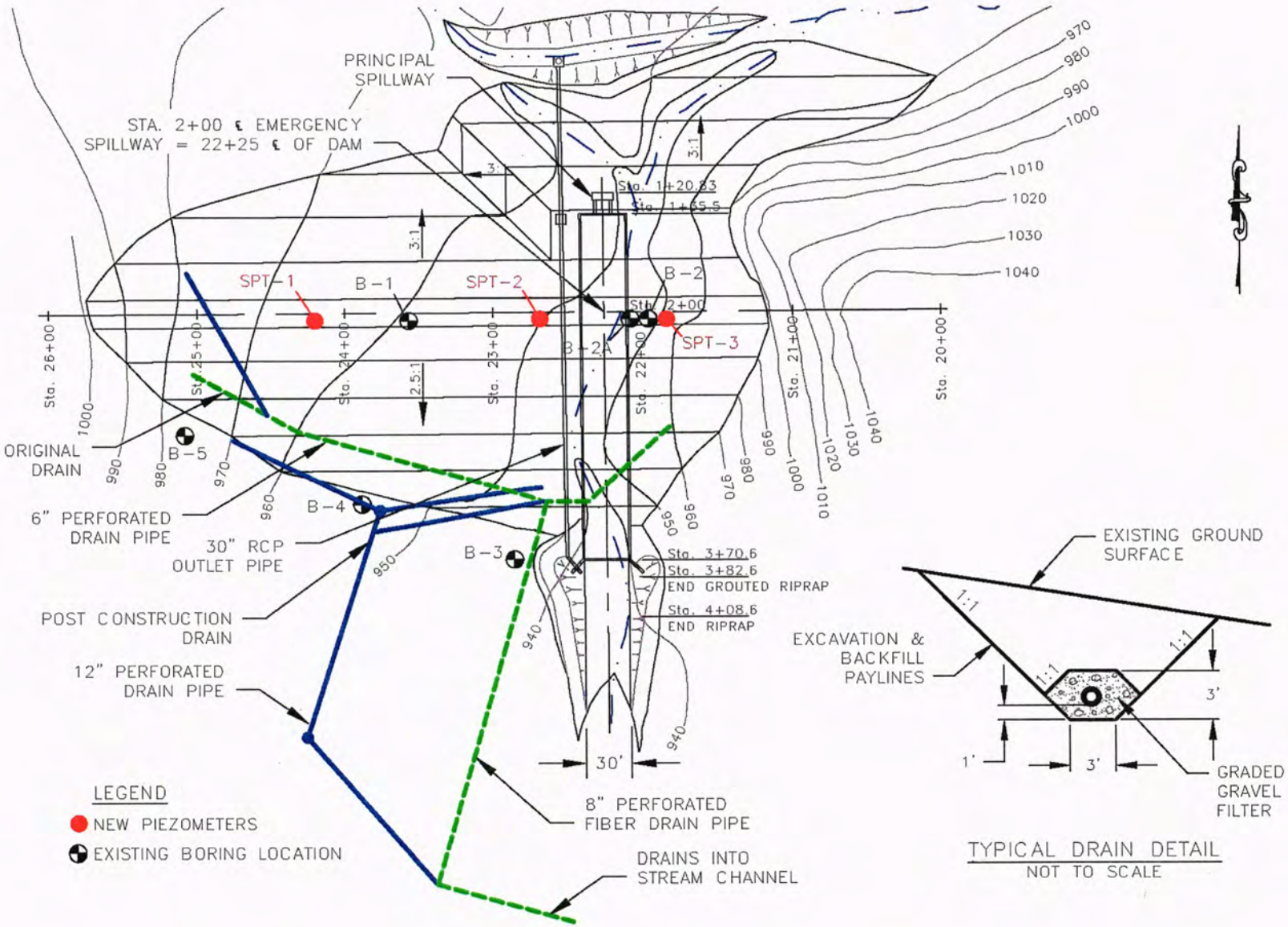
Table 1. Tibble Fork Dam & Reservoir Features

GENERAL	
Type Zoned Earthen	
Height	44 feet
Length Dam	455 feet
Crest Width	18 feet
Upstream Slope	3:1
Downstream Slope	2-1/2:1
Cut-Off-Trench	Minimal14-feet wide at the upstream toe of the existing dam w/ depth shown as 4-feet minimum
ELEVATIONS	
Embankment Crest	6388.5 feet
Principal Spillway Crest	6377 feet
(Freeboard)	(11.5 feet)
Emergency Spillway Crest	6382 feet
(Freeboard)	(6.5 feet)
Outlet Pipe Invert (Downstream)	6325.4 feet
Intake Invert (Upstream)	6356 feet
Intake Structure Lip	6356 feet
CAPACITIES	
Embankment Crest (6388.5)	366 ac-ft
Principal Spillway Crest (6377)	166 ac-ft
Emergency Spillway Crest (6382)	250 ac-ft
SPILLWAY	
Spillway Discharge	5800 cfs (embankment crest 6388.5) 94' weir wall
OUTLET	
Outlet Discharge	109.6 cfs (dam crest 6388.5) 30" reinforced concrete pipe with mid-stream guard gate
Designed	1964 USDA Soil Conservation Service
Constructed	1964-1966 Wasatch Construction Company
Initial Filling	1966

Post Construction Activities

1966	Seepage occurred which was not anticipated. Additional tile drains were installed at the downstream toe.
2001	Root ball removed from toe drain pipe.

Figure 4. Downstream Seepage Collection Systems



II. SITE INVESTIGATION

A. Regional Geology

Tibble Fork Dam and Reservoir are in the American Fork drainage in the Wasatch Mountains, northeast of the towns of Lehi and American Fork, Utah. The Wasatch Mountains are part of the Middle Rocky Mountains Physiographic Providence. The western side of the Wasatch Mountains forms the eastern boundary of the Basin and Range Physiographic Providence, which occurs west of the Wasatch Fault (Stokes, 1986). The Wasatch Fault occurs approximately 5.24 miles (8.4 kilometer (km)) west of Tibble Fork Dam.

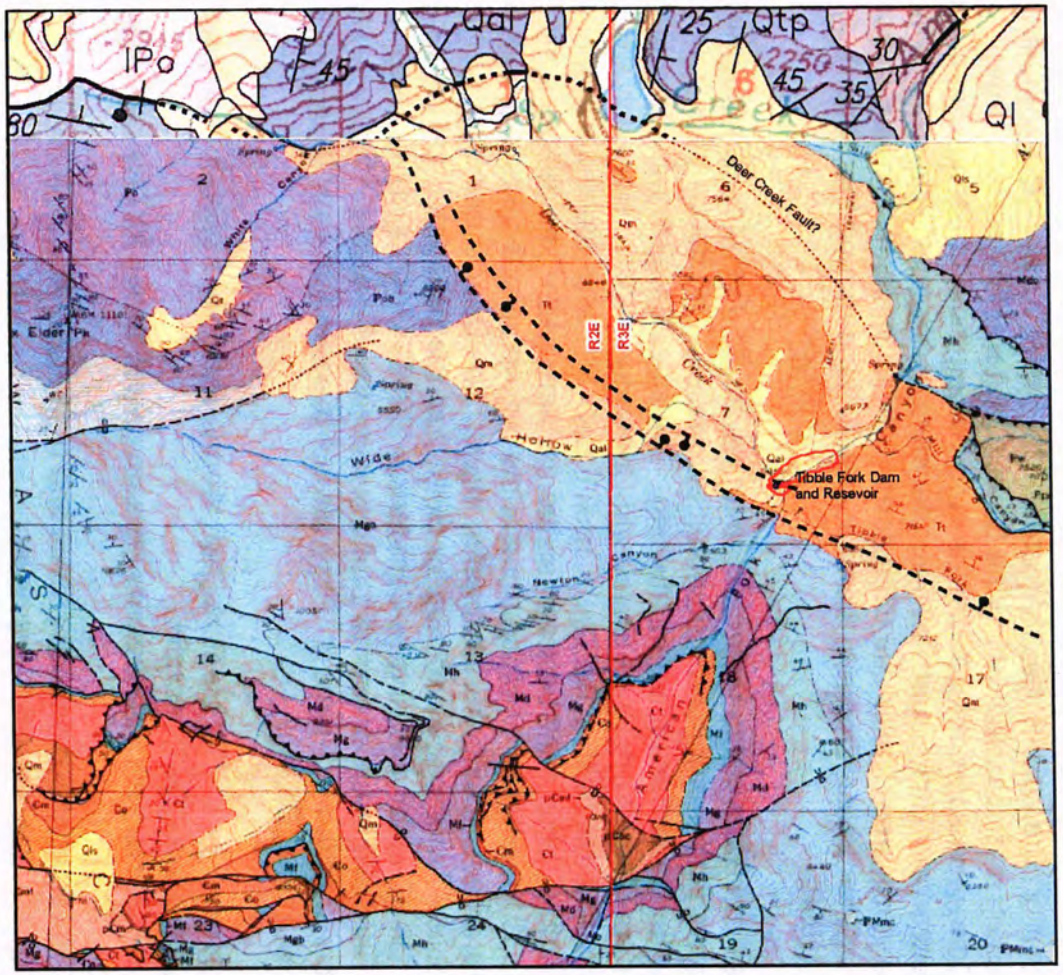
The structural setting of the study area contains the Uinta Arch, which is an east-trending upwarp that extends from the Uinta Mountains. It is north of the study area but influences the structural setting of the region. The Uinta Mountains are a Precambrian-cored uplift that occurs east of the study area. The Uinta Arch acted as a buttress from the thrust faulting that occurred during the Sevier Orogeny (Crittenden, 1964). During the middle Cretaceous age, the Charleston-Nebo thrust fault thrust the Cambrian rocks (Ophir Formation and Tintic quartzite) over the younger Mississippian rocks in the vicinity of the study area (Baker and Crittenden, 1961). Since the Uinta Arch acted as a buttress during the Sevier Orogeny, the thrust faults bend around the Uinta Arch (Crittenden, 1964).

Tibble Fork Dam is situated near numerous faults. The Wasatch Mountains have undergone both normal and thrust fault processes. The thrust faults have been displaced by the earlier recent normal faulting. The Deer Creek Fault is located 0.5 mile north of the Tibble Fork Dam (Baker and Crittenden, 1961). However, Constenius (2007) questions if this fault is the Deer Creek Fault. It is a normal fault with large displacement that trends east-west across the northern part of the Timpanogos Cave Quadrangle. This fault dips to the south at a low dip, and displacement is believed to be thousands of feet. It cuts the Charleston thrust. The Deer Creek fault is believed to be of mid- to late-Tertiary age and may be older than the Wasatch Fault (Baker and Crittenden, 1961). Later mapping by Constenius (2007) shows a normal fault at the Tibble Fork Dam and another normal fault downstream of the dam. These normal faults have been added to Figure 5. They are not classified as Quarternary faults (Hecker, 1993; Haller, 2005).

The geology for the Tibble Fork Dam area is shown in Figure 5. Rock types from Baker and Crittenden (1961) include:

- Qal - Quaternary alluvial deposits (stream gravel, valley fill, and low angle alluvial cones)
- Qt - Quaternary talus deposits (talus and high angle alluvial cones)
- Qls - Quaternary landslide deposits
- Qm - Quaternary moraine deposits (may include some glacial outwash)

Figure 5. Geologic Map



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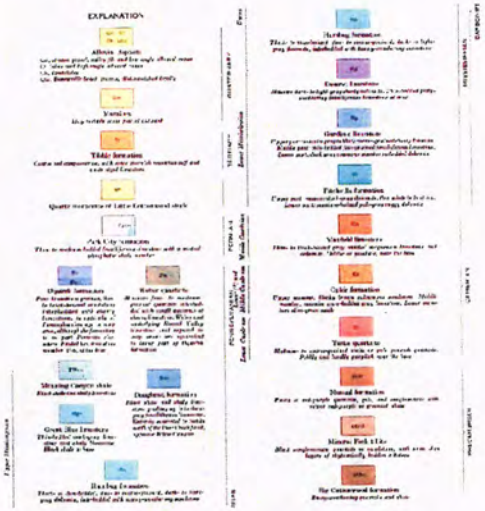
Legend



- Tibble Fork Dam and Reservoir
- Fault (ball and Bar on downthrown side)

Reference Information:

Baker and Crittenden 1961 and Bryant 1992
A dashed line for fault from Constenius 2007
Modified from Baker (1972) and Biek (2005)

Projection: NAD 83, UTM zone 12
Scale: 1:24,000 if printed on 11X17" paper

- Tt – Tertiary Tibble Formation (coarse red conglomerate, with some greenish reworked tuff, breccia, and white algal limestone)
- *o or *ob – Pennsylvanian Oquirrh Formation (fine- to medium-grained sandstone interbedded with cherty limestone)
- *w - Pennsylvanian Weber Quartzite (massive fine- to medium-grained quartzite interbedded with small amounts of cherty limestone)
- Mgb – Mississippian Great Blue limestone (thin-bedded dark gray limestone and shaly limestone)
- Mh - Mississippian Humburg Formation (thick- to thin-bedded, fine- to coarse-grained, dark- to light-gray dolomite interbedded with sandstone)
- Md - Mississippian Deseret Limestone (massive dark- to light-gray cherty dolomite)
- Mf - Mississippian Fitchville Formation (upper part is massive dark-gray dolomite, lower part is medium-bedded pale-gray vuggy dolomite)
- _o – Cambrian Ophir Formation (upper part is blocky brown calcareous sandstone, lower part is olive-green shale)
- _t – Cambrian Tintic Quartzite (medium- to coarse-grained white or pale pinkish quartzite).

The upper watershed of the reservoir has a slide area (Qls on geologic map, Baker and Crittenden, 1961), which occurs approximately one mile upstream of the Tibble Fork Reservoir. The landslide is located in Section 5, Township 4 South (T4S), Range 3 East (R3E). The slide is a major source of sediment yield for the watershed. The rock slide is powered by saturation from precipitation and natural springs. The landslide is active by sediment creep powered by the force of gravity, and major movement of portions of the slide is due to extreme saturation from snowmelt and intense thunderstorms. A maintained dirt road parallels the river and occurs at the bottom of the toe of landslide in the southwest corner of the slide. The road and American Fork Canyon River cut through the northwest bottom of the slide and Silver Creek defines the toe of the landslide on the northwest side. The streams transport sediment from the slide downstream toward Tibble Fork Reservoir. Removal of the toe of the landslide by stream erosion or road rebuilding would make the landslide unstable and cause additional movement. In the mid-1980s the landslide had major movement due to extreme saturation from a water year that was 200% of normal (Rasely, 2002). Rasely estimates a total of nearly 58 acre-feet of sediment was yielded to the reservoir from the 1980s landslide event to 2002.

B. Reservoir Basin Geology

Figure 5 (geologic map from Baker and Crittenden, 1961) shows the geology. The left abutment is composed of the Tibble Formation and the right abutment is Quaternary moraine deposits (includes glacial outwash deposits). The valley floor of the reservoir is Quaternary alluvium, possibly overlaying the Tibble Formation. The Tibble Formation is a pebble-to-boulder conglomerate, with sandy to shaley greenish-gray to reddish-brown tuffaceous sediment. This formation contains thin lenticular beds of white limestone. The large boulders are generally well rounded and may be several feet in

diameter. These boulders are andesite or latite. The mostly angular rocks or fragments are sedimentary, including quartzite, limestone, and sandstone. The maximum thickness of the Tibble Formation is 2,500 feet (762 meters). The Tibble Formation formed around the margins of a basin in which volcanic rocks were accumulating and is mostly fluvial in origin (Baker and Crittenden, 1961). Terracon (1997) states that approximately 90 meters downstream of the Tibble Fork Dam an outcrop of Mississippian Great Blue Limestone occurs. The Great Blue Limestone weathers into light gray slabs or flakes and is a thin-bedded, dark gray limestone with numerous fossils (Baker and Crittenden, 1961). The Tibble Formation lies unconformably on the Mississippian Great Blue Limestone.

Later mapping by Constenius (2007) shows a normal fault at the Tibble Fork Dam and another normal fault downstream of the dam. These normal faults have been added to Figure 5. They are not classified as Quarternary faults (Hecker, 1993; Haller, 2005). Hecker (1993) indicates the fault is >1,650,000 years since last activity, while Haller (2005) indicates the fault's last activity is >1,600,000 years. Bridges (1977) states these faults are probably Late Tertiary age and are considered to be *potentially active*[1]. Available evidence indicates geologically recent activity. The estimated recurrence period could be short enough to be of engineering significance (Bridges, 1977).

C. Geologic Hazards

A summary of the hazard rating for geologic hazards at Tibble Fork Dam and Reservoir is summarized in Table 2. Earthquake and ground shaking are discussed in Seismotectonic Setting. Flooding, upstream dam failure, spillway capacity, and dam overtopping are discussed in Hydrologic Evaluation (Section IV). Other possible geologic hazards are described below.

1. Liquefaction

Terracon (1999) did a liquefaction analysis using a Maximum Credible Earthquake (MCE) of 6.5 and peak horizontal ground acceleration of 0.56g. The results determined B-1 at 46 feet, B-2 at 61 feet, B-3 at 8.5 feet, B-3 at 26 feet, B-3 at 31 feet, B-4 at 8.5 feet, B-4 at 11 feet, and B-4 at 13.5 feet may liquefy. Borehole B-5 at six feet is marginal for liquefaction. These locations for potentially liquefiable soils are at varying elevations and do not correlate well laterally. Terracon states the apparent lack of continuity suggests the dam and foundation would likely not liquefy during an MCE event. They did another liquefaction analysis using an Operating Basis Earthquake (OBE) of 5.0 with a peak horizontal acceleration of 0.36g. Under these conditions, no soil will liquefy, and they state that for an OBE event, the factor of safety for potential liquefaction of embankment and foundation soils is above 1.0. The result of these analyses is in Appendix B.

1 A *potentially active* fault is a fault along which no known historical ruptures have occurred.

Table 2. Summary of Geologic Hazards for Tibble Fork Dam and Reservoir

	Hazard Rating*		
	Probable	**Possible**	**Unlikely**
Earthquake			
Ground shaking	X		
Liquefaction		X	
Surface faulting		X	
Tectonic Deformation		X	
Slope Failure		X	
Seiche			X
Slope Failure (non-seismic)			
Rock Fall			X
Landslide		X	
Debris Flow		X	
Avalanche (snow)			X
Foundation Problems			
Collapsible soils			X
Expansive clays			X
Sensitive clays			X
Organic soils			X
Soluble salts			X
Pipable/Erodible soils			X
Karst			X
Differential settlement			X
Non-engineered fill			X
Hydrologic			
Shallow groundwater			X
Springs/seeps	X		
Flooding Stream/Lake		X	
Upstream dam failure		X	
Spillway capacity		X	
Dam overtopping		X	

*Hazard Rating: Probable – evidence is strong that the hazard exists and mitigation measures should be taken; Possible – hazard may exist but evidence is uncertain and further study is recommended; Unlikely – No evidence was found to indicate that the hazard is present.

2. Surface Faulting and Tectonic Deformation

See Reservoir Basin Geology (Section B) for a discussion of two potentially active faults (Figure 5) that are probably Late Tertiary age (Bridges, 1977), located at the dam and downstream of the dam. These faults are not classified as Quaternary

faults (Hecker, 1993; Haller, 2005). Tectonic deformation may occur if these two faults do create a seismic event. More analysis of these two faults needs to be done.

3. Slope Failure from Seismic Event, Landslide and Debris Flow

A seismic event could trigger a slope failure or, under the correct conditions, a slope failure could occur upstream of the dam. Slope failure could block the American Fork River flows, which could lead to overtopping or a breach of the slide materials. The resulting breach could cause flooding downstream into the Tibble Fork Reservoir. Debris flows are also a possibility.

4. Springs/Seeps

Seepage has been observed downstream of the dam embankment in the past. Seepage continues to be observed at the downstream embankment area but is "clean". This suggests that the seepage is not related to the embankment, but that is not definitive. The Dam Safety inspection in 2007 found typical profuse seepage from the toe drain at 200 to 300 gpm. The Dam Safety inspection in 2009 found that seepage occurs about 200 feet below the toe of the dam, suggesting this clear seepage may be the result of a clogged drainpipe in the area. The owner is planning on videoing the drain outfalls in the near future to determine if this is the cause.

D. Foundation Conditions

The cross section from USDA NRCS (1964) shows the foundation conditions on the left abutment (east) as red conglomerate containing igneous intrusive rock and quartzite. The bedrock below the centerline of the dam is reported to be mostly volcanic ash with sand, gravel, cobbles, or boulders. Geologic cross section is located in Appendix A. A summary of the depth to bedrock as reported by USDA NRCS (1964) is estimated in Table 3. The deepest older alluvium is located from Sta. 24+00 to Sta. 24+65. All three foundation boreholes (B-3, B-4, and B-5) drilled by Terracon (1999) in the downstream toe of the dam did not appear to penetrate into bedrock.

Table 3. Depth to Bedrock along Dam Centerline

	21+05	21+60	22+00	22+50	23+50	24+00	24+65	25+25	26+50	27+23
		TH-6	B-2	TH-1	B-1	TH-8	TH-4	TH-7	TH-3	TH-2
Depth (feet) to possible bedrock	0	18	>15	43	>27	>90	>60	52	4-25?	15
2010 Drilling			55	>80			54			

The foundation alluvium as characterized by drilling and laboratory testing done by Terracon (1999) is summarized in Table 4. Most of the material is clayey or silty sand, clayey or silty gravel, well-graded gravel, and well-graded gravel with silt binder. In Borehole B-4 (22 feet) the material is sandy lean clay to sandy fat clay. Material properties are summarized in the drill hole logs (Appendix A). Lab test data are in Appendix B. The moisture content ranges from 5% to 33%. These soils have liquid limits ranging from 44 to 64 and corresponding plasticity indexes from 22 to 35 (Appendix B, Terracon, 1999).

Table 4. Tibble Fork Dam Alluvial Foundation Characterization

Bore hole	Sample Depth (ft.)	SPT N	Den.	USCS		% Moist.	Laboratory Classification		
				Field	Lab		% Gravel	% Sand	% Fines
B-1	45-47	15	MD.	SC & SM		8			
	47-48.5	***59***	***VD***	SC & SM					
	50-52	46	D	SM/SC					
	55-57	64	VD	GM					
	60-61.5	***59***	***VD***	GC					
	65-67	68	VD	GC		12			
B-2	55-57	55	VD	GP-GM		5			
	60-62	16	MD	GM					
B-3	5-6.5	11	MD	SC		11			
	7.5-9	8	L	GM					
	10-11.5	39	D	GM	GM	8	46.5	40.9	12.6
	12.5-14	22	MD	GM					
	15-16.5	35	D	GW-GM					
	17.5-19	55	VD	GW-GM					
	20-21.5	86	VD	GW-GM	GW-GM	16	52.6	35.6	11.8
	22.5-24	69	VD	GW-GM					
	25-26.5	17	MD	GM					
	27.5-29	1	VL	SC	SC	29	8.1	52.7	39.2
	30-31.5	18	MD	GM					
	35-37	55	VD	GW-GM		9			
B-4	5-6.5	11	MD	SC					
	7.5-9	5	L	GC					
	10-11.5	6	L	GC					
	12.5-14	9	L	GC					

Bore hole	Sample Depth (ft.)	SPT N	Den.	USCS		% Moist.	Laboratory Classification		
				Field	Lab		% Gravel	% Sand	% Fines
	15-16.5	25	MD	GW-GM	GW-GM	10	57.8	32.9	9.3
	17.5-19	50/4"	VD	GW-GM					
	20-21.5	27	MD	GW-GM					
	22.5-24	13	SF	CL-CH	Sandy CL	29			54
	25-26.5	15	SF	CL-CH					
	27.5-29	14	SF	CL-CH	Sandy CH	30			58
	30-31.5	13	SF	CL-CH					
	35-37	12	SF	CL-CH					
	40-41.5	13	SF	CL-CH	Sandy CH	33			66
B-5	5-6.5	17	MD	GM					
	7.5-9	12	MD	SC					
	10-11.5	15	MD	SC	SC	19			45
	12.5-14	17	MD	SC					
	15-16.5	14	MD	SC					
	17.5-19	18	MD	SC					
	20-21.5	32-50/5"	VD	SC					
	22.5-24	9	L	SC	SC	25			41
	25-26.5	13	MD	SC					
	27.5-29	65	VD	SC					
	30-31.5	36	D	SC	SC	21	5.8	69.3	24.3
	35-37	42	D	GC					
	40-41.5	26	MD	SC					

Data from Terracon (1999)

Ft. = Feet
SPT N = Number of Blows per Foot by dropping a 140 pound hammer 30 inches on a 2-inch outer diameter split spoon. ***Bold and Italics***- indicates LSS type of split spoon
Den. = Density or consistency of material

VL = Very Loose
L = Loose
MD. = Medium Dense
D = Dense
VD = Very Dense

VS = Very Soft
S = Soft
F = Firm
SF = Stiff
VSF = Very Stiff
H = Hard

% = Percent
Moist. = Moisture

E. Seismotectonic Setting

Utah is a seismically active area. Bisecting the state, the Intermountain Seismic Belt (ISB) is a north-trending zone of historical seismicity. The ISB roughly coincides with the edge of the Basin and Range Physiographic Province. The ISB includes major active faults such as the Wasatch fault system in northern Utah. The Wasatch Fault is a normal fault with predominantly vertical movement down to the west side of the fault. It has abundant evidence of surface-rupturing events during the Holocene age.

Tibble Fork Dam falls within Seismic Zone 3 of the ICBO (1997 edition). The UDWR Dam Safety division, unless otherwise required by the State Engineer, requests the random or background event consist of a minimum magnitude 6.5 event, having a peak horizontal site acceleration obtained from the Utah Division of Water Rights (UDWR) and shown on Figure 6. In addition, the UDWR requires a 5,000-year return period (1% P.E. in 50 years) evaluation for fault specific sources or the random earthquake (no fault-specific source).

1. Deterministic Ground Motion

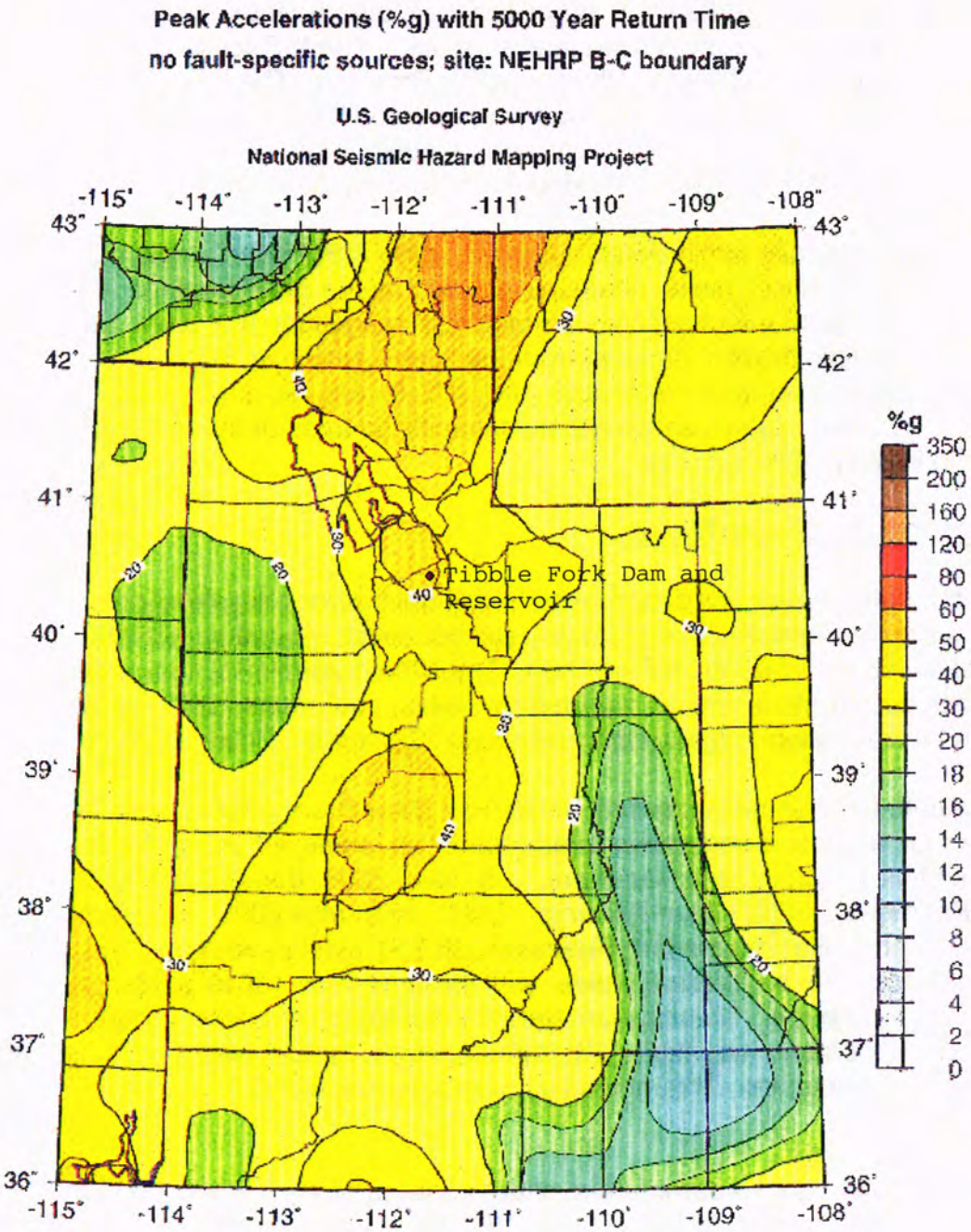
The Utah deterministic maximum peak horizontal bedrock acceleration map as reported by Halling and others (2002) shows peak horizontal ground acceleration (phga) of approximately .63g for the Tibble Fork Dam. The Utah deterministic maximum peak vertical bedrock acceleration map as reported by Halling and others (2002) shows peak vertical ground acceleration (pvga) of approximately .58g for the Tibble Fork Dam.

To evaluate the seismic hazard at Tibble Fork Dam in accordance with State Dam Safety requirements, a deterministic approach was employed using the latest attenuation models, which include Abrahamson & Silva, 2008; Boore & Atkinson, 2008; Campbell & Bozorgnia, 2008; Chiou &Youngs, 2008;, and Idriss 2008, are maintained on the Pacific Earthquake Engineering Research (PEER) Institute website. The PEER website allows access to the articles, tables, and spreadsheets that calculate ground motions for site parameters. These parameters for the fault in question include maximum credible moment magnitude (M), rupture length, rupture width, fault dip, focal depth, etc., and are assumed. The models show greater sensitivity to some parameters.

In addition to the above parameters, characteristics of the site must be understood. The International Building Code (IBC, 2009) has seven site classes: The first five classes (IBC 2009) are:

Class A – hard rock (V_{S30} > 1524 m/s)
Class B – rock (V_{S30} = 762 to 1524 m/s)
Class C – very dense soil and soft rock (V_{S30} = 366 to 762 m/s)
Class D – stiff soil profile (V_{S30} = 183 to 366 m/s), and
Class E – soft soil profile (V_{S30} < 183 m/s).

Figure 6. 5000 Year Return Random Earthquake Peak Ground Accelerations



From UDWR website http://www.waterrights.utah.gov/daminfo/forms.asp (accessed April 15, 2010)

Tibble Fork dam abutments are on Tertiary Tibble Formation, which is coarse red conglomerate with some greenish reworked tuff and breccias, and Quaternary gravels with the valley floor being alluvium that is on top of the Tibble Formation. A site Class B to C (rock to very dense soil) seems appropriate for this site, with variable site conditions. This indicates that a shear velocity within the upper 30 meters of soil (V_{S30}) of 760 m/s is adequate (lower end of Class B). The USGS (2010b) Global V_{S30} Map Server plots Tibble Fork Dam with a V_{S30} of >760 m/s. McDonald and Ashland's (2008) map of earthquake site conditions in the Wasatch Front urban corridor shows a V_{S30} of 2197 m/s for the Tibble Fork Dam. This V_{S30} value is high because the Tibble Formation is not Paleozoic or Precambrian bedrock, or Tertiary intrusive. The Tibble Formation is classified as Tertiary bedrock, which McDonald and Ashland (2008) give a minimum V_{S30} of 837 m/s, a Log mean V_{S30} of 1010 m/s, and a maximum V_{S30} of 1230 m/s. Abrahamson & Silva (2008), Campbell & Bozorgnia (2008), and Chiou & Youngs (2008) have a maximum V_{S30} value of 1500 m/s, while Boore & Atkinson 2008 has a maximum V_{S30} value of 1300 m/s. Therefore, a value of 2197 m/s cannot be used for the latest attenuation models. A V_{S30} value of 760 m/s (lower Class B) was chosen and is a conservative value for the site.

One fault geometry with one moment magnitude (M= 7.2 as reported by Halling and others 2002) was considered with three different dips for the Provo segment of the Wasatch Fault. The distance of 8.4 km that represents the distance from the Provo Section of the Wasatch fault to the Tibble Fork Dam site takes into account the elevation of the two sites. The calculation is shown in Appendix E. Three different dips were chosen because the fault dips do vary (faults are probably listric and shallow with depth, (UGS, 2010; Arbasz and others, 1992)). A moment magnitude (M=7.5 as reported by UGS, 2010) with one fault geometry was considered at a dip of 60°. The Salt Lake City segment of the Wasatch Fault was not considered because it was at a greater distance than the Provo Section. Arabasz and others (1992) state that if a fault dips at 45° to 70°, a surface faulting event would be about 3 to 4 km depth. A depth of 3 km for Ztor represents a minimal depth for a seismogenic zone (Arabasz and others, 1992). The maximum depth of an earthquake in the ISB is 15 km (Arabasz and others, 1992). Calculations for these four cases are summarized in Appendix E. The deterministic seismic ground motion (g) for the four cases are summarized in Table 5. These values should be compared with probabilistically-based values presented in the tables in the following section. These ground accelerations are consistent for the Provo Section of the Wasatch Fault.

2. Probablistic Ground Motion

Probabilistic ground motion from the USGS represents earthquake shaking hazards as calculated by projecting earthquake rates based on earthquake history and fault slip rates. These probability calculations consider all known potential earthquake sources. USGS (2009) Java Ground Motion Parameter Calculator was used to determine the probabilistic ground motions for Tibble Fork (using Latitude 40.481, Longitude -111.646). Table 6 represents the results of the probabilistic seismic ground motions. Numbers presented are taken from probabilistic hazard curves for the

Table 5. Deterministic Seismic Ground Motions

Fault	Median (g)	Abr. & Silva (2008) (g)	Boore & Atkinson (2008) (g)	Campbell & Bozorgnia (2008) (g)	Chiou & Youngs (2008) (g)	Idriss (2008) (g)
Case 1: WPS 60° dip	0.233 (0.256)*	0.284	0.113	0.222	0.256	0.289
Case 2: WPS 60° dip at M = 7.5	0.253 (0.277)*	0.313	0.123	0.230	0.285	0.316
Case 3: WPS 75° dip	0.246 (0.271)*	0.302	0.118	0.234	0.272	0.306
Case 4: WPS 50° dip	0.222 (0.243)*	0.270	0.109	0.210	0.244	0.275
For case 1: R_x=-10.1 km, R_{jb}=10.1 km, R_{rup}=10.5 km, w=13.9 km, M=7.22; For case 2: R_x=-10.1 km, R_{jb}=10.1 km, R_{rup}=10.5 km, w=13.9 km, M=7.5; For case 3: R_x=-9.2 km, R_{jb}=9.2 km, R_{rup}=9.7 km, w=12.4 km, M=7.22; For case 4: R_x=-10.7km, R_{jb}=10.7km, R_{rup}=11.4km, w=12.7, M=7.5; For all cases: V_{S30}=760 m/s, Z_{tor}=3 km						

Abr. = Abrahamson
g = ground acceleration
WPS = Wasatch Fault Provo Section
M = Magnitude
*Medium values were calculated removing the high and low values

Table 6. Probabilistic Seismic Ground Motions

Return Period	1996 PGA Hazard Curve (g)	2002 PGA Hazard Curve (g)
5,000 yrs	0.764 [1,2]	0.526 [1,2]
10,000 yrs	0.954 [2]	0.638 [2]

PGA = Peak Ground Acceleration
yrs = years
1 1% in 50 years (5,000 year return period)
2 Used USGS (2009) Java Ground Motion Parameter Calculator

site based on the 1996 and 2002 data. To be consistent with Dam Safety guidelines, specific values were calculated on the basis of probability of exceedance of 1% in 50 years (5,000 year return period). Shown for comparison, Table 7 are the probabilistic values determined from the 2003 NEHRP seismic design provisions as calculated from the USGS (2009) Java Ground Motion Parameter Calculator.

Table 7. Probabilistic Ground Motions from 2003 NEHRP Seismic Design Provisions

2003 NEHRP Seismic Design Provisions for 5,000 yr return period											
Site Class	F_a*	F_v*	Ss	S1	SMs	SM1	SDs	SD1	PGA	0.2 sec	1.0 sec
B	1.000	1.000	0.996	0.374	0.996	0.374	0.664	0.249	0.399	0.996	0.374
C	1.001	1.426	0.996	0.374	0.997	0.533	0.665	0.355	0.399	0.997	0.533
D	1.101	1.653	0.996	0.374	1.097	0.618	0.731	0.412	0.439	1.097	0.618

* Default values
Data from USGS (2009) Java Ground Motion Parameter Calculator

The USGS published a National Seismic map in 1996 and 2002, and updated these in 2008. These maps are a compilation of the hazards and probabilities from all faults or earthquake sources in the area of interest. Figure 7 is from the USGS National Seismic Hazard map that was updated in 2008. The USGS (2010a) Custom Hazard Mapping assigns a mean peak horizontal acceleration of 0.33g with a 2% probability of exceedance in 50 years (Figure 7).

The National Seismic Hazard map from the USGS (1996, 2002, and 2008) can be deaggregated to show the distribution. The Direct readout of the PGA from USGS Earthquake Hazards Program (2008) Deaggregation, using spectra acceleration of Peak Ground Acceleration (PGA) with a return period of 2% probability of exceedance in 50 year and V_{S30} (m/s) of 760, is shown in Figure 8.

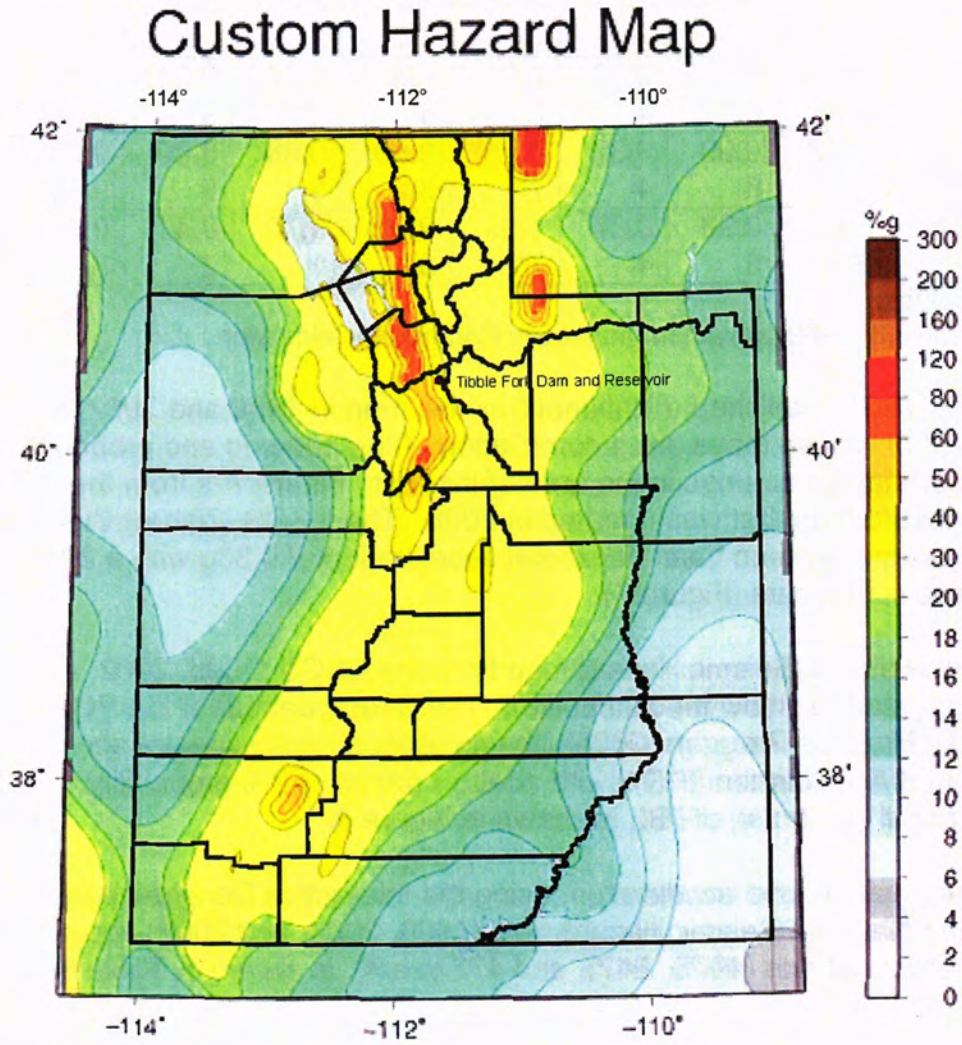
The peak ground acceleration, using the interactive Deaggregations for the three years of the National Seismic Hazard map (1996, 2002, and 2008) against three different return periods (4975, 2475, and 475 years), is shown in Table 8.

Table 8. Exceedance PGA using Deaggregation of Seismic Hazard at One Period of Spectral Acceleration

LOCATION: 40.481, -111.646			
Return Period (Years)	Exceedance PGA (g)		
	1996	2002	2008
4975	0.4037	0.5296	0.4277
2475	0.3072	0.4190	0.3312
475	0.1386	0.1856	0.1480

PGA = Peak Ground Acceleration
Results from USGS Interactive Deaggregations website accessed April 2010 (http://eqint.cr.usgs.gov/deaggint/2008/index.php) is in Appendix E.

Figure 7. U.S. Geological Survey Seismic Hazard Map



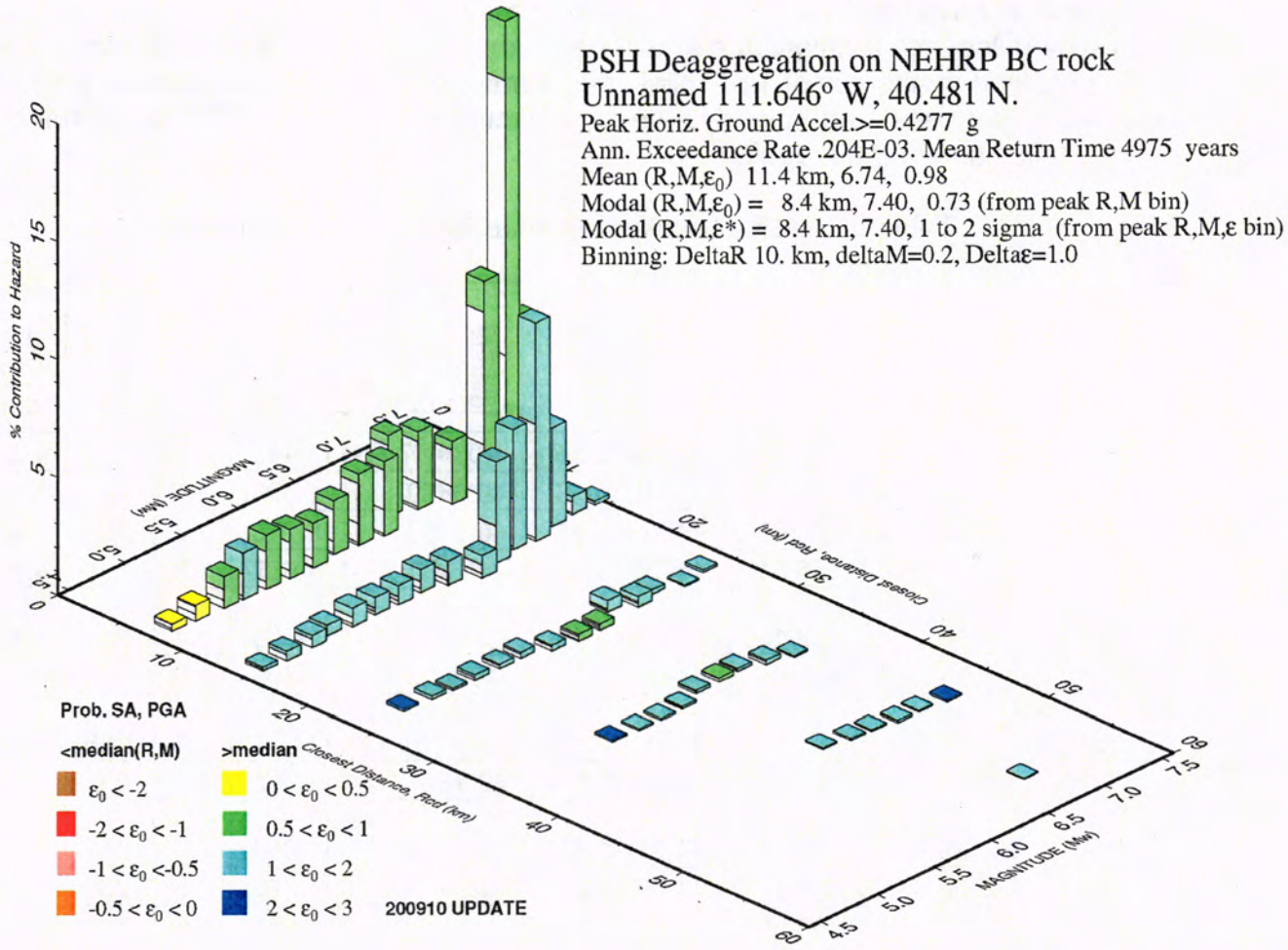
Peak Ground Acceleration

Peak Ground Acceleration (%g) with 2% Probabiltity of Exceedance in 50 Years
2008 Conterminuous U.S.
U.S. Geological Survey
National Hazard Mapping Project

0 15 30 60 90 120 Miles

1:4,000,000 if printed on 8.5 X 11 inch paper

Figure 8. Probalistic Seismic Hazard (PSH) Deaggregated Using 2008 (USGS 2010a) with Return Period of 4975 Years



GMT 2010 Apr 14 22:48:21 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs= 760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

3. Historic Earthquakes

Table 9 lists all earthquakes within a radius of five miles (8 km). The earthquake data is from the University of Utah (UofU SS 2010), which includes all USGS data but duplicates have been removed. The largest earthquake within this distance, at a radius of 4.84 miles, had a magnitude of 5 in February, 1958. The next largest earthquake was located at a radius of 1.57 miles, had a magnitude of 3.7, and occurred in March, 1947. The closest earthquake to the dam occurred in February, 1994 at a distance of 1.12 miles and had a magnitude of 0.2.

Table 9. All Earthquakes within a Radius of Five Miles (8 km)

Year	month	day	East Coord. UTMs	North Coord. UTMs	latitude Dec. Deg.	longitude Dec. Deg.	mag	depth (km)	Radius (Miles)	Radium (Km)
1958	2	13	462629.53	4465772.89	40.3417	-111.440	5.0		4.84	7.79
1947	3	28	424771.48	4501950.72	40.6650	-111.890	3.7		1.57	2.53
1989	1	12	439685.65	4485529.51	40.5183	-111.712	2.3	13.5	2.25	3.62
1973	8	5	445995.51	4473570.29	40.411	-111.637	1.8	7.0	4.81	7.74
1982	11	4	452608.13	4479375.49	40.4637	-111.559	1.4	3.1	4.43	7.13
2001	1	11	439943.54	4480720.78	40.475	-111.709	1.3	7.4	3.25	5.23
2004	12	27	447940.08	4481104.89	40.479	-111.614	1.1	10.8	1.69	2.72
1993	4	18	452384.17	4481486.00	40.4827	-111.562	1.0	3.9	4.46	7.18
1994	11	29	446244.34	4476321.43	40.4358	-111.634	0.7	4.7	3.06	4.92
1994	2	25	450361.71	4476870.24	40.441	-111.585	0.5	2.7	1.57	2.53
1999	4	28	451053.01	4485302.08	40.517	-111.578	0.5	5.5	2.68	4.31
1993	11	22	451818.88	4481889.23	40.4863	-111.569	0.5	18.6	4.09	6.58
2004	5	12	445317.61	4477182.88	40.4435	-111.645	0.5	5.9	2.59	4.17
2001	8	3	451347.98	4481159.65	40.4797	-111.574	0.4	1.9	3.81	6.13
1996	4	28	450386.79	4476814.57	40.4405	-111.585	0.4	2.9	1.54	2.48
1995	2	12	450842.91	4484271.10	40.5077	-111.58	0.3	3.1	3.00	4.83
1994	2	2	448020.37	4478018.37	40.4512	-111.613	0.2	4.5	1.12	1.80
1976	1	28	450653.31	4481219.70	40.4802	-111.582	0.2	1.5	3.38	5.44
1997	1	10	447113.29	4478058.03	40.4515	-111.624	0.1	3.4	1.67	2.69
2006	3	11	450491.86	4483718.39	40.5027	-111.584	0.0	7.6	2.94	4.73

Data from UofU SS (2010)
Coord. = Coordinate
Dec. Deg. = Decimal Degree
Mag = Magnitude
km = Kilometers

Table 10 lists all the earthquakes greater than magnitude 4 that have occurred with a radius of 50 miles (80 km). NEM part 531 Section 531.26 requires that historic seismicity within 100 km of the site be identified; however, the 80 km radius captured the Wasatch Fault and will not affect results. The largest earthquakes to occur in this region are three magnitude 5.7 earthquakes that occurred 15.3, 26.1, and 48.9 miles from Tibble Fork Dam. The closest earthquake to the dam with a magnitude greater than 4 is the February 13, 1958 event at a distance of 4.8 miles and had a magnitude of 5.0.

Table 10. Earthquakes with a Magnitude Greater Than 4 and within Radius of 50 Miles (80 km)

year	month	day	East Coord. UTMs	North Coord. UTMs	latitude Dec. Deg.	longitude Dec. Deg.	mag	Radius (Miles)	Radium (Km)
1910	5	22	428313.155	4511241.059	40.7490	-111.8492	5.7	15.3	24.6
1900	8	1	404842.375	4423079.284	39.9525	-112.1140	5.7	26.1	42.0
1914	5	13	419606.037	4564085.657	41.2242	-111.9592	5.7	48.9	78.7
1937	11	18	260194.776	4664949.742	42.1000	-113.9000	5.4	14.2	22.9
1962	9	5	408036.536	4507723.46	40.7153	-112.0888	5.2	16.3	26.2
1958	2	13	462629.533	4465772.889	40.3417	-111.4400	5.0	4.8	7.7
1949	3	7	428313.155	4511241.059	40.7490	-111.8492	5.0	15.3	24.6
1915	7	15	444242.212	4454508.970	40.2392	-111.6555	5.0	16.7	26.9
1943	2	22	408758.943	4506015.878	40.7000	-112.0800	5.0	16.7	26.9
1894	7	18	419606.037	4564085.657	41.2242	-111.9592	5.0	48.9	78.7
1980	5	24	417995.596	4421183.619	39.9368	-111.9598	4.4	33.3	53.6
1953	5	24	457632.986	4483374.791	40.5000	-111.5000	4.3	7.6	12.2
1952	9	28	426960.351	4472158.889	40.3968	-111.8607	4.3	9.8	15.8
1955	2	2	421248.239	4515124.457	40.7833	-111.9333	4.3	14.8	23.8
1938	6	30	428313.155	4511241.059	40.7490	-111.8492	4.3	15.3	24.6
1972	10	1	470472.853	4483979.058	40.5060	-111.3485	4.3	15.6	25.1
1853	12	1	444242.212	4454508.970	40.2392	-111.6555	4.3	16.7	26.9
1951	8	12	444242.212	4454508.970	40.2392	-111.6555	4.3	16.7	26.9
1943	4	10	408758.943	4506015.878	40.7000	-112.0800	4.3	16.7	26.9
1955	5	12	426118.314	4529543.787	40.9137	-111.8773	4.3	27.5	44.3
1950	5	8	437779.162	4432303.619	40.0387	-111.7293	4.3	30.1	48.4
1914	4	8	422887.047	4537311.486	40.9833	-111.9167	4.3	31.9	51.3
1916	2	5	433293.065	4425034.137	39.9728	-111.7812	4.3	34.2	55.0
1961	5	6	568684.964	4383668.330	39.6000	-110.2000	4.3	46.9	75.5
1906	5	24	419606.037	4564085.657	41.2242	-111.9592	4.3	48.9	78.7
1992	3	16	410876.449	4480255.654	40.4682	-112.0513	4.1	21.3	34.3
1963	7	9	483771.284	4430915.574	40.0283	-111.1902	4	20.2	32.5

Data from UofU SS (2010)
Coord. = Coordinate
Dec. Deg. = Decimal Degree
Mag = Magnitude km = Kilometers

Table 9 and Table 10 demonstrate the area is seismically active and potential for a large earthquake is probable. Few historic earthquakes of large magnitude (over 7) have been documented in Utah. In 1901, one earthquake with a magnitude of 7 occurred in Sevier County, Utah about 115 miles south-southwest of Tibble Fork Dam (UofU SS 2010). However, a large magnitude 7.1 to 7.7 event occurred near Hebgen Lake, Montana, in 1959. This earthquake appears to be a model of what may happen along the Wasatch Fault based on similar surface height rupture (Terracon, 1997). Appendix E lists all earthquake events within a 50 mile (80 km) radius of Tibble Fork Dam from UofU SS (2010).

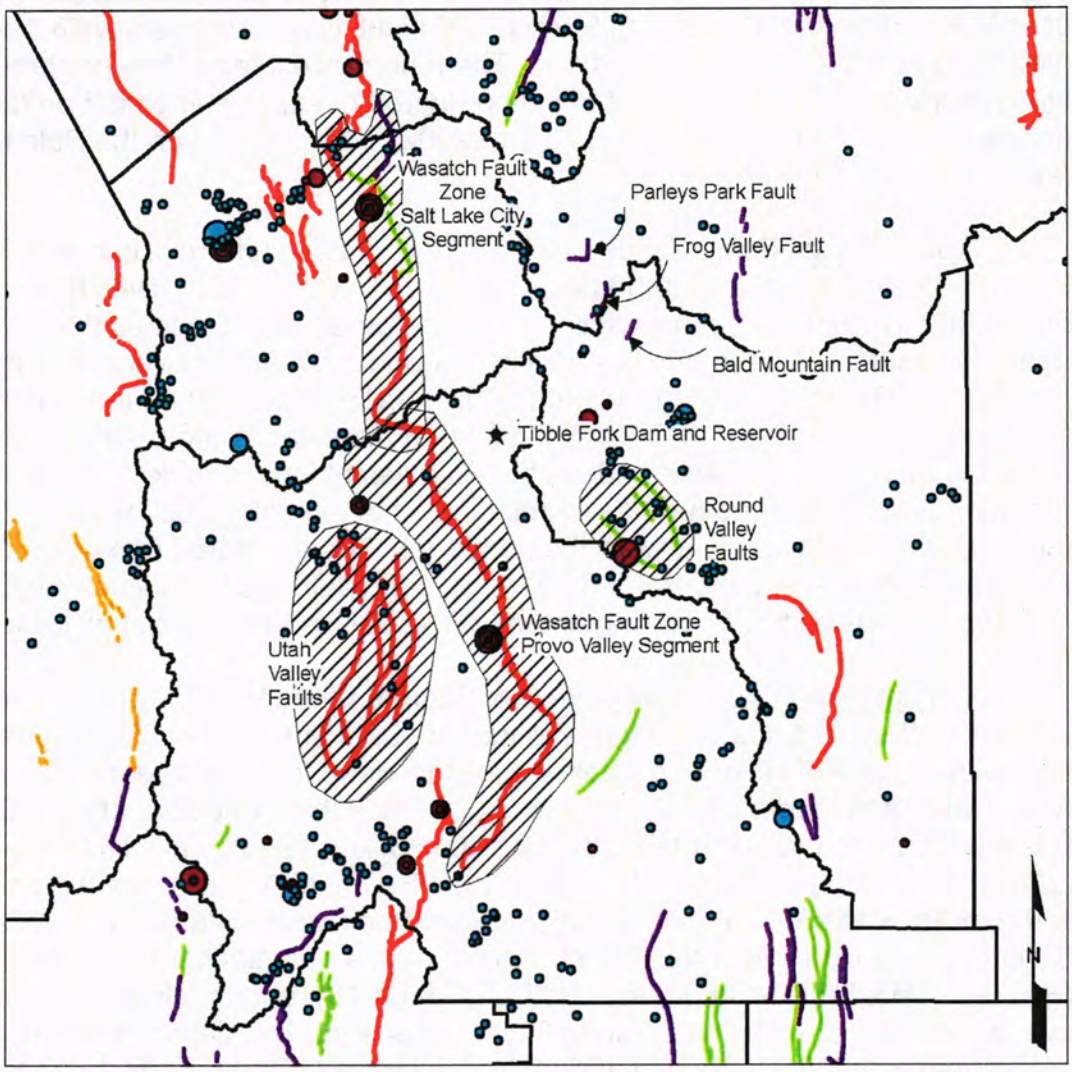
4. Potential Seismic Sources

Mapped Quaternary faults (Hecker, 1993) are shown in Figure 9, along with the epicenters of historic earthquakes (UofU SS 2010). The Quaternary faults within 20 miles of Tibble Fork Dam are described below. Only a 20-mile radius was analyzed because the Wasatch fault zone (Provo segment) is only 5.2 miles from the Tibble Fork Dam and could generate a 7.2 magnitude event. Such a large event so close to the dam overshadows the other faults farther than 20 miles away. Appendix E contains printout of the fault information from UGS (2010) for all faults listed below.

Parleys Park Fault (Fault #UT 12-10) – This fault is located at its closest point approximately 15.6 miles northeast of the dam. Hecker (1993) gives this fault an age of <1,650,000 years, while Haller and others (2005) states this fault is a class B, which indicates the fault may or may not be capable of generating earthquakes and may be older than Quaternary. The slip rate is < 1 mm/year and the fault's movement is normal (Hecker, 1993). Haller and others (2005) give a slip rate of < 0.2 mm/year, and the slip sense was not reported. The UGS (2010) states that overall this fault is poorly understood at this time. The fault was mapped by Sullivan and others (1988) and is a normal fault with the dip direction west and north (UGS 2010). The fault information as reported by Halling and others (2002) is summarized in Table 11.

Frog Valley Fault (Fault #UT 13-9) - This fault is located at its closest point approximately 12.6 miles northeast of the dam. Hecker (1993) gives this fault an age of <1,650,000 years, while Haller and others (2005) states this fault is <1,600,000 years. The slip rate is < 1 mm/year and the fault's movement is normal (Hecker, 1993). Haller and others (2005) give a slip rate of < 0.2 mm/year, and the slip sense was not reported. UGS (2010) states that this fault is a poorly understood fault in Deer Valley in the Wasatch Range and may represent a subsidiary thrust to the Mount Raymond-Medicine Butte thrust and reactivated as a down-to-the-west normal fault. This fault is a normal fault with the dip direction to the west (UGS 2010). Fault information as reported by Halling and others (2002) is summarized in Table 11.

Figure 9. Regional Quaternary Faults and Regional Seismicity



1:750,000 if printed on 8.5 X 11 inch paper

0 4 8 16 24 32 Miles

Pre-1962 Events Magnitude

- 6.0 - 7.0
- 5.0 - 5.9
- 4.0 - 4.9
- 2.3 - 3.9

Post-1962 Events Magnitude

- 5.0 - 5.2
- 4.0 - 4.9
- 2.0 - 3.9

County Boundary

- Holocene and Latest Pleistoncene (0 - 30,000 years)
- Late Pleistocene (10,000 - 130,000 years)
- Middle to late Pleistocene (10,000 - 750,000 years)
- Early to middle Pleistocene (130,000 - 1,650,000 years)
- Quarternary (< 1,650,000 years)

Source for Fault Traces: Hecker, 1993

Source for Seismic Events:University of Utah, Seismograph Stations, Earthquake Information Center, 2010

Bald Mountain Fault (Fault #UT 12-15) - This fault is located at its closest point approximately 13.4 miles northeast of the dam. Hecker (1993) gives this fault an age of <1,650,000 years, while Haller and others (2005) states this fault is <1,600,000 years. The slip rate is < 1 mm/year and the fault's movement is normal (Hecker, 1993). Haller and others (2005) give a slip rate of < 0.2 mm/year, and the slip sense was not reported. UGS (2010) states that this fault is a poorly understood fault on the east side of Bald Mountain in the Wasatch Range. This fault is a normal fault with the dip direction to the southeast (UGS 2010). The recurrence interval has no data; however, a long recurrence interval is indicated by the degree of soil development on faulted deposits (UGS 2010). Halling and others (2002) did not report on the Bald Mountain fault.

Round Valley Faults (Faults #UT 12-19) - These faults' closest point to the dam is approximately 11 miles southeast of the dam. Hecker (1993) gives this fault an age of 130,000 to 1,650,000 years, while Haller and others (2005) states this fault is <750,000 years. The slip rate is < 1 mm/year and the fault's movement is normal (Hecker, 1993). Haller and others (2005) give a slip rate of < 0.2 mm/year, and the slip sense was not reported. UGS (2010) state that these faults are poorly understood faults bounding the northeast and southwest sides of Round Valley. These three faults are normal faults with the northeast fault dipping to the southwest, while the other two faults (southwest fault) dip toward the northeast. The estimated maximum credible earthquake for these faults is 6.5-6.75 Magnitude (UGS, 2010; Hecker, 1993). Fault information as reported by Halling and others (2002) is summarized in Table 11.

Wasatch Fault Zone Salt Lake City Segment (Faults #UT 12-6) - The Salt Lake City (SLS) Segment has two segments that are different in age. SLC Segment A is the fault with the age of Holocene to latest Pleistocene (0 to 30,000 years, Hecker, 1993), while Haller and others (2005) report an age of less than 15,000 years. SLS Segment B is the fault with the age 10,000 to 750,000 (Hecker, 1993), while Haller and others (2005) report an age of <750,000 years. SLC Segment A at its closest point to the dam is 9.5 miles, while SLC Segment B at its closest point to the dam is 15.2 miles. Segment A and B show a slip rate of 1 to 5 mm/year and sense of movement is normal (Hecker, 1993; Haller and others, 2005). UGS (2010) reports a total of three to four events have occurred since 8,000 to 9,000 years ago. The timing of the most recent paleoevent is 1,200 years ago (UGS, 2010). Hecker (1993) reports 1.5 to 5(?) meters of displacement per event. Fault information as reported by Halling and others (2002) is summarized in Table 11.

Wasatch Fault Zone Provo Segment (Faults #UT 12-3) - The fault zones closest point to the dam is 5.2 miles west of the dam. Hecker (1993) gives the fault zone an age of Holocene to latest Pleistocene (0 to 30,000 years), while Haller and others (2005) give this fault an age of <15,000 years. The slip rate is 1 to 5 mm/year (Hecker 1993, Haller and others 2005) and the movement is normal (Hecker, 1993). When Lake Bonneville was present, slip rates of 20 to 30 meters of displacement may have occurred in just a few thousand years representing slip rates as high as 10 mm/year (UGS, 2010). Hecker (1993) reports 1.5 to 3 meters of displacement per event. UGS

(2010) states this fault zone shows abundant evidence of recurrent Holocene surface faulting. The most recent surface-faulting earthquake occurred 500 to 650 years ago, an event occurred near American Fork approximately 500 years ago (UGS, 2010). Fault information as reported by Halling and others (2002) is summarized in Table 11.

Utah Lake Faults and Folds (Faults #UT 12-19) - The faults closest point to the dam is 13 miles. Hecker (1993) gives the faults an age of Holocene to latest Pleistocene (0 to 30,000 years), while Haller and others (2005) gives this fault an age of <15,000 years. Hecker (1993) reports a slip rate is <1 mm/year, while Haller and others (2005) report a slip rate of <0.2 mm/year. UGS (2010) reports during the Lake Bonneville regression, displacements of <2 to 5 meters at 14,000 to 16,000 year ago, which indicates slip rates from <0.1 to 0.4 mm/year. UGS (2010) states that these faults are poorly understood questionable faults and folds beneath Utah Lake that were identified from seismic reflection data. The reflection profiles suggest that displacement decreases upward and occur within several meters of the lake bottom (Hecker, 1993). Fault information as reported by Halling and others (2002) is summarized in Table 11. Table 12 is a summary of design earthquakes information for Tibble Fork Dam and Reservoir.

Table 11. Fault Parameters as Reported by Halling and others (2002)

Name	Mw	Mw + σ	Dip Dir.	Dip Angle (°)	Length (km)	Max. Disp. (m)	Avg. Disp. (m)
Parleys Park	6.00	6.24	SE	60	4	NR	NR
Frog Valley	6.09	6.33	NSE	60	5	NR	NR
Round Valley	6.45	6.69	NE	60	11.5	NR	NR
Wasatch Fault Zone –Salt Lake City Segment	7.11	7.45	W	60	46	5	3.25
Wasatch Fault Zone – Provo Segment	7.22	7.50	W	60	69.5	3	2.25
Utah Lake	6.85	7.09	NSE	60	30		

Data from Halling and others (2002)
Mw = maximum considered earthquake (Mw) as calculated using the Wells and Coppersmith equations
Mw + σ = maximum considered earthquake plus one standard deviation as calculated using the Wells and Coppersmith equations
Dip Dir. = Dip Direction
W = West, SE = southeast, NE = northeast, NSE = north southeast,
° = degree
Km = kilometers
Max. Disp. (m) = Maximum Displacement (meters)
Avg. Disp. (m) = Average Displacement (meters)
NR = Not Reported

Table 12. Design Earthquakes Information as Reported by Halling and others (2002) and UGS (2010)

Source	Length (km)[1]	Cum. Length (km)[2]	Offset <35,000 (yrs)	Offset Mult. Offset	Slip rate mm/yr.[2]	Activity Class[3]	Dist. (mi)	Dist. (km)
Parleys Park	4	5	?	No	<0.2?	Ex Low	15.6	25.1
Frog Valley	5	5	?	No	<0.2?	Ex Low	12.6	20.3
Bald Mountain	2	2	?	No	<0.2?	Ex Low	13.4	21.6
Round Valley	11.5	27	?	Yes	<0.2?	Ex Low	11	17.7
WFZ –Salt Lake City Segment	46	92	Yes	Yes	1-5	Mod	9.5	15.3
WFZ –Provo Segment	69.5	127	Yes	Yes	1-5	Mod	5.2	8.4
Utah Lake	40	131	?	Yes	0.2-1	Low	13	20.9

Data from Halling and others (2002)
[1] Length data from Halling and others (2002)
[2] from UGS (2010)
[3] Activity class is determined Slemmons (1977)
Cum. = Cumulative
WFZ = Wasatch Fault Zone
km = kilometer
yrs. = years
mm/yr. = millimeter per year
Mod = Moderate activity rates
Ex Low = extremely low rates of activity
Low = Low activity

5. Maximum Credible Earthquake (MCE)

The UDWR 2004 states "all active sources of seismicity with the potential to impact the stability of a dam should be assigned a maximum credible seismic event" and defines the Maximum Credible Earthquake (MCE) as the event which has the greatest potential to cause damage at the site. Terracon (1999) assigned a Magnitude 6.5 event occurring less than one mile from the site. This event would generate a peak horizontal ground acceleration of 0.56g at the site. This number seems too high, and a more realistic value that would meet State standards would be 0.43g. A more site specific study should be performed at the time of final design in order to more accurately define the design earthquake.

6. Operating Basis Earthquake (OBE)

The UDWR 2004 states "all active sources of seismicity with the potential to impact the stability of a dam should be assigned an operating basis seismic event" and defines the Operating Basis Earthquake as the event which has the greatest potential to

cause damage at the site within the last 200 years. Terracon (1999) assigned a Magnitude 5.0 event occurring less than one mile from the site. This event would generate a peak horizontal ground acceleration of 0.36g at the site.

F. Instrumentation

In 1996 and 1998 Terracon (1999) placed two observation wells in each of four borings (B-1, B-3, B-4, B-5). In borehole B-2, two piezometers were installed, but were not separated by a bentonite plug. Despite this, the readings are very different. The embankment piezometer reads consistently about 30 feet below the crest, but the second piezometer, supposedly in the foundation, reads within a few feet of the crest, which indicates that it is not reading properly. A second boring (B-2A) was drilled six feet west of B-2, and one embankment piezometer was placed in it. These readings are fairly consistent at a 3-foot higher water surface than B-2. All of the toe piezometers had dual piezometers installed, separated by 10 feet and a bentonite plug, even though both were placed in essentially the same material (alluvial foundation). Both piezometers in the same hole have very similar readings, as should be expected. The locations and elevations of boreholes B-1, B-2, and B-2A were surveyed by Echoff, Watson, & Preator Engineering following the initial investigation. The type of sand and bentonite was documented in Terracon's 1999 report. A summary of the piezometer information from the borehole logs (Appendix A) is summarized in Table 13. Table 14 summarizes the top and bottom of sand, top and bottom of slotted pipe, and the top and bottom of bentonite as adjusted to elevation above mean sea level (amsl). USDA NRCS (1964) has 5,390 feet added to survey elevations recorded on the sheets from the Plans for Construction. Elevation was determined from the logs and 5,390 feet was added to the read elevation from logs. These results are summarized in Table 14.

Three additional holes were drilled in the dam in 2010, all on the crest. The main reason for these additional holes was that the Terracon drilling did not penetrate far enough into the foundation to accurately characterize the materials. Three additional piezometers were installed in these drill holes, but there have not been enough readings from them to provide additional insight into the piezometric levels in the dam. NUWCD will work with Dam Safety to logically number these piezometers and add them to the database.

Table 13. Summary of Piezometer Information[1]

Borehole		Sand Int., top	Sand Int., bot.	Sand Thck.	Slotted Pipe top	Slotted Pipe bot.	Slotted Pipe Thck	Bentonite Int., top	Bentonite Int., bot.	Bentonite Thck.
		ftbgs.	ftbgs.	ft.	ftbgs.	ftbgs.	ft.	ftbgs.	ftbgs.	ft.
B-1	Found.	42.5	69	26.5	49	54	5	38.5	42.5	4
	Emb.	30	38.5	8.5	32	37	5	17	30	13
B-2	Found.	33.5	66.6	34.6	56.5	61.5	5	31	32	1
	Emb.	33.5	66.6	34.6	37	42	5	31	32	1
B-2A	Emb.	38	45	7	39.5	44.5	5	34	38	4
B-3	TD = 37'							30	37	7
	Found.	24	30	6	25	30	5	20	24	4
	Found.	14	20	6	15	20	5	0	14	14
B-4	TD = 41.5'							30	41.5	11.5
	Found.	24	30	6	25	30	5	20	24	4
	Found.	14	20	6	15	20	5	0	14	14
B-5	TD = 41.5'							30	41.5	11.5
	Found.	24	30	6	25	30	5	20	24	4
	Found.	14	20	6	15	20	5	0	14	14

[1]Data from Terracon 1999

Int. = Interval

bot. = bottom

Thck. = thickness

ftbgs. = feet below ground surface

ft. = feet

TD = Total Depth below ground surface

Table 14. Summary of Piezometer Information Adjusted to Elevation amsl[1]

Borehole		Sand Int., top	Sand Int., bot.	Slotted Pipe top	Slotted Pipe bot.	Bentonite Int., top	Bentonite Int., bot.
B-1	Found. 54' TD = 69'	6346.8	6320.3	6340.3	6335.3	6350.8	6346.8
	Emb. 37'	6359.3	6350.8	6357.3	6352.3	6372.3	6359.3
B-2	Found. 61.5' TD = 66.6'	6357.2	6322.6	6332.7	6327.7	6358.2	6357.2
	Emb. 42'	6357.2	6322.6	6352.2	6347.2	6358.2	6357.2
B-2A	TD = 45'	6351.2	6344.2	6349.7	6344.7	6355.2	6351.2
B-3	TD = 37'					6303	6296
	Found. 30'	6309	6303	6308	6303	6313	6309
	Found. 20'	6319	6313	6318	6313	6333	6319
B-4	TD = 41.5'					6313	6301.5
	Found. 30'	6319	6313	6318	6313	6323	6319
	Found. 20'	6329	6323	6328	6323	6343	6329
B-5	TD = 41.5'					6313	6301.5
	Found. 30'	6342	6336	6341	6336	6346	6342
	Found. 20'	6352	6346	6351	6346	6366	6352

[1]Data from Terracon 1999 took depth adjust value to elevation above mean sea level (amsl) reported on logs and added 5390 feet.

Int. = Interval

bot. = bottom

TD = Total Depth below ground surface

Due to the confusion that has resulted from previous readings, Everett Taylor, Utah Dam Safety, has labeled the piezometers as the readings would indicate make the most sense. Table 15 is a summary of the dam monitoring devices as reported by Taylor (2010) and Terracon (1999) and modified for this report.

Table 15. Piezometer Information

Borehole (Terracon 1999)		Piezometer (UDWR 2010)		
B-1	Shallow	Piez. 1a	Embankment	Sta 23+50, Crest
	Deep	Piez. 1b	Foundation	Sta 23+50, Crest
B-2	Shallow	Piez. 2a	Embankment	Sta 22+00, Crest, 5 ft. left of Spillway
	Deep	Piez. 2b	Foundation	Sta 22+00, Crest, 5 ft. left of Spillway
B-2A		Piez. 2A	Embankment	Sta 22+06, Crest, 11 ft. left of Spillway
B-3	Shallow	Piez. 3a	Foundation	Sta 23+00 , Toe
	Deep	Piez. 3b	Foundation	Sta 23+00 , Toe
B-4	Shallow	Piez. 4a	Foundation	Sta 24+00, Toe
	Deep	Piez. 4b	Foundation	Sta 24+00, Toe
B-5	Shallow	Piez. 5a	Foundation	Sta 25+00, Right Toe
	Deep	Piez. 5b	Foundation	Sta 25+00, Right Toe

UDWR = Utah Division of Water Rights

III. EMBANKMENT DAM AND FOUNDATION EVALUATION

A. Generalized Embankment and Foundation Materials

Based on construction specifications, subsurface exploratory drilling, test pits, and laboratory testing, a description of the embankment and foundation materials and soil strengths can be made. The location of each material type for the dam and foundation is shown on Figure 3. General descriptions are presented below. Assigned strength parameters are also included based on field descriptions, blow count data, laboratory testing, and correlation tables (Obert, 1967); Bray, 1981; Carter, 1991; USBF, 1989; NavFac, 1971).

1. Bedrock Foundation

The cross section from the USDA NRCS (1964) shows the foundation conditions on the left abutment (east) as red conglomerate containing igneous intrusive rock and quartzite. The bedrock below the centerline of the dam is mostly volcanic tuff with sand, gravel, cobbles, or boulders. A summary of the depth to bedrock as reported by the USDA NRCS (1964) is estimated in Table 3, page 14, and also in Appendix A. The deepest older alluvium is located from Sta. 24+00 to Sta. 24+65. All three foundation boreholes (B-3, B-4, and B-5) drilled by Terracon (1999) at the downstream toe of the dam do not appear to penetrate into bedrock. The two crest holes (B1 and B2) also did not penetrate into the bedrock foundation. Additional drilling was performed in 2010 to better characterize the foundation, and the drill logs for these holes are in Appendix A.

2. Alluvial Foundation

The foundation alluvium as characterized by drilling and laboratory testing done by Terracon (1999) is summarized in Appendix A. Most of the material is clayey or silty sand, clayey or silty gravel, well-graded gravel, or well-graded gravel with silt binder. In Borehole B-4 at 22 feet, the material is sandy lean clay to sandy fat clay. Material properties are summarized in the drill hole logs (Appendix A). Lab test data are in Appendix B. The moisture content ranges from 5% to 33%. These soils have liquid limits ranging from 44 to 64 and corresponding plasticity indexes from 22 to 35 (Appendix B, Terracon).

3. Embankment Fill - Impervious Zone I

The Zone I materials were specified to come from Borrow Area 1, located within the reservoir basin, and directly north of the embankment with a maximum permissible rock size of 6 inches and a minimum of 25% passing a No. 200 sieve. Laboratory tests of this material resulted in a classification of clayey sand/gravel (SC to GC), which transitions to sandy lean clay with gravel (CL) in the bottom of B-2 (Terracon 1999). The moisture content ranged from 7% to 13%. The materials were required to be compacted to 95% of ASTM D-698 using a sheepsfoot or vibratory sheepsfoot compactor. Considerable density data is available showing the compaction met

specifications. Subsurface exploration holes B1 and B2 by Terracon (1999), encountered the full height of the Zone I material from the crest of the dam. Blow counts varied from 11 to 53, with most values between 13 and 30. These soils have liquid limits ranging from 34 to 46 and corresponding plasticity indexes from 14 to 27 (Appendix B, Terracon, 1999). A phi angle of 30 degrees and cohesion of 200 psf were assigned to this material for the stability analyses.

4. Embankment Fill - Semi-Pervious Zone II

The Zone II materials were excavated from Borrow Area 2, which is located within the reservoir basin, and also north of the embankment, with a maximum permissible rock size of 12 inches and a fines content (% passing a #200 sieve) required to be between 10% and 25%. Very limited information on this material was obtained by Terracon, as the two crest exploratory holes only show one test in each hole that may be in the Zone II. Construction specifications detailed maximum lift thickness of 12" and a method compaction using vibratory sheepsfoot or vibratory drum type roller pulled by a 150 H.P. minimum track type tractor. Four passes over the entire area of each lift were required. Correlation values for this type of material vary from 31 to 37 degrees and 230 to 420 psf for phi angle and cohesion respectively. As above, slightly lower parameters were assigned, using a phi angle of 32 and cohesion of 100.

5. Embankment Fill – Zone III

None of the investigation by Terracon sampled the Zone III material, so the only information on this material comes from the construction specifications. Zone III materials were also to come from Borrow Area 2, and were required to have a maximum rock size of 18 inches and a fines content between 0% and 10%. Zone III materials were to be placed in layers not to exceed 18 inches loose and compacted by means of vibratory sheepsfoot or vibratory sheepsfoot or vibratory drum-type roller pulled by a 150 H.P. minimum, track type tractor. Compaction was to be accomplished by four passes over the entire area of each lift. Correlation values for this type of material are greater than 34 degrees for the phi angle and virtually no cohesion. The values used in the stability analyses were 34 degree phi angle and zero cohesion.

B. Reservoir Sediment Characterization

The Tibble Fork Reservoir was designed for a 50-year life span. More sediment deposition than originally anticipated has occurred. A landslide upstream of reservoir was reactivated during the 1980s, and an estimated total of nearly 58 acre-feet of sediment was deposited from the 1980s to 2002 (Rasely, 2002). The draft reservoir sediment survey done in 2002 estimated the total sediment volume to be less than 108 acre-feet. This volume is about 65% of the design volume of 166 acre-feet (USDA NRCS, 2004). An evaluation of the sediment deposited in the reservoir needs to be done to determine the storage capacity. In addition to an evaluation of the storage capacity, an evaluation of the quality of the sediment needs to be performed. Knowing

the quality of the sediment will help to determine if the sediment should be removed or if there are other feasible alternatives to address the storage capacity of the reservoir.

Initial metal concentration of the sediment in the reservoir was done in 2000. The results of this survey are summarized in Table 16.

Table 16. Metal Concentrations in Sediments at Tibble Fork Reservoir

FS ID #	Mo	Zr	Sr	Rb	Pb	As	Zn	Fe	Mn	Ba	Sn
1	9	110	203	49	68	*	168	20890	657	101	116
2	15	123	215	49	210	*	420	20390	750	222	171
3	*	76	79	31	94	*	252	4518	318	125	103
4	*	104	236	51	109	32	299	17498	*	302	104

Data from Pope 2003
Date collected: 6/15/2000
Data collected by: Ted V. Fitzgerald, FS and Linda Calton, BOR
Method was In-situ
No coordinates given for sample location
No units given
LOD = Level of Detection
* <LOD Measurement result does not exceed detection limit
Hg, Cu, Cr, Sb, Cd, Se, Ni, Co, and Ag were monitored but did not exceed LOD

These preliminary metal concentrations indicate that metals are present in the sediment. Additional sampling was done in the late summer of 2010, which verified the presence of arsenic and lead in the sediment. While additional tests are needed to further define some metals, it appears that there are too many hazardous metals in the sediment to allow removal and disposal somewhere else.

C. Seepage Analysis

1. Piezometer Records

Piezometric levels are available from Utah Division of Water Rights (UDWR, 2010). However, the values seem to have some inconsistencies and were adjusted by Taylor (2010). These data are summarized in Appendix E of this report. Taylor states the difference is from different ground elevations used to calculate the depths. Table 17 summarizes the different elevation used for the database on the webpage versus the ground elevation reported by Terracon (1999).

Table 17. Comparison of Ground Elevation for UDWR Database and Terracon (1999)

Piezometer (Terracon 1999)	Piezometer (Taylor 2010)	DB Elev., ft.	GR Elev., ft.
B-1 shallow	1a	6380	6389.3
B-1 deep	1b	6380	6389.3
B-2A	2A	6380	6389.2
B-2 shallow	2Ba	6380	6389.2
B-2 deep	2Bb	6380	6389.2
B-3 shallow	3a	6323.7	6333
B-3 deep	3b	6323.7	6333
B-4 shallow	4a	6333.7	6343
B-4 deep	4b	6333.7	6343
B-5 shallow	5a	6356.7	6366
B-5 deep	5b	6356.7	6366

UDWR = Utah Division of Water Rights
DB Elev. = Database elevation used by UDWR (2010) webpage
GR = Ground elevation used by Terracon (1999)
Ft. = feet

Piezometers B-3a,b, B-4a,b, and B-5a,b are placed at the toe of the dam within the foundation. Although two piezometers were placed in each boring at different depths and separated by a bentonite plug, they are in the same type of material and show essentially the same water levels. Piezometers B-3a and 3b are approximately 115 feet right of the spillway; average water level is 6330.8 feet amsl, or two feet below the ground surface. Piezometers B-4a and 4b are approximately 290 feet right of the spillway; average water level is 6334.5 feet amsl, or 8.5 feet below the ground surface. Piezometers B-5a and 5b are approximately 550 feet right of the spillway; average water level is 6349 feet amsl, or 17 feet below the ground surface. As the piezometers get closer to the maximum section of the dam, water levels go up in elevation and are closer to the ground surface.

Piezometers B-1a and 1b, B-2A, and B-2a and 2b were placed along the downstream crest edge, and go through the embankment material into the foundation. Terracon (1999) states that Piezometer B-2 embankment and foundation could not be separated and no bentonite was placed between the two screens; however, these two wells show very different water levels in spite of the fact that the piezometers are not separated with a bentonite seal. Piezometer B-2a-embankment gives an average water level of 6358.2 feet amsl, or ~30 feet below the crest. Piezometer B-2b-foundation average water level is much higher at 6383.7 feet amsl, or ~5 feet below the crest, although readings the last two years are approximately two feet below the crest. This is most likely not an accurate reading, since there is no other indication of a water level this high in the structure. The most likely explanation for this is the piezometer is not responsive to the water level in the foundation, but is plugged and simply filled with water that cannot drain out. Piezometer B-2A water level (average 6354.9 feet amsl) is similar to the water level for Piezometer B-2a-embankment. Only four feet of difference

indicates these two piezometers are both reading from the embankment piezometric surfaces. Piezometer B-1b-foundation piezometric surface is higher at 6360 feet amsl, or ~28 feet below the crest. Piezometer B-1a-embankment is at 6353.5 feet amsl, or ~35 feet below the crest, which is almost identical to B-2A and B-2a-embankment. The 2010 piezometer were installed too late in the year to have any readings provided for inclusion in this report.

2. Analysis

The embankment and foundation pore pressure scenarios were analyzed by use of SEEP2D, automated seepage analysis. Monitoring data from the 11 installed piezometers was used to refine the analysis using field piezometric data. A two dimensional, finite element, **seepage analysis** was performed using the SEEP2D program. The pore pressures in the foundation and embankment match the piezometric readings fairly well, and do not show any problems.

The permeabilities used in the analysis are shown in Table 18. Figure 10 depicts the calculated flow net, showing the phreatic surface, flow lines, and equi-potential lines. Piezometric data matched the flow net very closely, and no modification to permeabilities was necessary. The Seep 2D analysis is a two-dimensional analysis and cannot take into consideration seepage from the sides or the abutments. Seepage from the abutments does occur as evidenced by downstream groin seepage 35 feet below the crest.

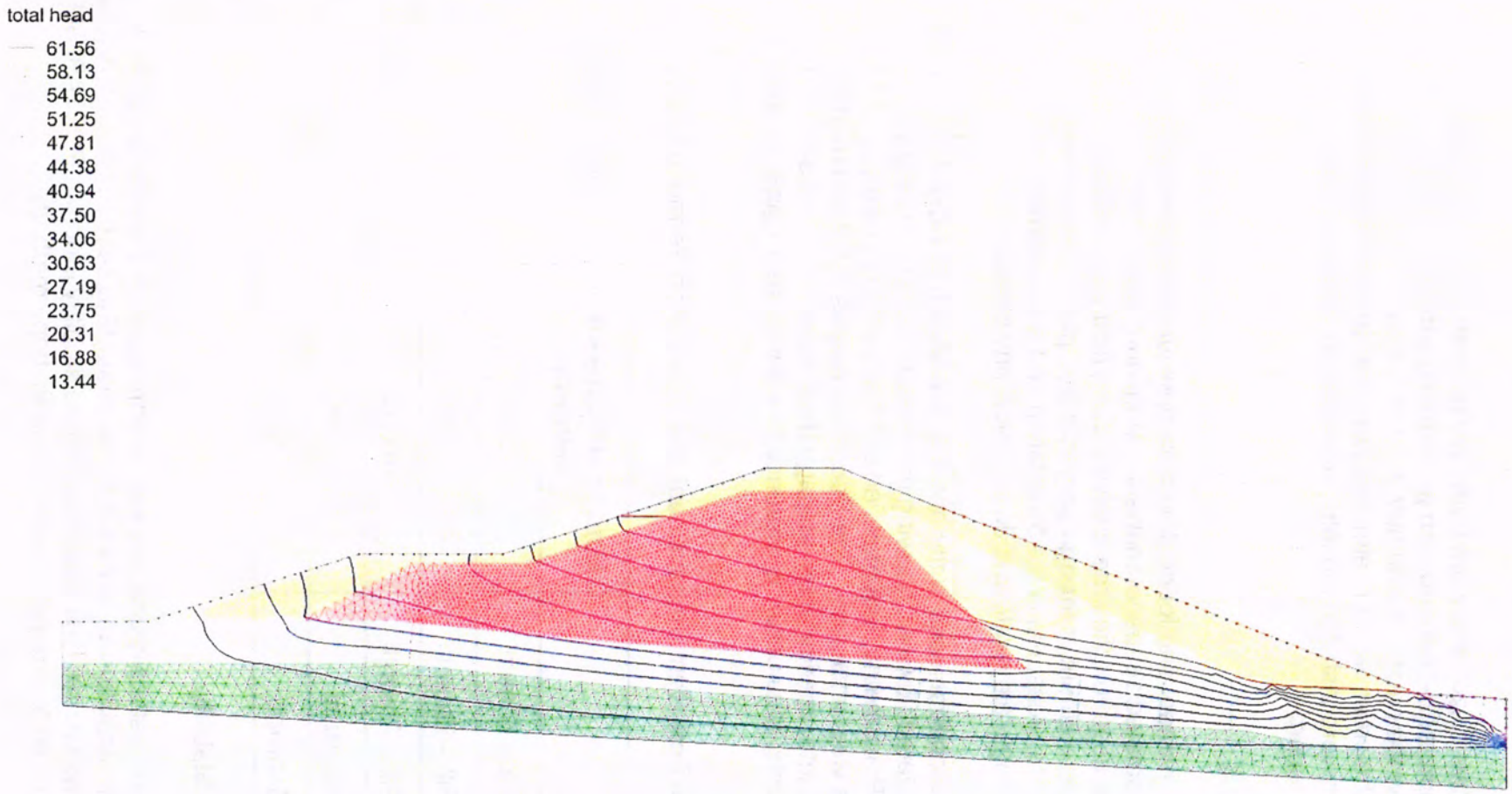
Table 18. Tibble Fork Dam Embankment and Foundation Permeabilities

Material Type	Horizontal Permeability (feet/year)	Vertical Permeability (feet/year)
Embankment Fill – Zone I	500	50
Embankment Fill – Zone II	2,000	200
Embankment Fill – Zone III	10,000	10,000
Foundation – Alluvium	1,000	1,000
Foundation – Bedrock	500	500

D. Static Slope Stability

A static slope stability analysis was performed on the dam to determine compatibility with stability standards set by the State Engineer's Office. The analysis used the two-dimensional, limit equilibrium slope stability program PCSTABL5M. The stability conditions were analyzed by simplified Bishops methods.

Figure 10. Flow Net-Maximum Section



The stability conditions analyzed included steady state seepage for both the upstream and downstream slopes and rapid drawdown for the upstream slope. The configuration of the dam is shown in Figure 3. Two different cross sections were analyzed, one through the spillway section and another at Sta. 23+57. The lowest factor of safety was reported from the two scenarios. The descriptions of the embankment zones and foundation materials are described above (see III. A. Generalized Embankment and Foundation Materials). Strengths were assigned to the different materials based on material type, blow counts, and laboratory testing results. Assigned parameters are summarized in Table 19.

Tibble Fork Dam does meet all the static slope stability standards, although two situations are close to the minimum requirement. The downstream steady state condition resulted in a factor of safety of 1.69. The minimum requirement for the downstream condition is a factor of safety of 1.5. The upstream steady state condition resulted in a factor of safety of 2.38, well above the required 1.5. The upstream rapid drawdown condition yielded a minimum factor of safety of 1.29, slightly above the minimum 1.2, but this lowest factor of safety failure surface only occurs in the Zone III, and would likely not result in a failure of the embankment. A more realistic failure surface through the maximum section yields a factor of safety of 1.87, well above 1.29. The results of the static analyses are presented in Table 20 and failure surfaces are shown on Figures 11, 12, and 13.

Figure 11. Downstream Steady State Static Slope Stability Failure Surfaces

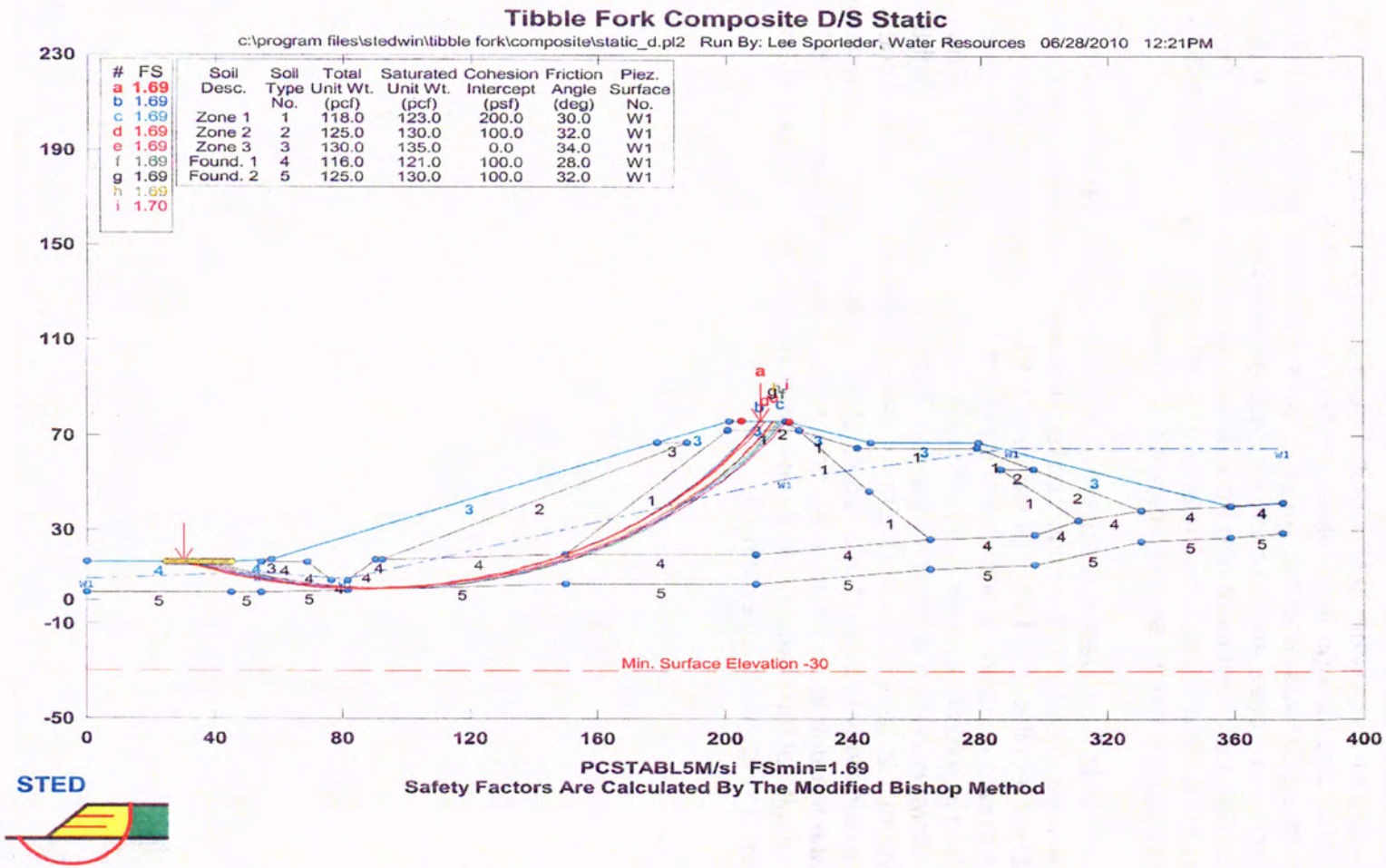


Figure 12. Upstream Steady State Static Slope Stability Surface

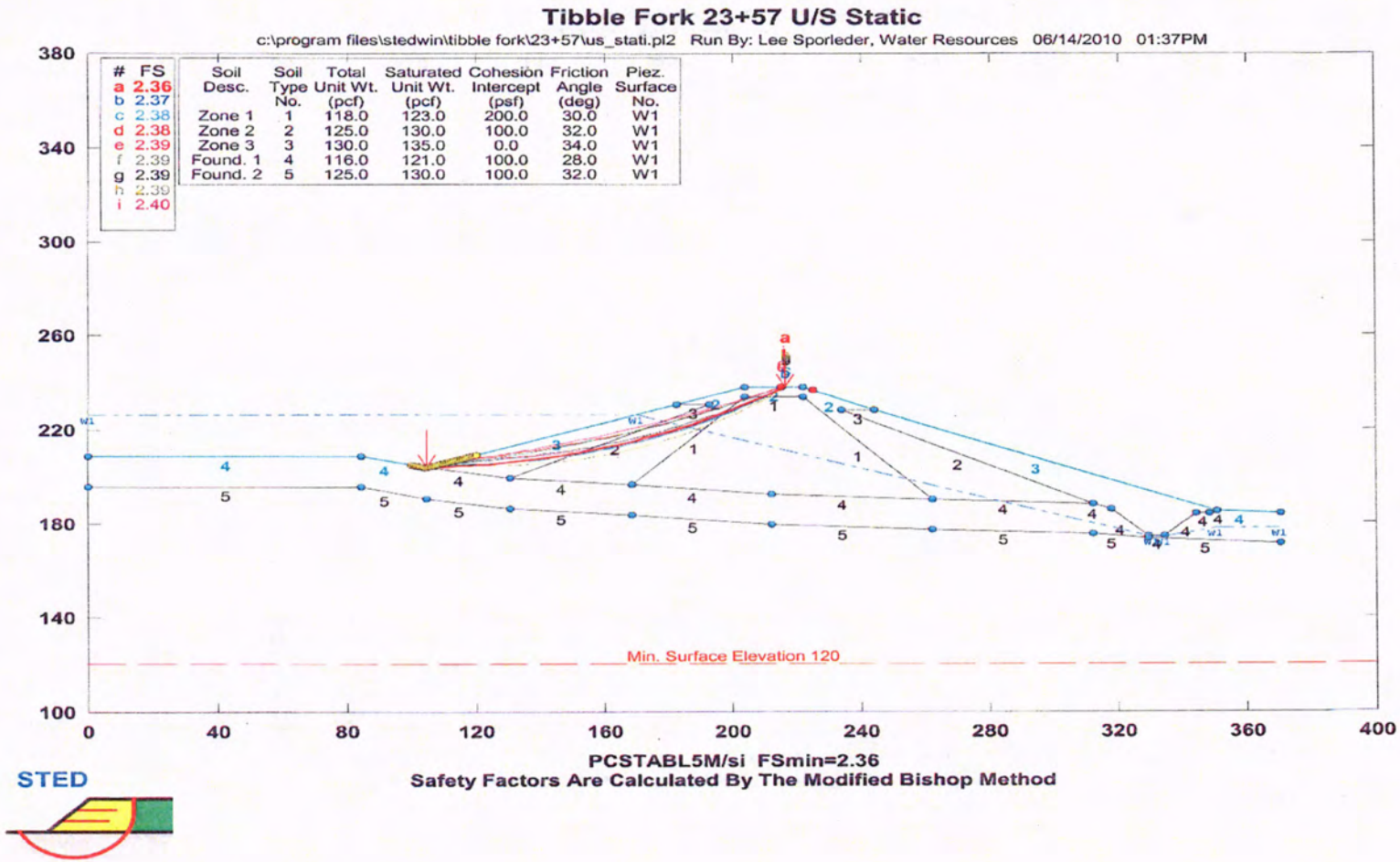


Figure 13. Upstream Rapid Drawdown Failure Surface

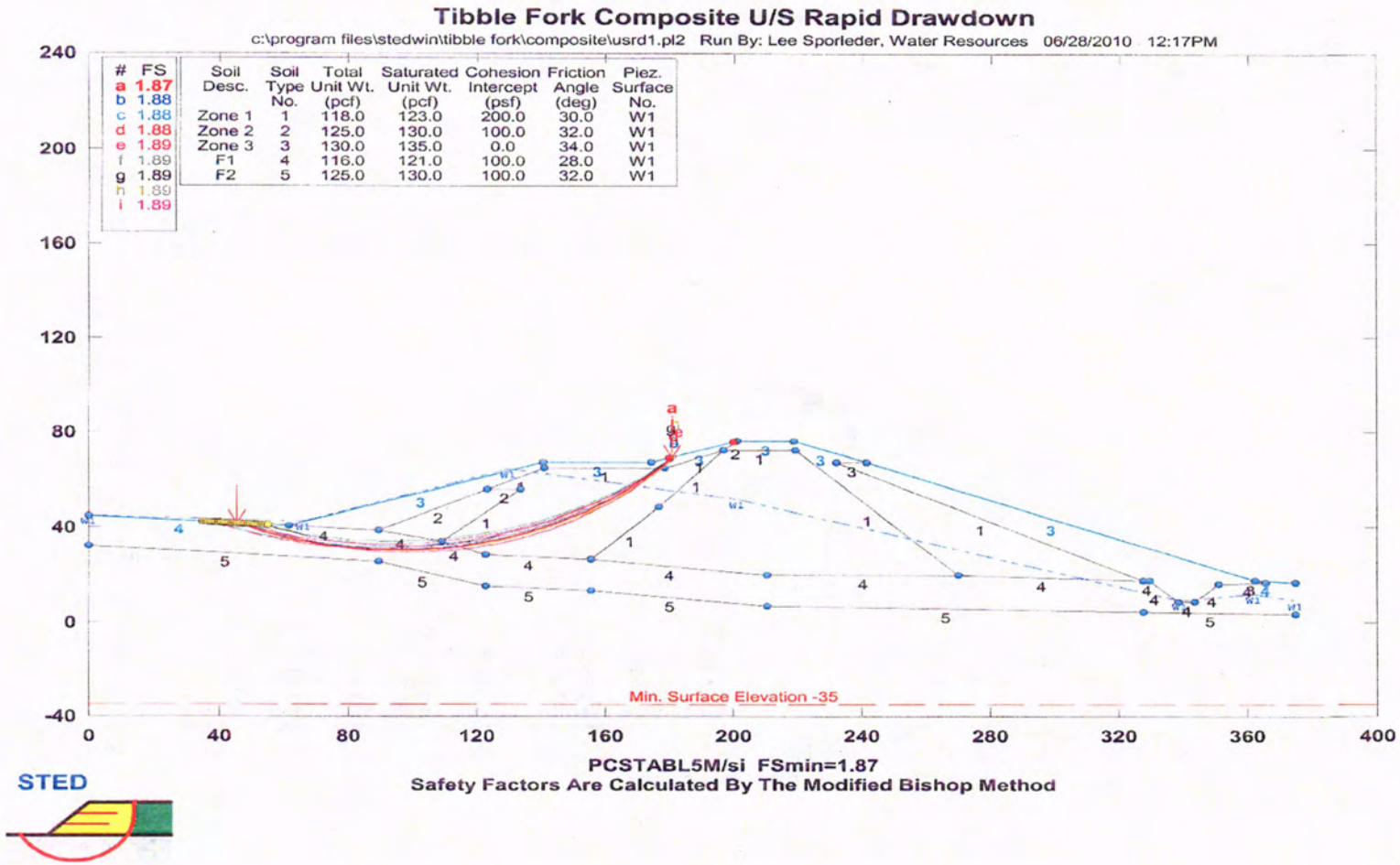


Table 19. Tibble Fork Dam Slope Stability Static Strength Parameters

Soil/Zone Type	Total Weight (pcf)	Saturated Weight (pcf)	Cohesion (psf)	Phi Angle	Pore Pressure Parameter
1. Zone I	118	123	200	30	0.0
2. Zone II	125	130	100	32	0.0
3. Zone III	130	135	0	34	0.0
4. Found. 1	116	121	100	28	0.0
5. Found. 2	125	130	100	32	0.0

Additional stability analyses are included in Appendix E.

Table 20. Static Slope Stability Factors of Safety

Stability Condition	Calculated Factor of Safety	Minimum Requirements
Downstream - Steady State	1.69	1.50
Upstream - Steady State	2.36	1.50
Upstream - Rapid Drawdown	1.87	1.20

E. Liquefaction and Post Earthquake Stability Analyses

Granular foundation materials with relatively moderate to low blow counts were encountered in the subsurface exploration. An analysis of these materials for susceptibility to liquefaction was accomplished according to the NCEER Workshop (2001). This approach calculates the factors of safety against liquefaction from the determined cyclic stress and cyclic resistance ratios. Table 21 presents the results of the calculations using a magnitude 6.5 MCE, (maximum acceleration 0.56 g). Those zones with factors of safety less than or equal to 1.1 are considered liquefiable.

Two intervals in the foundation beneath the embankment were calculated to have a factor of safety less than 1.1, as shown in Fig. 3, page 5. The drill holes did not penetrate very far into the foundation to adequately identify liquefiable zones beneath the embankment. Only one test within the embankment showed a possibility of liquefaction, but the material is a sandy clay, and is likely not a threat. It is very unlikely

that embankment materials placed in lifts at approximate optimum moisture contents will fall into the susceptible category. It is recommended that during final investigation appropriate moisture testing be accomplished to substantiate the low susceptibility of all Zone I materials.

Two of the holes drilled by Terracon at the downstream toe in 1999 (B-3, B-4) showed low calculated factors of safety, within the first 13 feet of drilling. Due to the lack of information for material beneath the embankment, these liquefiable zones were extended all the way beneath the embankment, as well as extended upstream of the embankment, as shown in Figure 14. Additional drilling performed in 2010 verified the previous assumptions made, and no changes were made to the material strengths used in the analyses.

In order to meet the minimum standards for deformation, modifications were made for preliminary design, which included a downstream stability berm 30 feet high and 60 feet long. The preliminary design modifications and provisions listed below are recommended as part of this study (see VII.D.E. Summary and Recommendations).

Table 21. Tibble Fork Dam Slope Stability Post Earthquake Strength Parameters

Soil/Zone Type	Total Weight (pcf)	Saturated Weight (pcf)	Cohesion (psf)	Phi Angle	Pore Pressure Parameter
1. Zone I	118	123	200	30	0.1
2. Zone II	125	130	100	32	0.1
3. Zone III	130	135	0	34	0.1
4. Found. 1*	116	121	800	0	0.2
5. Found. 2**	116	121	1000	0	0.2
5. Found. 3	125	130	100	32	0.2

*Liquefiable zone under embankment
**Liquefiable zone not under embankment

Table 22. Liquefaction Analysis

Utah Division of Water Resources

PROJECT **Tibble Fork Dam**

SPT - LIQUEFACTION ANALYSIS

NCEER 2001(last update 11/24/2004)

Date: 11/22/10
Engr MLC

Water = 62.4 pcf
EQ Mag = 6.5
amax = 0.56 g
Wtr Dpth 9.5 ft

Hmmr = Auto
Liner = without

MSF = 1.44

CE = 1.33 -- Donut, Safety, Auto
CS = 1.20 -- Wtih, Without Liner

* N1(60) Clean Sand Greater than 30 - NON-LIQUEFIABLE
** Greater than 50 feet, rd factor may be questionable

1 Smpl Depth ft	Bore Hole #	2 Moist Dnsty pcf	3 Sat Dnsty psf	4 Eff Stress psf	5 Total Stress psf	6 Blow Count N	7 Soil Classif USC	8 Brhole Dia in	9 Brhle Dia Corr CB	10 Rod Lngth CR	11 1 tsf Eff OB Con CN	12 Corr & Adj N1(60)	13 Silt Cntnt %	14 D50 mm	15 N1(60) Clean Sand	16 CRR * 7.5	17 Rel Den Dr	18 Site Cond f	19 K-sig Corr	20 K-alph Corr	21 Capcty Resist CRR	22 Stress Red Coef rd**	23 Seismic Demand CSR	24 Factor of Safety	25 Critical Acc
46	B-1	125	130	3,655	5,933	15	SC/SM	4.25	1.00	1.00	0.73	17.4	20	0.9	22.4	0.248	50	0.75	0.86	1.00	0.307	0.79	0.469	0.65	0.37 g
21	B-2	125	130	1,965	2,683	12	SC	4.25	1.00	0.95	1.01	18.3	40	0.9	27.0	0.339	51	0.75	1.00	1.00	0.488	0.95	0.474	1.03	0.58 g
5.5	B-3	125	130	688	688	11	SC	4.25	1.00	0.75	1.43	18.8	20	0.9	23.9	0.271	52	0.74	1.00	1.00	0.390	0.99	0.360	1.08	0.61 g
8	B-3	125	130	1,000	1,000	8	GM	4.25	1.00	0.75	1.29	12.4	20	0.9	17.0	0.181	42	0.79	1.00	1.00	0.260	0.98	0.358	0.73	0.41 g
28	B-3	125	130	2,438	3,593	1	SC	4.25	1.00	0.95	0.91	1.4	20	0.9	5.1	0.073	14	0.80	0.96	1.00	0.101	0.93	0.499	0.20	0.11 g
5.5	B-4	125	130	688	688	11	SC	4.25	1.00	0.75	1.43	18.8	20	0.9	23.9	0.271	52	0.74	1.00	1.00	0.390	0.99	0.360	1.08	0.61 g
8	B-4	125	130	1,000	1,000	5	GC	4.25	1.00	0.75	1.29	7.7	20	0.9	12.0	0.131	33	0.80	1.00	1.00	0.189	0.98	0.358	0.53	0.29 g
11.5	B-4	125	130	1,323	1,448	6	GC	4.25	1.00	0.85	1.18	9.6	20	0.9	14.0	0.150	37	0.80	1.00	1.00	0.216	0.98	0.389	0.56	0.31 g
13	B-4	125	130	1,424	1,643	9	GC	4.25	1.00	0.85	1.15	14.0	20	0.9	18.8	0.201	45	0.78	1.00	1.00	0.289	0.97	0.408	0.71	0.40 g
23	B-5	125	130	2,100	2,943	9	SC	4.25	1.00	0.95	0.98	13.3	20	0.9	18.0	0.192	43	0.78	0.99	1.00	0.274	0.95	0.484	0.57	0.32 g
25.5	B-5	125	130	2,269	3,268	13	SC	4.25	1.00	0.95	0.94	18.6	20	0.9	23.7	0.268	51	0.74	0.97	1.00	0.373	0.94	0.493	0.76	0.42 g
45	10-2	125	130	3,673	5,795	15	CL	4.25	1.00	1.00	0.72	17.3	20	0.9	22.3	0.247	50	0.75	0.86	1.00	0.306	0.80	0.462	0.66	0.37 g
50	10-2	125	130	4,011	6,445	11	SM-SC	4.25	1.00	1.00	0.69	12.0	20	0.9	16.6	0.177	41	0.79	0.87	1.00	0.220	0.75	** 0.440	0.50	0.28 g

A post-earthquake stability analysis taking into consideration the liquefiable zones beneath the downstream shell of the dam was performed. Undrained embankment and foundation material strengths were used in the analysis and obtained by reducing shear strengths through use of pore pressure parameters to account for pore pressure build-up due to dynamic loading. Pore pressure parameters of 0.1 and 0.2 were assigned to the embankment and foundation, respectively (USBR, 1989). The liquefied zones experienced 100% pore pressure build-up; thus residual strengths were assigned (Marcuson, 1990). The residual strengths and pore pressure parameters used in the analysis are included on Table 22. Figures 14 and 15 show the results of the post-earthquake stability analysis, including the proposed provisions, with an unacceptable factor of safety equal to 1.18 (1.20 required) for the downstream failure surface of the maximum section. A more normal section at Sta. 23+57, outside of the spillway berm area, gave an acceptable factor of safety of 1.22. Material properties could be refined further during final design, but the stability berm required for deformation would raise the downstream post-earthquake factor of safety well above 1.2.

The liquefaction analysis discussed above was completed using blow counts for standard subsurface exploration techniques. Exploration and detailed liquefaction testing including the upstream foundation materials are necessary to fully evaluate the dam for the post-earthquake condition, and are recommended for final design.

F. Yield Acceleration Calculations

Yield accelerations for the Tibble Fork Dam were determined using the same computer techniques described in the slope stability analysis above. Determination of the yield acceleration is necessary for the deformation analyses. The yield accelerations are obtained by increasing the seismic coefficient until a factor of safety equal to 1.0 is obtained. Undrained embankment and foundation material strengths were used in the analysis as described above in the post-earthquake condition. The calculated yield accelerations for the upstream and downstream portions of the dam were 0.19 and 0.06 g, respectively. Figures 16 and 17 depict the upstream and downstream yield acceleration failure surfaces.

Figure 14. Upstream Post Earthquake Failure Surfaces

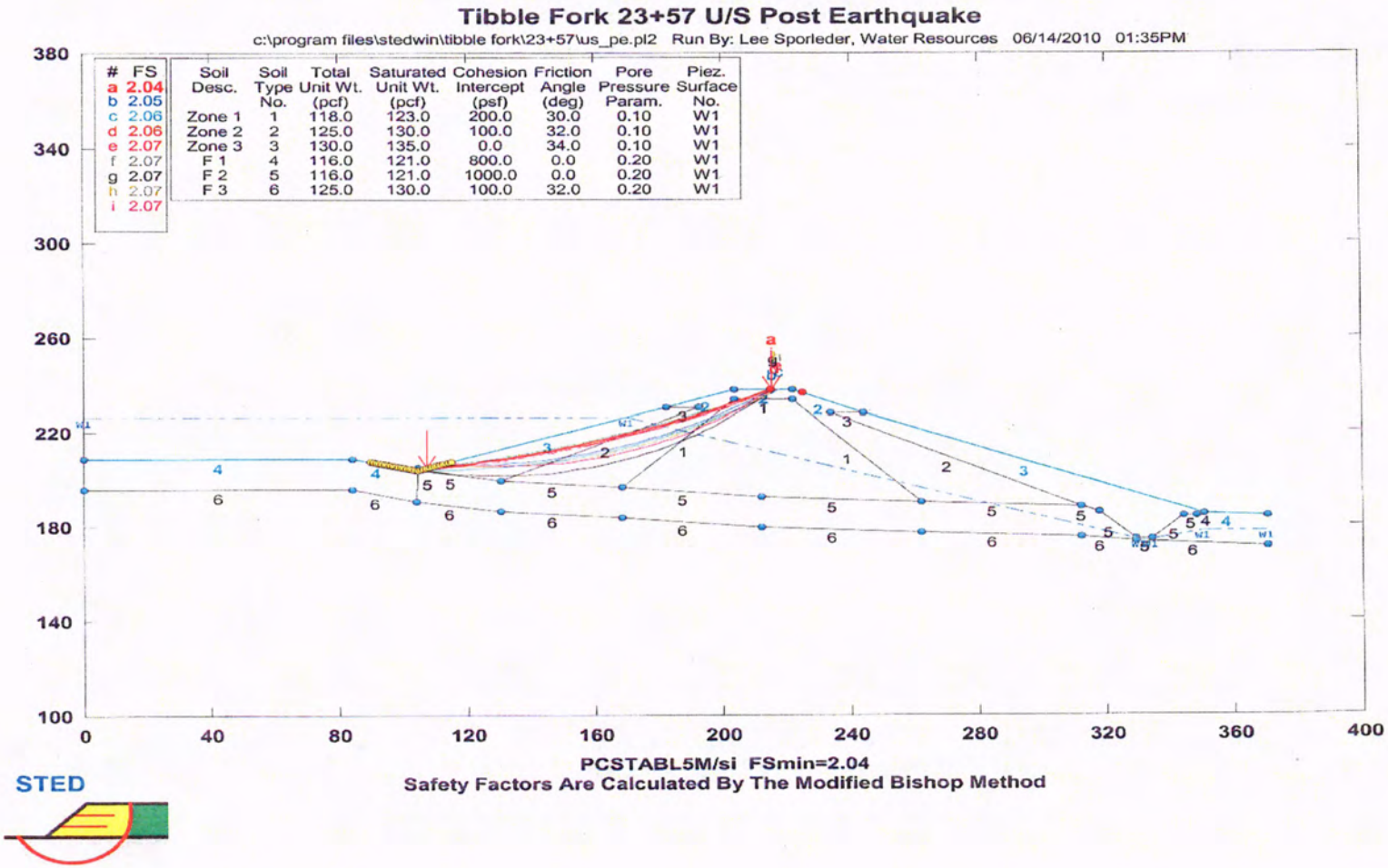


Figure 15. Downstream Post Earthquake Failure Surfaces

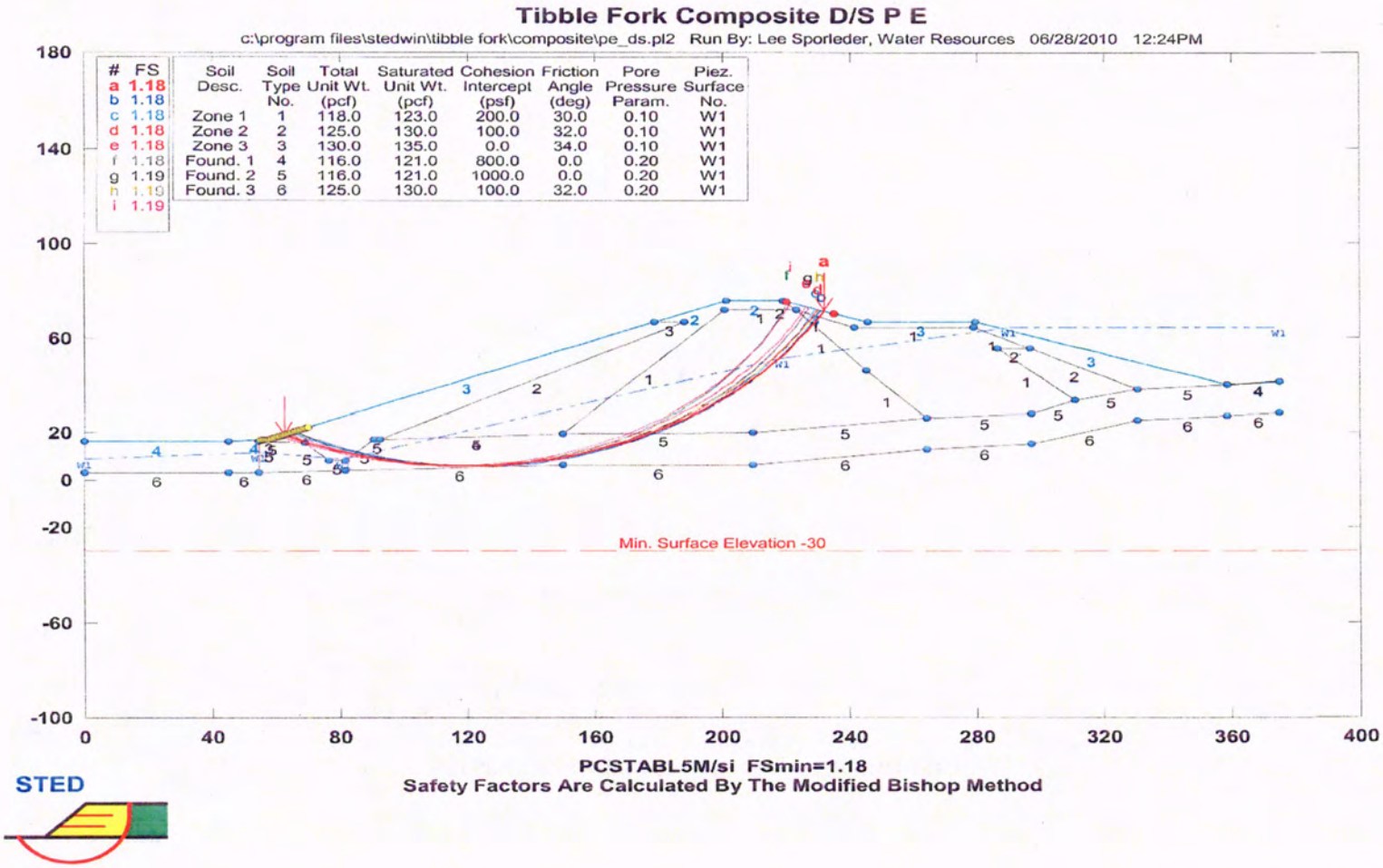


Figure 16. Upstream Yield Acceleration Failure Surfaces

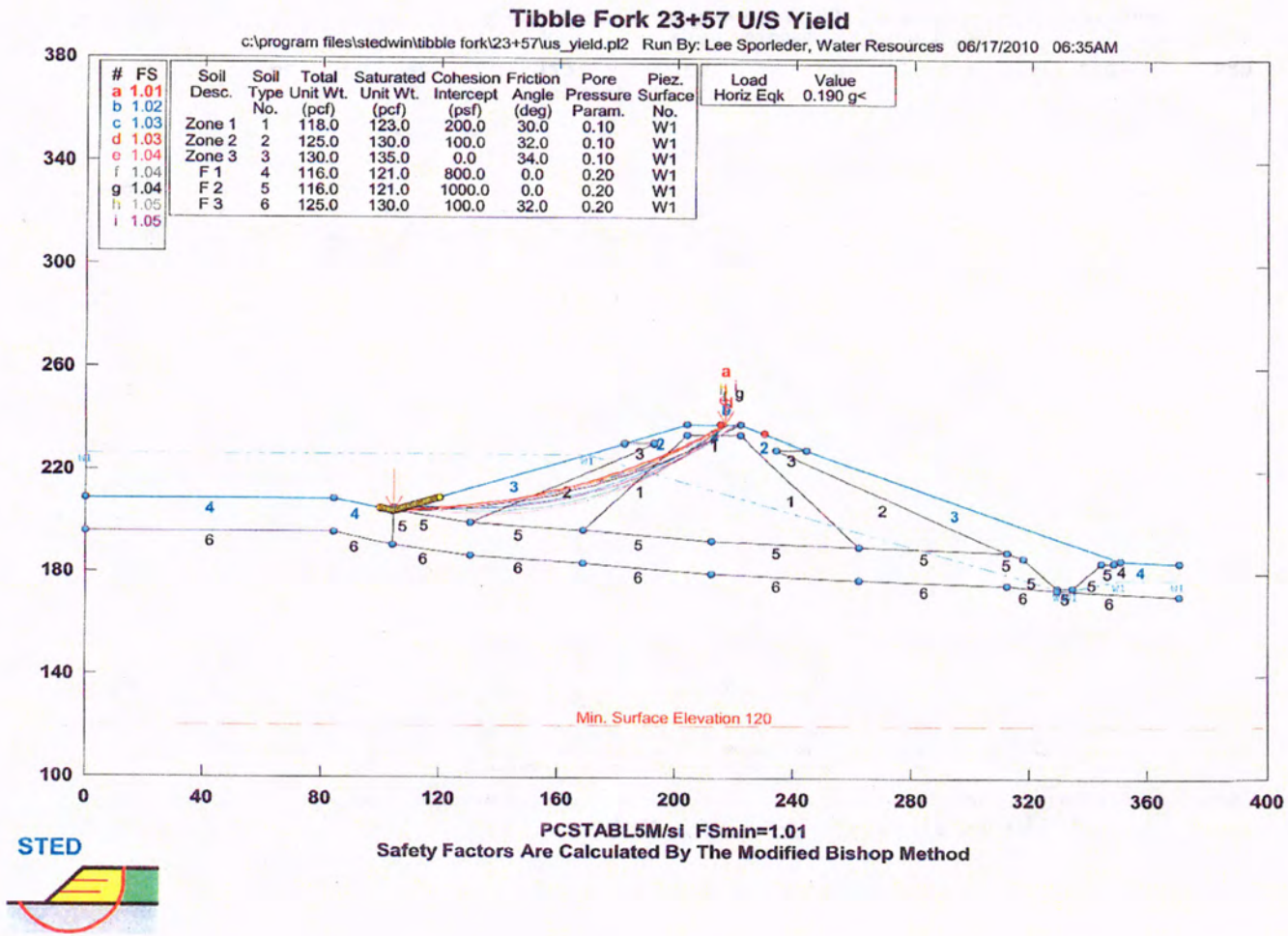
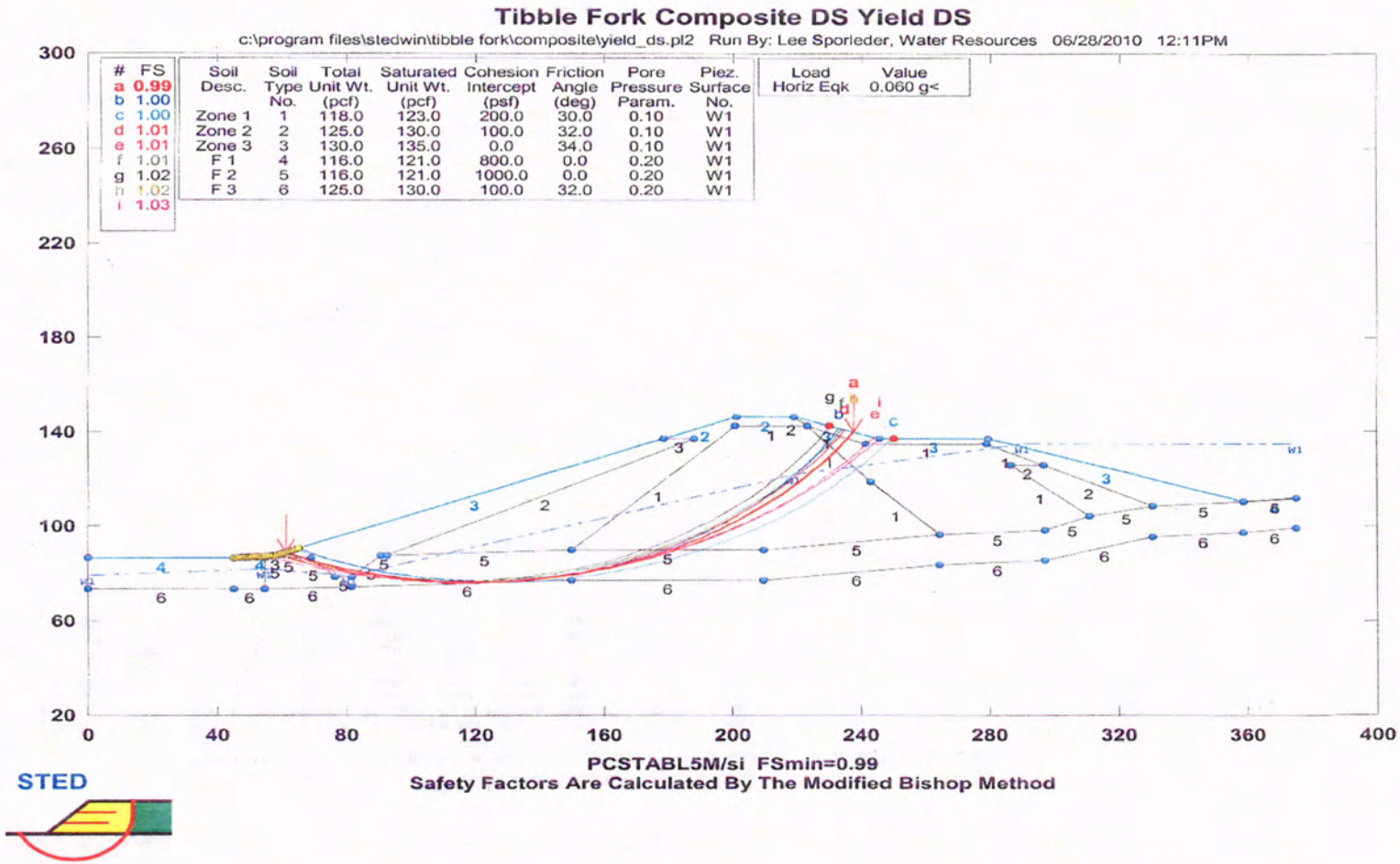


Figure 17. Downstream Yield Acceleration Failure Surfaces



G. Deformation Analyses

The purpose of the analysis was to estimate the expected settlement of the crest caused by the MCE with a magnitude of 6.5 (0.56g). Using the Makdisi & Seed method, the upstream displacement range was from 1.6 in. to 9.3 inches and the downstream displacement range was from 7.8 inches to 46.4 inches. A simple addition of both settlements results in a conservative estimate of 4.6 feet of deformation at the crest. The constructed freeboard of 6.5 feet at the crest provides a factor of safety of 1.4 against overtopping following the design earthquake, well below the required FS of 3. As a result, a berm will be required. The yield acceleration required to reduce the deformation to an acceptable level was calculated, and a berm large enough to accomplish this was then modeled. This berm would need to restrain the spillway as well, so the lower portion of the spillway would need to be covered so that fill could be placed over it, or the spillway would need to follow the contours of the berm, which would require much higher walls where the top of the berm required a large grade change. Additional stability analyses show that a 30-foot high, 60-foot wide berm would be needed to reduce deformation to an acceptable level.

The Makdisi & Seed method is very conservative. Deformation estimates using Swaisgood (2003) and Jansen resulted in much smaller displacements, 7.25 inches and 1.2 feet, respectively. For final design, a more rigorous deformation analysis will be used to verify the need for and size of a downstream stability berm.

H. Internal Stability

No problems have been noted in the past with seepage or piping through the embankment. The existing toe drains have a single stage filter/drain material separating it from the Zone III material. There is very limited information on gradation of the filter material, as well as full gradations of the Zone III, but based on available data, the Zone I/Zone II transition appears to meet present day filter criteria. However, the Zone II/Zone III transition does not meet filter criteria. Further analysis of this should be accomplished, but the present recommendation is to remove all of the toe drains possible to remove suspect material, and reinstall with a two-stage filter meeting current criteria.

The additional toe drain installed after the first filling of the reservoir was also installed with a single-stage filter enveloping the drain pipe, which appears to be a clay tile pipe. This drain was installed slightly downstream of the downstream toe. See Figure 4, page 7. It is recommended that the existing toe drain downstream of the toe be removed and replaced with a properly designed, two stage filter. In addition, if a stability berm is required, a transition zone should be placed between the existing embankment and the berm.

I. Embankment Crest Elevation

The crest of the embankment dam is in good condition, and presents no problems except that it serves as the access for privately owned cabins located southeast of the dam. Any future remediation will need to preserve access across the dam during construction.

IV. HYDROLOGIC EVALUATION

A. Existing Capacity

Tibble Fork Reservoir was originally constructed with a storage capacity of 166 acre-feet at the principal spillway crest, 250 acre-feet at the emergency spillway crest, and 366 acre-feet at the dam crest (6,388.5 MSL). These capacities have been reduced due to sediment flowing into the reservoir, primarily from a landslide in the stream channel upstream of the reservoir. A sedimentation study was commissioned by the NRCS in August of 2010. The results are detailed below.

B. Sedimentation

A contract was awarded to AMEC Earth and Environmental, Inc. to perform a dual frequency sonar data collection survey, as well as sample the sediment in the reservoir basin. Unfortunately, the results were not easy to understand, partially due to the fact that the existing water surface elevation was not referenced to a real elevation at the site, such as the emergency spillway crest. The results show that the existing capacity of the reservoir at the emergency spillway crest is 108 acre-feet. The original construction drawings indicated that the capacity at this same elevation was 250 acre-feet, meaning that 142 acre-feet has been displaced by the accumulation of sediment in the basin. The inconsistency is that using AMEC's top and bottom of sediment numbers, only 84 acre-feet has been displaced in the reservoir. The most logical approach at this point is to use the top of sediment readings, as the bottom sediment readings would seem to be less certain. The new water level, if the dam is raised enough to restore 250 acre-feet of storage, is shown in Figure 18.

C. Existing Spillway

The principal spillway consists of a box inlet with a crest length which varies from 15 feet 9 inches to 24 feet 9 inches, depending on reservoir elevation, drained by three 27-inch diameter pipes that extend through the wall of the concrete spillway with an invert elevation 16.75 feet below the dam crest. The emergency spillway has a 100-foot long (35' x 30' x 35') inlet weir 6.5 feet below the crest, with a 30-foot wide reinforced concrete constant width channel, and a 110-foot long chute below the vertical curve (see Figure 19). The spillway will pass a conservative 100-year event with slightly less than four feet of head, and has a maximum capacity of 3,800 cfs before the spillway walls overtop. Most of the spillway would pass a 4,880 cfs flood, but the walls overtop from Sta. 2+50 to 2+73 by a maximum of 1.03 feet at flows above 3,800 cfs.

1. Hydrological Analyses

The Division of Water Resources Flood extensions were used in ArcMap GIS to delineate the Tibble Fork watershed and to determine the hydrologic parameters. The watershed drainage area is 35 square miles, ranging in elevation from 6,312 to 11,478

Figure 18

Tibble Fork Dam 9 FT Raise

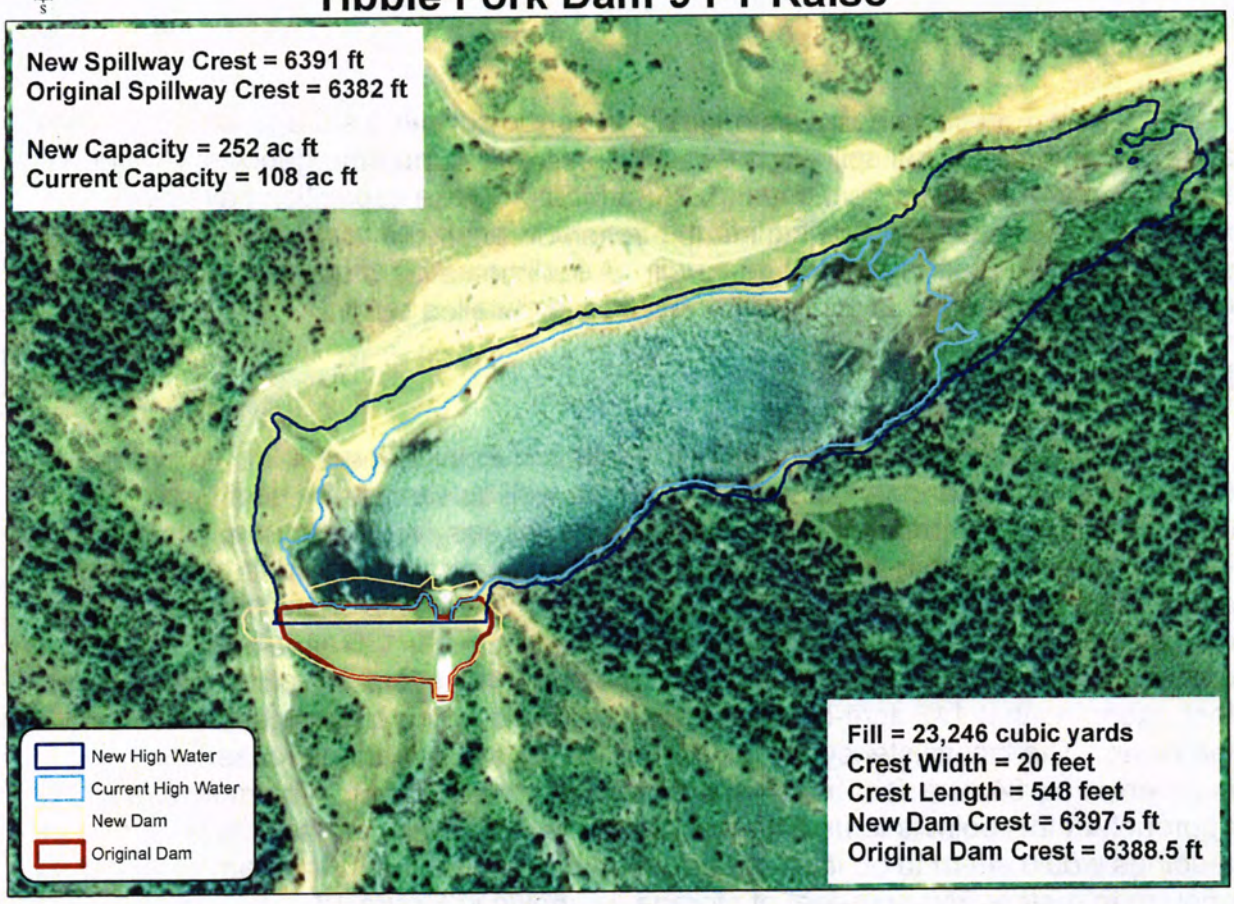


Figure 19. Existing Spillway

feet above mean sea level at the watershed divide. The watershed was divided into three sub-basins. Figure 20 shows the delineated Tibble Fork watershed. The hydrologic parameters were computed for each sub-basin using the methods developed for flood hydrology studies in the *Design of Small Dams* (Bureau of Reclamation, 1987) and are shown in table 24. Unit and flood hydrographs for the drainage area were computed using methods outlined in the NRCS National Engineering Handbook for the 100-year and the probable maximum precipitation (PMP) storm.

Curve Number - The curve numbers were derived using soil information from the STATSGO database and vegetative cover from the Utah Gap Analysis. Figure 21 shows the vegetative cover from the GAP analysis. The SCS Curve Number method was used to compute losses for both the 100-year and PMP storms. The computed curve numbers ranged from 39 to 88, depending on the soil moisture condition (AMC) and the hydrologic condition of the watershed. These values can be found in Table 23 for each sub-basin.

Figure 20. Tibble Fork Watershed with Three Sub-basins

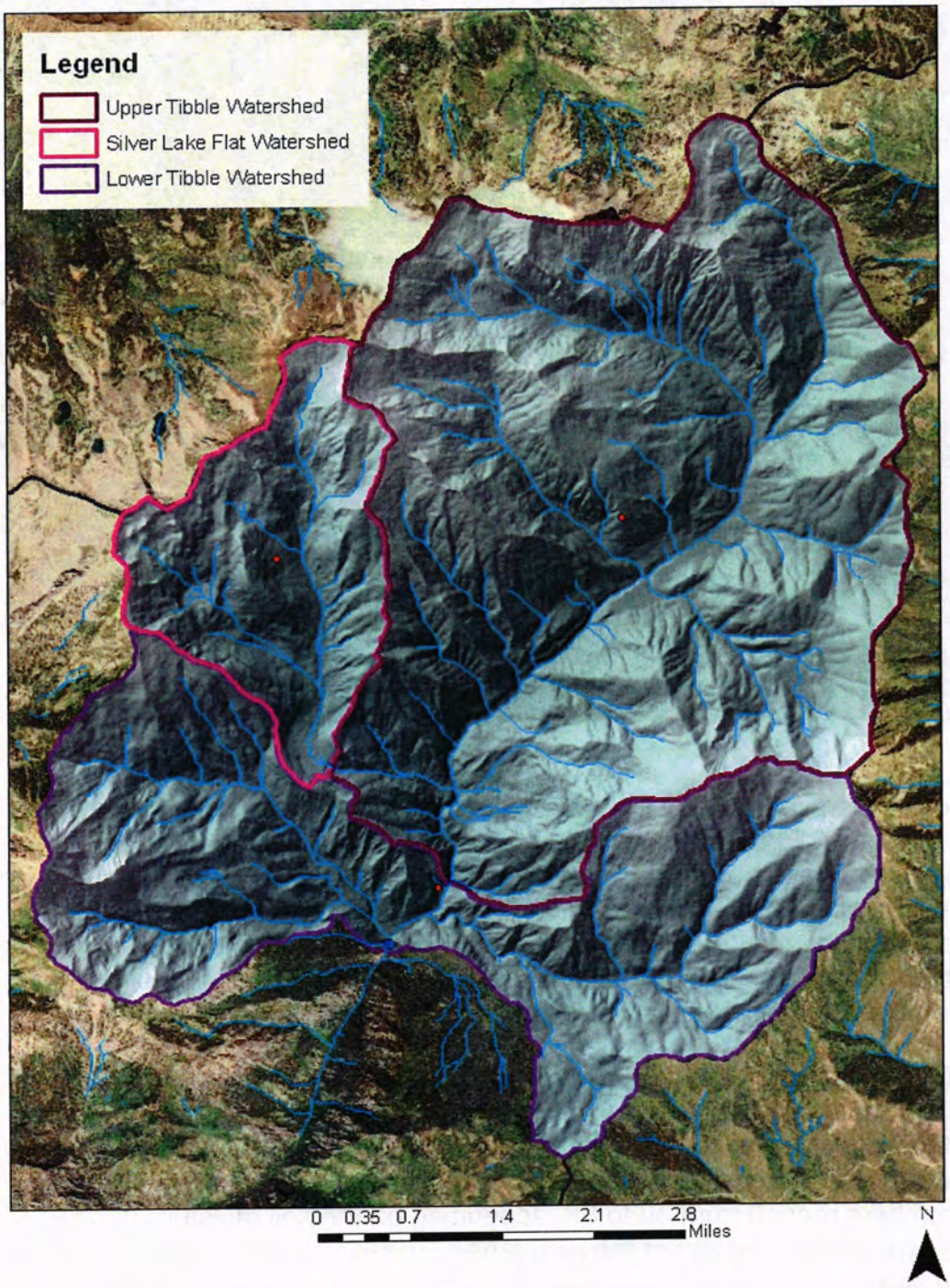
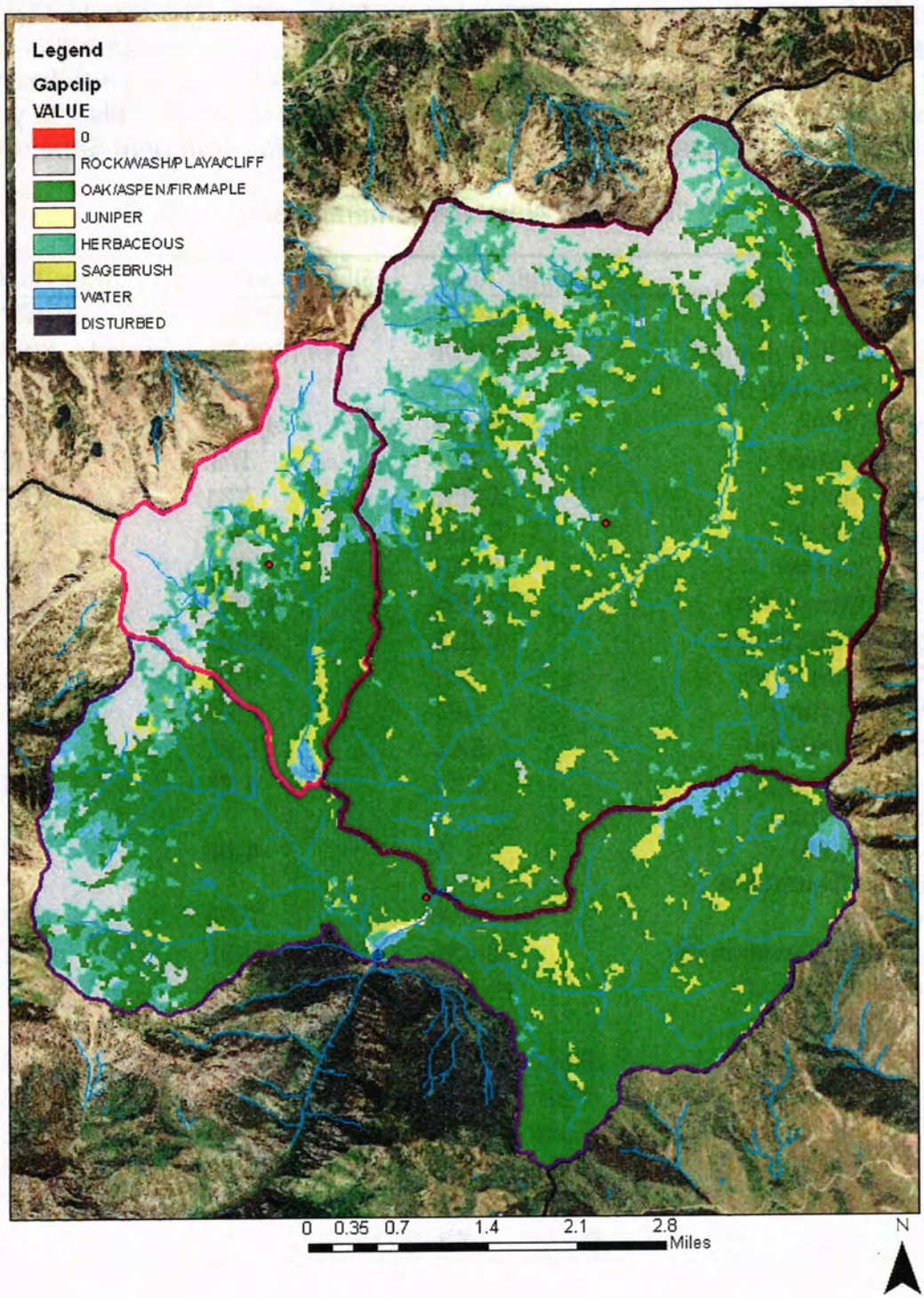


Figure 21. Vegetative Gap Coverage



100-Year Storm - A 24-hour storm with a return period of 100 years was estimated to produce 4.86 inches of precipitation (NOAA Atlas 14, Volume VI – Utah). This precipitation was distributed using a 24-hour SCS storm distribution. For the 100-year storm, a saturated soil moisture condition AMC-III was assumed, which was calculated to have a curve number of 72 for upper Tibble, 80 for Silver Lake Flat and 70 for lower Tibble sub-basins. The general time of concentration (T_c) used in this analysis ranged from 2.69 to 5.84 hours depending on the sub-basin. The peak flow for the 100-year flood was 4,248 cfs and produced a volume of 2,945 acre-feet. This 100 year AMC-III storm was modeled to document IDF procedures for Utah Dam Safety statutes.

Table 23. Watershed Characteristics

Characteristic		Upper Tibble	Silver Lake Flat	Lower Tibble
CENTROIDX (Lat)		40.53051	40.52582	40.4871
CENTROIDY (Long)		-111.61208	-111.66252	-111.63871
Basin Area (sq mi)		19.89	4.28	11.2
Slope (ft/mi)		550.7	989.9	874.8
Soil A (acres)		994	378	834
Soil B (acres)		5,956	731	2,917
Soil C (acres)		3,090	949	2,150
Soil D (acres)		2,692	683	1,266
Low Infrate (in/hr)		0.106	0.099	0.111
High Infrate (in/hr)		0.222	0.207	0.228
TP General (hrs)		3.5	1.98	1.61
TP Local (hrs)		1.87	1.06	0.86
TC General (hrs)		5.84	3.31	2.69
TC Local (hrs))		3.11	1.76	1.43
Longest Flow Distance(mi)		9	4.08	5.42
Longest Centroidal Flow (mi)		4.15	2.19	0.83
Minimum Elevation (ft)		6,435	7,430	6,313
Max Elevation (ft)		11,402	11,478	11,066
Curve Numbers				
AMC II	Poor	70	75	68
AMC II	Fair	53	63	50
AMC II	Good	42	52	39
AMC III	Poor	85	88	84
AMC III	Fair	72	80	70
AMC III	Good	62	71	59

USU Probable Maximum Storm - General 72 and 24-hour PMP storms were developed to determine the critical storm for the Tibble Fork watershed. The 72-hour

storm PMP precipitation and distribution were based on the report *Probable Maximum Precipitation Estimates for Short-Duration, Small-Area Storms in Utah* (USU 1995), the Type II distribution was used on the 24-hour storm. The 72 and 24-hour PMPs were calculated to be 10.67 and 8.39 inches, respectively. The curve numbers and T_c for each sub-basin are shown in Table 24. Details of the modified HMR 49 PMP for the 72 and 24-hour storms are found in Appendix A.

Table 24. AMC II Curve Numbers And General T_c

Subbasin	Curve Number	T_c (hr)
Upper Tibble	53	5.84
Silver Lake Flat	63	3.3
Lower Tibble	50	2.69

The inflow design flood was controlled by the 24-hour storm. This storm had a peak discharge of 4,880 cfs and a volume of 3,531 acre-feet. Table 25 contains a comparison of the three storms tested.

Table 25. Final Inflow Design Flood (IDF) For Developed Storms

100 year-6 hr (cfs)	USU PMF-24 hr (cfs)	USU PMF-72 hr (cfs)
4,248	4,880	4,440

Calibration - To ensure that the T_c represented reasonable values, a day trip was taken to the Tibble Fork watershed to check bank full velocities on the stream. Two sample locations were used to look at the velocities. The first was two miles up from the reservoir. This section of stream was running bank full. A velocity meter used to spot check the stream averaged 5.5 ft/s. The next sample location was farther up Tibble Fork Canyon next to the mine. This section was not running at bank full. A cross section of the stream was taken, velocities measured across, and a 100-pebble count (to estimate manning's n) was done across the stream. A bank full velocity was then calculated to be 6.33 ft/s using the manning's n equation. Additional locations and cross sections will be necessary to represent the velocities along the entire stream length. The trip did give rough numbers of what the velocities would be at bank full. The T_c listed in Table 25 produced velocities ranging from 1.81 ft/s to 2.95 ft/s. The T_c was then reduced so the velocities ranged from 4.1 to 5.1 ft/s, which is closer to the velocities seen on the day trip.

The curve numbers were adjusted until the two 100-year storm events corresponded with historical stream flow records in the area. Table 26 shows the return period of various stream gages in the area. These flows represent the watershed if it was the same size as Tibble Fork.

Table 26. Normalized return period corresponding to 35 square mile watershed

Stream Gage No.	Stream Gage Name	100	50	25	10	5	2
9310500	Fish Creek Above Reservoir	864	792	685	593	488	313
9312600	White R Bl Tabbyune Creek	547	454	341	263	189	96
10023000	Big Creek	179	155	123	98	73	38
10132500	Lost Creek	405	303	200	142	95	46
10134500	East Canyon Creek	161	137	109	90	73	49
10137500	South Fork Ogden River	497	469	420	373	313	200
10164500	American Fork Gage	535	499	443	393	334	228
	Tibble	815	458	203	98	50	25

The curve numbers and T_c (shown in Table 27) that were used in the two 100-year storm events were applied to the 24 and 72-hour PMP. The IDF were determined to be 4799 and 4214 cfs, respectively. This reinforces that a minimum IDF of 4800 cfs needs to be designed for.

Table 27. Calibrated curve numbers and T_c

Subbasin	Curve Number	T_c (hr)
Upper Tibble	44	2.58
Silver Lake Flat	52	1.42
Lower Tibble	43	1.92

Dam Break Analysis – HEC-HMS was used to do a dam break analysis. This was done to determine the inflow caused by a Silver Lake Flat dam failure on the Tibble Fork reservoir. This failure is modeled as a rainy day event and the top elevation of the dam is used as the trigger elevation. Two methods were used to determine the time to failure (T_f). For the first, the T_f was calculated based on 1 minute for 1 foot of height on the dam; the T_f was 1.4 hour. The failure of Silver Lake Flat dam would cause a peak inflow of 24,997 cfs. If Tibble Fork dam failed (due to the Silver Lake Flat Dam break) the peak discharge would be 27,268 cfs. The incremental change in flow was found to be 2,271 cfs.

In the case where a cohesionless soil is present in the upstream dam, the Association of State Dam Safety Officials (ASDSO) Dam Failure Analysis has offered an alternative method. The second method used to calculate T_f is given in equation 1.

$$T_f = \frac{0.2V^{0.51}}{H^{0.9}} \qquad \text{Equation (1)}$$

Where T_f=time to failure (hour)

V= reservoir storage at the time of failure (acre-feet)

H= depth of water at the dam at the time of failure

Assuming the V was at the spillway at 1040 acre-feet and H was 52 feet; T_f is calculated to be 0.34 hour. Using this T_f, the failure of Silver Lake Flat would cause a peak discharge of 51,587 cfs. If Tibble Fork failed (due to Silver Lake Flat's failure) the peak discharge would be 55,220 cfs. The incremental change in flow was found to be 3,633 cfs.

D. Reservoir Flood Routing

The inflow hydrographs from the 100-year and PMP storms were sent through the existing spillway crest, which was found to have capacity of 5,800 cfs. The normal water surface elevation was compared to the dam height (6388.5 feet MSL) and the spillway outflow was compared to the inflow hydrograph. Figure 22 shows the discharge curve for the existing spillway crest. The spillway channel was then tested to ensure it could handle the 5,800 cfs capacity of the crest. It was found that the channel could only handle 3,800 cfs without overtopping. The channel overtopped from H station 2+50.47 to 2+73.88 when a 4,880 cfs flow was discharged down the spillway, as seen in Table 29.

The elevation-volume table used for Tibble Fork is shown in Table 28.

Figure 22. Existing Spillway Crest Discharge versus Reservoir Stage top of dam at 6388.5 feet)

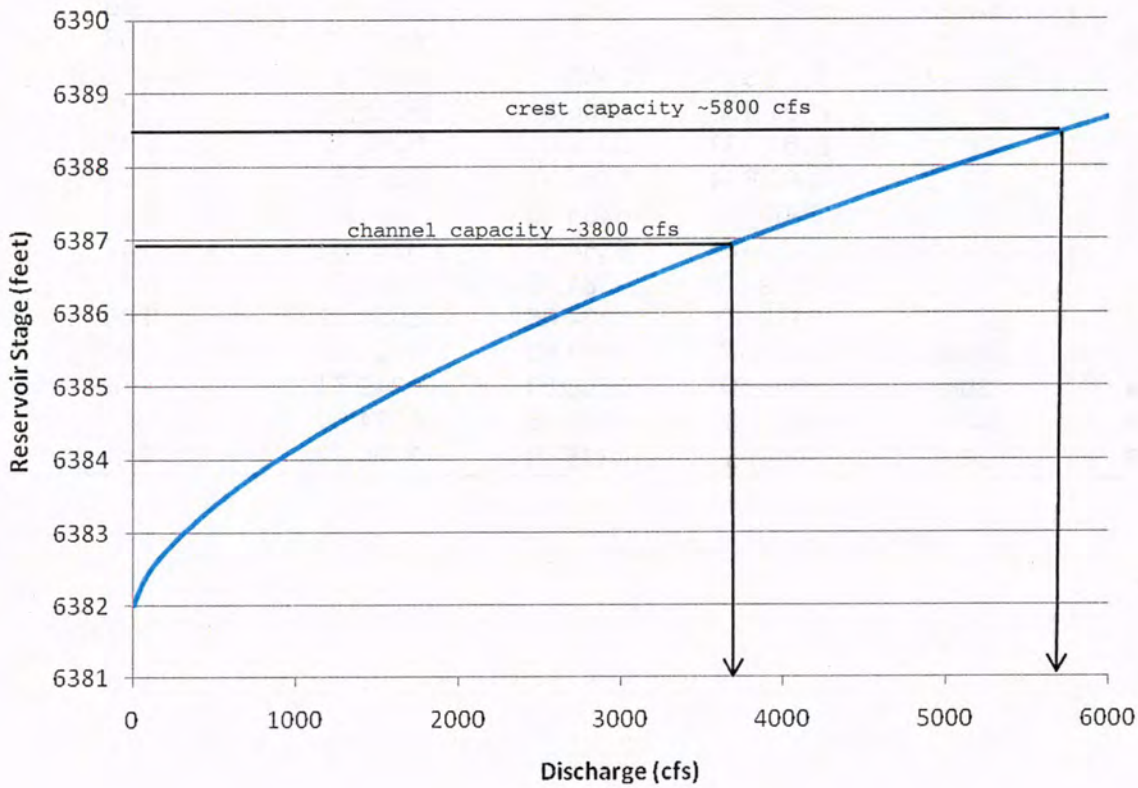


Table 28. Water surface elevation compared to wall height (4,880 cfs)

	H Station	Bottom Elev	Top Wall El.	Water Surface Elevation	Difference (Water Surface/ Wall Height)
1	133.5	6369.25	6382.00	6385.19	3.19
2	168.5	6369.25	6382.00	6382.38	0.38
3	189.5	6369.25	6388.00	6379.38	-8.62
4	210.5	6369.25	6388.00	6379.13	-8.87
5	229.88	6369.25	6381.25	6378.70	-2.55
6	244.47	6368.07	6375.41	6375.28	-0.13
7	250.47	6366.615	6373.01	6373.02	0.01
8	251.47	6366.372	6372.61	6372.68	0.07
9	252.47	6366.13	6372.21	6372.34	0.13
10	253.47	6365.887	6371.81	6372.01	0.20
11	254.47	6365.645	6371.41	6371.69	0.28
12	255.47	6365.402	6371.01	6371.37	0.35
13	256.47	6365.16	6370.61	6371.05	0.44
14	257.47	6364.917	6370.21	6370.74	0.52
15	258.47	6364.674	6369.81	6370.43	0.61
16	259.47	6364.432	6369.41	6370.12	0.71
17	260.22	6364.25	6369.11	6370.14	1.03
18	261.22	6363.85	6368.71	6369.64	0.92
19	262.22	6363.451	6368.31	6369.14	0.83
20	263.22	6363.051	6367.91	6368.65	0.74
21	264.22	6362.652	6367.51	6368.17	0.66
22	265.22	6362.252	6367.11	6367.69	0.58
23	266.22	6361.852	6366.71	6367.21	0.50
24	267.22	6361.453	6366.31	6366.74	0.43
25	268.22	6361.053	6365.91	6366.27	0.36
26	269.22	6360.654	6365.51	6365.80	0.29
27	269.88	6360.39	6365.25	6365.48	0.23
28	270.88	6359.99	6364.85	6365.02	0.17
29	271.88	6359.59	6364.45	6364.56	0.11
30	272.88	6359.19	6364.05	6364.10	0.06
31	273.88	6358.79	6363.65	6363.65	0.00
34	306	6345.94	6350.80	6349.71	-1.09
35	342.6	6331.3	6336.16	6334.50	-1.66
36	362	6323.5	6335.50	6326.39	-9.11

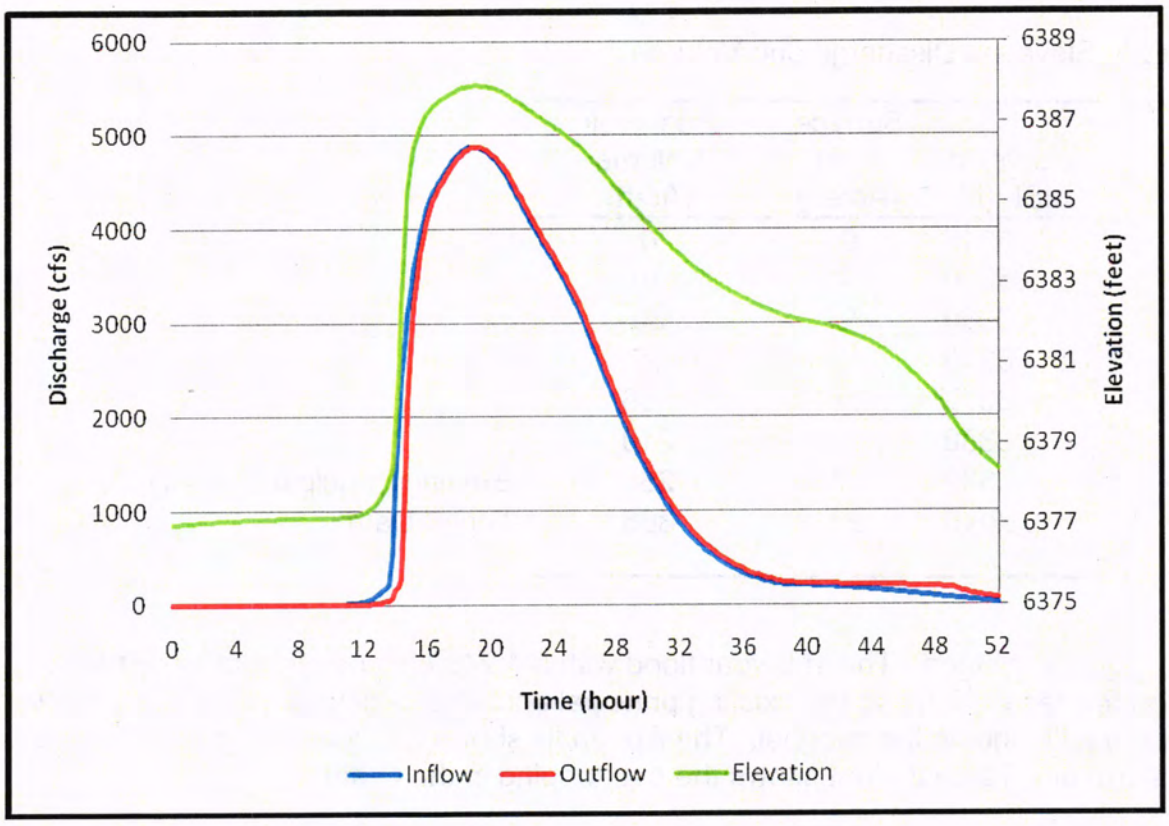
Table 29. Elevation Discharge and Volume

Elevation MSL (ft)	Surface Area (Acres)	Reservoir Volume (Ac-ft)	
6345	0	0	
6350	4	10	
6360	9	30	
6370	13	95	
6377	17	166	
6380	22	210	
6382	27	250	Existing Principal Spillway
6388.5	28	366	Top of Dam

100-Year Flood - The 100 year flood with a 4,248 cfs peak flow does not route through the reservoir using the existing principal and emergency spillways. The limiting factor is wall height in the channel. The Appendix shows the flood routing for the 100 year storm and Table 28 that shows the overtopping in the channel.

Inflow Design Flood (USU Local PMF) - The Inflow Design Flood (IDF), based on the USU 24-hour general PMP, with a peak inflow of 4,880 cfs and a volume of 3,531 acre-feet, will require additional wall height to be added to the channel. Figure 23 shows this flood routing for the Tibble Fork spillway with a current rectangular overflow crest with two side crest lengths of 35 feet and an end length of 30 feet, for a total crest length of 100 feet at the existing spillway crest elevation of 6,382 feet. The spillway channel wall needed to be increased by a maximum of 1.03 feet from station 2+29.88 to 2+75.88 as shown in Table 28. The discharge vs. elevation table for this spillway was calculated separately using the Utah Division of Water Resources Spillway Program and is shown in Appendix C. The peak outflow for this flood routing is 4,880 cfs. This calculation is shown in Appendix D.

Figure 23. IFD Flood Routing-100' Spillway Crest



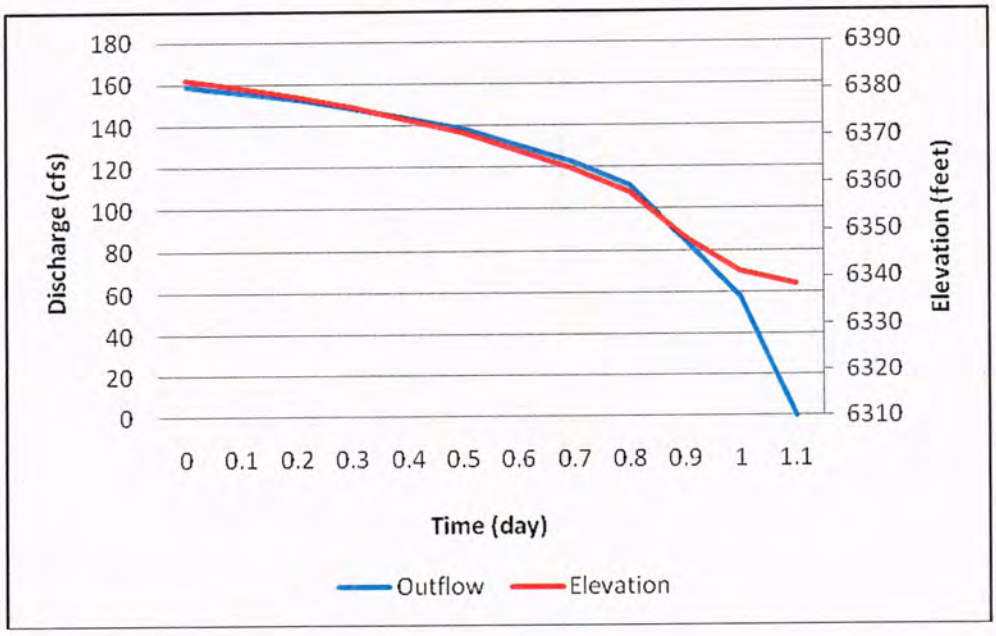
V. OUTLET WORKS

The outlet consists of a 346-foot long, 30-inch reinforced concrete pipe placed on a concrete cradle supporting the pipe to springline. The pipe trench was excavated through the existing foundation. The pipe passes through the maximum section of the dam, just to the right of the spillway. The pipe has nine concrete cutoff collars at 20-feet on center. The intake consists of a vertical 60-inch diameter corrugated metal pipe with 3-inch holes drilled at approximately 6.5-inches on center, with a conical trashrack on the top. A 3.6-inch square concrete manway/wet well is located approximately 105 feet downstream of the inlet, with a square cast iron gate operated from the top of the wet well. While this dam was originally designed as a debris basin, the use is now to keep the outlet gate closed and the reservoir full for use as a fishery, so the flood benefit is reduced.

The outlet control cannot be reached when the reservoir is spilling, and to meet current Dam Safety rules modifications will be required. The outlet pipe needs to have an upstream guard gate, which may be operated mechanically or hydraulically. In addition, the outlet controls need to be accessible when the reservoir is spilling. This can be accomplished with a new gate installed on top of the intake riser, or on a new concrete intake structure, along with hydraulic operation with lines running to the dam crest. The lines will need to be protected from freezing and wave action, and the controls placed inside a locked box.

The existing outlet easily meets the 30-day draining requirement of Dam Safety, draining the reservoir in one day (See Figure 24).

Figure 24. Drain Time Through Current Outlet



VI. PRELIMINARY COST ESTIMATE

Based on the investigation and analysis, four remedial provisions are necessary to meet Dam Safety minimum requirements. These provisions include: 1) interception and collection of seepage in the embankment, foundation, and abutments with a properly designed filter and drain; 2) an increase in spillway capacity to pass the required inflow design flood; 3) an upstream guard gate placed on the inlet end of the outlet works pipe, operable from the crest, and 4) a downstream stability berm . A preliminary cost estimate for these provisions is summarized below in Table 30. Alternatively, the existing spillway could be left alone, and a separate, second emergency spillway could be constructed to the right of the existing spillway. This could be either an RCC spillway over the embankment, or a smaller, structural concrete spillway, since the incremental flow is only 1,000 cfs.

In order to qualify for NRCS funding, any rehabilitation would need to extend the life of the structure by at least 50 years. Since so much sediment has accumulated in the reservoir basin, some provision for providing more storage should be considered. Sediment removal has been placed in the cost estimate table, but the volume of sediment that would need to be removed makes this approach cost-prohibitive. Alternatively, the spillway and dam crest could be raised by approximately 6 feet to restore the original storage. This alternative is included in the cost estimate since it is a much more reasonable option. A 9-foot raise would not bring the water level over the existing road (Figure 18) around the reservoir, but a retaining wall would be needed to contain the embankment along the roadway at the right abutment. A possible way to retain access for cabin owners in the canyon east of the dam would be to use the stability berm as a new roadway. This alternative can be investigated further during Phase III final design.

Table 30. Preliminary Cost Estimate

	Quantity	Unit Cost	Total
1. Excavate Tile Drain	800 LF	10.00	8,000
2. Demolish Existing Spillway	1 LS	20,000	20,000
3. Toe Drain	800 LF	75.00	60,000
3. Chimney Drain	1200 CY	75.00	90,000
4. Misc. Concrete Emergency Spillway Structures	440 CY	1,200.00	528,000
5. Upstream Guard Gate w/ Hydraulic Operator	1 LS	50,000	50,000
6. Replace Piezometers	8 EA	3,000	24,000
7. Downstream Stability Berm	11,833 CY	12.00	142,000
8. Extend Outlet Pipe	50 FT	200.00	10,000
9. Remove Sediment***	229,000 CY	20.00	(4.6 Mil.)
10. Raise Dam 9' to Restore 250 Ac-Ft of Storage	22,300 CY	15.00	267,000
Subtotal			$1,199,000
11. Engineering (approx. 15%)			180,000
12. Contingency (approx. 25%)			300,000
Total			$1,679,000

***This option is not feasible due to the high cost, so is not included in the total.

VII. SUMMARY AND RECOMMENDATIONS

The Tibble Fork Dam was built from 1964-1966 to a height of 52 feet. The zoned earthfill dam originally impounded a 250 acre-feet reservoir, and includes both a principal and emergency spillway over the maximum section of the embankment. A reinforced concrete outlet pipe is located just right of the spillway. The dam has functioned well since construction with some minor ongoing concerns about seepage at the toe of the dam, primarily due to clogged drains.

An inspection of the Tibble Fork Dam in May, 1994 by the Utah State Division of Water Rights, Dam Safety, resulted in a description of apparent deficiencies with respect to the new Dam Safety Rules (1993). An evaluation of the structure was required as to its compatibility with the Statutes and Administrative Rules for Dam Safety (April, 1996). This report describes the investigation, evaluation and analysis of the dam. A brief description of the important results and recommendations are presented below:

1. The Provo section of the Wasatch fault lies 8.4 km. from the Tibble Fork dam site. As a result, a random earthquake of Magnitude 6.5 was assigned as the **Maximum Credible Earthquake (MCE)** for the dam. The expected peak acceleration at the site for this earthquake is 0.56 g. The **Operating Basis Earthquake (OBE)** was defined as the 10% probability of exceedance in 50 years with an expected acceleration of 0.36 g and Magnitude 5.0.

2. Six **subsurface exploratory holes** were drilled in the dam embankment and foundation by Terracon in 1996 and 1998, which included in-situ testing, sampling, and logging, followed by laboratory testing of representative samples. Eleven **piezometers** were installed in the exploratory holes to monitor the performance of the dam. However, none of these borings penetrated very far into the foundation, so three additional holes were drilled in 2010 by RB&G. The primary reason for these holes was to gather additional information about the foundation beneath the dam. Three additional piezometers were installed at this time, all located on the crest.

3. A two dimensional, finite element, **seepage analysis** was performed using the SEEP2D program. This consisted of evaluating all the recorded piezometric pore pressure data. The pore pressures in the foundation and embankment match the piezometric readings fairly well, and do not show any problems.

4. The dam meets all static slope stability requirements, so no stability berm or other modifications to the embankment should be needed to meet static criteria.

5. A **liquefaction analysis** of the granular foundation materials and blow count data obtained from the exploratory drilling indicates two zones susceptible to liquefaction within the foundation of the dam. An evaluation of the foundation materials was only accomplished for the downstream foundation where subsurface exploration was accomplished. However, the three additional holes drilled in 2010 showed that the

liquefiable zone modeled based on the Terracon drilling did extend upstream, and no changes to the foundation modeled were needed. A **post-earthquake analysis** utilizing the preliminary design provisions included in 4. above, along with appropriate residual strengths and pore pressure parameters, resulted in an acceptable factor of safety of 1.35.

6. A **deformation analysis** was conducted on the dam embankment to estimate the potential settlement of the crest during the Maximum Credible Earthquake. This analysis resulted in 4.6 feet of deformation at the crest. The existing freeboard of 6.5 feet is not sufficient to meet the existing standard of FS=3 (6.5/4.6 = 1.4). This will likely require a downstream stability berm to provide an acceptable factor of safety.

7. Some concern exists about the existing toe drains meeting present day filter criteria. These are single stage filters with clay tile pipe, and should be replaced with two-stage filters.

8. The **existing spillway,** consisting of two inlets with different crest elevations into the same concrete spillway channel and chute, will pass the **Inflow Design Flood** of 4,880 cfs, but overtops the walls of the spillway chute at approximately Sta. 2+50 by one foot. This flood only rises about three feet above the emergency spillway crest.

9. An **emergency spillway** to accommodate the **IDF** without overtopping the spillway walls is needed. This could be accomplished by removing and replacing the existing spillway with one large enough to handle the 4,880 cfs design flood. The lower portion of the spillway would need to be covered so that the stability berm required for deformation could extend across the spillway.

10. Four remedial provisions are necessary to bring the dam up to the minimum dam safety requirements. These include: 1) increasing the spillway capacity to handle the design flood; 2) installing an upstream guard gate on the outlet pipe, operable from the dam crest; 3) new toe drains with properly graded two-stage filters; 4) raise the dam crest or add a downstream berm to meet deformation criteria after an earthquake. A **preliminary cost estimate**, including engineering and contingency to upgrade the dam to meet Dam Safety Requirements, is estimated at approximately $1,700,000.00. It may also be necessary to restore the original capacity of the reservoir to meet future needs. While not required by dam safety criteria, this would make the dam eligible for funding from an NRCS program, and make it easier for the owner to rehabilitate the structure, so these costs are included in the cost estimate.

11. The following **recommendations** are submitted for the final investigation, design and construction:

A. Continue to monitor the piezometers, **as required by Dam Safety,** with submittal of data to the Division of Water Rights on a monthly basis. This should include the new piezometers installed in 2010.

B. Conduct a detailed **liquefaction and deformation investigation** and analysis of the foundation and embankment materials. This is necessary to better refine the liquefiable materials encountered in the downstream portion, but more specifically in the upstream portion where no exploration work was accomplished in the alluvial/fluvial deposits. This will allow a better understanding of the need to provide post-earthquake stabilization.

C. It is recommended that all existing drains and collection systems be removed and replaced as part of the remediation work. An appropriately designed and constructed **drain collection system** with necessary filtering and capacities to intercept and safely discharge foundation and embankment seepage is needed.

D. Replace all **piezometers** lost due to construction activities.

E. Construct a new spillway capable of passing the 4,880 cfs design flood, or add a separate emergency spillway to pass an additional 1,000 cfs. A new spillway is recommended because the required downstream stability berm would need to be placed over a covered, enlarged spillway to adequately protect that portion of the embankment.

F. Install an upstream guard gate on the outlet pipe, with controls accessible from the dam crest. It may be desirable to construct a new inlet structure and remove the vertical stand-pipe portion of the outlet, which would permit more complete draining of the reservoir if necessary.

G. Construct a downstream stability berm so that the dam meets the post earthquake deformation requirements.

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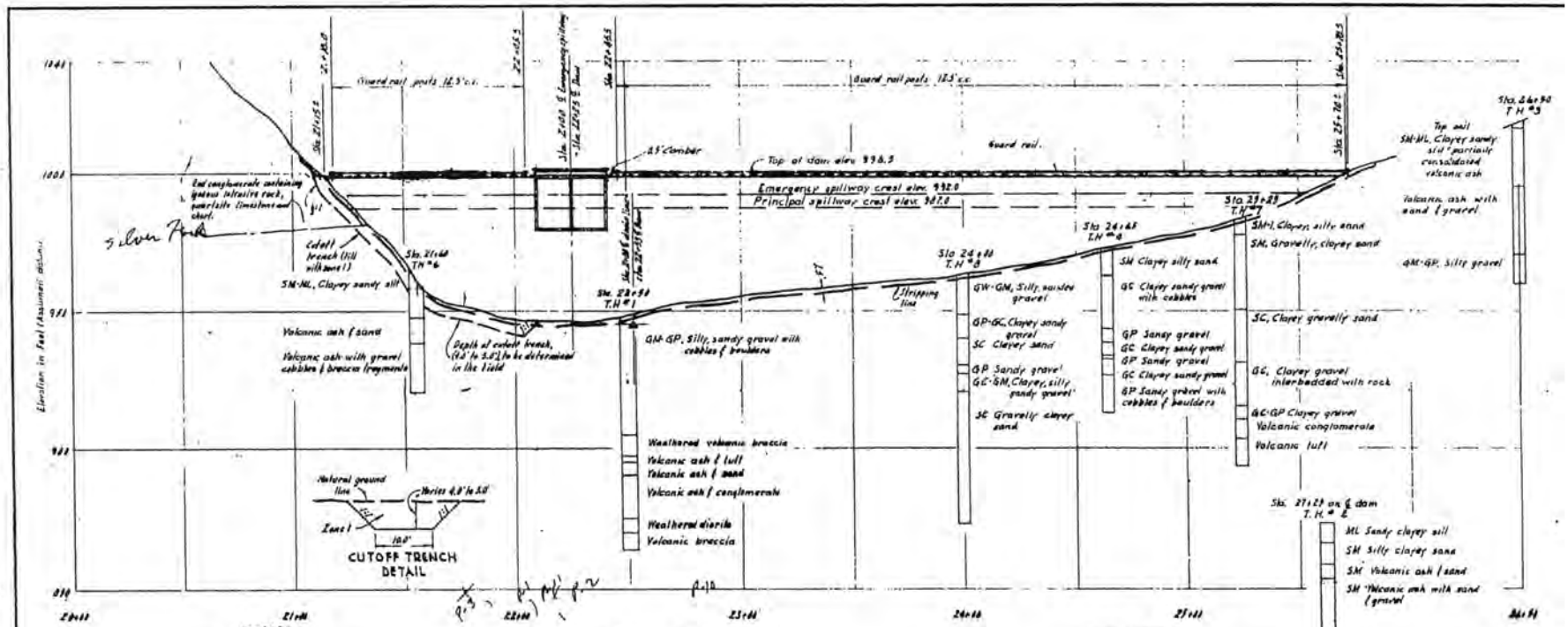
APPENDIX A

Drill Hole & Test Pit Logs

Borehole	Top dbgs	Bottom dbgs	Thickness (Feet)	USCS Symbol	Description
From Sheet 6					
TH-6	0	18	18	SM-ML	Clayey sandy SILT
Sta. 21+60	18	27	9		Volcanic ash and sand
Elev. =965	27	45	18		Volcanic ash with gravel cobbles and breccia fragments
Elev. =6355 amsl		TD	45		
TH-1	0	43	43	GM-GP	Silty, sandy GRAVEL with cobbles and boulders
Sta. 22+50	43	50	7		Weathered volcanic breccia
Elev.=949	50	53	3		Volcanic ash & tuff
Elev.=6339 amsl	53	58	5		Volcanic ash & sand
	58	73	15		Volcanic ash & conglomerate
	73	78	5		Weathered diorite
	78	85	7		Volcanic breccia
		TD	85		
TH-8	0	15	15	GW-GM	Silty sandy GRAVEL
Sta. 24+00	15	23	8	GP-GC	Clayey sandy GRAVEL
Elev. =963	23	33	10	SC	Clayey SAND
Elev. =6353	33	36	3	GP	Sandy GRAVEL
	36	43	7	GC-GM	Clayey, silty sandy GRAVEL
	43	90	47	SC	Gravelly clayey SAND
		TD	90		
TH-4	0	10	10	SM	Clayey silty SAND
Sta. 24+65	10	29	19	GC	Clayey sandy GRAVEL with cobbles
Elev. =973	29	34	5	GP	Sandy GRAVEL
Elev. =6363 amsl	34	39	5	GC	Clayey sandy GRAVEL
	39	40	1	GP	Sandy GRAVEL
	40	46	6	GC	Clayey sandy GRAVEL
	46	60	14	GP	Sandy GRAVEL with cobbles and boulders
		TD	60		
TH-7	0	5	5	SM	Clayey, silty SAND
Sta. 25+25	5	33	28	SM	Gravelly, clayey SAND
Elev. =983	33	52	19	SC	Clayey, gravelly SAND
Elev. =6373 amsl	52	68	16	GC	Clayey GRAVEL interbedded with rock
	68	73	5	GC-GP	Clayey GRAVEL
	73	80	7		Volcanic conglomerate
	80	90	10		Volcanic tuff
		TD	90		
TH-3	0	4	4		Top Soil
Sta. 26+50	4	25	21	SM-ML	Clayey sandy SILT partially consolidated volcanic ash
Elev. =1020	25	50	25		Volcanic ash with sand and gravel
Elev. =6410 amsl	50	60	10	GM-GP	Silty GRAVEL
		TD	60		


Guard rail posts 12.5' c.c.
2.5' Camber
Top of dam elev. 998.5
Guard rail.
Emergency spillway crest elev. 992.0
Principal spillway crest elev. 987.0
Cutoff trench (fill with sand)
Depth of cutoff trench, (9.0' to 5.0') to be determined in the field
Stripping line
Weathered volcanic breccia
Volcanic ash & tuff
Volcanic ash & sand
Volcanic ash & conglomerate
Weathered diorite
Volcanic breccia
Volcanic ash & sand
Volcanic ash with gravel cobbles & breccia fragments
Natural ground line
Varies 4.0' to 5.0'
Zone I
10.0'
CUTOFF TRENCH DETAIL
Elevation in Feet (Assumed datum)
Top soil
Volcanic ash with sand & gravel
Volcanic conglomerate
Volcanic tuff
Sta. 27+23 on ℄ dam T.H. #2
Silt Sandy clayey silt
Silty clayey sand
Volcanic ash & sand
Volcanic ash with sand & gravel
Silty gravel with volcanic ash
Volcanic conglomerate
Volcanic ash with sand & gravel, partially consolidated
Volcanic conglomerate
PROFILE ON ℄ OF DAM
CAMBER SCHEDULE
STATION | CAMBER
21+75.5 | 0
22+65 | 0.5
22+95 | 0.5
23+70.5 | 0
Emergency spillway crest elev. 992.0
Principal spillway crest elev. 987.0
Top of dam elev. 998.5
Elev. 990.0
Zone III
Zone II
Zone I
2.0' Blanket material
Stripping line
Natural ground line
Trench drain
Varies
STA. 23+36 TO STA. 25+70±
GUARD RAIL DETAIL
6"x6" treated post
PROFILE & CROSS SECTION
TIBBLE FORK DEBRIS BASIN
AMERICAN FORK - DRY CREEK W.P.P.
UTAH COUNTY, UTAH
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed B.D.L. G.P.S. 12-66
Drawn M.H.K. 12-68
Checked S.C.S. MKN 1-69
Approved by
Sheet No. 6 of 19
Drawing No. 7-E-20445
Tibble Fork Res. H38, P6 of 19
Form SCS-313 (November 1950)

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-1

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343998.04 East-1599668.26

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: — Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 13-Sep-2010 Time: 10:20:00 AM Finish Date: 14-Sep-2010 Time: 1:34:00 AM

Core Boxes: Samples: Overburden: Rock: Total Depth: 75

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (tsf)	Clod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = CLAY Silty sandy CLAY (CL) with little gravel, no structure, sand mostly f-m grained, little coarse sand, gravel is fine, gravel subrounded to subangular, clay is medium plasticity, slightly moist, brown (7.5 YR, 4/3) [Fill]										
5			SPT 1	86	2-10-11 (21)							
		Major Component = GRAVEL med. Dense, clayey GRAVEL (GC) with some sand, silt; no structure, sand is mostly f-m grained, little coarse sand, gravel is f-c, gravel subrounded to subangular, clay is medium plasticity, slightly moist, reddish brown (5 YR, 5/4) [Fill]										
		Major Component = CLAY Very stiff, silty sandy CLAY (CL) with trace fine-grained gravel, no structure, sand mostly f-m grained, little coarse sand, gravel is fine, gravel subrounded to subangular, clay is low to medium plasticity, slightly moist, reddish brown (5 YR, 5/4) [Fill]										
10			SPT 2	78	4-6-10 (16)							
15		**Major Component = GRAVEL** med. Dense, clayey GRAVEL (GC) with some sand, silt; no structure, sand is f-c grained, gravel is f-c, limestone pieces, CaCO3 binder, gravel subrounded to subangular, clay is low plasticity, slightly moist, yellowish white and brown (7.5 YR, 5/3) [Fill]	SPT 3	100	9-12-15 (27)							
		Major Component = CLAY Very stiff, silty sandy CLAY (CL) with some gravel, no structure, sand mostly f-m grained, little coarse sand, gravel 3 pieces 1/2 to 3/4", gravel subrounded to subangular, clay is medium plasticity, binding, moist, brown (7.5 YR, 5/3) [Fill]										
20			SPT 4	4	8-12-14 (26)							
25		—@25' med plascity, contains more coarse sand, color is reddish brown (5YR, 4/4)	SPT 5	61	10-10-13 (23)							
30		—@30' slightly moist	SPT 6	93	7-11-13 (24)							
		—@32.5' contains more gravel than above	SPT 7	94	9-6-12 (18)							
35			SPT 8	100	7-10-16 (26)							
			SPT 9	69	24-40-32 (72)							
40												

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Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL_2008 | Project: MOSTIBBLEFORK.GPJ | Data Template: USDA-NM V42-2008.GDT | Last Mod: 15 Sep 2010 08:47 am | Printed: 14 Dec 2010 09:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-1 (Continued)

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343998.04 East-1599668.26

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cloz Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = GRAVEL Very dense, well graded, sandy GRAVEL (GW), with little silt, not binding, gravel f-c, sand f-c grained, subangular a little subrounded, mottled little brown yellow (10YR, 6/6), little white, little reddish brown (5YR, 4/4), mostly olive grey (5Y, 4/4), slightly moist [Alluvium] *(continued)*	SPT 10	53	11-10-13 (23)							
			SPT 11	61	11-18-39 (57)							
45		**Major Component = GRAVEL** med. Dense, well graded, clayey GRAVEL (GW-GC) with sand, clay just slightly binding, gravel f-c grained, sand f-c grained, subrounded to subangular, moist, matrix olive brown (2.5Y, 4/3) [Alluvium]	SPT 12	61	16-36-21 (57)							
		Major Component = GRAVEL Very dense, well graded, sandy GRAVEL (GW), with little silt binder and little to trace of clay, sand is f-c grained, gravel f-c, sand f-c grained, subangular a little subrounded, no structure, moist, light olive brown (2.5Y, 4/3) [Alluvium]	SPT 13	61	9-15-17 (32)							
50		**Major Component = SAND** very dense, clayey SAND (SC) and gravel, sand f-c, gravel f-c, subangular to subrounded, clay not binding but >12%, wet, grayish brown (2.5Y, 5/2) [Alluvium]	SPT 14	47	10-30-39 (69)							
		Major Component = GRAVEL Dense, well graded, sandy GRAVEL with little clay, sand f-c, gravel f-c, subangular to subrounded, clay binding, wet, brown (10YR, 5/3) [Alluvium]	SPT 15	53	37-21-17 (38)							
55		**Major Component = SAND** very dense, clayey SAND (SC) and gravel, well graded, sand f-c, gravel f-c, subangular to subrounded, clay binding, wet, brown (10YR, 4/3) [Alluvium]	SPT 16	67	12-8-8 (14)							
		Major Component = TUFF Weathered volcanic tuff, mottled white and pinkish grey (7.5YR, 6/2), horizontal layers, with f-c geol sand size grains of quartz, feldspar, and biotite. Behaves like a silty clayey SAND (SM-SC) low plasticity with thin layers of of clayey SAND with med. plasticity, slightly moist [Pyroclastic]	SPT 17	83	5-9-12 (21)							
60		–@57.5' white and pinkish white (5YR, 8/2) and dusky red (10R, 3/3). –@60' slightly less weathered volcanic tuff t, clay that is med to high plasticity, pinkish (5YR, 8/2) matrix with white and pinkish gray (5YR, 6/2) clasts	SPT 18	89	4-8-12 (20)							
			SPT 19	83	6-11-9 (20)							
65		–@65' white and pale red (2.5YR, 6/2 in lower half of sample) layers	SPT 20	100	4-9-11 (20)							
			SPT 21	56	5-8-11 (19)							
70		–@70' grayish brown (10YR, 5/2), low plasticity	SPT 22	58	5-10-31 (41)							
		Burnt from tuff flowing over it, black, burnt wood?										
		Major Component = SAND Clayey SAND (SC) and gravel with little clay, clay weakly binding, well graded, sand f-c grained, gravel f- c grained, angular to subrounded, dark grayish brown (2.5Y, 4/2) [Alluvium]	SPT 23	61	17-22-22 (44)							
75		**Major Component = GRAVEL** Well graded sandy GRAVEL (GW) with little clay/silt, sand f-c, gravel f-c, subangular to subrounded, clay not binding, brown (10YR, 5/3) [Alluvium]										
		Hollow-Stem Auger completed at 75.0 ft on 14-Sep-2010										
80												
85												
90												

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Soil Classification in Accordance with ASTM D2488 - 93

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-2

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343997.17 East-1599809.36

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: — Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 15-Sep-2010 Time: 10:33:00 AM Finish Date: 18-Sep-2010 Time: 11:50:00 AM

Core Boxes: Samples: Overburden: Rock: Total Depth: 80

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N-VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cold Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = CLAY Very stiff, sandy CLAY (CL) with some gravel (f-c), subrounded, sand mostly f-m, little coarse, gravel mostly fine, low to medium plasticity, slightly moist [Fill]										
5			SPT 1	100	8-7-10 (17)							
		Major Component = SAND Medium dense, clayey SAND with little to some gravel, some silt, low plasticity, sand mostyly f-m, little coarse gravel, gravel subangular, low plasticity, slightly moist, brown (7.5 YR, 4/2) [Fill]										
10			SPT 2	53	6-10-9 (19)							
		Major Component = CLAY Very stiff, sandy CLAY (CL) with some mostly fine-grained gravel with occasional layers of coarse-grained gravel, angular to subrounded, sand mostly f-m, little coarse sand, medium plasticity, slightly moist, mottled very dark brown (7/5YR 2.5/3) and brown (7.5YR, 4/2) [Fill]										
15			SPT 3	81	4-11-12 (23)							
20			SPT 4	0	50/3"							
25		—@25' reddish brown (5YR, 4/3)	SPT 5	61	5-18-10 (28)							
		Major Component = CLAY Very stiff to 44' @45' stiff, sandy CLAY (CL) with little to some gravel with a few 2" layer with and gravel, angular to subrounded, sand mostly f-m, little coarse sand, gravel f-c, medium plasticity, slightly moist, no structure, reddish brown (5YR, 4/3) [Fill]										
30			SPT 6	83	8-12-12 (24)							
35			SPT 7	100	7-17-13 (30)							
40												

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Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL-2008 | Project: MOSTIBBLEFORK.GPJ | Data Template: USDA-NM V42-2008.GDT | Last Mod: 15 Sep 2010 09:47 am | Printed: 14 Dec 2010 09:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-2 (Continued)

Sheet 2 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): Nonb-7343997.17 East-1599809.36

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Clod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = CLAY Very stiff to 44' @45' stiff, sandy CLAY (CL) with little to some gravel with a few 2" layer with and gravel, angular to subrounded, sand mostly f-m, little coarse sand, gravel f-c, medium plasticity, slightly moist, no structure, reddish brown (5YR, 4/3) [Fill] *(continued)*	SPT 8	100	6-9-13 (22)							
45			SPT 9	67	6-6-9 (15)							
50		**Major Component = SAND** Med. Dense, silty and clayey SAND (SM-SC) with some some clayey GRAVEL and sand lens at 52.5 to 54', well graded, sand f-c, gravel f-c, gravel subangular, clay not binding at 50-51.5, but binds at 52', wet, brown (10YR, 4/2) [Alluvium]	SPT 10	17	4-4-7 (11)							
		Major Component = GRAVEL Very dense to dense, well graded sandy GRAVEL (GW) with little to some silt/clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, wet, dark grayish brown (10YR, 4/2) [Alluvium]	SPT 11	69	6-16-39 (55)							
55		-@55' clay not binding, grayish brown (10YR, 5/2)	SPT 12	50	34-24-30 (54)							
			SPT 13	83	29-86-114 (200)							
60		**Major Component = SAND** clayey SAND (SC) with some gravel, clay is weak to mod. Binding, sand f-c, well graded, gravel mostly fine-grained, subangular to subrounded, very moist to wet, grayish brown (10YR, 5/2) [Alluvium]	SPT 14	83	15-33-30 (63)							
		Major Component = SAND probably very dense, silty SAND (SM) with a trace of fine-grained gravel, sand f-c, well graded, subangular to subrounded, silt binding, slightly moist, overall grey (10YR, 5/1) but salt (white) and pepper (dark grey (10YR, 4/1) [Alluvium]	SPT 15	67	50-50/3"							
65		**Major Component = GRAVEL** clayey GRAVEL (GC) with some sand, not enough sample to describe, dark grayish brown (10YR, 4/2) [Alluvium]	SPT 16	31	16-25-23 (48)							
		Major Component = GRAVEL Very Dense, well graded sandy GRAVEL (GW) with little to just some clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, weakly layered, mottled grayish brown (2.5Y, 5/2), light grey (10YR, 7/2), yellowish brown (10YR, 5/6), grey (10YR, 5/1) [Alluvium]	SPT 17	47	5-10-17 (27)							
70			SPT 18	72	21-59-50/4"							
		Major Component = GRAVEL Dense, well graded sandy GRAVEL (GW) with some clay (weakly binding), well rounded to subangular, sand f-c, gravel f-c, very moist, brown (10YR, 4/3) [Alluvium]	SPT 19		50/3"							
75		**Major Component = SAND** Dense, clayey SAND (SC) with some gravel, some silt, sand mostly f-m, little coarse-grained sand, gravel f-c, subangular to subrounded, clay binding sand, clay low to med. Plasticity, wet, brown (7.5 YR, 4/3) [Alluvium]										
		Major Component = GRAVEL Well graded sandy GRAVEL (GW) with little to some clay, clay is weak binding, sand f-c, gravel f-c, subangular to subrounded, moist, brown (7.5YR, 4/3) [Alluvium]										
80		**Major Component = GRAVEL** Well graded sandy GRAVEL (GW) with some clay, clay is mod. binding, sand f-c, gravel f-c, angular to subrounded, horizontally platy layers, moist, binder is dark grayish brown (10YR, 4/2) [Alluvium]										
		Major Component = GRAVEL [Alluvium]										
85		Hollow-Stem Auger completed at 80.0 ft on 18-Sep-2010										
90												

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Soil Classification in Accordance with ASTM D2488 - 93

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-3

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343993.93 East-1599907.5

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: — Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 18-Sep-2010 Time: 3:05:00 AM Finish Date: 21-Sep-2010 Time: 12:17:00 PM

Core Boxes: Samples: Overburden: Rock: Total Depth: 90.34

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cloid Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = GRAVEL very dense, clayey GRAVEL and sand (GC), some silt, sand is mostly f-m, trace coarse-grained sand, gravel f-c, angular to subangular, clay binding, no structure, low to med. Plasticity, slightly moist, brown (7.5YR, 4/3) [Fill]										
5			SPT 1	33	5-10-9 (19)							
		Major Component = CLAY Stiff to very stiff, gravelly CLAY (CL) and sand with some silt, sand mostly f-m, trace coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Fill]										
10			SPT 2	69	3-5-9 (14)							
15			SPT 3	94	5-5-15 (20)							
20			SPT 4		5-7-5 (12)							
25			SPT 5	86	5-4-11 (15)							
30			SPT 6	14	7-10-13 (23)							
35			SPT 7	69	8-11-14 (25)							
40												

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Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL-2004 | Project: MGSTIBBLEFORK.GPJ | Data Template: USDA-NM V82-2008.GDT | Last Mod: 16 Sep 2010 09:47 am | Printed: 14 Dec 2010 08:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-3 (Continued)

Sheet 2 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

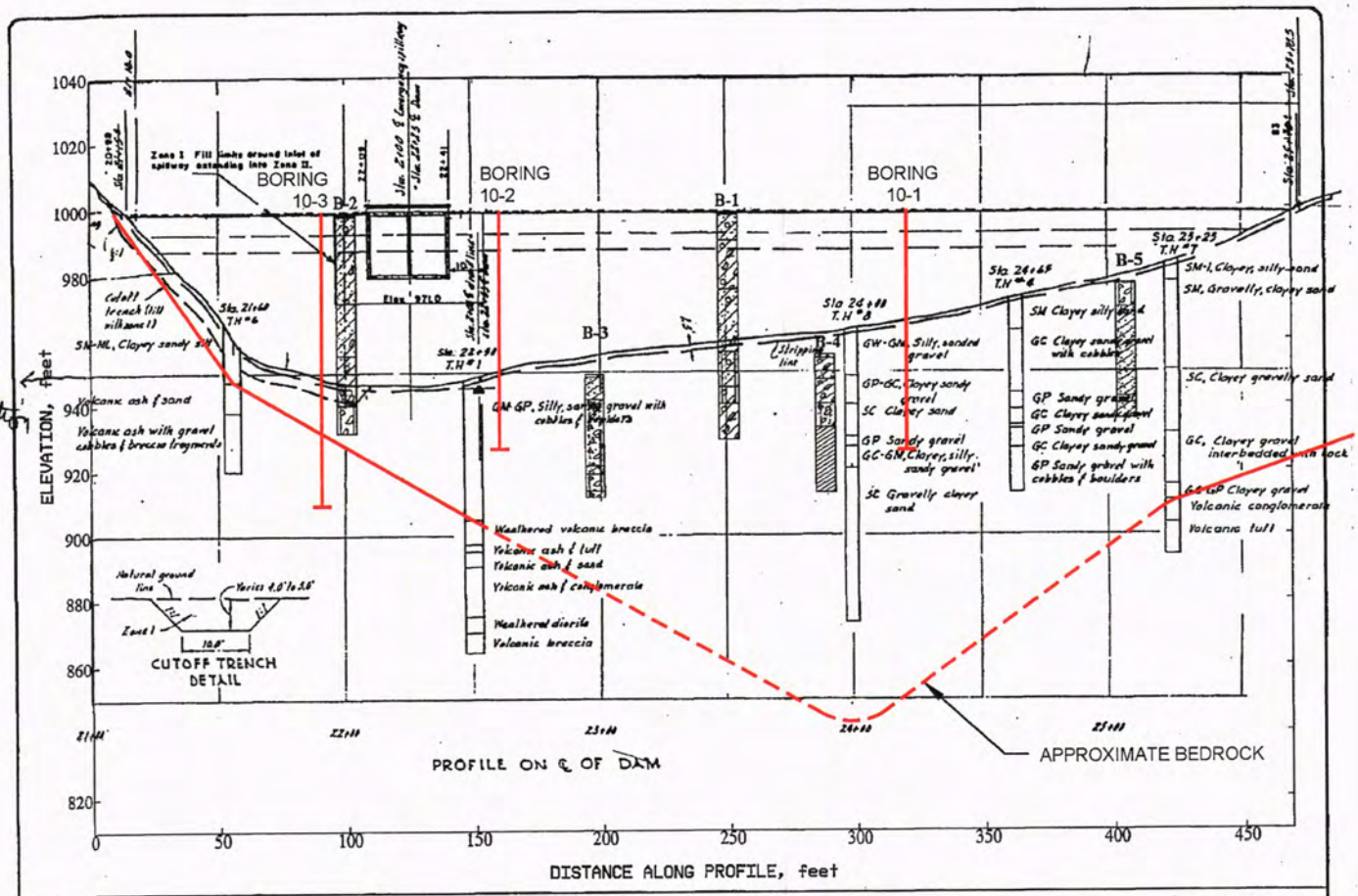
Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343993.93 East-1599907.5

Depth (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (tsf)	Cold Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
	Major Component = GRAVEL clayey GRAVEL with some sand, little silt, no structure, gravel subrounded to subangular, slightly moist, dark brown (7.5YR, 3/2) [Fill]	SPT 8	94	5-10-15 (25)							
	Major Component = CLAY Very stiff, sandy CLAY with some gravel, some silt, sand mostly f-m, little coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Fill]	SPT 9	72	7-10-12 (22)							
45		SPT 10	61	7-7-11 (18)							
	Major Component = CLAY Very stiff, sandy CLAY with some gravel, some silt, sand mostly f-m, little coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Alluvium]	SPT 11	69	14-10-8 (18)							
50	**Major Component = GRAVEL** poorly graded sandy GRAVEL (GP), gravel fine-grained, angular to subrounded, little clay nonbinding, sand f-c, wet, brown (7.5 YR, 4/3) [Alluvium]	SPT 12	48	5-7-50/1"							
	Major Component = CLAY sandy CLAY (CL) with little fine-grained gravel, some silt, subangular to subrounded, sand mostly f-m, little coarse-grained, CaCO3 present, low plasticity, brown (7.5 YR, 4/3) [Alluvium]	SPT 13	0	50/1"							
55	No sample unknown do to grinding to 54' probably a sandy GRAVEL (GW) [Alluvium]	SPT 14	100	4-7-28 (35)							
	Major Component = TUFF weathered Tuff, sandine (?), behaves as a sandy clay of med. To low plasticity w/ little fine-grained gravel, subrounded to subangular, light olive brown (2.5Y, 5/3) and reddish brown (5YR, 4/3k) [Pyroclastic]	SPT 15	100	2-8-9 (17)							
60	**Major Component = SAND** clayey SAND and gravel (SC), some silt, gravel is angular, fine-grained, sand is mostly f-medium grained with little coarse-grained, gravel is dark grey limestone, low plasticity slightly moist, reddish brown (2.5 YR, 5/4) [Alluvium]	SPT 16	61	1-5-7 (12)							
	Major Component = TUFF completely weathered tuff, biotite and sandine (? square) present, behaves as sandy CLAY (CL) with little fine-grained gravel, CaCO3 present, med. to high plasticity, subangular to subrounded, olive gray (5Y, 5/2), slightly moist [Pyroclastic] –@61.1' light olive greey (5Y, 6/2) and reddish bronw (5YR, 4/3)	SPT 17	53	10-13-18 (31)							
65	Sandy GRAVEL w/ little clay, well graded (GW), gravel f-c grained, angular to subrounded, sand f-c, some silt, wet, matrix is olive gray (5Y, 5/2) [Alluvium]	SPT 18	0	39-63-50/4"							
	Major Component = SAND Slough (?): Wet, non-binding clayey SAND (SC) with soome gravel, sand was f-c, completely saturated, subrounded to subangular, grayish brown (10YR, 5/2) [Alluvium]	SPT 19	39	12-10-19 (29)							
70	**Major Component = SAND** clayey SAND (SC) and gravel, clay is binding, med. Plasticity, sand f-c, gravel fine-grained, subrounded to subangular, CaCO3 present, moist, grayish brown (10YR, 5/2) [Alluvium]	SPT 20	86	18-26-34 (60)							
		SPT 21	100	18-30-41 (71)							
75	**Major Component = TUFF** completely weathered tuff, trace biotite and sandine (? square) present, behaves as sandy CLAY (CL) with trace to little fine-grained gravel, CaCO3 present, low plasticity, subrounded, gray (5Y, 5/1), slightly moist [Pyroclastic] –@72.5' greenish gray (GLEY2, 6/5GY)	SPT 22	83	29-39-38 (77)							
		SPT 23	97	25-50-55/4"							
80		SPT 24		73/4"							
		SPT 25		17-33-50/4"							
85		SPT 26		69							
		SPT 27		53/3"							
90	Hollow-Stem Auger completed at 90.3 ft on 21-Sep-2010	SPT 28		65/4"							

Natural Resources Conservation Service

U.S.D.A.- N.R.C.S.
125 South State Street, Rm. 4402
Salt Lake City, UT 84138-1100
Telephone: 801-524-4550
Fax: 801-524-4403

Soil Classification in Accordance with ASTM D2488 - 93



957 Foundation

Tibble Fork Dam March 1997

SUBSURFACE PROFILE

TERRACON CONSULTANTS WESTERN, INC. - SALT LAKE CITY, UTAH

Borehole	Top dbgs	Bottom dbgs	Thickness (Feet)	USCS Symbol	Description
TH-2	0	7	7	ML	Sandy clayey SILT
Sta. 27+25	7	15	8	SM	Silty clayey SAND
Elev. unknown	15	20	5	SM	Volcanic ash and SAND
	20	45	25	SM	Volcanic ash with SAND and gravel
	45	66	21	GM	Silty GRAVEL with volcanic ash
	66	70	4		Volcanic conglomerate
	70	80	10		Volcanic ash with sand and gravel, partially consolidated
	80	100	20		Volcanic conglomerate
		TD	100		

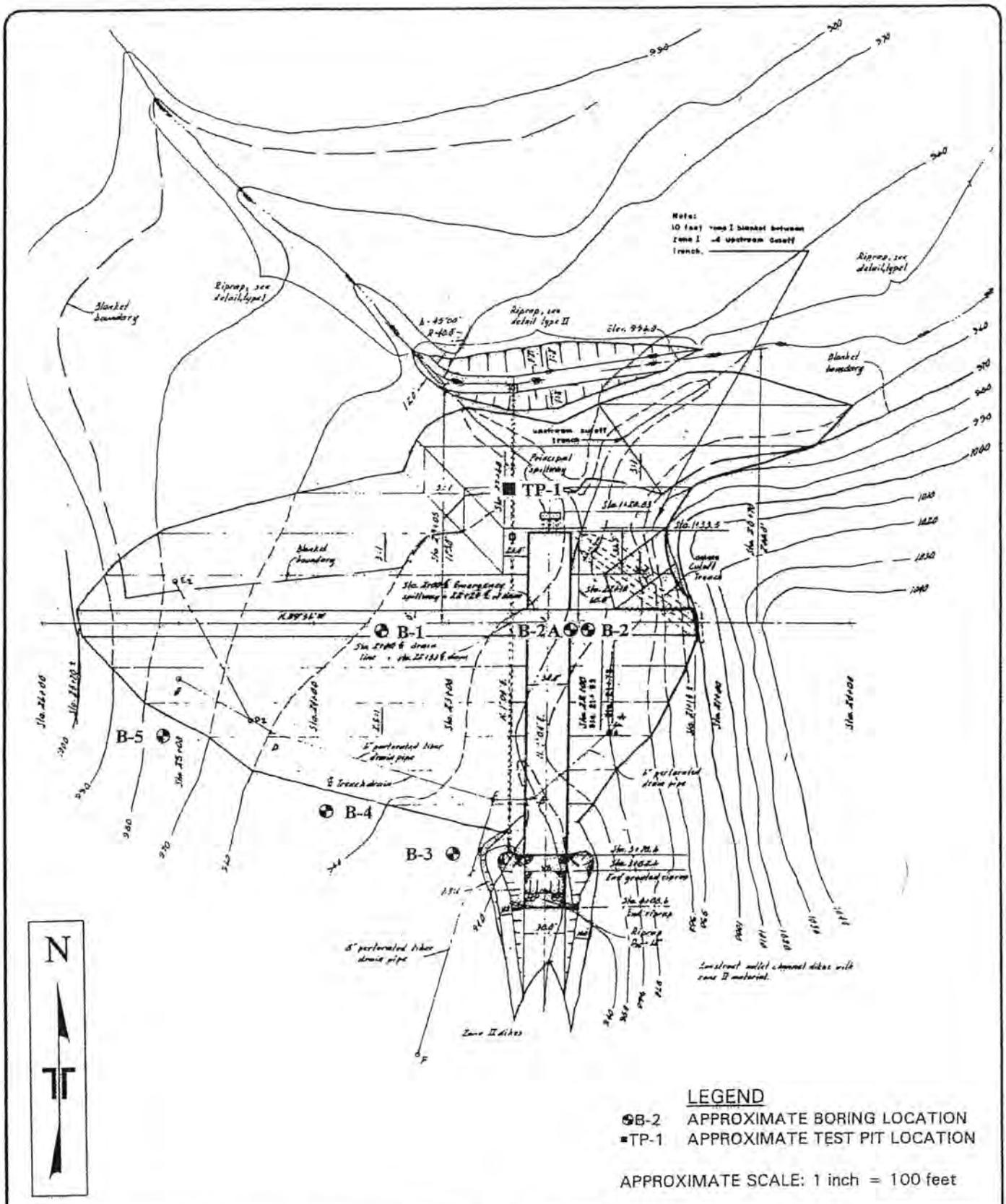
From Sheet 19

301	0	5	5		Cobbles and boulders
Elev. 952.8	5	9	4	SM	Silty SAND with cobbles and boulders
Elev. 6342.8 amsl	9	28	19	GC	Clayey sandy GRAVEL with cobbles and boulders
	28	48	20	GC-GP	Clayey sandy GRAVEL with cobbles and boulders
		TD	48		

601	0	5	5		Cobbles and boulders
Elev. 959.9	5	18	13	GP-GM	Silty sandy GRAVEL; @12' is Water Table
Elev. 6349.9 amsl	18	31	13	GP	Sandy GRVEL with boulders
	31	39	8		Rock
		TD	39		

302	0	5	5		Cobbles and boulders
Elev. 950.0	5	41	36	GW-GM	Silty sandy GRAVEL with cobbles and boulders
Elev. 5485 amsl		TD	41		

All data from USDA NRCS 1964
dbgs = depth below ground surface
amsl = above mean sea level



LEGEND

B-2 APPROXIMATE BORING LOCATION

TP-1 APPROXIMATE TEST PIT LOCATION

APPROXIMATE SCALE: 1 inch = 100 feet

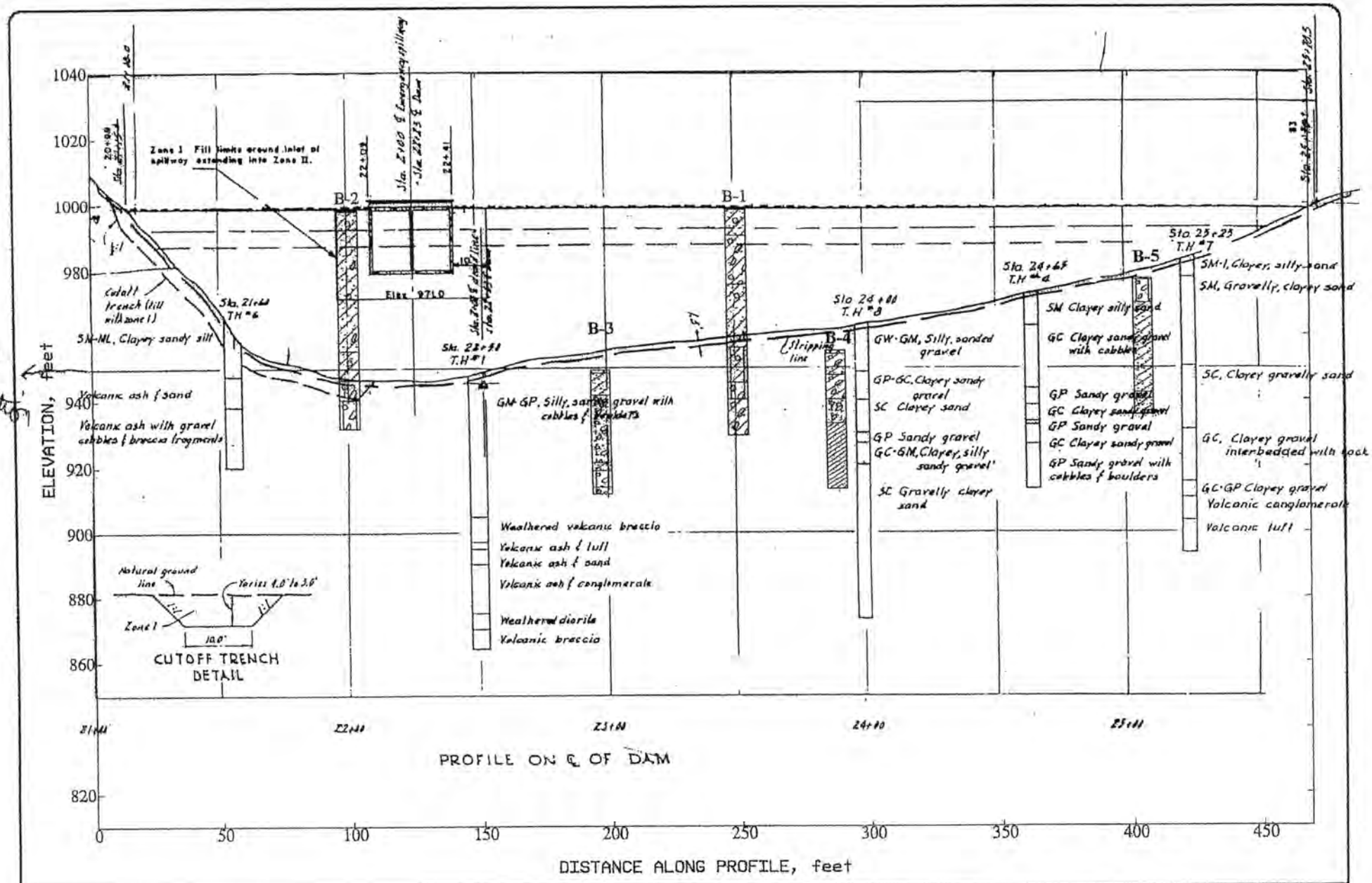
BORING AND TEST PIT LOCATION DRAWING

Evaluation of Tibble Fork Dam

American Fork Canyon, Utah County, Utah

JOB # 61965027	DATE: March 1997	BY: WGT

Terracon



Tibble Fork Dam

March 1997

SUBSURFACE PROFILE

TERRACON CONSULTANTS WESTERN, INC. - SALT LAKE CITY, UTAH

LOG OF BORING NO. B-1

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

Approx. Surface Elev.: 999.3 ft.

Location: About Station 23+50, 5 feet left of dam centerline (see Boring & Test Pit Location Drawing)

DESCRIPTION		DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
0.3 4 inches of Asphalt surfacing	999.0									
Embankment Fill Clayey Sand with gravel (SC): medium dense, moist, reddish brown, scattered cobbles		5	SC	1	SPT	1.2	19			
8.0	991.3									
Clayey Gravel with sand (GC): dense, moist, brownish gray		10	GC	2	SPT	1.0	29	7		
		15	GC	3	SPT	1.0	53			
		20	GC	4	SPT	1.1	32	7		
23.0	976.3									
Clayey Sand with gravel (SC): medium dense, moist, reddish brown		25	SC	5	SPT	1.3	17			
		30	SC	6	SPT	1.4	23	10		

Continued Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS

WL	▽	▼
WL		
WL		

Terracon

BORING STARTED	10-2-96		
BORING COMPLETED	10-2-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-1

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
	Embankment Fill continued (Clayey Sand with gravel (SC): medium dense, moist, reddish brown)		35	SC	7	SPT	0.8	30			
	--cobbles at 38.5 feet		40	SC	8	SPT	1.2	20	13		
	42.0 — 957.3										
	Foundation Layered Silty to Clayey Sand with gravel (SC to SM): coarse to medium coarse sand, medium dense to dense, wet, dark brown to dark gray		45	SC& SM	9	SPT	1.2	15			
				SC& SM	10	LSS	0.5	59	8		
	--trace of gravel in sample at 50 feet		50	SM/ SC	11	SPT	1.6	46			
	53.0 — 946.3										
	Silty Gravel with sand (GM): very dense, wet, dark grayish brown		55	GM	12	SPT	1.3	64			
	58.0 — 941.3										
	Clayey Gravel with sand (GC): very dense, wet, dark brown		60	GC	13	LSS	1.2	59			
			65								

Continued Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

Terracon

BORING STARTED	10-2-96		
BORING COMPLETED	10-2-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-1

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
				SAMPLES					TESTS		
	Clayey Gravel with sand (GC) (continued) --probably weathered bedrock below 66 feet (difficult drilling)			GC	14	SPT	1.4	68	12		
	69.0 930.3										
	Bottom of boring (practical auger refusal) at about 69 feet Piezometers installed to depths of about 37 and 54 feet										
	Key to Piezometer Details:										
	Mixed Backfill										
	Bentonite										
	Sand										
	Slotted Pipe										

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

Terracon

BORING STARTED	10-2-96		
BORING COMPLETED	10-2-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-2

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

Approx. Surface Elev.: 999.2 ft.

Location: About Station 22+00, 5 feet left of dam centerline (see Boring & Test Pit Location Drawing)

DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
0.5 6 inches of Asphalt surfacing 998.7									
Embankment Fill Clayey Sand with gravel (SC): medium dense, moist, reddish brown, scattered cobbles in upper 10 feet	5	SC	1	SPT	1.3	13	11		
	10	SC	2	SPT	0.8	11			
	15	SC	3	SPT	1.4	13	12		
	20	SC	4	SPT	1.2	12			
	25	SC	5	SPT	1.2	15	10		
	30	SC	6	SPT	1.4	21			

Continued Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS

WL	▽ 45.3 ft.	▼
WL		
WL		

Terracon

BORING STARTED	9-30-96		
BORING COMPLETED	9-30-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-2

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
	Embankment Fill continued (Clayey Sand with gravel (SC): medium dense, moist, reddish brown)		35	SC	7	SPT	0.6	22	11		
			40	SC	8	SPT	1.4	23			
	43.0 — 956.2										
	Sandy Lean Clay with gravel (CL): very stiff, moist, reddish brown		45	CL	9	SPT	1.5	25	14		
			50	CL	10	SPT	1.3	21	13		
	52.0 — 947.2										
	Foundation Poorly Graded Gravel with silt and sand (GP-GM): very dense, moist, wet, grayish brown		55	GP-GM	11	SPT	1.3	55	5		
	58.0 — 941.2										
	Silty Gravel with sand (GM): medium dense, wet		60	GM	12	SPT	1.5	16			
			65								

Continued Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽ 45.3 ft.	▼
WL		
WL		

Terracon

BORING STARTED	9-30-96		
BORING COMPLETED	9-30-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-2

CLIENT	ARCHITECT/ENGINEER
North Utah County Water Conservancy District	
SITE: American Fork Canyon, Utah County, Utah	PROJECT: Tibble Fork Dam

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	TESTS: MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
	66.6 --heaving sand at 65 feet, no sampling attempted 932.6										
	Bottom of boring (auger refusal) at about 66.6 feet Piezometers installed to depths of about 42 and 61.5 feet										

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽ 45.3 ft.	▼
WL		
WL		

Terracon

BORING STARTED	9-30-96		
BORING COMPLETED	9-30-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-2A

CLIENT North Utah County Water Conservancy District	ARCHITECT/ENGINEER
SITE American Fork Canyon, Utah County, Utah	PROJECT Tibble Fork Dam

Approx. Surface Elev.: 999.2 ft.

Location: About Station 22+06, 5 feet left of dam centerline (see Boring & Test Pit Location Drawing)

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	SAMPLES: USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY	SAMPLES: SPT - N BLOWS / FT.	TESTS: MOISTURE, %	TESTS: DRY DENSITY PCF	TESTS: UNCONFINED STRENGTH PSF
	0.5 6 inches of Asphalt surfacing 998.7 **Embankment Fill** Clayey Sand with gravel (SC): medium dense, moist, reddish brown, scattered cobbles in upper 10 feet		5 10 15 20 25 30								

Continued Next Page

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

Terracon

BORING STARTED	10-3-96		
BORING COMPLETED	10-3-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-2A

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Tibble Fork Dam

GRAPHIC LOG	DESCRIPTION	PIEZOMETER DETAIL	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES SPT - N BLOWS / FT.	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	Embankment Fill continued (Clayey Sand with gravel (SC): medium dense, moist, reddish brown)		35								
			40								
	43.0 956.2										
	Sandy Lean Clay with gravel (CL): very stiff, moist, reddish brown 45.0 954.2		45								
	Bottom of boring at about 45 feet Piezometer installed to depth of about 44.5 feet										

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

Terracon

BORING STARTED	10-3-96		
BORING COMPLETED	10-3-96		
RIG	CME 75	FOREMAN	MS
APPROVED	WGT	JOB #	61965027

LOG OF BORING NO. B-3

CLIENT: North Utah County Water Conservancy District

ARCHITECT/ENGINEER:

SITE: American Fork Canyon, Utah County, Utah

PROJECT: Silver Lake Flat Dam

Approx. Surface Elev.: 943.0 ft. 5323.7

Location: See Boring And Test Pit Location Drawing

DESCRIPTION	Elevation
1.0 Topsoil; dark brown, clayey SAND with gravel (SC)	942.0
Clayey SAND (SC) with gravel and cobbles; medium dense, brown, slightly moist	
7.5 Silty GRAVEL with sand (GM) to well graded GRAVEL with silt and sand (GW-GM); medium dense to dense, brown to gray, moist to very moist	935.5
27.5 Clayey SAND (SC); very loose, light brown to black, very moist, trace organics, trace gravel	915.5
30.0 Silty GRAVEL with sand (GM); medium dense, orange-brown,	913.0

Continued Next Page

DEPTH (FT.)	USCS SYMBOL	NUMBER	TYPE	RECOVERY	SPT - N BLOWS / FT.	MOISTURE, %	DRY DENSITY PCF	UNCONFINED STRENGTH PSF
5	SC	1	SPT	0	11	11		
	GM	2	SPT	4	8			
10	GM	3	SPT	7	39	8		
	GM	4	SPT	0	22			
15	GW-GM	5	SPT	5	35			
	GW-GM	6	SPT	8	55			
20	GW-GM	7	SPT	4	86	16		
	GW-GM	8	SPT	12	69			
25	GM	9	SPT	5	17			
	SC	10	SPT	16	1	29		
30	GM	11	SPT	4	18			

Calibrated Hand Penetrometer*

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

WATER LEVEL OBSERVATIONS

WL	5.0 ft WD	
WL		
WL		

Terracon

BORING STARTED	10-5-98		
BORING COMPLETED	10-5-98		
RIG	CME-75	FOREMAN	CS
APPROVED	DKF	JOB #	61965027

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-1

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343998.04 East-1599668.26

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: — Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 13-Sep-2010 Time: 10:20:00 AM Finish Date: 14-Sep-2010 Time: 1:34:00 AM

Core Boxes: Samples: Overburden: Rock: Total Depth: 75

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD - SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (tsf)	Clod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = CLAY Silty sandy CLAY (CL) with little gravel, no structure, sand mostly f-m grained, little coarse sand, gravel is fine, gravel subrounded to subangular, clay is medium plasticity, slightly moist, brown (7.5 YR, 4/3) [Fill]										
5			SPT 1	86	2-10-11 (21)							
		Major Component = GRAVEL med. Dense, clayey GRAVEL (GC) with some sand, silt; no structure, sand is mostly f-m grained, little coarse sand, gravel is f-c, gravel subrounded to subangular, clay is medium plasticity, slightly moist, reddish brown (5 YR, 5/4) [Fill]										
10		**Major Component = CLAY** Very stiff, silty sandy CLAY (CL) with trace fine-grained gravel, no structure, sand mostly f-m grained, little coarse sand, gravel is fine, gravel subrounded to subangular, clay is low to medium plasticity, slightly moist, reddish brown (5 YR, 5/4) [Fill]	SPT 2	78	4-6-10 (16)							
15		**Major Component = GRAVEL** med. Dense, clayey GRAVEL (GC) with some sand, silt; no structure, sand is f-c grained, gravel is f-c, limestone pieces, CaCO3 binder, gravel subrounded to subangular, clay is low plasticity, slightly moist, yellowish white and brown (7.5 YR, 5/3) [Fill]	SPT 3	100	9-12-15 (27)							
		Major Component = CLAY Very stiff, silty sandy CLAY (CL) with some gravel, no structure, sand mostly f-m grained, little coarse sand, gravel 3 pieces 1/2 to 3/4", gravel subrounded to subangular, clay is medium plasticity, binding, moist, brown (7.5 YR, 5/3) [Fill]										
20			SPT 4	4	8-12-14 (26)							
25		—@25' med plascity, contains more coarse sand, color is reddish brown (5YR, 4/4)	SPT 5	61	10-10-13 (23)							
30		—@30' slightly moist	SPT 6	93	7-11-13 (24)							
		—@32.5' contains more gravel than above	SPT 7	94	9-8-12 (18)							
35			SPT 8	100	7-10-16 (26)							
			SPT 9	69	24-40-32 (72)							
40												

Natural Resources Conservation Service

U.S.D.A.- N.R.C.S.
125 South State Street, Rm. 4402
Salt Lake City, UT 84138-1100
Telephone: 801-524-4550
Fax: 801-524-4403

Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL-2008 | Project: MGSTIBBLEFORK.GPJ | Data Template: USDA-NM V12-2008.GDT | Last Mod: 18 Sep 2010 08:47 am | Printed: 14 Dec 2010 09:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-1 (Continued)

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343998.04 East-1599668.26

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Clod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = GRAVEL Very dense, well graded, sandy GRAVEL (GW), with little silt, not binding, gravel f-c, sand f-c grained, subangular a little subrounded, mottled little brown yellow (10YR, 6/6) little white, little reddish brown (5YR, 4/4), mostly olive grey (5Y, 4/4), slightly moist [Alluvium] *(continued)*	SPT 10	53	11-10-13 (23)							
			SPT 11	61	11-18-39 (57)							
45		**Major Component = GRAVEL** med. Dense, well graded, clayey GRAVEL (GW-GC) with sand, clay just slightly binding, gravel f-c grained, sand f-c grained, subrounded to subangular, moist, matrix olive brown (2.5Y, 4/3) [Alluvium]	SPT 12	81	16-36-21 (57)							
		Major Component = GRAVEL Very dense, well graded, sandy GRAVEL (GW), with little silt binder and little to trace of clay, sand is f-c grained, gravel f-c, sand f-c grained; subangular a little subrounded, no structure, moist, light olive brown (2.5Y, 4/3) [Alluvium]	SPT 13	61	9-15-17 (32)							
50		**Major Component = SAND** very dense, clayey SAND (SC) and gravel, sand f-c, gravel f-c, subangular to subrounded, clay not binding but >12%, wet, grayish brown (2.5Y, 5/2) [Alluvium]	SPT 14	47	10-30-39 (69)							
		Major Component = GRAVEL Dense, well graded, sandy GRAVEL with little clay; sand f-c, gravel f-c, subangular to subrounded, clay binding, wet, brown (10YR, 5/3) [Alluvium]	SPT 15	53	37-21-17 (38)							
55		**Major Component = SAND** very dense, clayey SAND (SC) and gravel, well graded, sand f-c, gravel f-c, subangular to subrounded, clay binding, wet, brown (10YR, 4/3) [Alluvium]	SPT 16	67	12-6-8 (14)							
		Major Component = TUFF Weathered volcanic tuff, mottled white and pinkish grey (7.5YR, 6/2), horizontal layers, with f-c geol sand size grains of quartz, feldspar, and biotite. Behaves like a silty clayey SAND (SM-SC) low plasticity with thin layers of of clayey SAND with med. plasticity, slightly moist [Pyroclastic]	SPT 17	83	5-9-12 (21)							
60		—@57.5' white and pinkish white (5YR, 8/2) and dusky red (10R, 3/3). —@60' slightly less weathered volcanic tuff f, clay that is med to high plasticity, pinkish (5YR, 8/2) matrix with white and pinkish gray (5YR, 6/2) clasts	SPT 18	89	4-8-12 (20)							
			SPT 19	83	5-11-9 (20)							
65		—@65' white and pale red (2.5YR, 6/2 in lower half of sample) layers	SPT 20	100	4-9-11 (20)							
			SPT 21	56	5-8-11 (19)							
70		—@70' grayish brown (10YR, 5/2), low plasticity	SPT 22	58	5-10-31 (41)							
		Burnt from tuff flowing over it, black, burnt wood?										
		Major Component = SAND Clayey SAND (SC) and gravel with little clay, clay weakly binding; well graded, sand f-c grained, gravel f-c grained, angular to subrounded, dark grayish brown (2.5Y, 4/2) [Alluvium]	SPT 23	61	17-22-22 (44)							
75		**Major Component = GRAVEL** Well graded sandy GRAVEL (GW) with little clay/silt, sand f-c, gravel f-c, subangular to subrounded, clay not binding, brown (10YR, 5/3) [Alluvium]										
		Hollow-Stem Auger completed at 75.0 ft on 14-Sep-2010										
80												
85												
90												

Natural Resources Conservation Service

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Soil Classification in Accordance with ASTM D2488 - 93

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-2

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343997.17 East-1599809.36

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: -- Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 15-Sep-2010 Time: 10:33:00 AM Finish Date: 18-Sep-2010 Time: 11:50:00 AM

Core Boxes: Samples: Overburden: Rock: Total Depth: 80

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Qtod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = CLAY Very stiff, sandy CLAY (CL) with some gravel (f-c), subrounded, sand mostly f-m, little coarse, gravel mostly fine, low to medium plasticity, slightly moist [Fill]										
5			SPT 1	100	8-7-10 (17)							
		Major Component = SAND Medium dense, clayey SAND with little to some gravel, some silt, low plasticity, sand mostly f-m, little coarse gravel, gravel subangular, low plasticity, slightly moist, brown (7.5 YR, 4/2) [Fill]										
10			SPT 2	53	6-10-9 (19)							
		Major Component = CLAY Very stiff, sandy CLAY (CL) with some mostly fine-grained gravel with occasional layers of coarse-grained gravel, angular to subrounded, sand mostly f-m, little coarse sand, medium plasticity, slightly moist, mottled very dark brown (7/5YR 2.5/3) and brown (7.5YR, 4/2) [Fill]										
15			SPT 3	81	4-11-12 (23)							
20			SPT 4	0	50/3"							
25		-@25' reddish brown (5YR, 4/3)	SPT 5	61	5-18-10 (28)							
		Major Component = CLAY Very stiff to 44' @45' stiff, sandy CLAY (CL) with little to some gravel with a few 2" layer with and gravel, angular to subrounded, sand mostly f-m, little coarse sand, gravel f-c, medium plasticity, slightly moist, no structure, reddish brown (5YR, 4/3) [Fill]										
30			SPT 6	83	8-12-12 (24)							
35			SPT 7	100	7-17-13 (30)							
40												

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Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL-2008 | Project: MOATIBBLEFORK.GPJ | Data Template: USDA-NM V82-2008.GDT | Last Mod: 15 Sep 2010 09:47 am | Printed: 14 Dec 2010 09:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-2 (Continued)

Sheet 2 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343997.17 East-1599809.36

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SCD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cbd Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = CLAY Very stiff to 44' @45' stiff, sandy CLAY (CL) with little to some gravel with a few 2" layer with and gravel, angular to subrounded, sand mostly f-m, little coarse sand, gravel f-c, medium plasticity, slightly moist, no structure, reddish brown (5YR, 4/3) [Fill] *(continued)*	SPT 8	100	6-9-13 (22)							
45			SPT 9	67	6-5-9 (15)							
50		**Major Component = SAND** Med. Dense, silty and clayey SAND (SM-SC) with some some clayey GRAVEL, and sand lens at 52.5 to 54', well graded, sand f-c, gravel f-c, gravel subangular, clay not binding at 50-51.5, but binds at 52', wet, brown (10YR, 4/2) [Alluvium]	SPT 10	17	4-4-7 (11)							
		Major Component = GRAVEL Very dense to dense, well graded sandy GRAVEL (GW) with little to some silt/clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, wet, dark grayish brown (10YR, 4/2) [Alluvium] -@55' clay not binding, grayish brown (10YR, 5/2)	SPT 11	69	6-16-39 (55)							
55			SPT 12	50	34-24-30 (54)							
			SPT 13	83	29-86-114 (200)							
60		**Major Component = SAND** clayey SAND (SC) with some gravel, clay is weak to mod. Binding, sand f-c, well graded, gravel mostly fine-grained, subangular to subrounded, very moist to wet, grayish brown (10YR, 5/2) [Alluvium]	SPT 14	83	15-33-30 (63)							
		Major Component = SAND probably very dense, silty SAND (SM) with a trace of fine-grained gravel, sand f-c, well graded, subangular to subrounded, silt binding, slightly moist, overall grey (10YR, 5/1) but salt (white) and pepper (dark grey (10YR, 4/1) [Alluvium]	SPT 15	67	50-50/3"							
65		**Major Component = GRAVEL** clayey GRAVEL (GC) with some sand, not enough sample to describe, dark grayish brown (10YR, 4/2) [Alluvium]	SPT 16	31	16-25-23 (48)							
		Major Component = GRAVEL Very Dense, well graded sandy GRAVEL (GW) with little to just some clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, weakly layered, mottled grayish brown (2.5Y, 5/2), light grey (10YR, 7/2), yellowish brown (10YR, 5/6), grey (10YR, 5/1) [Alluvium]	SPT 17	47	5-10-17 (27)							
70			SPT 18	72	21-59-50/4"							
		Major Component = GRAVEL Dense, well graded sandy GRAVEL (GW) with some clay (weakly binding), well rounded to subangular, sand f-c, gravel f-c, very moist, brown (10YR, 4/3) [Alluvium]	SPT 19		59/3"							
75		**Major Component = SAND** Dense, clayey SAND (SC) with some gravel, some silt, sand mostly f-m, little coarse-grained sand, gravel f-c, subangular to subrounded, clay binding sand, clay low to med. Plasticity, wet, brown (7.5 YR, 4/3) [Alluvium]										
		Major Component = GRAVEL Well graded sandy GRAVEL (GW) with little to some clay, clay is weak binding, sand f-c, gravel f-c, subangular to subrounded, moist, brown (7.5YR, 4/3) [Alluvium]										
80		**Major Component = GRAVEL** Well graded sandy GRAVEL (GW) with some clay, clay is mod. binding, sand f-c, gravel f-c, angular to subrounded, horizontally platy layers, moist, binder is dark grayish brown (10YR, 4/2) [Alluvium]										
		Major Component = GRAVEL [Alluvium]										
85		Hollow-Stem Auger completed at 80.0 ft on 18-Sep-2010										
90												

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Salt Lake City, UT 84138-1100
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Soil Classification in Accordance with ASTM D2488 - 93

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-2 (Continued)

Sheet 2 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343997.17 East-1599809.36

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cled Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = CLAY Very stiff to 44' @45' stiff, sandy CLAY (CL) with little to some gravel with a few 2" layer with and gravel, angular to subrounded, sand mostly f-m, little coarse sand, gravel f-c, medium plasticity, slightly moist, no structure, reddish brown (5YR, 4/3) [Fill] *(continued)*	SPT 8	100	6-9-13 (22)							
45			SPT 9	67	5-5-9 (15)							
50		**Major Component = SAND** Med. Dense, silty and clayey SAND (SM-SC) with some some clayey GRAVEL and sand lens at 52.5 to 54', well graded, sand f-c, gravel f-c, gravel subangular, clay not binding at 50-51.5, but binds at 52', wet, brown (10YR, 4/2) [Alluvium]	SPT 10	17	4-4-7 (11)							
		Major Component = GRAVEL Very dense to dense, well graded sandy GRAVEL (GW) with little to some silt/clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, wet, dark grayish brown (10YR, 4/2) [Alluvium] —@55' clay not binding, grayish brown (10YR, 5/2)	SPT 11	69	6-16-39 (55)							
55			SPT 12	50	34-24-30 (54)							
			SPT 13	83	28-86-114 (200)							
60		**Major Component = SAND** clayey SAND (SC) with some gravel, clay is weak to mod. Binding, sand f-c, well graded, gravel mostly fine-grained, subangular to subrounded, very moist to wet, grayish brown (10YR, 5/2) [Alluvium]	SPT 14	83	15-33-30 (63)							
		Major Component = SAND probably very dense, silty SAND (SM) with a trace of fine-grained gravel, sand f-c, well graded, subangular to subrounded, silt binding, slightly moist, overall grey (10YR, 5/1) but salt (white) and pepper (dark grey (10YR, 4/1) [Alluvium]	SPT 15	67	50-50/3"							
65		**Major Component = GRAVEL** clayey GRAVEL (GC) with some sand, not enough sample to describe, dark grayish brown (10YR, 4/2) [Alluvium]	SPT 16	31	16-25-23 (48)							
		Major Component = GRAVEL Very Dense, well graded sandy GRAVEL (GW) with little to just some clay, clay weakly binding, sand f-c, gravel f-c, subangular to subrounded, weakly layered, mottled grayish brown (2.5Y, 5/2), light grey (10YR, 7/2), yellowish brown (10YR, 5/6), grey (10YR, 5/1) [Alluvium]	SPT 17	47	5-10-17 (27)							
70			SPT 18	72	21-59-50/4"							
		Major Component = GRAVEL Dense, well graded sandy GRAVEL (GW) with some clay (weakly binding), well rounded to subangular, sand f-c, gravel f-c, very moist, brown (10YR, 4/3) [Alluvium]	SPT 19		59/3"							
75		**Major Component = SAND** Dense, clayey SAND (SC) with some gravel, some silt, sand mostly f-m, little coarse-grained sand, gravel f-c, subangular to subrounded, clay binding sand, clay low to med. Plasticity, wet, brown (7.5 YR, 4/3) [Alluvium]										
		Major Component = GRAVEL Well graded sandy GRAVEL (GW) with little to some clay, clay is weak binding, sand f-c, gravel f-c, subangular to subrounded, moist, brown (7.5YR, 4/3) [Alluvium]										
80		**Major Component = GRAVEL** Well graded sandy GRAVEL (GW) with some clay, clay is mod. binding, sand f-c, gravel f-c, angular to subrounded, horizontally platy layers, moist, binder is dark grayish brown (10YR, 4/2) [Alluvium]										
		Major Component = GRAVEL [Alluvium]										
85		Hollow-Stem Auger completed at 80.0 ft on 18-Sep-2010										
90												

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Soil Classification in Accordance with ASTM D2488 - 93

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-3

Sheet 1 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343993.93 East-1599907.5

Contractor: RB&G Engineering, Inc. Driller: Tom Kern Exploration Equipment: CME-55 Exploration Method: Hollow-Stem Auger

Azimuth: — Angle from Horizontal: 90 Hammer Type: Automatic Hammer-CME Hammer Wgt: 140 Hammer Fall: 30

Logged By: Ana Vargo Start Date: 18-Sep-2010 Time: 3:05:00 AM Finish Date: 21-Sep-2010 Time: 12:17:00 PM

Core Boxes: Samples: Overburden: Rock: Total Depth: 90.34

GROUNDWATER DATA

Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:
Date:	Time:	Water Depth (Ft): NA	Casing Depth (Ft):	Hole Depth (Ft):	Symbol:

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (ksf)	Cloid Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Asphalt										
		Major Component = GRAVEL very dense, clayey GRAVEL and sand (GC), some silt, sand is mostly f-m, trace coarse-grained sand, gravel f-c, angular to subangular, clay binding, no structure, low to med. Plasticity, slightly moist, brown (7.5YR, 4/3) [Fill]										
5			SPT 1	33	5-10-9 (19)							
		Major Component = CLAY Stiff to very stiff, gravelly CLAY (CL) and sand with some silt, sand mostly f-m, trace coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Fill]										
10			SPT 2	69	3-5-9 (14)							
15			SPT 3	94	5-5-15 (20)							
20			SPT 4		6-7-5 (12)							
25			SPT 5	86	5-4-11 (15)							
30			SPT 6	14	7-10-13 (23)							
35			SPT 7	69	8-11-14 (25)							
40												

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Soil Classification in Accordance with ASTM D2488 - 93

Report: GEOTECHNICAL-2006 | Project: MGSTIBBLEFORK.GPJ | Data Template: USDA-NM V42-2005.GDT | Last Mod: 19 Sep 2010 09:47 am | Printed: 14 Dec 2010 09:24 am

Project: Tibble Fork
Client: USDA-NRCS
Location: American Fork Canyon, Utah County, Utah

HOLE No. TFSPT10-3 (Continued)

Sheet 2 of 2

Surface Elevation: 6389.2 Quadrangle: Map Projection: Datum:

Ref. Alignment: Sta.: Offset: Coordinates(UTM): North-7343993.93 East-1599907.5

Depth (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % RQD SQD	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) TORVANE (kcf)	Clod Density DRY UNIT WT. (pcf)	Water Content Moisture Content (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
		Major Component = GRAVEL clayey GRAVEL with some sand, little silt, no structure, gravel subrounded to subangular, slightly moist, dark brown (7.5YR, 3/2) [Fill]	SPT 8	94	5-10-15 (25)							
		Major Component = CLAY Very stiff, sandy CLAY with some gravel, some silt, sand mostly f-m, little coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Fill]	SPT 9	72	7-10-12 (22)							
45			SPT 10	61	7-7-11 (18)							
		Major Component = CLAY Very stiff, sandy CLAY with some gravel, some silt, sand mostly f-m, little coarse sand, gravel f-c, angular to subrounded, clay med. Plasticity, clay binding, no structure, slightly moist, brown (7.5 YR, 4/3) [Alluvium]	SPT 11	69	14-10-8 (18)							
50		Major Component = GRAVEL poorly graded sandy GRAVEL (GP), gravel fine-grained, angular to subrounded, little clay nonbinding, sand f-c, wet, brown (7.5 YR, 4/3) [Alluvium]	SPT 12	48	5-7-50/1"							
		Major Component = CLAY sandy CLAY (CL) with little fine-grained gravel, some silt, subangular to subrounded, sand mostly f-m, little coarse-grained, CaCO3 present, low plasticity, brown (7.5 YR, 4/3) [Alluvium]	SPT 13	0	50/1"							
55		No sample unknown do to grinding to 54' probably a sandy GRAVEL (GW) [Alluvium]	SPT 14	100	4-7-28 (35)							
		Major Component = TUFF weathered Tuff, sandine (?), behaves as a sandy clay of med. To low plasticity w/ little fine-grained gravel, subrounded to subangular, light olive brown (2.5Y, 5/3) and reddish brown (5YR, 4/3k) [Pyroclastic]	SPT 15	100	2-8-9 (17)							
60		Major Component = SAND clayey SAND and gravel (SC), some silt, gravel is angular, fine-grained, sand is mostly f-medium grained with little coarse-grained, gravel is dark grey limestone, low plasticity slightly moist, reddish brown (2.5 YR, 5/4) [Alluvium]	SPT 16	81	1-5-7 (12)							
		Major Component = TUFF completely weathered tuff, biotite and sandine (? square) present, behaves as sandy CLAY (CL) with little fine-grained gravel, CaCO3 present, med. to high plasticity, subangular to subrounded, olive gray (5Y, 5/2), slightly moist [Pyroclastic] --@61.1' light olive greay (5Y, 6/2) and reddish bronw (5YR, 4/3)	SPT 17	53	10-13-18 (31)							
65			SPT 18	0	39-63-50/4"							
		Sandy GRAVEL w/ little clay, well graded (GW), gravel f-c-grained, angular to subrounded, sand f-c, some silt, wet, matrix is olive gray (5Y, 5/2) [Alluvium]	SPT 19	39	12-10-19 (29)							
70		Major Component = SAND Slough (?): Wet, non-binding clayey SAND (SC) with soome gravel, sand was f-c, completely saturated, subrounded to subangular, grayish brown (10YR, 5/2) [Alluvium]	SPT 20	86	18-26-34 (60)							
		Major Component = SAND clayey SAND (SC) and gravel, clay is binding, med. Plasticity, sand f-c, gravel fine-grained, subrounded to subangular, CaCO3 present, moist, grayish brown (10YR, 5/2) [Alluvium]	SPT 21	100	16-30-41 (71)							
75		Major Component = TUFF completely weathered tuff, trace biotite and sandine (? square) present, behaves as sandy CLAY (CL) with trace to little fine-grained gravel, CaCO3 present, low plasticity, subrounded, gray (5Y, 6/1), slightly moist [Pyroclastic] --@72.5' greenish gray (GLEY2, 6/5GY)	SPT 22	83	29-39-38 (77)							
			SPT 23	97	25-50-55/4"							
80			SPT 24		73/4"							
			SPT 25		17-33-50/4"							
85			SPT 26		89							
			SPT 27		53/3"							
90		Hollow-Stem Auger completed at 90.3 ft on 21-Sep-2010	SPT 28		65/4"							

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Soil Classification in Accordance with ASTM D2488 - 93

Borehole	Top dbgs	Bottom dbgs	Thickness (Feet)	USCS Symbol	Description
TH-2	0	7	7	ML	Sandy clayey SILT
Sta. 27+25	7	15	8	SM	Silty clayey SAND
Elev. unknown	15	20	5	SM	Volcanic ash and SAND
	20	45	25	SM	Volcanic ash with SAND and gravel
	45	66	21	GM	Silty GRAVEL with volcanic ash
	66	70	4		Volcanic conglomerate
	70	80	10		Volcanic ash with sand and gravel, partially consolidated
	80	100	20		Volcanic conglomerate
		TD	100		

From Sheet 19

301	0	5	5		Cobbles and boulders
Elev. 952.8	5	9	4	SM	Silty SAND with cobbles and boulders
Elev. 6342.8 amsl	9	28	19	GC	Clayey sandy GRAVEL with cobbles and boulders
	28	48	20	GC-GP	Clayey sandy GRAVEL with cobbles and boulders
		TD	48		

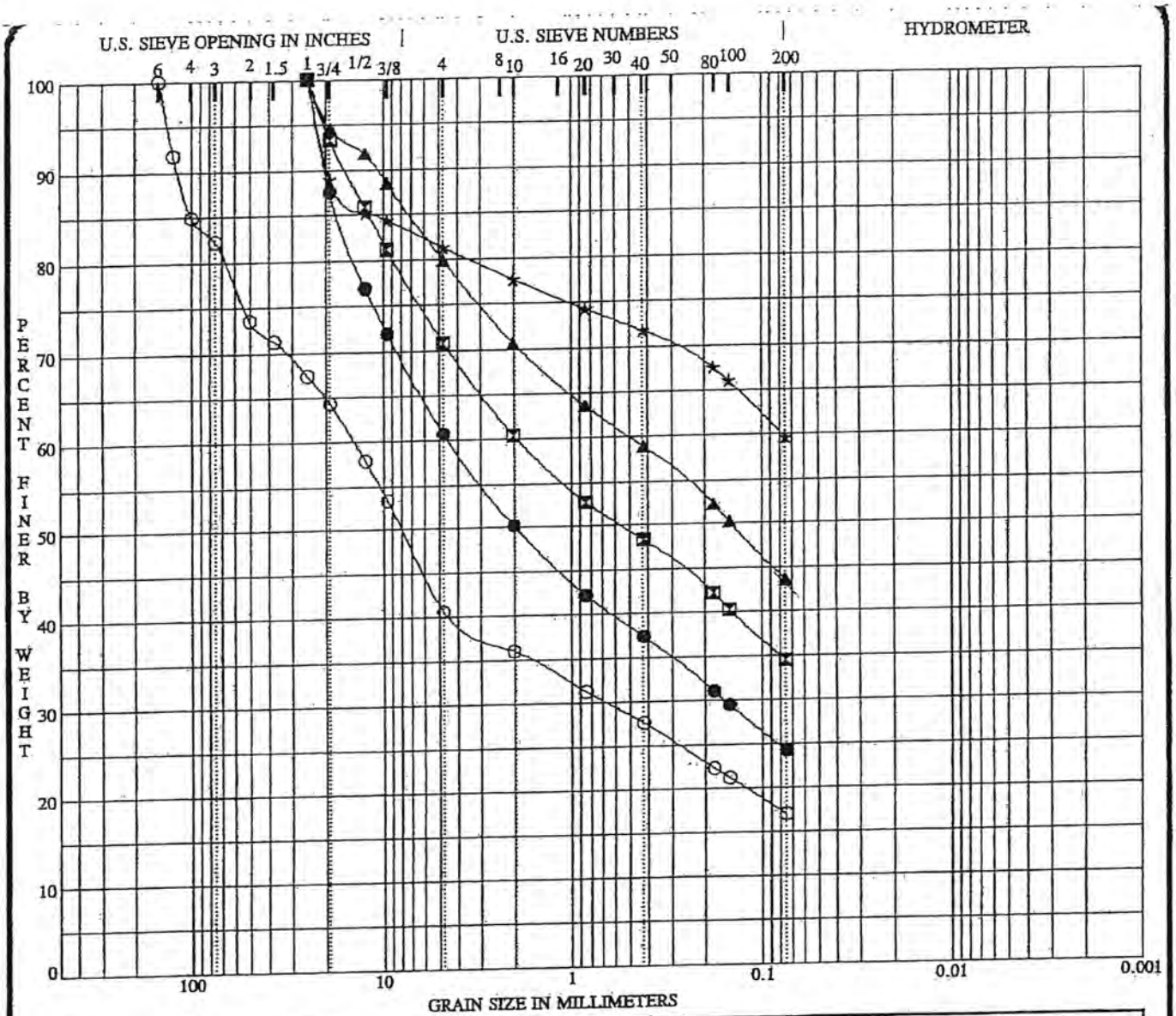
601	0	5	5		Cobbles and boulders
Elev. 959.9	5	18	13	GP-GM	Silty sandy GRAVEL; @12' is Water Table
Elev. 6349.9 amsl	18	31	13	GP	Sandy GRVEL with boulders
	31	39	8		Rock
		TD	39		

302	0	5	5		Cobbles and boulders
Elev. 950.0	5	41	36	GW-GM	Silty sandy GRAVEL with cobbles and boulders
Elev. 5485 amsl		TD	41		

All data from USDA NRCS 1964
dbgs = depth below ground surface
amsl = above mean sea level

APPENDIX B

Laboratory Testing



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	B-1	10.0	Fill, Clayey Gravel with sand (GC)	7					
⊠	B-1	30.0	Fill, Clayey Sand with gravel (SC)	10					
▲	B-2	15.0	Fill, Clayey Sand with gravel (SC)	12					
★	B-2	50.0	Fill, Sandy Lean Clay with gravel (CL)	13					
⊙	TP-1	0.0	Fill, Clayey Gravel with sand and cobbles (GC)	3					

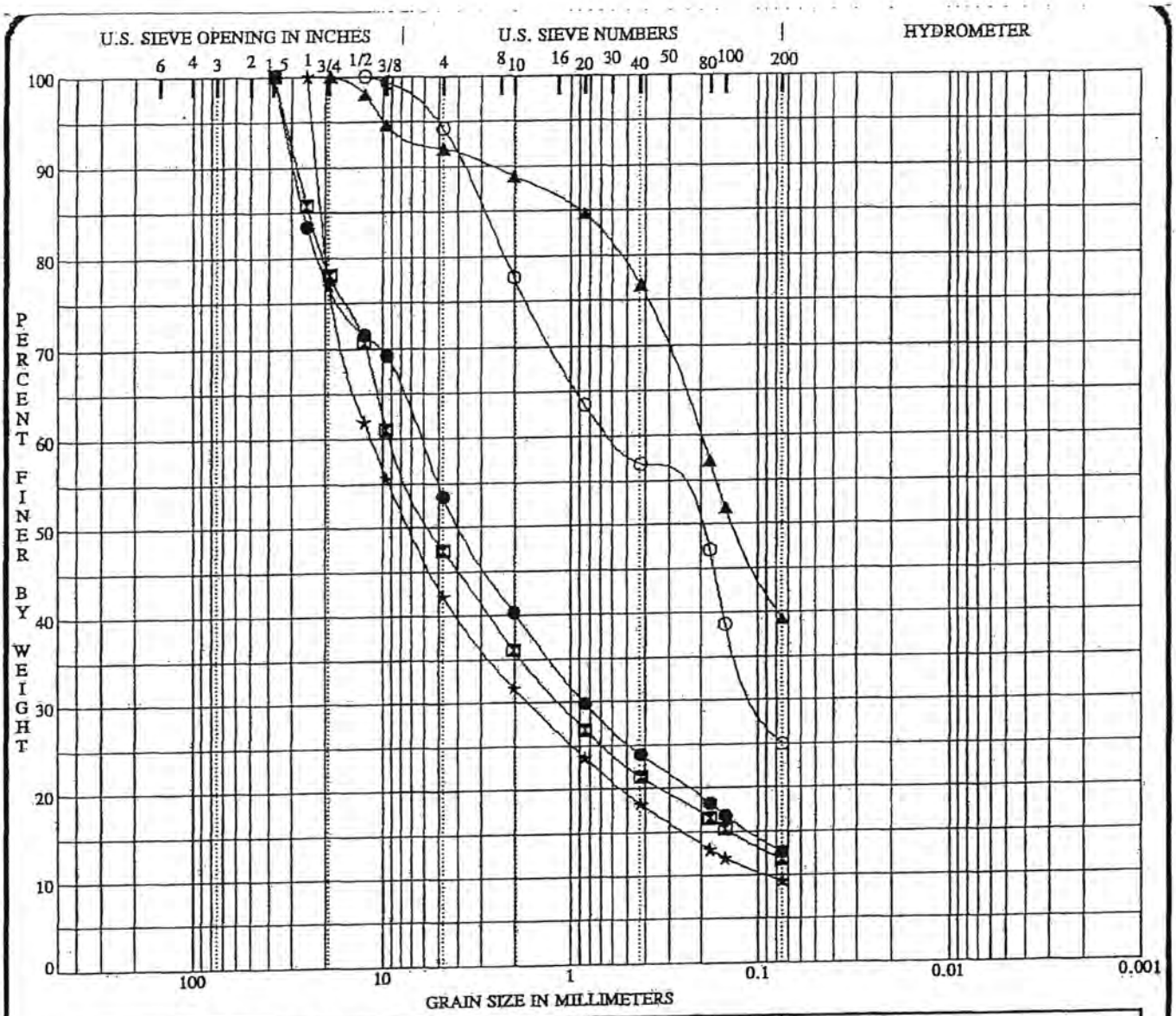
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	10.0	25.00	4.48	0.159		39.3	36.5	24.2	
⊠	B-1	30.0	25.00	1.91			29.2	36.3	34.5	
▲	B-2	15.0	25.00	0.50			20.2	36.2	43.6	
★	B-2	50.0	25.00	0.08			18.8	21.6	59.6	
⊙	TP-1	0.0	150.00	14.34	0.666		41.6	23.6	17.0	

PROJECT Tibble Fork Dam - American Fork Canyon, Utah County, Utah

JOB NO. 61965027
DATE 3/7/97

GRADATION CURVES
TERRACON CONSULTANTS WESTERN, INC.
SALT LAKE CITY, UTAH

Figure A1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
●	B-3	10.0	Silty gravel with sand (GM)	8					
⊠	B-3	20.0	Well graded gravel wth silt and sand (GW-GM)	16				2.07	129.0
▲	B-3	27.5	Clayey sand (SC), trace gravel	29					
★	B-4	15.0	Well graded gravel with silt and sand (GW-GM)	10				2.70	128.2
⊙	B-5	30.0	Clayey sand (SC), trace gravel	21					

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-3	10.0	37.50	6.33	0.864		46.5	40.9	12.6	
⊠	B-3	20.0	37.50	9.03	1.145		52.6	35.6	11.8	
▲	B-3	27.5	19.00	0.20			8.1	52.7	39.2	
★	B-4	15.0	25.00	11.51	1.671	0.0898	57.8	32.9	9.3	
⊙	B-5	30.0	12.50	0.59	0.097		5.8	69.3	24.9	

PROJECT Tibble Fork Dam - American Fork CanyonUtah County, Utah

JOB NO. 61965027
DATE 12/3/98

GRADATION CURVES
TERRACON CONSULTANTS, INC.
SALT LAKE CITY, UTAH

Figure A2

Table A1
SUMMARY OF LABORATORY TEST RESULTS

Tibble Fork Dam - American Fork Canyon, Utah County, Utah

Terracon Project No. 61965027

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	GRADATION			ATTERBERG LIMITS		OTHER TESTS (SEE NOTES)	
BORING NO.	DEPTH (feet)		GRAVEL (%)	SAND (%)	SILT AND CLAY (%)	LIQUID LIMIT	PLASTICITY INDEX		UNIFIED
B-1	10-12	7	39	37	24				Fill, Clayey Gravel with sand (GC)
	20-22	7							Fill, Clayey Gravel with sand (GC)
	25-27	8			29	36	16		Fill, Clayey Sand with gravel (SC)
	30-32	10	29	36	35				Fill, Clayey Sand with gravel (SC)
	40-42	13							Fill, Clayey Sand with gravel (SC)
	47-48.5	8							Silty Sand with gravel (SM)
	65-67	12							Clayey Gravel with sand (GC)
B-2	5-7	11							Fill, Clayey Sand with gravel (SC)
	15-17	12	20	36	44				Fill, Clayey Sand with gravel (SC)
	25-27	10			40	34	14		Fill, Clayey Sand with gravel (SC)
	35-37	11							Fill, Clayey Sand with gravel (SC)
	40-42				49	46	27		Fill, Clayey Sand with gravel (SC)
	45-47	14							Fill, Sandy Lean Clay with gravel (CL)
	50-52	13	19	22	60				Fill, Sandy Lean Clay with gravel (CL)
	55-57	5							Poorly Graded Gravel with silt and sand (GP-GM)
TP-1	0-6	3	42	24	17				Fill, Clayey Gravel with sand and cobbles (GC)

Table A1

SUMMARY OF LABORATORY TEST RESULTS

Tibble Fork Dam – American Fork Canyon, Utah County, Utah

Project No. 61965027

SAMPLE LOCATION		NATURAL MOISTURE	DRY DENSITY (PCF)	GRADATION			ATTERBERG LIMITS		OTHER TESTS (SEE NOTES)	UNIFIED SOIL CLASSIFICATION
BORING NO.	DEPTH (FEET)	CONTENT (%)		GRAVEL (%)	SAND (%)	SILT AND CLAY (%)	Liquid Limit (%)	Plasticity Index(%)		
B-3	7.5-9.0	11								Silty Gravel with Sand (GM)
	10-11.5	8		46	41	13				Silty Gravel with Sand (GM)
	20-21.5	16		53	35	12				Well Graded Gravel with Silt and Sand (GW-GM)
	27.5-29	29		8	53	39				Clayey Sand, trace Gravel (SC)
	35-37	9								Well Graded Gravel with Silt and Sand (GW-GM)
B-4	15-16.5	10		58	33	9				Well Graded Gravel with Silt and Sand (GW-GM)
	22.5-24	29				54	48	22		Sandy Lean Clay (CL)
	27.5-29	30				58	52	25		Sandy Fat Clay (CH)
	40-41.5	33				66	64	35		Sandy Fat Clay (CH)
B-5	10-11.5	19				45	46	25		Clayey Sand (SC)
	22.5-24	25				41	44	22		Clayey Sand (SC)
	30-31.5	21		6	69	25				Clayey Sand, trace Gravel (SC)

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS : Split Spoon - 1⅜" I.D., 2" O.D., unless otherwise noted
ST : Thin-Walled Tube - 2" O.D., Unless otherwise noted
PA : Power Auger
HA : Hand Auger
DB : Diamond Bit - 4", N, B
AS : Auger Sample
HS : Hollow Stem Auger
PS : Piston Sample
WS : Wash Sample
FT : Fish Tail Bit
RB : Rock Bit
BS : Bulk Sample
PM : Pressuremeter
DC : Dutch Cone
WB : Wash Bore

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch OD split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL : Water Level
WCI : Wet Cave In
DCI : Dry Cave In
AB : After Boring
WS : While Sampling
WD : While Drilling
BCR : Before Casing Removal
ACR : After Casing Removal

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of ground water levels is not possible with only short term observations.

DESCRIPTIVE SOIL CLASSIFICATION:

Soil Classification is based on the Unified Soil Classification System and ASTM Designations D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

Unconfined Compressive Strength, Qu, psf	Consistency
< 500	Very Soft
500 - 1,000	Soft
1,001 - 2,000	Medium
2,001 - 4,000	Stiff
4,001 - 8,000	Very Stiff
8,001 -16,000	Hard
> -16,000	Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft.	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
80+	Extremely Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) (of Components Also Present in Sample)	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component Of Sample	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) (of Components Also Present in Sample)	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3[E]	GW	Well-graded gravel[F]
			Cu < 4 and/or 1 > Cc > 3[E]	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel[F, G, H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[E]	Cu ≥ 6 and 1 ≤ Cc ≤ 3[E]	SW	Well-graded sand[I]
			Cu < 6 and/or 1> Cc > 3[E]	SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G, H, I]
			Fines classify as CL or CH	SC	Clayey sand[G, H, I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K, L, M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K, L, M]
		organic	Liquid limit — oven dried / Liquid limit — not dried < 0.75	OL	Organic clay[K, L, M, N] / Organic silt[K, L, M, O]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay[K, L, M]
			PI plots below "A" line	MH	Elastic silt[K, L, M]
		organic	Liquid limit — oven dried / Liquid limit — not dried < 0.75	OH	Organic clay[K, L, M, P] / Organic silt[K, L, M, Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A]Based on the material passing the 3-in. (75-mm) sieve.

[B]If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C]Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D]Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E]$Cu = D_{60}/D_{10}$ $\quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F]If soil contains ≥ 15% sand, add "with sand" to group name.

[G]If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H]If fines are organic, add "with organic fines" to group name.

[I]If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J]If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K]If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.

[L]If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

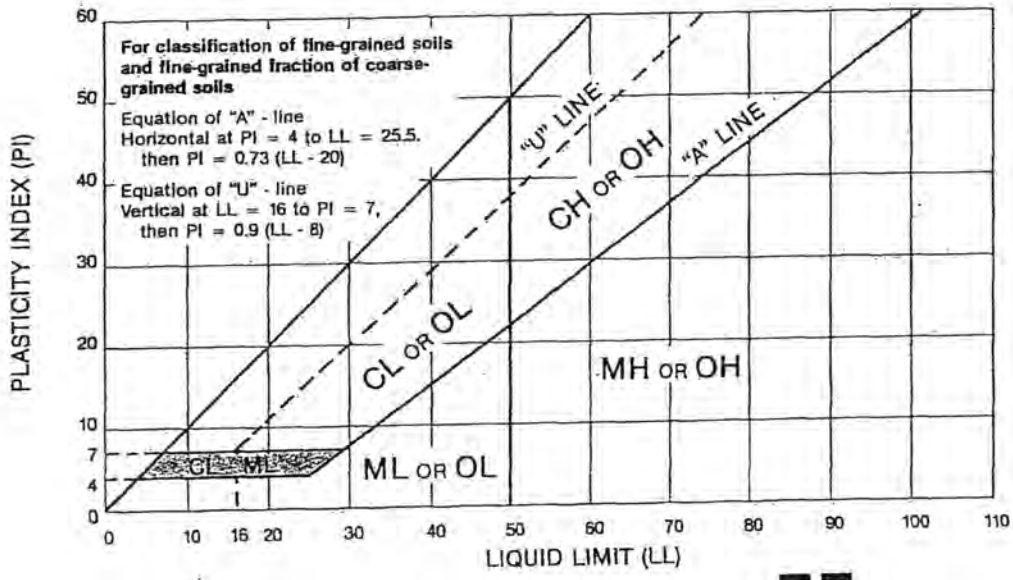
[M]If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N]PI ≥ 4 and plots on or above "A" line.

[O]PI < 4 or plots below "A" line.

[P]PI plots on or above "A" line.

[Q]PI plots below "A" line.



Terracon

Form 111—6-85

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
National Design, Construction, and Soil Mechanics Center
Lincoln Soil Mechanics Laboratory
512 South 7th Street
Lincoln, Nebraska 68508

Phone: 402-437-5337
Fax: 402-437-5441

RECEIVED MAR 25 2011

Subject: ENG – Soil Mechanics – Utah (WRHB)
Tibble Fork Dam, Utah County

Date: MAR 22 2011

To: Bronson Smart
State Conservation Engineer
NRCS, Salt Lake City, Utah

File Code: 210-22
Job No.: 11-35WB

BACKGROUND

The soil mechanics tests requested for the samples submitted from the subject site have been completed and the test results are summarized on the attached reporting form NRCS-ENG-354. Twenty-three small size disturbed samples were submitted to the NDCSMC-Lincoln soil mechanics laboratory for testing from a dam rehabilitation project. A particle size analysis (gravel sieve, sand sieve, and mechanics analysis) as well as an as-received moisture content were performed on each sample. Atterberg limits, dispersion, and fine specific gravity tests were performed on selected samples as directed. This report summarizes the results of the tests performed on the samples.

INTERPRETATION AND DISCUSSION OF DATA

Soil Classification and Description

Based upon the index tests performed on the samples, the soils classify as different variable material according the Unified Soil Classification System. The tested samples range from relatively fine-grained, high plasticity, fat clay (CH soil) represented by samples 11-239 and 11-240 to coarse-grained, non-plastic, poorly graded gravel with silt and sand (GP-GM soil) represented by sample 11-243. Approximately 1/3 of the samples classify as coarse-grained, medium plastic, clayey sand with gravel (SC soil).

The as-received water content of these samples was also variable. As would be expected, the finer grained soils have higher as-received water contents than the sand and gravel soils. The complete index properties for the samples tested are included on the attached NRCS-ENG-354 reporting forms. Parentheses around the unified soil classifications for some samples on the NRCS-ENG-354 forms indicates that the classification of those samples is correlated from similar samples for which both a particle size analysis and an Atterberg limits testing were performed.

Dispersion Tests

Double hydrometer dispersion and crumb dispersion indication tests were performed on selected samples. All crumb readings were taken after one hour. These samples had average crumb readings of 1 or 2. Predominate crumb reading for the samples was a 1. Crumb tests with a result of 1 indicate that the sample has a low potential for being dispersive. A double

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hydrometer dispersion test was not performed on the samples with crumb test results of 1 at this time. Soils in the field similar to these samples tested are likely not dispersive.

A double hydrometer dispersion test was performed for two of the samples that had a crumb of 2. Three of the samples tested had average crumb readings of 2. Double hydrometer dispersion tests on the two finer grained samples yielded results of 35 and 15 percent dispersive clay. These test results indicate that these two soils have a slight potential for dispersion. The clay portion of these samples is likely slightly dispersive. The results of the crumb dispersion indication tests are included on the attached form NRCS-ENG-354.

Further testing and analysis for this project has not been requested at this time. If you have any questions about the test results or require any further testing or analysis for this project, please contact the NDCSMC-Lincoln at 402-437-5337.

Prepared by:

ARTHUR S. HEIBEL, E.I.
Engineer, Soil Mechanics Laboratory

Concurred by:

STEPHEN D. REINSCH, P.E.
Co-Director, NDCSMC, Soil Mechanics

Attachments:
Form NRCS-ENG-354, Soil Mechanics Laboratory Test Data, 3 sheets

cc:
Ana Vargo, Geologist, NRCS, Salt Lake City, UT

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

Sheet _1_ of _3_

11/18/10 UTAH (WRHB)

Lab. Sample No. 11-	Field Number	Location and Description Tibble Fork Dam (Utah Co.)	Sample Type	Depth ft.	Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified: Curve No.	Max γ_d p.c.f	w_0 %	Undisturbed Sample Data γ_d g/cc	w_N %	G_s	Special Tests: As-Received Moisture %				
232	3	TFSPT10-1	SB	15-16.5	9	14	18	28	32	34	42	47	53	59	68	76	82	92	100					(SC)	1							2.74	8.6				
233	5	TFSPT10-1	SB	25-26.5	15	20	28	41	44	47	53	57	60	67	74	83	90	100				33	17	SC	1							2.75	9.5				
234	8	TFSPT10-1	SB	35-36.5	16	20	28	41	44	47	55	59	63	68	73	79	83	95	100			38	20	SC	1							2.74	17.2				
235	9	TFSPT10-1	SB	38-39	1	3	9	15	16	17	24	49	36	48	61	73	79	89	100			—	NP	SM								2.70	2.4				
236	11	TFSPT10-1	SB	42.5-44	4	5	8	16	17	19	28	34	41	54	68	80	88	94	94	100				(SM)	1							2.72	6.6				
237	14	TFSPT10-1	SB	50-51.5	4	7	10	17	18	18	23	26	31	43	58	68	72	78	93	100				(GM)	2							2.73	9.8				
238	15	TFSPT10-1	SB	52.5-54																													9.8				
239	17	TFSPT10-1	SB	57.5-59	25	34	48	59	63	65	73	77	82	90	97	100						63	38	CH	1							2.74	30.5				

Date Reported: _____ Initials: _____

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

11/18/10 UTAH (WRHB)

Lab. Sample No. 11-	Field Number	Location and Description Tibble Fork Dam (Utah Co.)	Sample Type	Depth ft.	Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships ☐ Standard ☐ Modified: Curve No.	Max γ_d p.c.f	w_o %	Undisturbed Sample Data γ_d g/cc	w_N %	G_s	Special Tests: As-Received Moisture %				
240	20	TFSPT10-1	SB	65-66.5	28	36	52	68	71	72	80	82	83	85	95	98	100					73	46	CH	1							2.79	35.8				
241	3	TFSPT10-2	SB	15-16.5	10	14	22	31	34	37	47	54	60	65	72	77	79	83	88	100		33	15	SC	1							2.72	6.6				
242	7	TFSPT10-2	SB	35-36.5	12	15	21	30	34	35	40	43	46	51	67	82	93	98	100			37	20	SC	1							2.75	11.1				
243	11	TFSPT10-2	SB	52.5-54	4	6	8	11	12	13	16	19	22	30	41	51	57	64	78	100				GP-GM	1							2.69	2.9				
244	14	TFSPT10-2	SB	60.8-61.4	1	3	5	9	9	10	17	23	35	67	89	97	100							SW-SM								2.69	3.0				
245	15	TFSPT10-2	SB	62.5-63.25	3	5	8	12	13	14	18	22	28	36	50	64	73	82	100					(GM)									0.3				
246	18	TFSPT10-2	SB	70-70.5	4	7	10	15	16	17	21	24	29	39	49	60	66	78	85	100				(GM)									0.3				
247	2	TFSPT10-3	SB	10-11.5	11	13	20	28	31	35	43	48	53	59	65	72	76	80	84	100		32	15	GC								2.73	4.0				

Date Reported: _____ Initials: _____

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

Soil Mechanics Laboratory Data

Sheet _3__ of _3__

11/18/10		UTAH (WRHB)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																				
Lab. Sample No. 11-	Field Number	Location and Description Tibble Fork Dam (Utah Co.)	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f	w_o %	γ_d g/cc	w_N %	G_s	As-Received Moisture %			
248	4	TFSPT10-3	SB	20-20.25	8	12	17	27	30	32	40	45	51	56	64	71	74	82	82	85	100	32	14	GC								2.75	2.4			
249	8	TFSPT10-3	SB	40-41.2	19	28	32	46	51	52	59	62	66	71	79	88	93	100				39	20	CL	1							2.74	12.7			
250	12	TFSPT10-3	SB	50-51.05	15	20	29	39	44	45	51	54	59	64	72	80	84	89	89	100		43	23	SC	1								6.7			
251	15	TFSPT10-3	SB	57.5-59	25	28	32	43	45	51	62	65	69	75	81	84	89	94	100			59	31	SC	1							2.70	20.5			
252	19	TFSPT10-3	SB	67.5-69	9	13	18	27	29	32	41	46	53	65	80	90	96	100				29	13	SC	1							2.72	6.4			
253	22	TFSPT10-3	SB	75-76.5	22	26	28	39	46	52	72	74	77	84	91	98	99	100				43	18	SC	2	35						2.68	11.2			
254	25	TFSPT10-3	SB	82.5	26	33	37	55	59	66	97	97	98	100								45	20	CL	2	15						2.71	15.0			

Date Reported: _____ Initials: _____

APPENDIX C

Water Quality

TABLE 4A: WATER QUALITY DATA NEAR TIBBLE FORK RESERVOIR

Sample Site	Location	Date	Water Temp (c°)	pH	D.O (mg/l)	Salinity	TDS (g/l)	Flow (cfs)	D. Al (ug/l)	D.Cr (ug/l)	D. Fe (ug/l)	D.Mg (mg/l)	D. K (mg/l)	D.Ag (ug/l)	D.Ba (ug/l)	D.Ca (mg/l)	D.Cu (ug/l)	D.Mn (ug/l)	D. Na (mg/l)
11	N Fk AF Above Mary Ellen	6/2000	7.4	8.20	12.0	--	--	37.1	--	<5.0	64.6	11.7	<1.0	<2.0	50.2	27.0	<12.0	6.9	<1.0
12	N Fk AF Below Mary Ellen	6/2000	8.6	8.26	11.50	--	0.0930	44.4	35.3	<5.0	41.9	11.7	<1.0	<2.0	51.9	28.0	<12.0	5.7	<1.0
		7/2000	16.1	8.20	6.30	0.10	--	7.6	<30.0	<5.0	20.8	16.3	<1.0	<2.0	62.4	35.0	<12.0	8.4	<1.0
		8/2000	12.0	9.00	7.75	0.10	--	--	<30.0	<5.0	27.3	17.0	<1.0	<2.0	65.7	38.1	<12.0	11.9	1.71
		9/2000	7.6	8.03	9.29	0.14	--	--	<30.0	<5.0	39.5	17.2	<1.0	<2.0	60.0	35.4	<12.0	13.9	1.87
13	N Fk AF Above Major Evans	6/2000	10.90	8.05	5.00	--	0.0083	41.6	37.2	<5.0	52.4	11.9	<1.0	<2.0	56.8	28.6	<12.0	<5.0	<1.0
		9/2000	11.88	7.95	7.79	0.15	--	--	<30.0	<5.0	23.1	18.1	--	<2.0	64.7	39.3	<12.0	<5.0	--
15	N Fk AF Below Major Evans	6/2000	10.80	7.90	13.00	--	0.1030	42.0	33.7	<5.0	48.9	12.4	<1.0	<2.0	56.2	30.1	<12.0	<5.0	<1.0
		9/2000	12.25	7.96	7.38	0.14	--	--	<30.0	<5.0	21.2	17.9	--	<2.0	64.6	38.8	<12.0	<5.0	--
16	N.Fk AF Above Silver Creek	6/2000	11.50	7.98	8.00	--	107.00	48.5	36.0	<5.0	35.1	12.7	<1.0	<2.0	51.9	31.4	<12.0	<5.0	<1.0
		9/2000	7.13	8.05	9.90	0.16	--	--	<30.0	<5.0	<20.0	18.5	<1.0	<2.0	62.8	41.1	<12.0	<5.0	1.56
17	N Fk AF Below Silver Creek	6/2000	12.1	8.30	13.00	--	0.1056	44.6	<30.0	--	--	11.4	<1.0	--	--	30.7	--	--	1.54
		7/2000	13.8	8.40	8.60	0.20	--	10.5	<30.0	8.1	<20.0	17.7	<1.0	<2.0	69.6	43.2	<12.0	<5.0	1.34
		8/2000	10.6	8.40	8.80	0.20	--	--	<30.0	<5.0	<20.0	18.3	<1.0	<2.0	62.2	44.7	<12.0	<5.0	1.70
		9/2000	8.98	8.22	9.26	0.16	--	--	<30.0	<5.0	<20.0	18.2	<1.0	<2.0	63.1	42.3	<12.0	<5.0	1.62
18	N.Fk AF Above Tibble Fork Res	6/2000	12	7.5	9.5	--	0.1551	60.2	--	<3.0	<1.0	16.8	<1.0	<2.0	<5.0	48.8	<12.0	34.0	1.96
		7/2000	12.5	8	7.6	0.30	--	25.1	93.0	<20.0	25.6	--	<2.0	34.8	53.8	72.3	<12.0	<5.0	1.88
		8/2000	14.1	7.8	8.46	0.30	--	--	<30.0	<5.0	<20.0	25.6	<1.0	<2.0	43.3	82.4	<12.0	<5.0	3.15
		9/2000	11.51	7.93	9.11	--	--	--	<30.0	<5.0	<20.0	27.4	<1.0	<2.0	47.5	72.1	<12.0	<5.0	2.74
19	N.Fk AF Below Tibble Fork Res.	6/2000	9.8	8.1	5.00	--	0.1617	73.7	<30.0	<5.0	27.0	14.1	<1.0	<2.0	63.4	48.5	<12.0	8.9	2.13
		9/2000	11.37	7.54	7.80	0.25	--	--	<30.0	<5.0	23.6	22.9	--	<2.0	62.7	73.9	<12.0	8.3	--
20	N Fk AF Above S Fork Confluence	6/2000	11.15	8.42	9.32	--	0.2000	--	<30.0	<5.0	<20.0	15.7	<1.0	<2.0	59.5	50.5	<12.0	6.4	1.69
		7/2000	13.2	8.10	7.30	0.20	--	33.9	<30.0	<5.0	<20.0	21.5	<1.0	<2.0	61.1	66.2	<12.0	<5.0	2.36
		8/2000	17.3	8.20	7.99	0.20	--	--	<30.0	<5.0	26.5	21.8	1.28	<2.0	59.2	69.0	<12.0	5.4	11.00
		9/2000	11.5	8.26	9.24	0.23	--	--	<30.0	<5.0	<20.0	21.5	<1.0	<2.0	65.0	63.7	<12.0	<5.0	2.74

Highlighted numbers are readings of concern.

TABLE 4B: WATER QUALITY DATA NEAR TIBBLE FORK RESERVOIR

Sample Site	Location	Date	D. Se (ug/l)	D.As (ug/l)	D. Cd (mg/l)	D. Hg (ug/l)	D.Pb (ug/l)	D.Zn (ug/l)	Total Hardness (mg/l)	Total Alkalinity (mg/l)	Turbidity NTU	HCO^3 (mg/l)	SO^4 (mg/l)	Total PO^4 (mg/l)
11	N Fk AF Above Mary Ellen	6/2000	<1.0	<5.0	<1.0	<0.02	<3.0	56.1	115.5	99	1.00	120	26.0	<0.02
12	N Fk AF Below Mary Ellen	6/2000	<1.0	<5.0	<1.0	<0.02	<3.0	56.8	118.0	93	2.20	114	26.7	<0.02
		7/2000	<1.0	<5.0	<1.0	<0.02	<3.0	47.2	154.4	129	0.67	157	<20.0	<0.02
		8/2000	<1.0	<5.0	<1.0	<0.02	<3.0	35.6	165.0	143	0.85	174	<20.0	<0.02
		9/2000	<1.0	<5.0	<1.0	<0.02	3.1	40.1	159.1	137	1.51	167	20.8	--
13	N Fk AF Above Major Evans	6/2000	<1.0	<5.0	<1.0	<0.02	[illegible]	51.3	120.3	98	0.95	120	<20.0	0.025
			<1.0	<5.0	<1.0	<0.02								
		9/2000					<3.0	<30.0	172.5	150	--	182	25.3	--
15	N Fk AF Below Major Evans	6/2000	<1.0	<5.0	<1.0	<0.02	3.0	45.1	126.1	102	0.78	124	27.9	<0.02
			<1.0	<5.0	<1.0	<0.02								
		9/2000					<3.0	<30.0	170.5	148	--	181	<20.0	--
16	N Fk AF Above Silver Creek	6/2000	<1.0	<5.0	<1.0	<0.02	[illegible]	42.0	130.6	106	1.26	129	28.0	0.045
			<1.0	<5.0	<1.0	<0.02								
		9/2000					<3.0	37.2	178.7	155	0.58	189	23.0	--
17	N Fk AF Below Silver Creek	6/2000	--	<5.0	<1.0	<0.02	--	--	123.5	103	2.06	126	<20.0	<0.02
		7/2000	<1.0	<5.0	<1.0	<0.02	<3.0	33.3	180.6	147	0.28	180	<20.0	0.053
		8/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	186.6	157	0.29	192	641.0	--
		9/2000	<1.0	<5.0	<1.0	<0.02	<3.0	35.1	180.4	156	1.09	190	23.3	--
18	N.Fk AF Above Tibble Fork Res	6/2000	2.0	<5.0	<1.0	[illegible]	<3.0	<30.0	190.9	118	1.25	144	49.7	<0.02
		7/2000	2.32	<5.0	<1.0	--	<3.0	--	526.0	0.3	348.00	--	154.0	0.073
		8/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	310.9	164	0.47	200	145.0	<0.02
		9/2000	1.2	<5.0	<1.0	<0.02	<3.0	<30.0	292.6	167	0.23	204	144.0	--
19	N.Fk AF Below Tibble Fork Res	6/2000	<1.0	<5.0	<1.0	<0.02	<3.0	38.7	179.0	127	0.78	154	39.3	0.025
			<1.0	<5.0	<1.0	<0.02								
		9/2000					<3.0	<30.0	278.6	166	--	202	104.0	--
20	N.Fk AF Above S Fork Confluence	6/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	190.6	132	1.26	161	52.6	--
		7/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	253.6	148	0.57	180	88.1	0.073
		8/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	261.9	149	0.83	181	100.0	<0.02
		9/2000	<1.0	<5.0	<1.0	<0.02	<3.0	<30.0	247.4	159	1.44	194	92.5	--

Highlighted numbers are readings of concern.

STORET No	Lab No	Site Name	Date MMDDYY	Time HHMM	F-Air Temp Deg C	F-H2O Temp Deg C	F-pH	F-D.O. mg/l	DO%	Salinity	F-Sp. Cond. umhos/cm	ORP	TDS g/L	Field Turbidity NTU	Flow gpm	Flow cfs	D_Al ug/l	D_Cr ug/l	D_Fe ug/l	D_Mg mg/l	D_K mg/l	D_Ag ug/l	D_Ba ug/l	D_Ca mg/l	D_Cu ug/l	D_Mn ug/l	D_Na mg/l	D_Se ug/l	D_As ug/l
	200005009	AF-11A NFAF bl Shaffer, ab Mary Ellen	6/8/2000	930	22.5	7.4	8.2	12			199	299		5		37.1		<5.0	64.8	11.7	<1	<2.0	50.2	27	<12.0	6.9	<1.0	<1.0	<5.0
	200004995	AF-12 NFAF bl Mary Ellen	6/7/2000	1100	21.5	8.6	8.26	11.5			185	185	253	0.093	4.2	44.4	35.3	<5.0	41.9	11.7	<1	<2.0	51.9	28	<12.0	5.7	<1.0	<1.0	<5.0
591215	200006631	AF-12 NFAF bl Mary Ellen	7/19/2000	1135	24	16.1	8.2	6.3	64	0.1	248	296				7.8	<30.0	<5.0	20.8	16.3	<1	<2.0	62.4	35	<12.0	6.4	<1.0	<1.0	<5.0
591215	200007794	AF-12 NFAF bl Mary Ellen	8/22/2000	1450	23	12	9	7.75	71	0.1	212.3	282					<30.0	<5.0	27.3	17	<1	<2.0	65.7	38.1	<12.0	11.9	1.71	<1.0	<5.0
	200009466	AF-12 NFAF bl Mary Ellen	9/26/2000	1315	14	7.62	8.03	9.29	90.8	0.14		298	263				<30.0	<5.0	39.5	17.2	<1	<2.0	60	35.4	<12.0	13.9	1.87	<1.0	<5.0
	200005005	AF-13 NFAF ab Major Evans	6/8/2000	1305	23.1	10.9	8.05	5			144	165	242	0.0083	1	41.8	37.2	<5.0	52.4	11.9	<1	<2.0	58.8	28.6	<12.0	<5.0	<1.0	<1.0	<5.0
591216	200009002	AF-13 NFAF ab Major Evans	9/19/2000	1400	21	11.68	7.95	7.79	82.4	0.15		309	331				<30.0	<5.0	23.1	16.1		<2.0	64.7	39.3	<12.0	<5.0		<1.0	<5.0
	200005013	AF-14 Major Evans @ Mouth ab NF	6/8/2000	1350	22	11.9	8.5	10			309	330	468			7.4	<30.0	<5.0	<20.0	16.1	<1	<2.0	53.2	34.3	<12.0	<5.0	<1.0	<1.0	<5.0
591217	200009003	AF-14 Major Evans @ Mouth ab NF	9/19/2000	1445	21	12.42	7.96	7.37	81.2	0.16		0.00	399				<30.0	<5.0	<20.0	19.5		<2.0	54.9	36.1	<12.0	<5.0		<1.0	<5.0
	200005001	AF-15 NFAF bl Major Evans	6/8/2000	1445	21.5	10.8	7.9	13			206			0.103	5	42	33.7	<5.0	48.9	12.4	<1	<2.0	56.2	30.1	<12.0	<5.0	<1.0	<1.0	<5.0
591218	200009004	AF-15 NFAF bl Major Evans	9/19/2000	1530	21	12.25	7.96	7.38	80.4	0.14		307	342				<30.0	<5.0	21.2	17.9		<2.0	64.6	38.8	<12.0	<5.0		<1.0	<5.0
	200005011	AF-16 NFAF ab Silver Creek Confluence	6/8/2000	1545	23	11.5	7.96	8			214		238	107	4.2	48.5	36	<5.0	35.1	12.7	<1	<2.0	51.9	31.4	<12.0	<5.0	<1.0	<1.0	<5.0
	200009467	AF-16 NFAF ab Silver Creek Confluence	9/27/2000	1230	21	7.13	8.05	9.9	95.2	0.16		332	343				<30.0	<5.0	<20.0	18.5	<1	<2.0	62.8	41.1	<12.0	<5.0	1.56	<1.0	<5.0
	200005308	AF-17 NFAF bl Silver Creek	6/15/2000	1300	24	12.1	8.3	13			215			0.1058		44.6	<30.0			11.4	<1			30.7			1.54		
591220	200006620	AF-17 NFAF bl Silver Creek	7/18/2000	1330	27.5	13.8	8.4	8.6	82.1	0.2	258	328				10.5	<30.0	8.	<20.0	17.7	<1	<2.0	69.6	43.2	<12.0	<5.0	1.34	<1.0	<5.0
591220	200007809	AF-17 NFAF bl Silver Creek	8/22/2000	1100	22	10.6	8.4	8.8	79.5	0.2	229.9	317.4					<30.0	<5.0	<20.0	18.3	<1	<2.0	62.2	44.7	<12.0	<5.0	1.7	<1.0	<5.0
	200009468	AF-17 NFAF bl Silver Creek	9/26/2000	1425	18	8.98	8.22	9.26	94	0.16		337	273				<30.0	<5.0	<20.0	18.2	<1	<2.0	63.1	42.3	<12.0	<5.0	1.62	<1.0	<5.0
	200005309	AF-18 NFAF ab Tibble Fork Res.	6/12/2000	1615	23.5	12	7.5	9.5			308			0.1551		60.2		<3.0	<1.0	16.8	<1	<0.2	<5.0	48.8	<12.0	34	1.96	<2.0	<5.0
591284	200006621	AF-18 NFAF ab Tibble Fork Res.	7/18/2000	1130	25	12.5	8	7.8	72	0.3	416	546				25.1	93	<20.0	25.6	<1	<2.0	34.8	53.8	72.3<	<3.0	<1.0	188	2.32	<1.0
591284	200007795	AF-18 NFAF ab Tibble Fork Res.	8/17/2000	1445	27	14.1	7.8	8.46	82.2	0.3	441.4	558					<30.0	<5.0	<20.0	25.6	<1	<2.0	43.3	82.4	<12.0	<5.0	3.15	<1.0	<5.0
	200009469	AF-18 NFAF ab Tibble Fork Res.	9/26/2000	1515		11.51	7.93	9.11	97.8			579	275				<30.0	<5.0	<20.0	27.4	<1	<2.0	47.5	72.1	<12.0	<5.0	2.74	1.2	<5.0
	200005311	AF-19 NFAF bl Tibble Fork Reservoir	6/15/2000	1000	22.5	9.8	8.1	5			327			0.1617		73.7	<30.0	<5.0	27	14.1	<1	<2.0	63.4	48.5	<12.0	8.9	2.13	<1.0	<5.0
591281	200009005	AF-19 NFAF bl Tibble Fork Reservoir	9/19/2000	1030	22	11.37	7.64	7.8	82.8	0.25	352	473	361				<30.0	<5.0	23.6	22.9		<2.0	62.7	73.9	<12.0	8.3		<1.0	<5.0
	200005434	AF-20 NFAF ab confl. W/ SFAF	6/20/2000		19	11.15	8.42	9.32	100		353			0.2			<30.0	<5.0	<20.0	15.7	<1	<2.0	59.8	50.5	<12.0	8.4	1.69	<1.0	<5.0
499499	200006623	AF-20 NFAF ab confl. W/ SFAF	7/18/2000	1035	23.5	13.2	8.1	7.3	70.5	0.2	357	461				33.9	<30.0	<5.0	<20.0	21.5	<1	<2.0	61.1	66.2	<12.0	<5.0	2.36	<1.0	<5.0
499499	200007793	AF-20 NFAF ab confl. W/ SFAF	8/17/2000	1530	23.5	17.3	8.2	7.99	83.3	0.2	394	461.9					<30.0	<5.0	28.5	21.8	1.28	<2.0	59.2	69	<12.0	5.4	11	<1.0	<5.0
	200009470	AF-20 NFAF ab confl. W/ SFAF	9/27/2000	1530	22.5	11.5	8.26	9.24	98.8	0.23		479	359				<30.0	<5.0	<20.0	21.5	<1	<2.0	65	63.7	<12.0	<5.0	2.74	<1.0	<5.0

CY - 2000 Water Samples in AFC

62	73	66	71	19														18	23	25	18	27	29		11		HCO	24	17					32	28	40
D_Cd ug/l	D_Hg ug/l	D_Pb ug/l	D_Zn ug/l	T. Hardns mg/l	T-As ug/l	T-Ca ug/l	T-Pb ug/l	T-Hg ug/l	T-Zn ug/l	T-Cu ug/l	T-Ag ug/l	T-Al ug/l	T-Ba mg/l	Chro mium ug/l	T-Fe mg/l	T-Mn ug/l	T-Se ug/l	Cl- mg/l	CO2 mg/l	OH- mg/l	Tot. Alk. mg/l	Turbi dity NTU	TDS @ 180C mg/l	CO3 Solids mg/l	TSS mg/l	Ammonia N mg/l	3- mg/l	CO3 mg/l	SO4 mg/l	Total Cations mg/l, me/l	Total Anions mg/l, me/l	Total Ions mg/l	Lab pH	NO2+NO3, N mg/l	L-Sp. Cond umhos/cm	T PO4 mg/l
<1.0	<0.2		56.1	115.5														<3	1	0	99	1	106	59	6.4		120	0	26	41,2.4	86,2.8	129	8.21	0.2	186	0.02
<1.0	<0.2		56.8	118														<3	1	0	93	2.2	106	56	13.2		114	0	26.7	42,2.4	86,2.5	128	8.19	0.2	186	<0.02
<1.0	<0.2	<3.0	47.2	154.4														<3	1	0	129	0.67	176	77	<4.0		157	0	<20.0	53,3.2	100,3.1	153	8.44	0.1	285	<0.02
<1.0	<0.2	<3.0	35.8	165														<3	1	0	143	0.85	180	86	<4.0		174	0	<20.0	56,3.4	109,3.4	167	8.47	<0.1	304	<0.02
<1.0	<0.2	3.1	40.1	159.1	<5.0	<1	37.4	<0.2	81.8	<12.0	<2.0	81.1	0.06	<5.0	0.194	28.3	<1.0		1	0	137	1.51	160	82	8.8	<0.05	167	0	20.8				8.39	0.1	309	
<1.0	<0.2		51.3	120.3														<3	1	0	98	0.95	108	59	6.8		120	0	<20.0	43,2.5	82,2.5	125	8.31	0.2	188	0.025
<1.0	<0.2	<3.0	<30.0	172.5															1	0	150		170	90	<4.0	<0.05	182	0	25.3				8.59	0.1		
<1.0	<0.2	<3.0	<30.0	169.1														<3	1	0	166	0.74	184	98	<4.0		202	0	27.8	55,3.9	130,4.0	185	8.61	0.2	290	0.042
<1.0	<0.2	<3.0	<30.0	181.1															1	0	172		178	103	<4.0	<0.05	210	0	<20.0				8.66	<0.1		
<1.0	<0.2	3	45.1	126.1														<3	1	0	102	0.76	112	61	8		124	0	27.9	46,2.6	92,2.7	137	8.37	0.2	199	<0.02
<1.0	<0.2	<3.0	<30.0	170.5															1	0	146		168	89	<4.0	<0.05	181	0	<20.0				8.55	<0.1		
<1.0	<0.2		42	130.6														<3	1	0	106	1.26	120	64	6		129	0	28	46,2.7	95,2.6	141	8.32	0.2	206	0.045
<1.0	<0.2	<3.0	37.2	178.7															1	0	155	0.56	206	93	<4.0	<0.05	189	0	23				8.4	0.1	328	
	<0.2			123.5	<5	<1	13.3	<.2	85.2	<12	<2	63.3	0.04	<5	0.16	9.4	<1		1	0	103	2.06	132	62	11.6		126	0	<20	45,2.6	85,2.6	130	8.46	0.1	221	<0.02
<1.0	<0.2	<3.0	33.3	180.6														<3	1	0	147	0.28	182	88	<4.0		180	0	<20.0	63,3.7	111,3.4	174	8.55	0.1	322	0.053
<1.0	<0.2	<3.0	<30.0	186.6														<3	1	0	157	0.29	196	94	<4.0		192	0	641	66,3.8	738,15.5	804,%	8.38	0.1	345	
<1.0	<0.2	<3.0	35.1	180.4	<5.0	<1	9.2	<0.2	57.1	<12.0	<2.0	36.6	0.051	<5.0	0.091	6.1	<1.0		1	0	156	1.09	184	94	4.4	<0.05	190	0	23.3				8.46	0.1	330	
<1.0		<5.0	<30.0	190.9	<5.0	<1	10.3	<0.2	52.1	<12.0	<2.0	49.7	0.04	<5.0	0.116	6.3	<1.0	<3	1	0	118	1.25	196	71	<4.0		144	0	49.7	69,3.9	124,3.5	193	8.388	0.1	348	<0.02
		<5.0	1	528														122	<3	0.03	0.3	348	<0.2	<4.0	<5.0		0	0	154	101,5.8	218,5.7	319,%	8.34	0.1	<30.0	0.073
<1.0	<0.2	<3.0	<30.0	310.9														5.5	1	0	164	0.47	394	98	<4.0		200	0	145	112,6.4	249,6.4	361,%	8.34	0.11	579	<0.02
<1.0	<0.2	<3.0	<30.0	292.6	<5.0	<1	<3.0	<0.2	31.7	<12.0	<2.0	<30	0.042	<5.0	0.0313	<5.0	<1.0	3	2	0	167	0.23	370	100	<4.0	<0.05	204	0	144				8.29	0.1	527	
<1.0	<0.2	<3.0	38.7	179	<5.0	<1	4.2	<0.2	39.5	<12.0	<2.0	<30	0.046	<5.0	0.08	11	<1.0	<3	1	0	127	0.78	194	76	<4.0		154	0	39.3	66,3.7	118,3.4	184	8.44	0.1	326	0.025
<1.0	<0.2	<3.0	<30.0	278.6															2	0	166		328	99	<4.0	<0.05	202	0	104				8.29	0.1		
<1.0	<0.2	<3.0	<30.0	190.8	<5.0	<1	5.3	<0.2	55.1	<12.0	<2.0	68.3	0.041	<5.0	0.108	12.8	<1.0	<3	1	0	132	1.26	210	79	<4.0		161	0	52.6	69,3.9	135,3.8	204	8.54	0.1	354	
<1.0	<0.2	<3.0	<30.0	253.6														<3	1	0	148	0.57	296	89	<4.0		180	0	86.1	91,5.2	180,4.9	271,%	8.45	0.1	461	0.073
<1.0	<0.2	<3.0	<30.0	261.9														17	1	0	149	0.83	366	89	<4.0		181	0	100	103,5.8	206,5.5	309,%	8.51	<0.1	734	<0.02
<1.0	<0.2	<3.0	<30.0	247.4														<3	1	0	159	1.44	344	95	<4.0	<0.05	194	0	92.5				8.51	0.1	464	

5.8 47.55.0
3.4
3.5
3.6

APPENDIX D

Piezometer Records

Appendix E1. Piezometer Level Readings

Device No.	Device Name	Description
1	Reservoir Level	Measured from the lip of the principal spillway (Elev = 6377) in inches
2	1A	Surface elevation = 6389.3', Depth = 37'
3	1B	Surface elevation = 6389.3', Depth = 54'
4	2A-a	Surface elevation = 6389.2', Depth = 44.5'
5	2B-a	Surface elevation = 6389.2', Depth = 42'
6	2B-b	Surface elevation = 6389.2', Depth = 61.5'
7	3a	Surface elevation = 6333', Depth = 20'
8	3b	Surface elevation = 6333', Depth = 30'
9	4a	Surface elevation = 6343', Depth = 20'
10	4b	Surface elevation = 6343', Depth = 30'
11	5a	Surface elevation = 6366', Depth = 20'
12	5b	Surface elevation = 6366', Depth = 30'

Date	Reservoir Level $Elev_{Calc}$, ft. amsl	B-1 Shal. 1A $Elev_{Calc}$, ft. amsl	B-1 Deep 1B $Elev_{Calc}$, ft. amsl	B-2A 2A-a $Elev_{Calc}$, ft. amsl	B-2 Shal. 2B-a $Elev_{Calc}$, ft. amsl	B-2 Deep 2B-b $Elev_{Calc}$, ft. amsl	B-3 Shal. 3A $Elev_{Calc}$, ft. amsl	B-3 Deep 3B $Elev_{Calc}$, ft. amsl	B-4 Shal. 4A $Elev_{Calc}$, ft. amsl	B-4 Deep 4B $Elev_{Calc}$, ft. amsl	B-5 Shal. 5A $Elev_{Calc}$, ft. amsl	B-5 Deep 5B $Elev_{Calc}$, ft. amsl
6/8/2004	6379.9											
6/30/2004	6380.3	6352.3	6359.3	6354.2	6357.2	6385.2	6330	6330	6335	6334	6349	6349
7/9/2004	6380.7	6352.3	6360.3	6354.2	6357.2	6385.2	6330	6330	6335	6334	6349	6349
7/14/2004	6380.8	6352.7	6359.6	6353.9	6357.3	6385.2	6330.1	6330	6334.6	6333.8	6348.6	6348.8
7/20/2004	6380.8	6352.7	6359.6	6353.9	6357.3	6385.2	6330.1	6330	6334.6	6333.8	6348.6	6348.8
7/29/2004	6380.8	6352.7	6359.5	6353.9	6357.3	6385.3	6330.1	6330	6334.6	6333.8	6348.6	6348.7
8/12/2004	6380.8	6352.7	6359.5	6353.8	6357.3	6385.4	6330.1	6330	6334.6	6333.8	6348.6	6348.7
8/19/2004	6381.0	6352.7	6359.4	6353.8	6357.2	6385.3	6330.1	6330	6334.8	6333.9	6348.6	6348.8
8/26/2004	6381.1	6352.7	6359.5	6353.8	6357.2	6385.3	6330.1	6330	6334.8	6333.9	6348.6	6348.8
8/31/2004	6381.2	6352.7	6359.4	6353.8	6357.1	6385.2	6330.1	6330	6334.6	6333.9	6348.6	6348.7
9/10/2004	6381.2	6352.7	6359.5	6353.9	6357.1	6385.1	6330.1	6330	6334.6	6333.9	6348.6	6348.7
9/22/2004	6381.2	6352.7	6359.5	6353.9	6357.1	6385.2	6330.1	6330	6334.6	6333.9	6348.6	6348.7
9/29/2004	6381.3	6352.7	6359.4	6353.9	6357.1	6384.9	6330.1	6330	6334.6	6333.8	6348.6	6348.7
10/13/2004	6381.2	6352.7	6359.4	6353.9	6357.1	6384.8	6330	6330	6334.5	6333.8	6348.6	6348.7
4/23/2005		6353.0	6362.0	6355.9	6358.8	6384.9	6330.5	6330.3	6334.9	6334.1	6349.4	6349.5
5/1/2005	6380.1	6353.0	6361.8	6356.2	6359.8	6384.9	6330.5	6330.3	6334.9	6334.1	6349.4	6349.5
5/9/2005	6379.8	6353.1	6362.0	6356.1	6359.9	6385	6330.6	6330.5	6335	6334.2	6349.4	6349.6
5/16/2005	6379.7	6353.1	6362.2	6356.7	6360.1	6385.3	6330.6	6330.5	6335.1	6334.2	6349.4	6349.5
5/24/2005	6378.0	6353.2	6362.4	6356.5	6358.5	6385.3	6330.8	6331	6335.1	6334.3	6350	6350.3
5/31/2005	6377.0	6353.2	6362.2	6356.2	6359.2	6385.3	6331.2	6331.7	6335.3	6334.4	6350	6350.4
6/8/2005	6378.0	6353.2	6362.2	6356.2	6359.2	6385.3	6331.1	6331.5	6335.3	6334.4	6349.9	6350.4
6/14/2005	6379.3	6353.4	6361.5	6356.5	6359.8	6386.2	6331.4	6331.8	6335.4	6334.3	6349.4	6349.8
6/28/2005	6376.0	6353.4	6361.0	6356.4	6359.5	6386.2	6331.4	6331.8	6335.4	6334.4	6349.4	6349.8
7/6/2005	6379.2	6353.5	6360.8	6356.1	6358.4	6386.3	6331.5	6331.7	6335.5	6334.2	6349.4	6349.8
7/21/2005	6379.3	6353.5	6360.7	6355.5	6358.2	6386.2	6331.5	6331.6	6335.5	6334.1	6349.2	6349.5
7/27/2005	6379.8	6353.5	6360.4	6355	6358.1	6386	6331.3	6331.2	6335.2	6334.1	6349.2	6349.5
8/3/2005	6380.0	6353.5	6360.4	6354.9	6358.1	6386	6331.3	6331.5	6335.3	6334	6349.1	6349.3
8/11/2005	6380.1	6353.5	6360.4	6354.8	6358.2	6386	6331.3	6331.5	6335.2	6334	6349.1	6349.2
8/19/2005	6380.2	6353.5	6359.5	6354.7	6358	6385.9	6331.1	6331.5	6335.2	6334	6348.9	6349.2
8/31/2005	6380.4	6353.5	6360.1	6354.7	6357.9	6385.7	6331.1	6331.4	6335.1	6334	6348.9	6349.1
9/13/2005	6380.6	6353.5	6360.0	6354.7	6357.8	6385.7	6331.1	6331.3	6335.1	6334	6348.9	6349.1
10/2/2005	6380.8	6353.6	6360.0	6354.6	6357.7	6385.4	6330.8	6331.3	6335	6334	6348.8	6349
10/13/2005	6380.9	6353.6	6360.0	6354.6	6357.6	6385.3	6330.8	6331.2	6335	6333.9	6348.8	6349
10/19/2005	6381.0	6353.6	6360.0	6354.6	6357.6	6385.3	6330.8	6330.2	6335	6333.9	6348.8	6349
4/16/2006	6380.0	6353.6	6361.6	6356	6360.4	6384.5	6330.6	6331	6335	6334.4	6349.9	6350
4/27/2006	6380.0	6353.6	6362.1	6355.5	6359.9	6384.5	6330.8	6331.4	6335.1	6334.3	6349.6	6349.8
5/2/2006	6379.8	6353.7	6361.6	6355.6	6359.9	6384.4	6330.9	6331.4	6335.4	6334.3	6349.5	6349.7
5/11/2006	6379.5	6353.7	6361.6	6355.7	6359.8	6384.5	6331	6331.5	6335.2	6334.2	6349.5	6349.7
5/16/2006	6377.0	6353.7	6361.3	6355.4	6359.6	6384.4	6331	6331.5	6335.3	6334.3	6349.5	6349.7
5/24/2006	6377.0	6353.8	6361.2	6355.3	6359.8	6384.3	6331.1	6331.6	6335.3	6334.4	6349.8	6350.1
6/1/2006	6379.2	6353.8	6361.2	6355.4	6359.8	6384.3	6331.1	6331.5	6335.2	6334.4	6349.8	6350.1
6/6/2006	6377.0	6353.9	6361.2	6355.2	6359.5	6384.2	6331.3	6331.7	6335.4	6334.3	6349.5	6349.7
6/15/2006	6377.0	6353.9	6361.2	6355.2	6359.4	6384.2	6331.3	6331.7	6335.4	6334.3	6349.5	6349.8
6/20/2006	6378.5	6353.9	6360.7	6355.6	6359.4	6384.1	6331.1	6331.6	6335.4	6334.2	6349.2	6349.4
6/28/2006	6378.8	6353.9	6360.5	6355.3	6359.3	6384.1	6331.4	6331.6	6335.3	6334.2	6349.1	6349.3
7/6/2006	6378.8	6353.9	6360.4	6355.5	6359.2	6384	6331.3	6331.6	6335.3	6334.1	6349	6349.1
7/12/2006	6378.9	6353.9	6360.4	6355.5	6359.2	6384.1	6331.3	6331.6	6335.3	6334.1	6349	6349.1
7/19/2006	6379.2	6353.9	6360.3	6355.4	6359	6383.8	6331.2	6331.6	6335.2	6334.1	6349	6349.2
7/26/2006	6379.8	6353.9	6360.2	6355.3	6358.9	6383.8	6331.1	6331.6	6335.1	6334.1	6349	6349.1
8/7/2006	6379.8	6353.9	6360.3	6355.6	6358.2	6383.8	6331	6331.5	6335.1	6334.1	6348.9	6349.1
8/15/2006	6379.8	6353.9	6360.1	6355.4	6358.1	6383.7	6331	6331.5	6335.1	6334.1	6348.9	6349.1
8/29/2006	6380.4	6353.9	6360.1	6355	6358	6383.6	6330.8	6331.4	6335.1	6334	6348.9	6349
9/25/2006	6380.8	6353.9	6360.0	6356	6357.8	6383.4	6330.7	6331.3	6335	6334	6348.8	6348.9
4/9/2007	6380.1	6353.7	6359.4	6355.3	6357.5	6381.9	6330.3	6330.7	6334.8	6334	6348.8	6348.8
4/30/2007	6380.0	6353.7	6359.2	6354.9	6356.9	6381.7	6330.3	6330.7	6334.8	6334	6348.8	6348.9
5/9/2007	6380.1	6353.8	6359.2	6354.9	6356.9	6381.8	6330.3	6330.7	6334.8	6334	6348.8	6348.9
5/17/2007	6379.5	6353.7	6359.3	6354.8	6357.1	6381.6	6330.3	6330.7	6334.8	6334	6348.8	6348.9
5/25/2007	6379.6	6353.7	6359.4	6354.9	6357.1	6381.7	6330.3	6330.7	6334.8	6334	6348.8	6348.9
5/31/2007	6379.7	6353.7	6359.4	6354.4	6357.2	6381.4	6330.3	6330.6	6334.9	6334	6348.8	6348.9
6/13/2007	6379.8	6353.7	6359.4	6354.9	6357.3	6381.3	6330.3	6330.6	6334.8	6334	6348.7	6348.9
6/29/2007	6379.8	6353.7	6359.3	6354.9	6357.3	6381.3	6330.3	6330.6	6334.8	6334	6348.7	6348.8
7/5/2007	6380.0	6353.7	6359.3	6354.3	6356.9	6381.2	6330.3	6330.6	6334.8	6334	6348.8	6348.9
7/12/2007	6380.1	6353.7	6359.3	6354.2	6356.8	6381.1	6330.3	6330.6	6334.8	6334	6348.7	6348.8
7/20/2007	6380.1	6353.7	6359.3	6354.2	6356.7	6381.1	6330.3	6330.6	6334.8	6334	6348.7	
7/24/2007	6380.8	6353.7	6359.3	6354.3	6356.7	6381	6330.3	6330.6	6334.8	6334	6348.7	6348.8
8/3/2007	6380.8	6353.7	6359.3	6354.2	6356.7	6380.9	6330.3	6330.6	6334.7	6334	6348.7	6348.6
8/17/2007	6380.9	6353.6	6359.3	6354.1	6356.7	6380.9	6330.3	6330.6	6334.7	6334	6348.7	6348.6
9/12/2007	6381.0	6353.7	6359.3	6353.7	6356.7	6380.6	6330.2	6330.5	6334.7	6333.9	6348.6	6348.7

Date	Reservoir Level $Elev_{Calc}$, ft. amsl	B-1 Shal. 1A $Elev_{Calc}$, ft. amsl	B-1 Deep 1B $Elev_{Calc}$, ft. amsl	B-2A 2A-a $Elev_{Calc}$, ft. amsl	B-2 Shal. 2B-a $Elev_{Calc}$, ft. amsl	B-2 Deep 2B-b $Elev_{Calc}$, ft. amsl	B-3 Shal. 3A $Elev_{Calc}$, ft. amsl	B-3 Deep 3B $Elev_{Calc}$, ft. amsl	B-4 Shal. 4A $Elev_{Calc}$, ft. amsl	B-4 Deep 4B $Elev_{Calc}$, ft. amsl	B-5 Shal. 5A $Elev_{Calc}$, ft. amsl	B-5 Deep 5B $Elev_{Calc}$, ft. amsl
9/25/2007	6381.0	6353.7	6359.3	6353.6	6356.7	6380.6	6330.2	6330.5	6334.7	6333.9	6348.6	6348.7
10/31/2007	6381.1	6353.7	6359.3	6353.7	6356.7	6380.6	6330.2	6330.5	6334.6	6333.9	6348.6	6348.7
4/29/2008	6380.1	6353.4	6359.5	6354.5	6356.8	6378.6	6330.3	6330.3	6334.7	6334	6348.8	6348.9
5/8/2008	6380.0	6353.4	6359.4	6354.4	6356.9	6378.6	6330.2	6330.3	6334.7	6334	6348.8	6348.9
5/15/2008	6379.9	6353.4	6359.4	6354.6	6356.8	6378.5	6330.4	6330.3	6334.7	6334	6348.8	6348.9
5/21/2008	6379.0	6353.4	6359.4	6354.8	6356.9	6378.4	6330.4	6330.3	6334.7	6334	6349	6349.1
5/28/2008	6379.6	6353.4	6359.5	6355	6357	6378.4	6330.4	6330.3	6334.7	6334	6348.9	6349.1
6/3/2008	6379.3	6353.4	6359.3	6355	6356.9	6378.4	6330.5	6330.4	6334.7	6334.1	6349	6349.2
6/10/2008	6379.4	6353.4	6359.3	6355.3	6357	6378.3	6330.5	6330.4	6334.7	6334.1	6349	6349.1
6/19/2008	6378.7	6353.4	6359.3	6354.8	6356.8	6378.3	6330.6	6330.5	6334.9	6334.1	6349	6349
6/25/2008	6378.7	6353.5	6359.1	6354.5	6356.9	6378.2	6330.7	6330.5	6334.8	6334.1	6349.1	6349.2
7/1/2008	6378.5	6353.5	6359.1	6354.4	6356.8	6378.2	6330.7	6330.5	6334.8	6334	6349	6349.1
7/9/2008	6379.3	6353.6	6359.1	6354.3	6356.9	6378.1	6330.7	6330.5	6334.8	6334.1	6349	6349.1
7/18/2008	6378.4	6353.5	6359.1	6354.2	6356.8	6378.2	6330.7	6330.4	6334.8	6334	6349	6349
7/24/2008	6379.3	6353.5	6359.1	6354.2	6356.8	6377.9	6330.7	6330.5	6334.7	6334	6348.8	6349
7/28/2008	6379.4	6353.5	6359.1	6354.2	6356.8	6377.9	6330.7	6330.5	6334.7	6334	6348.8	6348.8
8/5/2008	6380.0	6353.5	6359.3	6354.2	6356.8	6377.9	6330.6	6330.5	6334.7	6334	6348.7	6348.8
8/13/2008	6380.8	6353.5	6359.3	6354.2	6356.8	6377.9	6330.6	6330.5	6334.7	6334	6348.6	6348.8
8/21/2008	6381.0	6353.5	6359.1	6354.1	6356.8	6377.8	6330.6	6330.5	6334.7	6333.9	6348.7	6348.8
9/5/2008	6381.0	6353.5	6359.1	6354.4	6356.8	6377.7	6330.5	6330.5	6334.7	6333.9	6348.7	6348.8
9/17/2008	6381.0	6353.5	6359.1	6354.4	6356.8	6377.7	6330.5	6330.5	6334.7	6333.9	6348.7	6348.8
4/20/2009	6380.6	6353.5	6360.1	6355.2	6364	6388.5	6330.6	6330.5	6334.7	6334.1	6349.2	6349.2
4/28/2009	6380.5	6353.5	6361.2	6355.6	6362.3	6388.4	6330.7	6330.5	6334.8	6334.1	6349.2	6349.2
5/5/2009	6380.1	6353.5	6361.2	6355.8	6362.2	6388.3	6330.8	6330.6	6334.8	6334.1	6349.2	6349.3
5/11/2009	6379.8	6353.5	6361.3	6355.3	6361	6388.2	6330.8	6330.8	6334.8	6334.1	6349.2	6349.3
5/18/2009	6379.7	6353.5	6361.3	6354.9	6360.4	6388.2	6330.9	6330.8	6334.8	6334.1	6349.3	6349.4
5/26/2009	6378.7	6353.5	6361.3	6355.1	6360.4	6388.1	6331	6331.4	6334.8	6334.2	6349.5	6349.6
6/6/2009	6379.2	6353.5	6361.2	6355.1	6360.8	6387.9	6331.2	6331.5	6334.9	6334.1	6349.3	6349.2
6/15/2009	6379.2	6353.5	6361.3	6355.1	6360.8	6387.8	6331.2	6331.5	6334.8	6334.1	6349.3	6349.2
6/22/2009	6379.2	6353.6	6360.7	6357.4	6360.9	6387.9	6331.2	6331.5	6335	6334.1	6349	6349.1
6/30/2009	6379.2	6353.6	6360.5	6356.9	6358.9	6387.8	6331.2	6331.4	6334.9	6334.1	6348.1	6349.1
7/13/2009	6379.7	6353.7	6360.4	6356.6	6358.7	6387.6	6331.1	6331.4	6334.9	6334	6348.9	6349
7/21/2009	6379.7	6353.7	6360.3	6355.6	6358.6	6387.6	6331.2	6331.3	6334.8	6334	6348.9	6348.9
7/29/2009	6379.8	6353.7	6360.3	6355.2	6358.6	6387.6	6331.2	6331.3	6334.8	6334	6348.9	6348.9
8/5/2009	6379.7	6353.7	6360.3	6355.1	6358.4	6387.5	6331.1	6331.3	6334.8	6334	6348.8	6348.9
8/12/2009	6379.8	6353.7	6360.3	6354.8	6358.3	6387.5	6331.2	6331.3	6334.8	6334	6348.8	6348.9
8/18/2009	6379.9	6353.7	6360.3	6354.7	6358.2	6387.5	6331.2	6331.3	6334.8	6334	6348.8	6348.9
8/26/2009	6380.5	6353.7	6360.3	6354.9	6358.2	6387.3	6331.2	6331.3	6334.8	6334	6348.8	6348.9
9/31/2009	6380.8	6353.7	6360.3	6354.9	6358.2	6387.3	6331.2	6331.3	6334.9	6334	6348.8	6348.9
9/16/2009	6380.7	6353.6	6360.3	6354.8	6358.2	6387.3	6331.1	6331.3	6334.8	6334	6348.8	6348.8
9/21/2009	6380.9	6353.7	6360.0	6354.8	6358	6387.1	6330.8	6331	6334.7	6334	6348.7	6348.8
9/30/2009	6380.9	6353.7	6360.0	6354.8	6358	6387.1	6330.8	6331	6334.7	6334	6348.7	6348.8
10/15/2009	6381.0	6353.7	6360.0	6354.8	6358	6387	6330.8	6330.9	6334.7	6334	6348.7	6348.8
Average	**6379.3**	**6353.5**	**6360.1**	**6354.9**	**6358.2**	**6383.7**	**6330.7**	**6330.9**	**6334.9**	**6334.1**	**6349.0**	**6349.1**

APPENDIX E

LIQUEFACTON & SEISMIC SLOPE STABILITY

FIGURE 4: SUMMARY OF LIQUEFACTION ANALYSIS FOR TIBBLE FORK DAM

BOR. NO.	WATER DEPTH (ft)	SAMPLE DEPTH (ft)	USC	UNIT WEIGHT (pcf)	MEAS. N	C_n	$(N_1)_{60}$	$(N_1)_{60cs}$	FINES (%)	Approx. r_d	$CRR_{7.5}$	Magnitude Scaling Factor = 1.4 MCE = 6.5; amax = 0.56 g CSR	CRR	F.S.	LIQUEFY?	Magnitude Scaling Factor = 2.8 OBE = 5.0; amax = 0.36 g CSR	CRR	F.S.	LIQUEFY?
B-1	12.0	6.0	SC	120	19	1.67	26.1	34.9	30	0.988	N/A	0.360	N/A	N/A	NO	0.231	N/A	N/A	NO
		11.0	GC	125	29	1.22	29.2	36.5	24	0.977	N/A	0.356	N/A	N/A	NO	0.229	N/A	N/A	NO
		16.0	GC	125	53	1.08	53.4	63.4	24	0.966	N/A	0.403	N/A	N/A	NO	0.259	N/A	N/A	NO
		21.0	GC	125	32	0.99	33.2	40.9	24	0.954	N/A	0.443	N/A	N/A	NO	0.285	N/A	N/A	NO
		26.0	SC	120	17	0.93	16.5	23.5	29	0.938	0.261	0.470	N/A	N/A	NO	0.302	N/A	N/A	NO
		31.0	SC	120	23	0.88	21.0	30.3	35	0.915	N/A	0.485	N/A	N/A	NO	0.312	N/A	N/A	NO
		36.0	SC	120	30	0.83	27.4	37.9	35	0.883	N/A	0.488	N/A	N/A	NO	0.314	N/A	N/A	NO
		41.0	SC	120	20	0.79	17.4	25.9	35	0.842	0.298	0.481	N/A	N/A	NO	0.309	N/A	N/A	NO
		46.0	SM	120	15	0.76	12.5	19.2	30	0.794	0.207	0.465	0.298	0.64	YES	0.299	0.788	2.64	NO
		48.0	SM	120	59	0.75	48.5	60.6	30	0.773	N/A	0.458	N/A	>1.1	NO	0.294	N/A	>1.1	NO
		51.0	SM	120	46	0.73	36.9	47.3	30	0.743	N/A	0.445	N/A	>1.1	NO	0.288	N/A	>1.1	NO
		56.0	GM	125	64	0.70	49.3	61.8	30	0.694	N/A	0.423	N/A	>1.1	NO	0.272	N/A	>1.1	NO
		61.0	GC	125	59	0.68	43.8	55.3	30	0.651	N/A	0.402	N/A	N/A	NO	0.259	N/A	N/A	NO
		66.0	GC	125	68	0.65	48.8	61.0	30	0.616	N/A	0.385	N/A	N/A	NO	0.247	N/A	N/A	NO
B-2	12.0	6.0	SC	120	13	1.60	17.2	25.6	44	0.988	0.293	0.360	N/A	N/A	NO	0.231	N/A	N/A	NO
		11.0	SC	120	11	1.23	11.2	18.4	44	0.977	0.199	0.356	N/A	N/A	NO	0.229	N/A	N/A	NO
		16.0	SC	120	13	1.09	13.3	21.0	44	0.966	0.227	0.404	N/A	N/A	NO	0.260	N/A	N/A	NO
		21.0	SC	120	12	1.01	12.7	20.2	40	0.954	0.219	0.447	N/A	N/A	NO	0.287	N/A	N/A	NO
		26.0	SC	120	15	0.94	14.8	22.7	40	0.938	0.250	0.474	N/A	N/A	NO	0.305	N/A	N/A	NO
		31.0	SC	120	21	0.89	19.5	28.4	40	0.915	0.354	0.489	N/A	N/A	NO	0.314	N/A	N/A	NO
		36.0	SC	120	22	0.84	20.4	29.4	45	0.883	0.397	0.492	N/A	N/A	NO	0.316	N/A	N/A	NO
		41.0	SC	120	23	0.80	20.3	29.3	49	0.842	0.391	0.485	N/A	N/A	NO	0.312	N/A	N/A	NO
		46.0	CL	120	25	0.77	21.1	30.3	60	0.794	N/A	0.469	N/A	N/A	NO	0.302	N/A	N/A	NO
		51.0	CL	120	21	0.74	17.0	25.4	60	0.743	0.290	0.449	N/A	N/A	NO	0.288	N/A	N/A	NO
		56.0	GP-GM	130	55	0.70	42.7	44.4	10	0.694	N/A	0.425	N/A	>1.1	NO	0.273	N/A	>1.1	NO
		61.0	GM	130	16	0.68	11.9	18.5	30	0.651	0.199	0.403	0.239	0.59	YES?	0.259	0.656	2.53	NO
B-3	5.0	6.0	SC	120	11	1.60	14.5	22.4	40	0.988	0.246	0.394	N/A	N/A	NO	0.253	N/A	N/A	NO
		8.5	GM	125	8	1.57	10.3	12.6	13	0.982	0.137	0.454	0.197	0.43	YES	0.292	0.521	1.79	NO
		11.0	GM	125	39	1.44	48.2	49.8	13	0.977	N/A	0.493	N/A	>1.1	NO	0.317	N/A	>1.1	NO
		13.5	GM	125	22	1.33	27.4	30.3	13	0.972	N/A	0.520	N/A	>1.1	NO	0.334	N/A	>1.1	NO
		16.0	GW-GM	130	35	1.24	40.7	43.5	12	0.966	N/A	0.538	N/A	>1.1	NO	0.346	N/A	>1.1	NO
		18.5	GW-GM	130	55	1.17	60.1	63.5	12	0.961	N/A	0.551	N/A	>1.1	NO	0.354	N/A	>1.1	NO
		21.0	GW-GM	130	86	1.11	99.4	104.1	12	0.954	N/A	0.560	N/A	>1.1	NO	0.360	N/A	>1.1	NO
		23.5	GW-GM	130	69	1.05	75.9	79.9	12	0.947	N/A	0.565	N/A	>1.1	NO	0.363	N/A	>1.1	NO
		26.0	GM	125	17	1.01	17.9	20.5	13	0.938	0.222	0.570	0.320	0.56	YES	0.366	0.846	2.31	NO
		28.5	SC	120	1	0.98	1.0	6.2	39	0.928	0.074	0.573	N/A	N/A	NO	0.368	N/A	N/A	NO
		31.0	GM	125	18	0.94	17.7	19.8	12	0.915	0.214	0.572	0.309	0.54	YES	0.368	0.816	2.22	NO
		36.0	GW-GM	125	55	0.88	53.3	56.6	12	0.883	N/A	0.563	N/A	>1.1	NO	0.362	N/A	>1.1	NO
B-4	5.0	6.0	SC	120	11	1.60	14.5	20.5	25	0.988	0.222	0.394	N/A	N/A	NO	0.253	N/A	N/A	NO
		8.5	GC	125	5	1.57	6.5	8.8	13	0.982	0.094	0.454	0.136	0.30	YES	0.292	0.359	1.23	NO
		11.0	GC	125	6	1.44	7.1	9.3	13	0.977	0.101	0.493	0.145	0.30	YES	0.317	0.385	1.21	NO
		13.5	GC	125	9	1.33	11.2	13.5	13	0.972	0.146	0.520	0.211	0.41	YES	0.334	0.557	1.67	NO
		16.0	GW-GM	130	25	1.24	29.0	30.1	9	0.966	N/A	0.538	N/A	>1.1	NO	0.346	N/A	>1.1	NO
		17.5	GW-GM	130	100	1.20	111.9	114.3	9	0.963	N/A	0.546	N/A	>1.1	NO	0.351	N/A	>1.1	NO
		21.0	GW-GM	130	27	1.11	31.2	32.3	9	0.954	N/A	0.560	N/A	>1.1	NO	0.360	N/A	>1.1	NO
		23.5	CL	120	13	1.06	14.4	22.3	54	0.947	0.244	0.568	N/A	N/A	NO	0.365	N/A	N/A	NO
		26.0	CL	120	15	1.02	16.0	24.2	54	0.938	0.270	0.574	N/A	N/A	NO	0.369	N/A	N/A	NO
		28.5	CH	120	14	0.98	14.4	22.3	58	0.928	0.244	0.577	N/A	N/A	NO	0.371	N/A	N/A	NO
		31.0	CH	120	13	0.95	12.9	20.5	58	0.915	0.222	0.578	N/A	N/A	NO	0.371	N/A	N/A	NO
		36.0	CH	120	12	0.89	11.8	19.2	58	0.883	0.207	0.571	N/A	N/A	NO	0.367	N/A	N/A	NO
		41.0	CH	120	15	0.85	14.0	21.8	66	0.842	0.237	0.554	N/A	N/A	NO	0.356	N/A	N/A	NO
B-5	5.0	6.0	GM	125	17	1.60	22.4	25.2	13	0.988	0.285	0.392	0.411	1.05	MARGINAL	0.252	1.087	4.31	NO
		8.5	SC	120	12	1.55	15.4	23.4	45	0.982	0.259	0.451	N/A	N/A	NO	0.290	N/A	N/A	NO
		11.0	SC	120	15	1.43	17.7	28.3	45	0.977	0.305	0.492	N/A	N/A	NO	0.316	N/A	N/A	NO
		13.5	SC	120	17	1.34	21.2	30.5	45	0.972	N/A	0.521	N/A	N/A	NO	0.335	N/A	N/A	NO
		16.0	SC	120	14	1.26	16.5	24.8	45	0.966	0.279	0.543	N/A	N/A	NO	0.349	N/A	N/A	NO
		18.5	SC	120	18	1.19	20.1	29.1	45	0.961	0.378	0.559	N/A	N/A	NO	0.359	N/A	N/A	NO
		20.5	SC	120	92	1.15	110.2	137.2	41	0.956	N/A	0.569	N/A	N/A	NO	0.366	N/A	N/A	NO
		23.5	SC	120	9	1.09	10.2	17.3	41	0.947	0.186	0.579	N/A	N/A	NO	0.372	N/A	N/A	NO
		26.0	SC	120	13	1.04	14.2	22.0	41	0.938	0.240	0.585	N/A	N/A	NO	0.376	N/A	N/A	NO
		28.5	SC	120	65	1.00	68.2	80.3	25	0.928	N/A	0.587	N/A	N/A	NO	0.378	N/A	N/A	NO
		31.0	SC	120	36	0.97	36.5	45.0	25	0.915	N/A	0.587	N/A	N/A	NO	0.378	N/A	N/A	NO
		36.0	GC	125	42	0.91	41.8	45.3	13	0.883	N/A	0.576	N/A	>1.1	NO	0.371	N/A	>1.1	NO
		41.0	SC	120	26	0.86	24.5	31.6	25	0.842	N/A	0.559	N/A	N/A	NO	0.359	N/A	N/A	NO

Terracon

NOTES:

YES? = Although the F.S. is less than 1, the occurrence of liquefaction is questionable due to the lack of empirical data at such depths

Although "LIQUEFY?" column may indicate "YES", liquefaction can only occur if soils are below water level.

CSR = Cyclic Stress Ratio induced by given acceleration = $0.65(a_{max}/g)(\sigma_{vo}/\sigma'_{vo})r_d$

CRR = Cyclic Resistance Ratio, adjusted by Magnitude Scaling Factor above and by K_σ for high overburden pressures

F.S. = Factor of Safety = CSR/CRR

MCE = Maximum Credible Earthquake

OBE = Operating Basis Earthquake

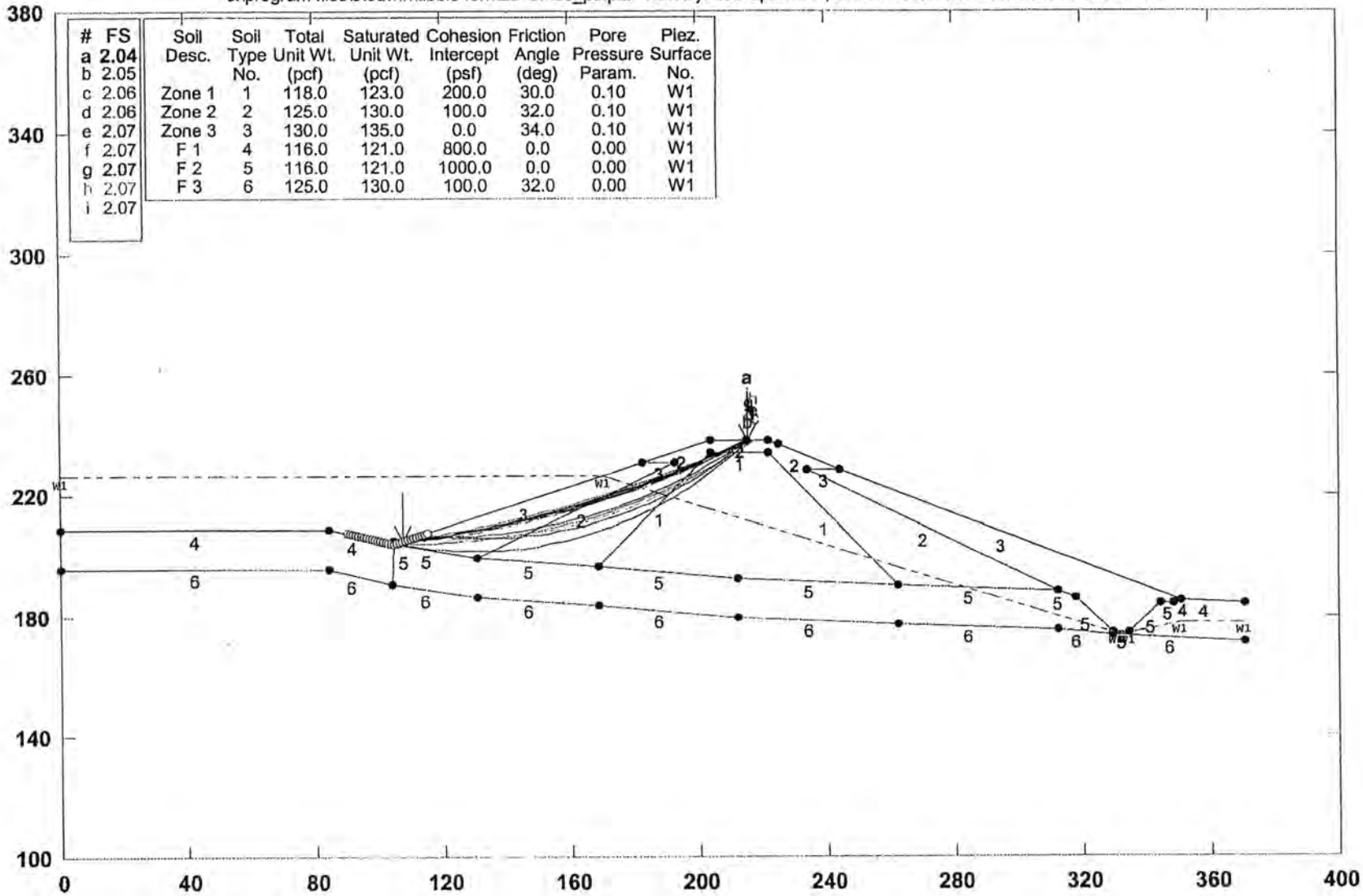
a_{max} = peak horizontal acceleration at ground surface

Tibble Fork 23+57 U/S Post Earthquake

c:\program files\stedwin\tibble fork\23+57\us_pe.pl2 Run By: Lee Sporleder, Water Resources 01/25/2011 08:58AM

#	FS
a	2.04
b	2.05
c	2.06
d	2.06
e	2.07
f	2.07
g	2.07
h	2.07
i	2.07

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	0.10	W1
Zone 2	2	125.0	130.0	100.0	32.0	0.10	W1
Zone 3	3	130.0	135.0	0.0	34.0	0.10	W1
F 1	4	116.0	121.0	800.0	0.0	0.00	W1
F 2	5	116.0	121.0	1000.0	0.0	0.00	W1
F 3	6	125.0	130.0	100.0	32.0	0.00	W1



PCSTABL5M/si FSmin=2.04

Safety Factors Are Calculated By The Modified Bishop Method

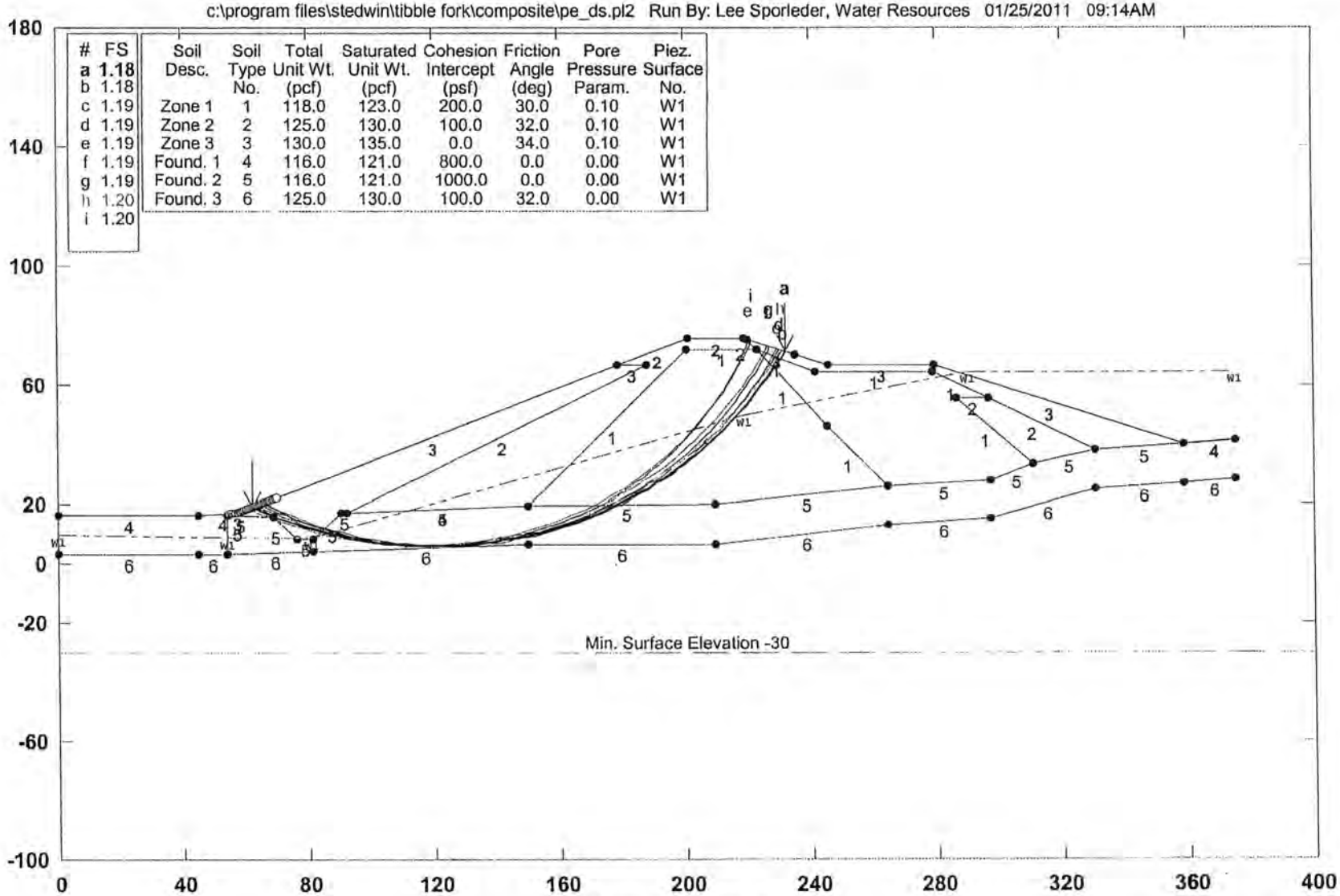
STED

Tibble Fork Composite D/S P E

c:\program files\stedwin\tibble fork\composite\pe_ds.pl2 Run By: Lee Sporleder, Water Resources 01/25/2011 09:14AM

#	FS
a	1.18
b	1.18
c	1.19
d	1.19
e	1.19
f	1.19
g	1.19
h	1.20
i	1.20

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	0.10	W1
Zone 2	2	125.0	130.0	100.0	32.0	0.10	W1
Zone 3	3	130.0	135.0	0.0	34.0	0.10	W1
Found. 1	4	116.0	121.0	800.0	0.0	0.00	W1
Found. 2	5	116.0	121.0	1000.0	0.0	0.00	W1
Found. 3	6	125.0	130.0	100.0	32.0	0.00	W1



PCSTABL5M/si FSmin=1.18

Safety Factors Are Calculated By The Modified Bishop Method

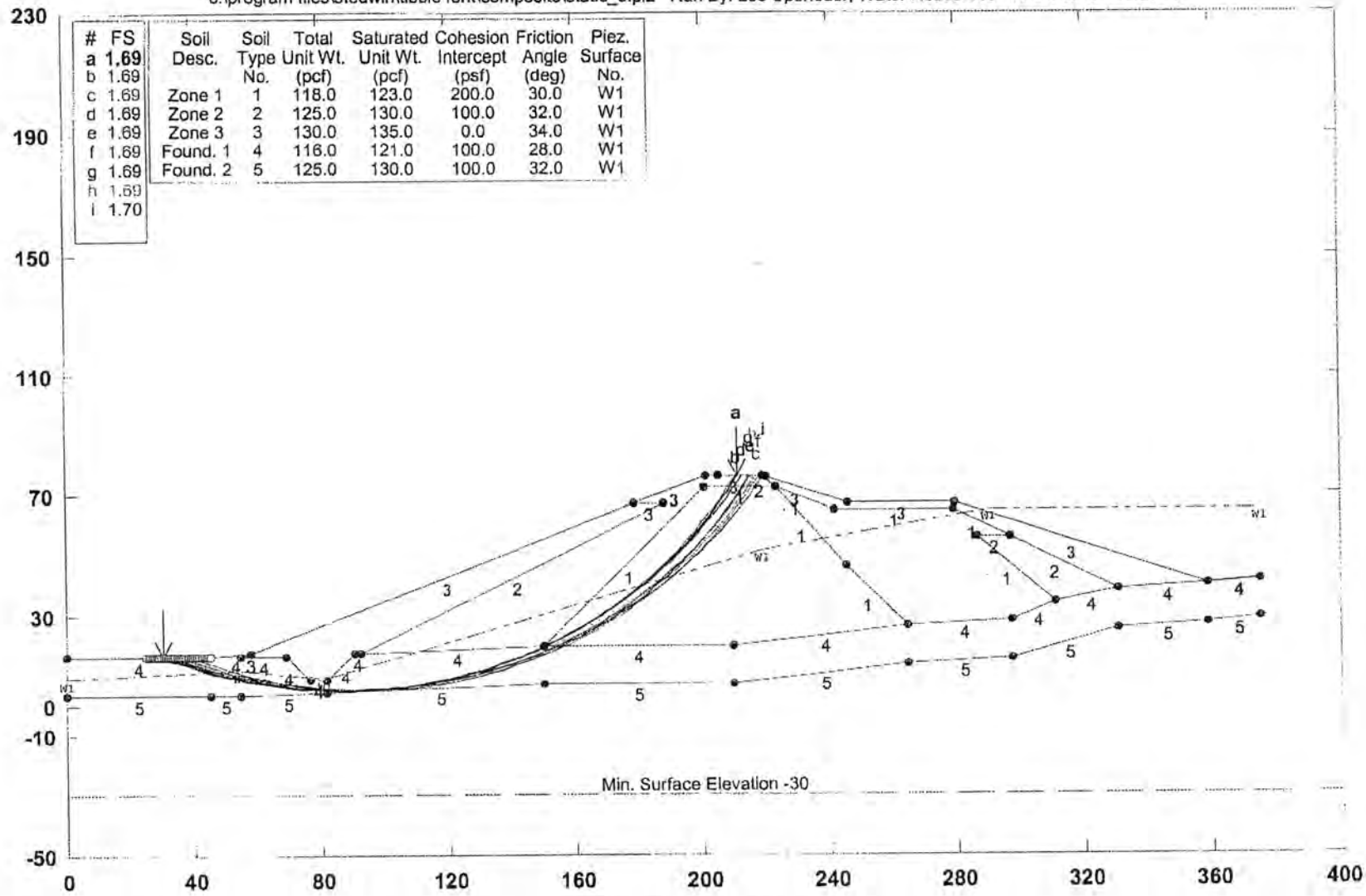
STED

Tibble Fork Composite D/S Static

c:\program files\stedwin\tibble fork\composite\static_d.pl2 Run By: Lee Sporleder, Water Resources 06/28/2010 12:21PM

#	FS
a	1.69
b	1.69
c	1.69
d	1.69
e	1.69
f	1.69
g	1.69
h	1.69
i	1.70

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	W1
Zone 2	2	125.0	130.0	100.0	32.0	W1
Zone 3	3	130.0	135.0	0.0	34.0	W1
Found. 1	4	116.0	121.0	100.0	28.0	W1
Found. 2	5	125.0	130.0	100.0	32.0	W1



PCSTABL5M/si FSmin=1.69

Safety Factors Are Calculated By The Modified Bishop Method

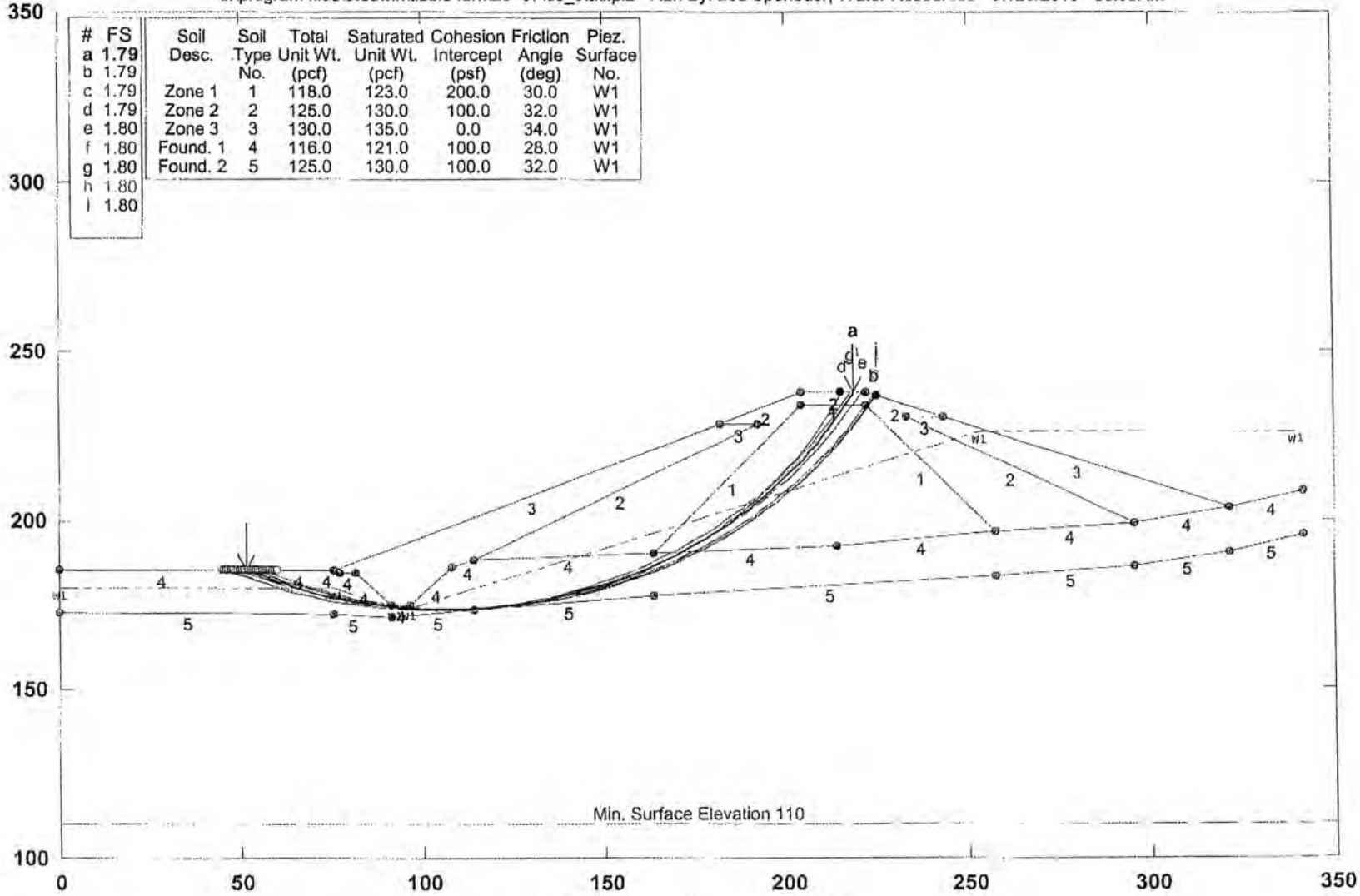
STED

Tibble Fork 23+57 D/S Static

c:\program files\stedwin\tibble fork\23+57\ds_stati.pl2 Run By: Lee Sporleder, Water Resources 07/26/2010 08:59AM

#	FS
a	1.79
b	1.79
c	1.79
d	1.79
e	1.80
f	1.80
g	1.80
h	1.80
i	1.80

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	W1
Zone 2	2	125.0	130.0	100.0	32.0	W1
Zone 3	3	130.0	135.0	0.0	34.0	W1
Found. 1	4	116.0	121.0	100.0	28.0	W1
Found. 2	5	125.0	130.0	100.0	32.0	W1



PCSTABL5M/si FSmin=1.79

Safety Factors Are Calculated By The Modified Bishop Method

STED

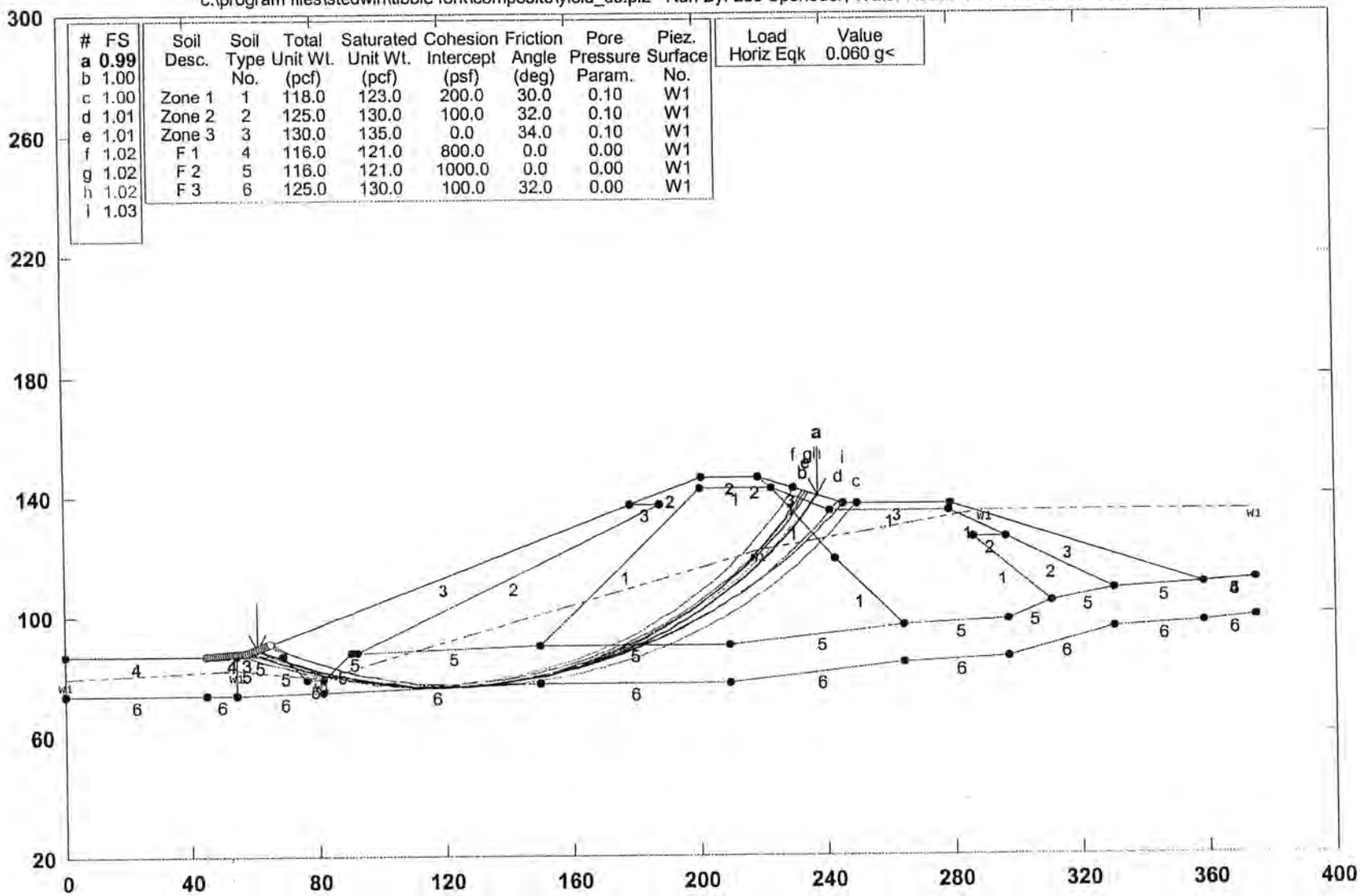
Tibble Fork Composite DS Yield DS

c:\program files\stedwin\tibble fork\composite\yield_ds.pl2 Run By: Lee Sporleder, Water Resources 01/25/2011 09:16AM

#	FS
a	0.99
b	1.00
c	1.00
d	1.01
e	1.01
f	1.02
g	1.02
h	1.02
i	1.03

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	0.10	W1
Zone 2	2	125.0	130.0	100.0	32.0	0.10	W1
Zone 3	3	130.0	135.0	0.0	34.0	0.10	W1
F 1	4	116.0	121.0	800.0	0.0	0.00	W1
F 2	5	116.0	121.0	1000.0	0.0	0.00	W1
F 3	6	125.0	130.0	100.0	32.0	0.00	W1

Load	Value
Horiz Eqk	0.060 g<



PCSTABL5M/si FSmin=0.99

Safety Factors Are Calculated By The Modified Bishop Method

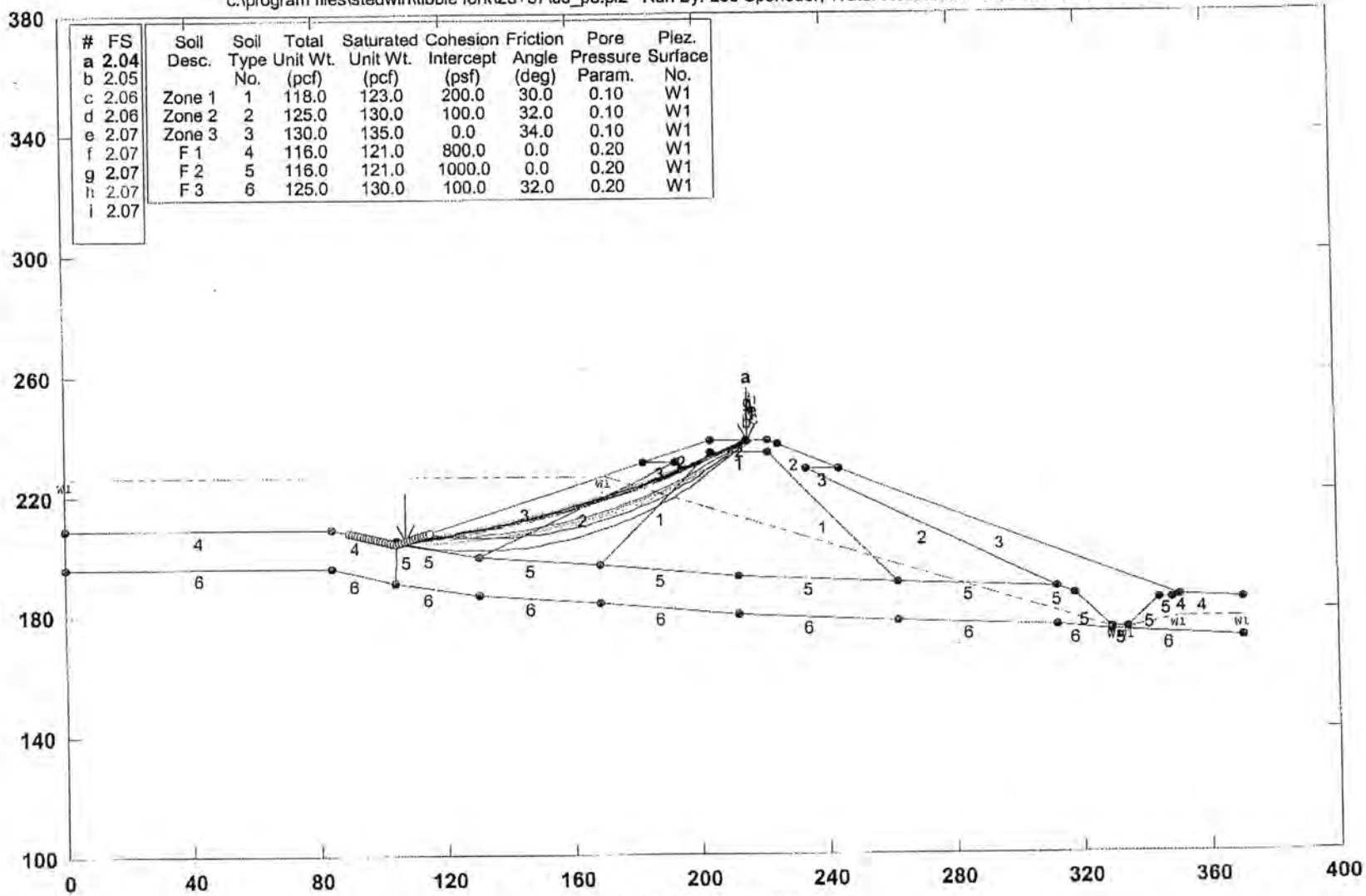
STED

Tibble Fork 23+57 U/S Post Earthquake

c:\program files\stedwin\tibble fork\23+57\us_pe.pl2 Run By: Lee Sporleder, Water Resources 06/14/2010 01:35PM

#	FS
a	2.04
b	2.05
c	2.06
d	2.06
e	2.07
f	2.07
g	2.07
h	2.07
i	2.07

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	0.10	W1
Zone 2	2	125.0	130.0	100.0	32.0	0.10	W1
Zone 3	3	130.0	135.0	0.0	34.0	0.10	W1
F 1	4	116.0	121.0	800.0	0.0	0.20	W1
F 2	5	116.0	121.0	1000.0	0.0	0.20	W1
F 3	6	125.0	130.0	100.0	32.0	0.20	W1



PCSTABL5M/si FSmin=2.04

Safety Factors Are Calculated By The Modified Bishop Method

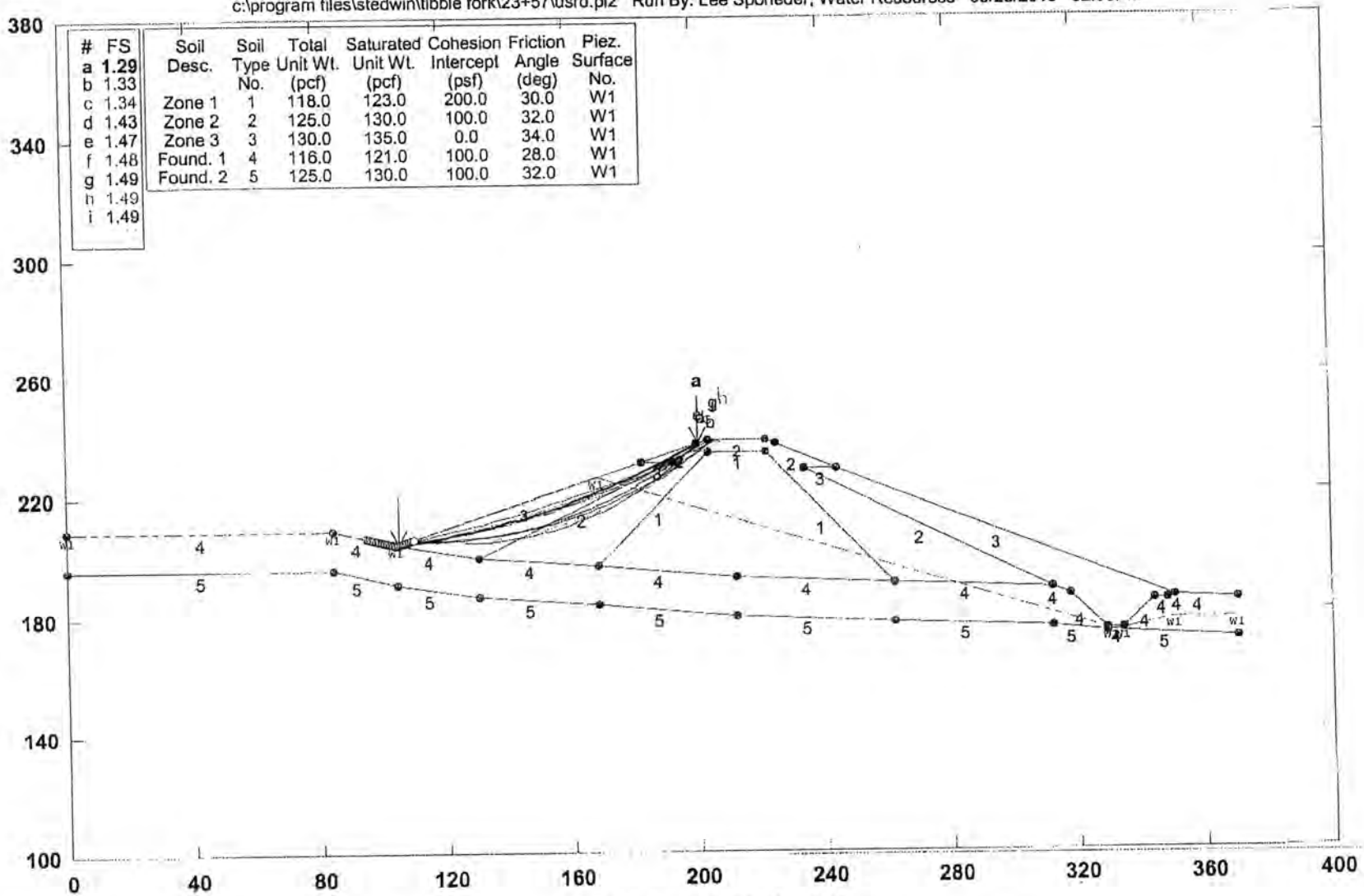
STED

Tibble Fork 23+57 U/S Rapid Drawdown

c:\program files\stedwin\tibble fork\23+57\usrd.pl2 Run By: Lee Sporleder, Water Resources 09/28/2010 02:06PM

#	FS
a	**1.29**
b	1.33
c	1.34
d	1.43
e	1.47
f	1.48
g	1.49
h	1.49
i	1.49

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	W1
Zone 2	2	125.0	130.0	100.0	32.0	W1
Zone 3	3	130.0	135.0	0.0	34.0	W1
Found. 1	4	116.0	121.0	100.0	28.0	W1
Found. 2	5	125.0	130.0	100.0	32.0	W1



PCSTABL5M/si FSmin=1.29

Safety Factors Are Calculated By The Modified Bishop Method

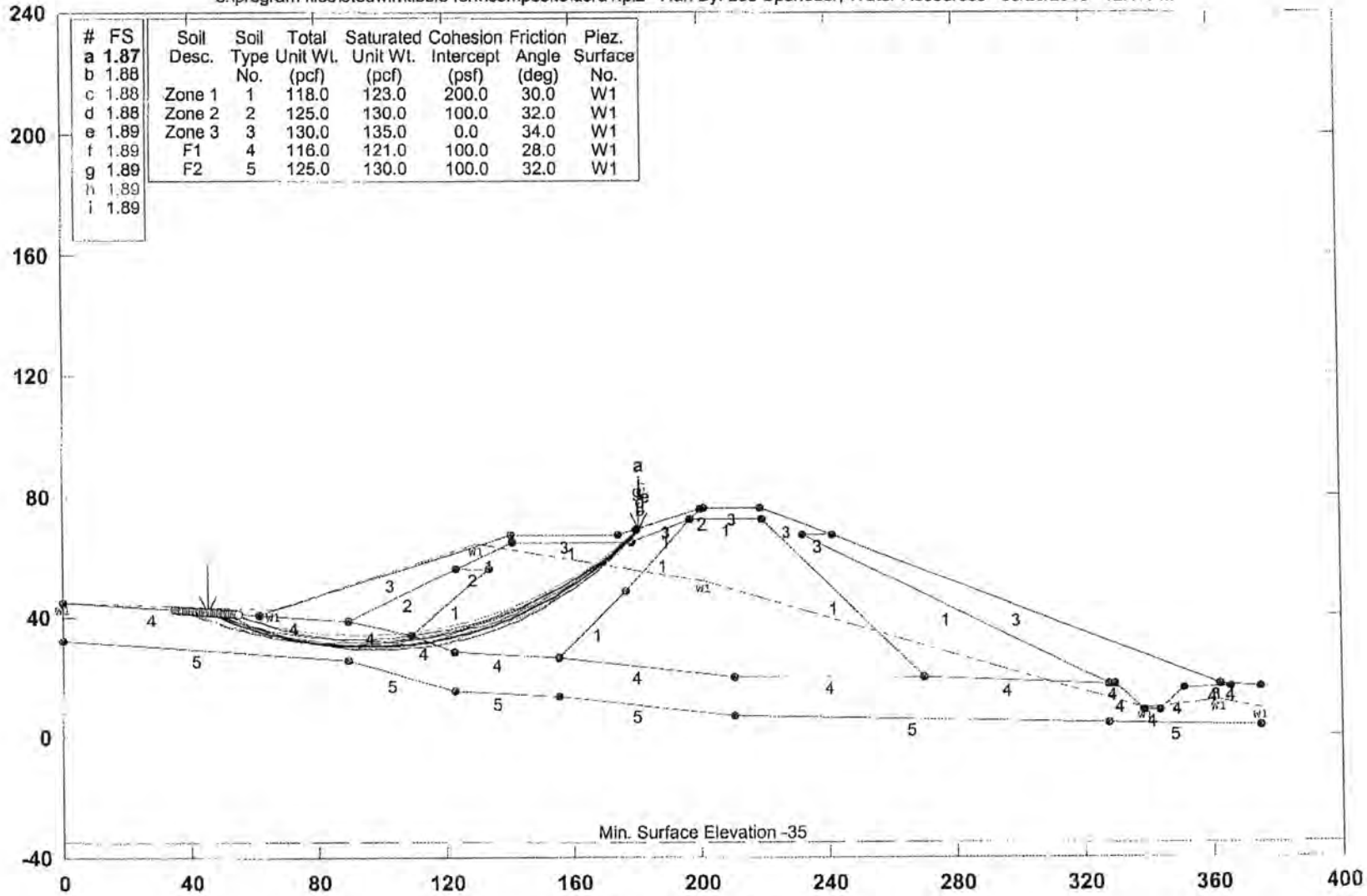
STED

Tibble Fork Composite U/S Rapid Drawdown

c:\program files\stedwin\tibble fork\composite\usrd1.pl2 Run By: Lee Sporleder, Water Resources 06/28/2010 12:17PM

#	FS
a	1.87
b	1.88
c	1.88
d	1.88
e	1.89
f	1.89
g	1.89
h	1.89
i	1.89

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	W1
Zone 2	2	125.0	130.0	100.0	32.0	W1
Zone 3	3	130.0	135.0	0.0	34.0	W1
F1	4	116.0	121.0	100.0	28.0	W1
F2	5	125.0	130.0	100.0	32.0	W1



PCSTABL5M/si FSmin=1.87

Safety Factors Are Calculated By The Modified Bishop Method

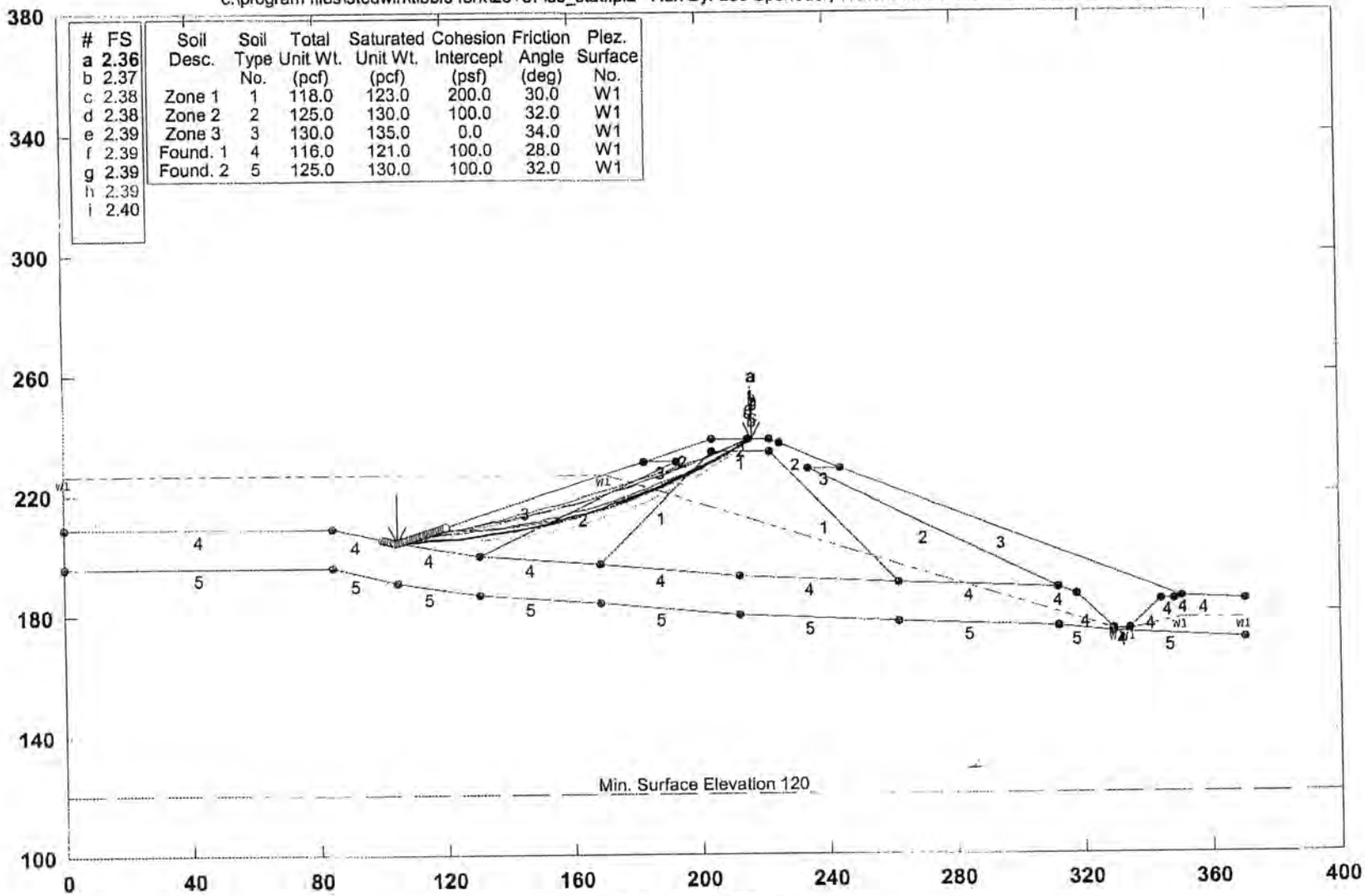
STED

Tibble Fork 23+57 U/S Static

c:\program files\stedwin\tibble fork\23+57\us_stati.pl2 Run By: Lee Sporleder, Water Resources 06/14/2010 01:37PM

#	FS
a	**2.36**
b	2.37
c	2.38
d	2.38
e	2.39
f	2.39
g	2.39
h	2.39
i	2.40

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	W1
Zone 2	2	125.0	130.0	100.0	32.0	W1
Zone 3	3	130.0	135.0	0.0	34.0	W1
Found. 1	4	116.0	121.0	100.0	28.0	W1
Found. 2	5	125.0	130.0	100.0	32.0	W1



PCSTABL5M/si FSmin=2.36

Safety Factors Are Calculated By The Modified Bishop Method

STED

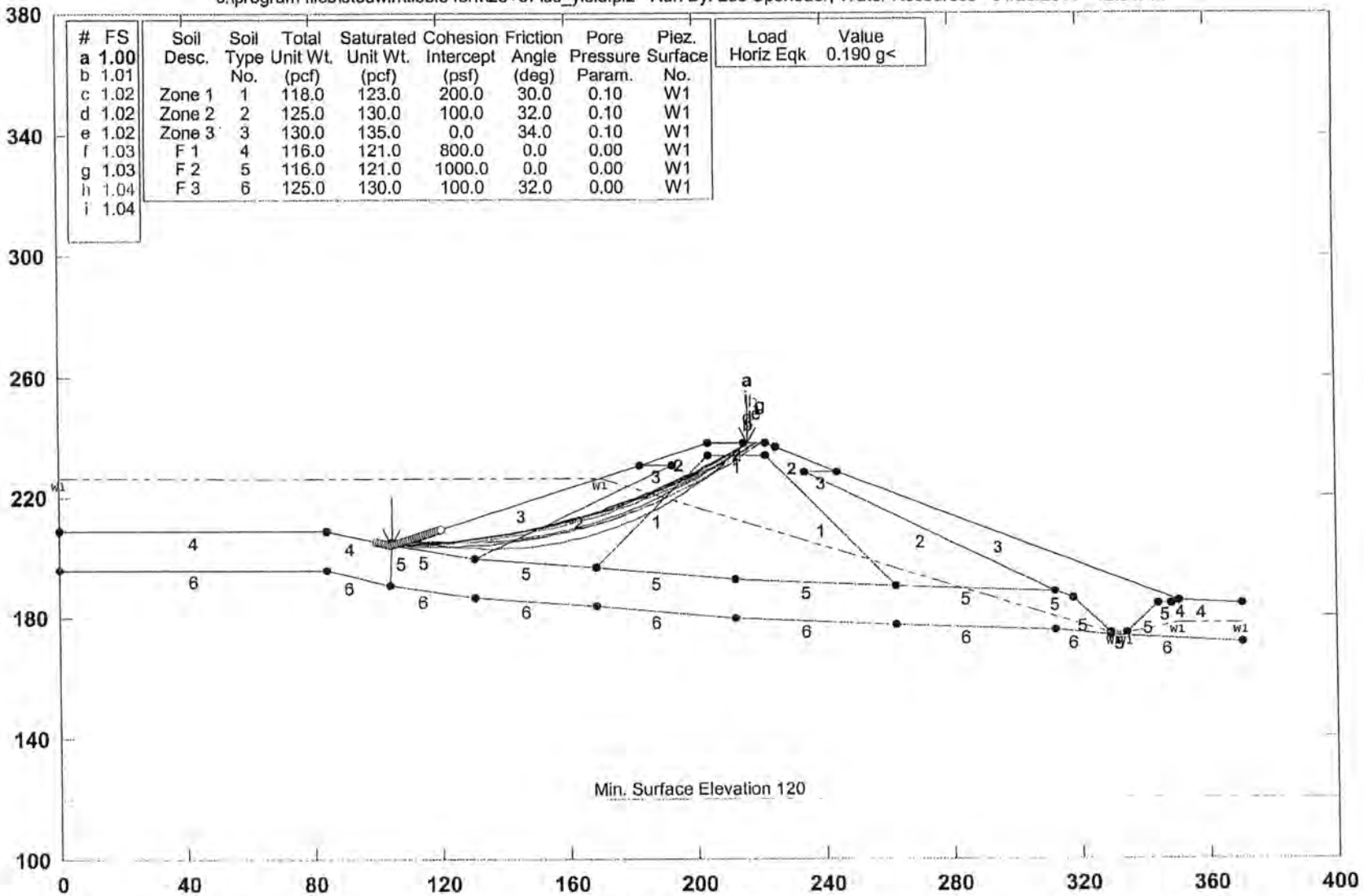
Tibble Fork 23+57 U/S Yield

c:\program files\stedwin\tibble fork\23+57\us_yield.pl2 Run By: Lee Sporleder, Water Resources 01/25/2011 12:34PM

#	FS
a	1.00
b	1.01
c	1.02
d	1.02
e	1.02
f	1.03
g	1.03
h	1.04
i	1.04

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Surface No.
Zone 1	1	118.0	123.0	200.0	30.0	0.10	W1
Zone 2	2	125.0	130.0	100.0	32.0	0.10	W1
Zone 3	3	130.0	135.0	0.0	34.0	0.10	W1
F 1	4	116.0	121.0	800.0	0.0	0.00	W1
F 2	5	116.0	121.0	1000.0	0.0	0.00	W1
F 3	6	125.0	130.0	100.0	32.0	0.00	W1

Load	Value
Horiz Eqk	0.190 g<



PCSTABL5M/si FSmin=1.00

Safety Factors Are Calculated By The Modified Bishop Method

STED

APPENDIX F

Seismic Information

Appendix F1-Deterministic Seismic Hazard Ground Motion Calculations using NGA Models 2008

2389, FROG VALLEY FAULT

Structure number: 2389.
Comments: Hecker's (1993) fault number 12-9.
Structure name: Frog Valley fault.
Comments:
Synopsis: Poorly understood Quaternary(?) fault in Deer Valley in the Wasatch Range.
Date of compilation: 8/01.
Compiler and affiliation: Bill D. Black and Mike Hylland (Utah Geological Survey), and Suzanne Hecker (U.S. Geological Survey).
State: Utah
County: Summit.
1° x 2° sheet: Salt Lake City.
Province: Middle Rocky Mountains.
Reliability of location: Good.
Comments: Mapped or discussed by Sullivan (1982), Sullivan and others (1986, 1988), and Ashland and others (2001). Mapping from J.T. Sullivan (unpublished U.S. Bureau of Reclamation mapping, 1988, scale 1:250,000).
Geologic setting: Arcuate, southeast- to north-trending fault southeast of Park City in Deer Valley in the Wasatch Range. Deer Valley is one of several "back valleys of the Wasatch," a line of discontinuous valleys in the Wasatch Hinterlands east of the Wasatch Range. The Frog Valley fault may represent a subsidiary frontal imbricate thrust to the Mount Raymond-Medicine Butte thrust (Ashland and others, 2001), reactivated as a down-to-the-west normal fault (Sullivan and others, 1986).
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: W.
Geomorphic expression: Drainage which formerly drained east into Keetley Valley has been cut off by the escarpment of the fault. Faulting and formation of the escarpment likely post-dates middle Quaternary deposits in Keetley Valley. No scarps were found in late Quaternary colluvium at the base of the escarpment, although if small scarps formed there, they could have been eroded in a few thousand years.
Age of faulted deposits: Quaternary(?).
Paleoseismology studies: None.
Timing of most recent paleoevent: (5) Quaternary (<1.6 Ma).
Comments: Based on drainage disruption.
Recurrence interval: No data.
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments:
Length: End to end (km): 5
Cumulative trace (km): 5
Average strike (azimuth): N22°E

REFERENCES

Ashland, F.X., Bishop, C.E., Lowe, Mike, and Mayes, B.H., 2001, The geology of the Snyderville basin, western Summit County, Utah, and its relation to ground-water conditions: Utah Geological Survey Water Resource Bulletin 28, 59 p., 15 plates.

Hecker, Suzanne, 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 2 plates, scale 1:500,000, 257 p.

Sullivan, J.T., 1982, Late Cenozoic faulting in the back valleys of the Wasatch Mountains, northeastern Utah [abs.]: Geological Society of America Abstracts with Programs, v. 14, no. 6, p. 351.

----1986, Regional seismotectonic study for back valleys of the Wasatch Mountains in northeastern Utah: Denver, unpublished U.S. Bureau of Reclamation report, 317 p.

Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Denver,

U.S. Bureau of Reclamation Seismotectonic Report 88-5, 269 p., scale 1:250,000.

2390, BALD MOUNTAIN FAULT

Structure number: 2390.
Comments: Hecker's (1993) fault number 12-15.
Structure name: Bald Mountain fault.
Comments:
Synopsis: Poorly understood Quaternary(?) fault on the east side of Bald Mountain in the Wasatch Range.
Date of compilation: 10/99.
Compiler and affiliation: Bill D. Black and Greg N. McDonald (Utah Geological Survey), and Suzanne Hecker (U.S. Geological Survey).
State: Utah
County: Wasatch.
1° x 2° sheet: Salt Lake City.
Province: Middle Rocky Mountains.
Reliability of location: Good.
Comments: Mapped and discussed by Sullivan and Nelson (1983); Sullivan, Martin, and Foley (1988); Sullivan, Nelson, and others (1988); and U.S. Geological Survey (1991). Mapping from Sullivan, Martin, and Foley (1988).
Geologic setting: Northeast-trending normal fault on the east side of Bald Mountain, west of Jordanelle Reservoir. Geology of the area is dominated by Tertiary volcanic rocks, primarily highly erodible tuff.
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: SE.
Geomorphic expression: The fault escarpment is more eroded, but appears similar to those in other back valleys in the Wasatch Hinterlands east of the Wasatch Front. A steep-sided trough (imaged by seismic refraction) beneath the Provo River valley to the south may be fault-bounded, but trenching studies for Jordanelle Dam determined that late Quaternary (~125 ka) deposits are unfaulted. Hecker (1993) believes early to middle Quaternary faulting cannot be precluded.
Age of faulted deposits: Quaternary(?).
Paleoseismology studies: Sullivan, Martin, and Foley (1988) excavated three trenches in surficial deposits across the inferred fault trace, as projected from adjacent bedrock and borehole control, about 1.5 kilometers northwest of the west abutment of Jordanelle Dam (site 2390-1). Quaternary faulting was not recognized in two of the three trenches. The third trench revealed faulted basin-fill deposits overlain by undisturbed Holocene deposits. Fault timing is poorly constrained by the estimated age of the basin-fill deposits ($500 ka based on soil development) and the geomorphic expression of the fault.
Timing of most recent paleoevent: (5) Quaternary (<1.6 Ma).
Comments: Based on range-front morphology and soil development.

2388, PARLEYS PARK FAULTS

Structure number: 2388.
Comments: Hecker's (1993) fault number 12-10.
Structure name: Parleys Park faults.
Comments:
Synopsis: Poorly understood Quaternary(?) faults in southeastern Snyderville Basin in the Wasatch Range.
Date of compilation: 10/99.
Compiler and affiliation: Bill D. Black (Utah Geological Survey) and Suzanne Hecker (U.S. Geological Survey).
State: Utah
County: Summit.
1° x 2° sheet: Salt Lake City.
Province: Middle Rocky Mountains.
Reliability of location: Good.
Comments: Mapped and discussed by Sullivan and others (1988). Mapping from J.T. Sullivan (unpublished U.S. Bureau of Reclamation mapping, 1988, scale 1:250,000).
Geologic setting: Arcuate-shaped west- and north-trending faults bounding the southeastern margin of Snyderville Basin in the Wasatch Range. The faults are about 5 kilometers northwest of the Frog Valley fault (2389). The Snyderville Basin is one of several discontinuous valleys in the Wasatch Hinterlands east of the Wasatch Range.
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: W and N.
Geomorphic expression: Range-front faults forming the southeastern corner of the Snyderville Basin. The eastern and southern margins of the valley are bounded by steep dip slopes that meet at right angles. Sullivan and others (1988) suggest this morphology is likely due to faulting rather than fluvial erosion. However, recent geologic investigations for ground-water resources in the area by F.X. Ashland (Utah Geological Survey, verbal communication, August, 2000) found no evidence indicating that this bedrock/alluvium contact is a fault.
Age of faulted deposits: Quaternary (?).
Paleoseismology studies: None.
Timing of most recent paleoevent: (5) Quaternary (<1.6 Ma).
Comments: Based on range-front morphology.
Recurrence interval: No data.
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments:
Length: End to end (km): 3
Cumulative trace (km): 5
Average strike (azimuth): N42°W

REFERENCES

Hecker, Suzanne, 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 2 plates, scale 1:500,000, 257 p.

Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Denver, U.S. Bureau of Reclamation Seismotectonic Report 88-5, 269 p., scale 1:250,000.

2400, ROUND VALLEY FAULTS

Structure number: 2400.
Comments: Hecker's (1993) fault number 12-12.
Structure name: Round Valley faults.
Comments:
Synopsis: Poorly understood late Quaternary(?) faults bounding the northeastern and southwestern sides of Round Valley.
Date of compilation: 10/99.
Compiler and affiliation: Bill D. Black (Utah Geological Survey) and Suzanne Hecker (U.S. Geological Survey).
State: Utah
County: Wasatch.
1° x 2° sheet: Salt Lake City
Province: Middle Rocky Mountains.
Reliability of location: Good.
Comments: Mapped or discussed by Sullivan and others (1988) and Hylland and others (1995). Mapping from Sullivan and others (1988).
Geologic setting: Northwest- to east-trending normal faults bounding the northeastern and southwestern margins of Round Valley in the Wasatch Range. Round Valley is one of several "back valleys of the Wasatch," a line of discontinuous valleys in the Wasatch Hinterlands east of the Wasatch Range.
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: SW and NE.
Geomorphic expression: Range-front escarpments. Scarps on alluvial fans at the base of the escarpments are not preserved, perhaps due to the steepness of escarpment slopes. For the purpose of seismic-hazard assessment, values for slip rate, recurrence interval, and single-event displacement are inferred to be similar to those calculated for the Morgan fault (2353), based on similarities in escarpment morphology. The estimated maximum credible earthquake for the fault is 6.5-6.75 (M_s).
Age of faulted deposits: Middle and late Quaternary (?).
Paleoseismology studies: None.
Timing of most recent paleoevent: (4) Middle and late Quaternary (<750 ka).
Comments: Based on range-front morphology.
Recurrence interval: No data.
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments: Sullivan and others (1988) believe slip rates are similar to the Morgan fault, which are <0.2 millimeters/year.
Length: End to end (km): 13
Cumulative trace (km): 27
Average strike (azimuth): N40°W

REFERENCES

Hecker, Suzanne, 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 2 plates, scale 1:500,000, 257 p.

Hylland, M.D., Lowe, Mike, and Bishop, C.E., 1995, Engineering geologic map folio, western Wasatch County, Utah: Utah Geological Survey Open-File Report 319, 12 plates, scale 1:24,000.

Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Denver, U.S. Bureau of Reclamation Seismotectonic Report 88-5, 269 p., scale 1:250,000.

Recurrence interval: No data.
Comments: A relatively long recurrence interval is indicated by the degree of soil development on faulted deposits and the subdued geomorphic expression of the scarp.
Slip rate: Unknown, probably <0.2 mm/yr.
Comments: Unfaulted late Quaternary deposits indicate a low slip rate.
Length: End to end (km): 2
Cumulative trace (km): 2
Average strike (azimuth): N23°E

REFERENCES

Hecker, Suzanne, 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 2 plates, scale 1:500,000, 257 p.

Sullivan, J.T., Martin, R.A., and Foley, L.L., 1988, Seismotectonic study for Jordanelle Dam, Bonneville Unit, Central Utah Project, Utah: Denver, U.S. Bureau of Reclamation Seismotectonic Report 88-6, 76 p., scale 1:24,000.

Sullivan, J.T., and Nelson, A.R., 1983, Late Cenozoic faulting in Heber and Keetley Valleys, northeastern Utah, *in* Gurgel, K.D., editor, Geologic excursions in neotectonics and engineering geology in Utah: Utah Geological and Mineral Survey Special Studies 62, p. 55-62.

Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Denver, U.S. Bureau of Reclamation Seismotectonic Report 88-5, 269 p., scale 1:250,000.

U.S. Geological Survey, 1991, Review of geotechnical aspects of the Jordanelle damsite, Heber, Utah: U.S. Geological Survey Open-File Report 91-398, 43 p.

2351, WASATCH FAULT ZONE

Jump to:
Clarkston || Collinston || Brigham || Weber || Salt Lake || Provo || Nephi || Levan || Fayette || References

Structure number: 2351.
Comments:
Structure name: Wasatch fault zone (WFZ).
Comments:
Synopsis: The WFZ is one of the longest and most tectonically active normal faults in North America. The fault zone shows abundant evidence of recurrent Holocene surface faulting and has been the subject of detailed studies for over three decades (for example, Schwartz and Coppersmith, 1984; Machette and others, 1991, 1992). Half of the estimated 50 to 120 post-Bonneville surface-faulting earthquakes in the Wasatch Front region have been on the WFZ (Hecker, 1993).
Date of compilation: 8/01.
Compiler and affiliation: Bill D. Black, Mike Hylland, and Greg N. McDonald (Utah Geological Survey), and Suzanne Hecker (U.S. Geological Survey).
State: Utah, Idaho.
County: Box Elder, Weber, Davis, Salt Lake, Utah, and Juab; Oneida.
1° x 2° sheet: Brigham City, Ogden, Salt Lake City, and Price.
Province: Basin and Range.
Geologic setting: Generally north-trending range-bounding normal fault along the western side of the Malad Range (Clarkston Mountain), Wellsville Mountains, Wasatch Range, and San Pitch Mountains. The WFZ marks the eastern boundary of the Basin and Range in northern Utah. Allluvial-fan sediment and deposits of Pleistocene Lake Bonneville dominate the surficial geology along the fault zone. The Wasatch Range is several kilometers higher than valleys to the west and is the result of repeated fault movement in Cenozoic time.
Number of sections: 10.
Comments: The WFZ is divided into 10 discrete, independent sections, totaling 343 kilometers in length. The sections are thought to represent segments (Schwartz and Coppersmith, 1984; Machette and others, 1991). The southern eight sections are wholly in Utah; the Clarkston section straddles Idaho and Utah, and the northernmost (Malad City) section is in Idaho. The chronology of surface-faulting earthquakes on the fault is one of the better dated in the world and includes 16 earthquakes since 5.6 ka, with an average repeat time of 350 years (McCalpin and Nishenko, 1996). Four of the central five sections (2351E-H) ruptured between 600 and 1,250 years ago; the remaining section (Brigham City, 2351d) has not ruptured in the past 2,125 years (McCalpin and Forman, 1994; McCalpin and Nishenko, 1996). Slip rates of 1-2 millimeters/year are typical for the central sections during Holocene time. In contrast, late Quaternary (<150-250 ka) slip rates on these sections are about 0.1-0.3 millimeters/year, an order of magnitude lower than the Holocene rates. This suggests a causal relation between increased slip rates and isostatic rebound/crustal relaxation following deep lake cycles such as Bonneville (Machette and others, 1986, 1992). Based on comparisons with historical surface fault ruptures in the region, the central fault sections may produce up to magnitude (M_s) 7.5-7.7 earthquakes. McCalpin and Nishenko (1996) suggest the probability for a surface-faulting earthquake somewhere on the fault is 13 and 25 percent in the next 50 and 100 years, respectively.

Length: End to end (km): 308
Cumulative trace (km): 566
Average strike (azimuth): N6°W

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2351b, CLARKSTON MOUNTAIN SECTION

Section number: 2351b.
Section name: Clarkston Mountain section.
Comments: Hecker's (1993) fault number 6-16.
Reliability of location: Good.
Comments: Mapped or discussed by Cluff and others (1974), Machette and others (1992), and Biek and others (2000). Mapping from Cluff and others (1974). Part of the section is in Idaho.
Sense of movement: N.
Comments:
Dip: No data.
Comments:

Dip direction: W.
Geomorphic expression: Steep linear escarpment along the western flank of the Malad Range (Clarkston Mountain). Section boundaries are based on structural and geomorphic relations only and are more tenuous than the boundaries of other WFZ sections to the south. Machette and others (1992) place the boundary between the Clarkston Mountain and Collinston sections at Short Divide, which is marked by a prominent east-striking down-to-the-south normal fault that places Tertiary lacustrine sediment against Paleozoic rock.
Age of faulted deposits: Late Pleistocene.
Paleoseismology studies: None.
Timing of most recent paleoevent: (3) Late Quaternary (<130 ka).
Comments: Regressional shorelines below the Provo level wrap around, and thus postdate, a probable fault escarpment, and deep-water sediments of Lake Bonneville are not faulted.
Recurrence interval: No data.
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments:
Length: End to end (km): 10
Cumulative trace (km): 16
Average strike (azimuth): N5°W

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2351c, COLLINSTON SECTION

Section number: 2351c.
Section name: Collinston section.
Comments: Hecker's (1993) fault number 6-5.

Reliability of location: Good to poor.

Comments: The location of the Collinston section north of the Wellsville Mountains is poorly constrained and subject to interpretation. Gravity data and topography suggested to Machette and others (1992) that the fault is west of the Junction Hills (the low hills north of the Wellsville Mountains), and ends where it intersects the prominent east-trending Short Divide fault at the south end of Clarkston Mountain. Cluff and others (1974) mapped the WFZ as continuous around the south end of Clarkston Mountain, whereas Machette and others (1992) recognized a 7-kilometer left step and gap in late Pleistocene faulting between the Collinston and Clarkston Mountain sections, and interpreted Cluff and others' (1974) supposed connecting fault as a shoreline. Goessel and others (1999) suggest that at the northern end of the Wellsville Mountains, displacement on the Collinston section is transferred several kilometers eastward to the Beaver Dam fault; they tentatively suggest the northern boundary of the Collinston section is in the area between the northern Wellsville Mountains and the Cache Butte divide. Mapping from Doelling (1980), Machette and others (1992), Oviatt (1986a,b), and Personius (1990).

Sense of movement: N.

Comments:

Dip: No data.

Comments:

Dip direction: W.

Geomorphic expression: West-facing escarpment along the western flank of the Malad Range (Clarkston Mountain) and Wellsville Mountains. Machette and others (1992) place the boundary between the Collinston and Brigham City sections at a reentrant near the mouth of Jim May Canyon, 2 kilometers northeast of Honeyville, where the trend of the fault and amount of pre-Bonneville displacement changes.

Age of faulted deposits: Late Pleistocene.

Paleoseismology studies: None.

Timing of most recent paleoevent: (3) Late Quaternary (<130 ka).

Comments: Faulting generally predates the transgressive phase of Lake Bonneville (~30 ka). A 2-kilometer-long scarp in alluvium (equivalent in age to the Provo level of Lake Bonneville) at the south end of the section is probably related to sympathetic or subsidiary rupturing from faulting on the Brigham City section. The remainder of the section shows no evidence of Holocene faulting (Machette and others, 1992).

Recurrence interval: No data.

Comments:

Slip rate: (D) <0.2 mm/yr.

Comments: At the south end of the section, alluvium estimated from soil-profile development to be several hundred thousand years old is displaced 12 meters.

Length: End to end (km): 30

Cumulative trace (km): 37

Average strike (azimuth): N21°W

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2351d, BRIGHAM CITY SECTION

Section number: 2351d.
Section name: Brigham City section.
Comments: Hecker's (1993) fault number 6-6.
Reliability of location: Good.
Comments: Mapping from Personius (1990).
Sense of movement: N.
Comments:
Dip: 65-80°W (Personius, 1991).
Comments: 65-80°W at Bowden Canyon trench in fluvial and debris-flow deposits; 70-80°W at Pleasant View trench in lacustrine deposits.
Dip direction: W.
Geomorphic expression: West-facing scarps along the western base of the Wellsville Mountains and Wasatch Range. Scarps on the valley floor between Willard and Brigham City may be associated with incipient lateral spreads, but have orientations and relief consistent with a faulting origin. In the southern part of the section,15- to 20-meter-high scarps on a Provo-level delta suggest as many as 6-10 surface-faulting events occurred since about 16 ka (assuming an average displacement per event of 2+ meters). However, only a few short, discontinuous scarps are in upper Holocene deposits near the southern section boundary, which is in contrast to the abundance of Holocene scarps on the Weber section to the south. Displacement per event is from 1.0 to 2.5 meters.
Age of faulted deposits: Holocene.
Paleoseismology studies: A trench excavated in 1986 across a fault scarp on the Bowden Canyon alluvial fan (Brigham City trench; site 2351d-1), east of Brigham City, exposed evidence for three surface-faulting earthquakes (Personius, 1991). The oldest of these events could not be directly dated. Radiocarbon age estimates on bulk-soil samples from paleosols and the base of the modern soil provide limiting ages for the penultimate and most recent events on the fault. Timing of the penultimate event may correlate with the timing of the most recent surface-faulting earthquake documented in a trench across a fault scarp on the Pleasant View salient (Pole Patch trench; site 2351d-3), about 20 kilometers south of the Brigham City trench (Personius, 1991). This scarp is associated with a short, off-trend fault in the area of the boundary between the Brigham City and Weber sections of the Wasatch fault. The trench exposed evidence for three surface-faulting earthquakes. Although a bulk-soil sample yielded a radiocarbon age estimate that closely approximates the age of the most recent event, other radiocarbon ages only poorly constrain the timing of the older events.

In 1992 and 1993, 14 additional trenches were excavated across scarps of the Brigham City section to lengthen the paleoseismic record for this fault (McCalpin and Forman, 1994). These trenches were on the Provo-level delta at the mouth of Box Elder Canyon (site 2351d-2). In total, the trenches exposed evidence for five, or possibly six, surface-faulting events. Earthquake timing is constrained by limiting ages obtained from radiocarbon and thermoluminescence dating of bulk soil samples. The most recent event here (event Z) is younger than the most recent event at the Brigham City trench; the timing of that earthquake correlates well with event Y here. Evidence was not observed for an earthquake correlative with the penultimate event at the Brigham City trench. A relatively wide range in limiting ages for event V suggests either a poorly constrained single event, or two separate events. McCalpin and Nishenko (1996) prefer the two-event interpretation, resulting in a total of seven paleoearthquakes on the Brigham City section since 13 ka.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).
Comments: The Brigham City section is the northernmost WFZ section that exhibits clear evidence of recurrent Holocene faulting along its entire length (Personius, 1988; Machette and others, 1992). McCalpin and Nishenko (1996) show seven paleoearthquakes on the section since 13 ka; mean ages of these events are 2.1 ka (event Z), 3.4 ka (event Y), 4.7 ka (event X), 6.0 ka (event W), 7.3 ka (event V), 8.5 ka (event U), and 13.0 ka (event T).
Recurrence interval: 1.3 ky (<8.5 ka).
Comments: The overall temporal pattern since 13 ka is one earthquake every 1-2 ky since 8.5 ka, with a long seismic gap between 8.5 and 13 ka. McCalpin and Forman (1994) indicate the ~5 ky seismic gap may have been influenced by changes in crustal stress regime associated with Lake Bonneville dessication, possibly causing crustal rebound to suppress extensional movements. Elapsed time since the last earthquake (2,125 years) exceeds the mean recurrence and suggests that the section is due for a surface-faulting earthquake, unless strain-accumulation rates have declined during the late Holocene. McCalpin and Nishenko (1996) suggest that the Brigham City section has a time-dependent earthquake probability that approaches or exceeds regional and fault-specific probabilities.
Slip rate: (C) 0.2-1 mm/yr (<4.7 ka), (B) 1-5 mm/yr (<15 ka).
Comments: 0.75 millimeters/year since 4.7 ka and 1.0-1.3 millimeters/year for the past 15 ky. Net slip gradually decreases to the north. The middle to late Holocene slip-rate estimate is based on trench data from near the center of the section at Brigham City. The late Pleistocene estimate is based on the post-Provo displacement in the southern part of the section.
Length: End to end (km): 37
Cumulative trace (km): 81
Average strike (azimuth): N9°W

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2351e, WEBER SECTION

Section number: 2351e.
Section name: Weber section.
Comments: Hecker's (1993) fault number 11-22.
Reliability of location: Good.
Comments: Mapping from Nelson and Personius (1993).
Sense of movement: N.
Comments:
Dip: 68-78°W (Swan and others, 1980); 68-70°W (McCalpin and others, 1994).
Comments: Measured in Kaysville trench A (Swan and others, 1980) and reopened Kaysville trench A (McCalpin and others, 1994) in lacustrine deposits juxtaposed against slope colluvium.

Dip direction: W.
Geomorphic expression: West-facing scarps along the western base of the Wasatch Range. The Weber section is the longest WFZ section. The southern boundary of the section is at the prominent Salt Lake salient, but fault scarps in this area are easily confused with nontectonic features and scarp distribution is less certain (Machette and others, 1992). The northern section boundary is at the Pleasant View salient. Scarp heights in the northern part of the Weber section suggest a higher rate of late Holocene faulting than on the Brigham City section to the north (Machette and others, 1992). Net displacement measured at three sites (Garner Canyon, East Ogden, and Kaysville), which are about 20 kilometers apart, is from 1.0 to 3.5 meters per event. Individual faulting events may not have ruptured the entire section, although the general timing of events at the three sites appears similar.
Age of faulted deposits: Holocene.
Paleoseismology studies: One of the earliest detailed paleoseismic investigations of the Wasatch fault (1978) was conducted on the Weber section between Bair (or Baer; variant spelling) and Shepard Creeks, about 3 kilometers east-southeast of Kaysville. This study was particularly important from the standpoint of developing two fundamental concepts of modern paleoseismology: colluvial-wedge stratigraphy (Swan and others, 1980), and characteristic earthquakes (Schwartz and Coppersmith, 1984). The Kaysville site (site 2351e-3) included five test pits and seven trenches, which exposed evidence for at least three surface-faulting earthquakes since about 12 ka (Swan and others, 1980; Swan, Schwartz, and others, 1981). A single radiocarbon age estimate on detrital charcoal indicated that two earthquakes had occurred since 1,580 ± 150 yr B.P. The Kaysville site was reoccupied in 1988 to refine the paleoearthquake chronology; a trench was excavated parallel to and slightly deeper than the 1978 trench A. Detailed stratigraphic analysis and geometrical reconstructions based on data from both the 1978 and 1988 trenches indicate five or six surface-faulting earthquakes since 13 ka (McCalpin and others, 1994). Radiocarbon and thermoluminescence age estimates on bulk-soil samples from paleosols constrain the timing of the three youngest faulting events. The earlier two or three events could not be directly dated because stratigraphic evidence for these postulated events was not exposed.

In 1986, five trenches were excavated across multiple scarps of the Weber section at the East Ogden site (site 2351e-2), about 1.5 kilometers north-northwest of the mouth of Ogden Canyon. The trenches exposed evidence for three, and possibly four, surface-faulting earthquakes since middle Holocene time (Nelson, 1988; Machette and others, 1992). Radiocarbon age estimates on bulk-soil samples from paleosols developed on colluvial wedges provided poor constraint on paleoearthquake timing (Nelson, 1988), but thermoluminescence age estimates on fault-related colluvial sediments reduced some of the uncertainty (Forman and others, 1991). One of the trenches (EO-3) showed stratigraphic evidence for a small-displacement event within the past 500-600 years, but obscure stratigraphic relations and problems with radiocarbon age estimates make interpretation of this event tenuous (Nelson, 1988). Although Nelson and Personius (1993) characterize this event as "probable," it has not been observed in any other trenches on the Weber section.

At Garner Canyon (site 2351e-1), 2 kilometers south of Coldwater Canyon near North Ogden, an artificial exposure across the fault revealed stratigraphic evidence for four surface-faulting earthquakes (Nelson and others, 1987; Machette and others, 1992; Nelson and Personius, 1993). Radiocarbon age estimates on bulk-soil samples from paleosols developed on colluvial wedges constrain the timing of the two youngest paleoearthquakes.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).
Comments: McCalpin and Nishenko (1996) show four paleoearthquakes on the section since 6.1 ka; mean ages of these events are 1.0 ka (event Z), 3.1 ka (event Y), 4.4 ka (event X), and 6.1 ka (event W)
Recurrence interval: 1.7 ky (<6.1 ka).
Comments:
Slip rate: (B) 1-5 mm/yr.
Comments: 0.9 to 1.9 millimeters/year for the past 15 ky for the central three-quarters of the section. Slip rates are highest in the central and northern part of the section, and decrease toward the ends.
Length: End to end (km): 56
Cumulative trace (km): 81
Average strike (azimuth): N6°W

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2351f, SALT LAKE CITY SECTION

Section number: 2351f.
Section name: Salt Lake City section.
Comments: Hecker's (1993) fault number 12-6.
Reliability of location: Good.
Comments: Mapping from Personius and Scott (1992) with the following exceptions: (1) The southernmost extent of the Warm Springs fault is from Scott and Shroba (1985). (2) The northernmost middle and late Quaternary trace (Virginia Street fault) is from Van Horn and Crittenden (1987; City Cemetery fault). (3) The central middle and late Quaternary trace (University Hospital fault) is from Hecker (1993), based on interpretation of data contained in Everitt (1980). (4) The southernmost middle and late Quaternary trace is from Crittenden (1965) and Van Horn (1972).
Sense of movement: N.
Comments:
Dip: 60-86°W (Black and others, 1996).
Comments: Measurements taken at the South Fork Dry Creek site in Holocene alluvial-fan and Pleistocene Lake Bonneville deposits.
Dip direction: W.

Geomorphic expression: The Salt Lake City section is divided into three en-echelon subsections (from north to south): the Warm Springs fault, East Bench fault, and Cottonwood subsection (Personius and Scott, 1992). The Warm Springs fault forms a prominent escarpment along the western flank of the Salt Lake salient; then trends south into basin fill and dies out. Location of the southern end of the Warm Springs fault beneath urbanized Salt Lake City is subject to interpretation (Schlenker and others, 1999). Pre-urbanization studies of the Warm Springs fault at Jones Canyon by G.K. Gilbert (1890, *in* Hunt, 1982) showed evidence for three post-Bonneville events, with displacements totaling 9 meters. However, these estimates are probably minima; perhaps six to eight latest Quaternary events with displacements totaling 14-16 meters have occurred on this part of the section (Personius and Scott, 1992). Robison and Burr (1991) estimated a maximum displacement of about 12 meters at a site (Washington Elementary School) at the south end of the Warm Springs fault. Based on variations in elevation of correlative Lake Bonneville deposits indicating paleolake level, Currey (1992) infers the presence of three faults (Capitol Hill fault zone) east of the Warm Springs fault, having a maximum cumulative offset of about 21 meters since 20,400 yr B.P.

In northeastern Salt Lake Valley, faulting activity shifted westward from the range front to the East Bench fault during the late Quaternary (Personius and Scott, 1992). The East Bench fault forms prominent northwest- to southwest-facing intrabasin fault scarps from Salt Lake City (about 2 kilometers east of the southern end of the Warm Springs fault) along about 1100 East Street and Highland Drive south to Big Cottonwood Creek. A trench site at the north end of the East Bench fault revealed evidence for 7 meters of deformation in transgressive Lake Bonneville deposits, including 3 meters of monoclinal folding that occurred prior to 12.5 ka and 4 meters of Holocene-age brittle faulting (Machette and others, 1992). A Quaternary(?) fault (Rudys Flat fault) cutting bedrock of the Salt Lake salient east of the Warm Springs fault appears to connect the East Bench fault with the Weber section of the Wasatch fault zone (2351E), but has no conclusive evidence of Quaternary movement.

The Cottonwood subsection forms a prominent (often wide and complex) zone of faulting along the range front from just north of Big Cottonwood Canyon to the Traverse Mountains. At the mouth of Little Cottonwood Canyon, the fault zone forms a 50-meter-wide graben with a 25-meter-high main scarp and 10-meter-high antithetic scarp. Farther south at South Fork Dry Creek, the graben is 400 meters wide, and six en-echelon scarps comprise the main fault zone. The complexity of the fault zone and poor exposure of antithetic faults has precluded accurate determination of net tectonic displacement. However, profiling of moraine surfaces across the fault zone in the Little Cottonwood Canyon area indicates approximately 14-14.5 meters of net vertical tectonic displacement (Madsen and Currey, 1979; Swan, Hanson, and others, 1981). The main fault zone shows stratigraphic evidence for seven events since 15 ka (McCalpin and Nelson, 2000), and estimates of displacement per event range from 1.5 to 5 meters (Schwartz and Lund, 1988; Black and others, 1996). Based on structural geology, distribution and size of fault scarps, and comparisons with large historical earthquakes elsewhere, surface rupture on the Salt Lake City section may initiate at the southern end of the Cottonwood subsection and propagate northward (Bruhn and others, 1987; Personius and Scott, 1992).
Age of faulted deposits: Holocene.

Paleoseismology studies: Most of the paleoseismic record for the Salt Lake City section comes from two sites on the Cottonwood subsection of the fault: the mouth of Little Cottonwood Canyon, and the South Fork of Dry Creek. Four trenches were excavated in 1979 across fault scarps just north of the mouth of Little Cottonwood Canyon (site 2351f-4). One trench did not expose the fault and was not logged. The other trenches exposed evidence for two or three surface-faulting earthquakes during the Holocene (Swan, Hanson, and others, 1981). Accelerator-mass-spectrometry radiocarbon age estimates on charcoal provided a minimum limiting age for the penultimate event, but the most recent event could not be dated (Schwartz and Lund, 1988). Because of the width and complexity of the fault zone at this site, not all fault traces were trenched.

To improve the paleoseismic record of the Salt Lake City section, trenches were excavated in 1985 in another complex zone of faulting at the South Fork Dry Creek site (site 2351f-5), about 4 kilometers south of the Little Cottonwood Canyon site. Four trenches were excavated across three of the six scarps present at the site; the trenches exposed evidence for two surface-faulting earthquakes, and radiocarbon age estimates on bulk-soil samples from paleosols beneath colluvial wedges provided maximum limiting ages for the events (Schwartz and Lund, 1988). Still, the late Quaternary paleoseismic record of the Salt Lake City section remained incomplete, as was shown by a trench excavated in

1991 as part of a geotechnical study at Dry Gulch (site 2351f-6), a few hundred meters south of the South Fork Dry Creek site. This trench also exposed evidence for two surface-faulting earthquakes; however, although radiocarbon age estimates on bulk-soil samples showed that the most recent event in this trench coincided with the age determined in the South Fork Dry Creek trenches, the penultimate event was previously unrecognized (Lund, 1992).

Five additional trenches were excavated at the South Fork Dry Creek site in 1994, across scarps that had not previously been trenched, to establish a complete late Holocene paleoseismic chronology for the Salt Lake City section. Stratigraphic relations exposed in the trenches, combined with limiting ages from radiocarbon age estimates on bulk-soil samples, provided evidence for yet another previously unrecognized surface-faulting earthquake, increasing the number of events since 6 ka to four (Black and others, 1996). This study also provided insights into the variable nature of recurrent surface faulting along existing fault traces in complex fault zones.

The Little Cottonwood Canyon site was reoccupied in 1999 as part of an investigation to document all of the post-Bonneville surface-faulting earthquakes on the Salt Lake City section. A "megatrench" and accompanying auger hole exposed a 26-meter vertical sequence that revealed evidence for seven surface-faulting events, including three in the period 6-15 ka (McCalpin and Nelson, 2000). Radiocarbon age estimates on bulk-soil samples and charcoal provided timing constraints for the paleoearthquakes. A significant finding from this study is that the average earthquake recurrence interval is much longer between 6 and 15 ka than it is after 6 ka. The megatrench also documented a prolonged early Holocene aseismic interval on the Wasatch fault, consistent with observations made by McCalpin and Forman (1994) at their trench site (2351d-2) on the Brigham City section.

Geotechnical studies have provided information on the late Quaternary paleoseismic history of the Warm Springs fault, at the northern end of the Salt Lake City section of the Wasatch fault. Trenches at the Washington Elementary School property at 400 North and 200 West Streets in northern Salt Lake City (site 2351f-1) revealed evidence of faulting; however, lack of correlative hanging-wall and footwall strata precluded measurement of offset, and no radiometric dating was done. Based on a minimum 12-meter displacement of Lake Bonneville sediments and assumed 2- to 3-meter displacement per event, four to six faulting events were estimated to have occurred since 15 ka (Robison and Burr, 1991). At the Salt Palace Convention Center at 200 South West Temple Street in downtown Salt Lake City (site 2351f-2), construction excavations and exploratory trenches revealed evidence for three faulting events; radiocarbon age estimates on bulk-soil samples provide a minimum limiting age for the oldest event and a maximum limiting age for the two younger events (Simon and Shlemon, 1999). The observed deformation at the Salt Palace was alternatively interpreted as being related to liquefaction-induced lateral spread (Korbay and McCormick, 1999).

Two trenches were excavated across the East Bench fault as part of a geotechnical study at the Dresden Place site at 550 South 900 East Street in eastern Salt Lake City (site 2351f-3). Although the number and timing of individual faulting events were not determined, the trenches did reveal intriguing evidence for contrasting deformational styles (including monoclinal warping and planar fault rupture) associated with faulting before and after regression of Lake Bonneville to an elevation below that of the site (results summarized by Machette and others, 1992).

Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).

Comments: Combined observations at two sites on the Cottonwood section in 1979 and 1985 showed a total of three events since 8-9 ka, but not all scarps at either site were trenched. Complete trenching at the South Fork Dry Creek site in 1994, combined with observations at Dry Gulch in 1991 and at South Fork Dry Creek in 1985, showed four paleoearthquakes occurred since 6 ka and at least five events occurred since 8-9 ka (Black and others, 1996). McCalpin and Nishenko (1996) indicate mean ages for the last four events are 1.2 ka (event Z), 2.5 ka (event Y), 3.9 ka (event X), and 5.4 ka (event W). Results from the "megatrench" at the mouth of Little Cottonwood Canyon indicated an additional three events in the time period 6-15 ka, rather than the six or seven events that would be expected if the post-6 ka recurrence interval had continued throughout latest Quaternary time (McCalpin and Nelson, 2000). The East Bench fault has evidence for at least two events in the past 26 ka (during and after the Bonneville lake cycle). The earliest documented event appears as 3 meters of monoclinally warped, deep-water sediments and probably occurred subaqueously, before the lake level dropped below the site about 12.5 ka. Subsequent events occurred as brittle, presumably subaerial, deformation. Simon and Shlemon (1999) found evidence for three events on a possible southern extension of the Warm Springs fault in downtown Salt Lake City, one between ~7.1 and 8.1 ka and two events after ~6.4 ka, alternatively interpreted by Korbay and McCormick (1999) as liquefaction-related deformation (lateral spreading).

Recurrence interval: 1.4 ky (<5.4 ka).

Comments: Based on the mean interevent time between events Z through W. McCalpin and Nelson (2000) indicate that recurrence has been irregular, with a much longer recurrence interval in the period 6-15 ka following and perhaps attributable to the drying up of Lake Bonneville.

Slip rate: (B) 1-5 mm/yr.

Comments: 1.4 millimeters/year (<5.4 ka) based on an average net slip per event of 2 meters and a recurrence interval of 1.4 ky. Hecker (1993) indicates a post-19 ka slip rate of 0.8 millimeters/year and recurrence interval of 2.4-3.0 ky based on 2-meter-displacement events and evidence from the Little Cottonwood Canyon site. A rough latest Quaternary slip-rate estimate of 1 millimeter/year for the East Bench fault is significantly greater than a rough long-term (Quaternary) estimate of 0.04-0.14 millimeters/year based on shallow seismic-reflection data (Crone and Harding, 1984).

Length: End to end (km): 43
Cumulative trace (km): 92

Average strike (azimuth): N4°W

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2351g, PROVO SECTION

Section number: 2351g.
Section name: Provo section.
Comments: Hecker's (1993) fault number 12-3.
Reliability of location: Good.
Comments: Mapping from Machette (1992).
Sense of movement: N.
Comments:
Dip: 77°W (Lund and Black, 1998); 79°W (Lund and others, 1991); 58°W (Swan and others, 1980).
Comments: Measurements are from the main fault in the trench at Rock Canyon in alluvium and debris-flow deposits (Lund and Black, 1998), south trench at Mapleton in lacustrine deposits (Lund and others, 1991), and Hobble Creek trench HC-1 in Provo fan-delta deposits.
Dip direction: W.
Geomorphic expression: Based on fault geometry and apparent recency of movement as indicated by scarp morphology, Machette and others (1986) tentatively subdivided the Provo section (as originally proposed by Schwartz and Coppersmith, 1984) into three subsections (from north to south, the American Fork, Provo "restricted sense," and Spanish Fork). However, based on the timing of the last two events deciphered from trench studies, the entire length of the WFZ in Utah Valley appears to be a single section (Machette, 1992; Lund and others, 1991; Machette and others, 1991; Lund and Black, 1998). Lund and Black (1998) measured 3.3 meters of displacement from the most recent event at Rock Canyon in correlative geologic units across the fault zone, which is one of the most accurate available for the WFZ. The Woodland Hills splay of the Spanish Fork subsection has evidence for three or four events, totaling 3 meters of displacement, in about the past 130 ka, yielding a slip rate of 0.01-0.02 millimeters/year and an average recurrence interval of about 40-65 ky (Machette, 1992). Movement on the splay apparently occurs during only some of the events on the main fault, although the most recent event on the splay occurred about 1.0 ka and may be correlative with the most recent event on the main fault. Movement on a couple of short subsidiary faults at the northern end of Utah Valley appears to have occurred during, and may be related to, the recession of Lake Bonneville.
Age of faulted deposits: Holocene.

Paleoseismology studies: Machette and Lund (1987) excavated three trenches in 1986 just south of the mouth of American Fork Canyon (site 2351g-1) (results also described in Machette, 1988, 1992; Machette and others, 1992). The trenches crossed several traces of the fault, and collectively revealed stratigraphic and structural evidence for four surface-faulting events since 8 ka. Radiocarbon and thermoluminescence age estimates on charcoal and bulk-soil samples from colluvial-wedge deposits and buried A horizon soils constrain the timing of the events.

In 1986, M.N. Machette (USGS) and W.E. Mulvey (UGS) mapped a natural stream-cut exposure of the fault northeast of Provo at Rock Canyon (site 2351g-2). They observed evidence for the most recent surface-faulting event; radiocarbon age estimates on bulk-soil samples from a colluvial-wedge deposit and a paleosol buried by post-event deposits constrain fault timing (Machette, 1992; Machette and others, 1992). In 1988, a trench excavated across the fault scarp about 50 meters south of the stream-cut exposure (Lund and others, 1990; Lund and Black, 1998) also revealed evidence for the most recent event, and re-examination of the cut identified a second fault trace. Radiocarbon age estimates from bulk-soil samples of three buried paleosols exposed in the trench provided additional constraints on the timing of the most recent event. Also, additional samples (collected in 1988 and 1995) of a paleosol that was buried by scarp-derived colluvial-wedge material, and exposed at the stream cut, yielded a radiocarbon age estimate that provides a maximum limiting age for the most recent event.

Near Springville, Swan and others (1980) profiled scarps where the main fault trace crosses a large alluvial-fan complex near the mouth of Hobble Creek Canyon, and excavated three trenches about 2 kilometers northwest of Hobble Creek at Deadmans Hollow (site 2351g-3). Collectively, the study area showed evidence for six or seven post-Provo (14.3 ka) surface-faulting events. The trenches revealed colluvial stratigraphy indicating three young events, and three or four older events are inferred from tectonic strath terraces preserved along Hobble Creek upstream from the fault zone.

In 1987, Lund and others (1991) excavated a total of five trenches at two closely spaced sites southeast of the town of Mapleton. The "Mapleton North" (2351g-4) and "Mapleton South" (2351g-5) sites are 4 and 5.5 kilometers, respectively, south of the Hobble Creek site. The north trench site revealed stratigraphic and structural evidence for the most recent surface-faulting event; radiocarbon age estimates from charcoal contained in pre- and post-event deposits constrain the timing of this event. Trench exposures at the south site revealed evidence for two surface-faulting events. A lack of datable material precluded determining the timing of the most recent event. Timing of the penultimate event was estimated from radiocarbon and thermoluminescence age estimates obtained from a buried soil that was displaced by faulting shortly before the time of burial.

The U.S. Bureau of Reclamation (USBR) excavated two trenches in 1987 in alluvial-fan deposits at the mouth of Water Canyon (site 2351g-6), about 8 kilometers south of the town of Spanish Fork (Ostenaa, 1990). The trenches revealed evidence for at least three Holocene surface-faulting events. Radiocarbon age estimates from charcoal in surface-burn horizons buried by scarp-derived colluvium provide maximum limiting ages for the two most recent events. Radiocarbon age estimates from detrital charcoal in alluvium and colluvium bracket the ages of the older events. Just prior to the study at Water Canyon, the USBR excavated two trenches across the Woodland Hills fault, a splay of the Provo section of the Wasatch fault. This site (2351g-7) is about 2 kilometers southwest of the Water Canyon site. The trenches revealed evidence for three or four surface-faulting events since about 130 ka, based on correlations of faulted alluvial-fan soils with similar soils in the area (Machette, 1992; Machette and others, 1992). Radiocarbon age estimates on bulk-soil samples from an A horizon soil buried by scarp-derived colluvium provide an approximation for the timing of the most recent event.

Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).

Comments: The most recent surface-faulting earthquake at the Rock Canyon site occurred just prior to 650 yr ago (Lund and Black, 1998), which corresponds well with the timing of the most recent surface-faulting earthquakes at the American Fork (500 yr ago; Machette, 1990) and Mapleton (600 yr ago; Lund and others, 1991) sites to the north and south, respectively. The penultimate event occurred about 2.6-3.0 ka; based on results from the American Fork site, two prior events also occurred about 5.3 ka and 5.5-8.0 ka. A conflicting chronology of faulting from a site near the southern boundary of the section (at Water Canyon, where two events have occurred in the last 1.0 ka) may be explained by spatial overlap of the Nephi and Provo sections, whereby events from both sections are recorded at the site (Machette, 1992; Ostenaa, 1990).

Recurrence interval: 2.4 ky (<5.3 ka).

Comments: Based on data from the American Fork site, where rates of activity appear to have been constant during post-Bonneville time. Six or seven post-Provo events are inferred to have occurred at the Hobble Creek site (east of Spanish Fork) site, yielding an average recurrence interval of 1.7-2.6 ky.

Slip rate: (B) 1-5 mm/yr.

Comments: 1.1-1.3 millimeters/year since 5.3 ka and 1.0-1.7 millimeters/year in the past 15 ka based on data from the American Fork site. However, two-to-three times more displacement is recorded in Bonneville transgressive deposits than in Provo-age regressive deposits at the Hobble Creek site. Twenty to thirty meters of displacement in just a few thousand years represents slip rates as high as 10 millimeters/year and may be related to the presence of Lake Bonneville.

Length: End to end (km): 59

Cumulative trace (km): 127

Average strike (azimuth): N14°W

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2351h, NEPHI SECTION

Section number: 2351h.

Section name: Nephi section.

Comments: Hecker's (1993) fault number 13-21.

Reliability of location: Good.

Comments: Mapping from Machette (1992) and Harty and others (1997).

Sense of movement: N.

Comments:

Dip: 72°W (Jackson, 1991).

Comments: Measured at the Red Canyon trench in alluvial-fan, mudflow, and fluvial deposits.

Dip direction: W.

Geomorphic expression: Scarps in Quaternary lacustrine deposits and alluvium. The northern end of the section overlaps the Provo section at the Payson salient. The Benjamin fault forms the west side of the salient and dies out as it extends northward into Utah Valley (Harty and others, 1997). Sediments of the Provo phase of the Bonneville lake cycle are only offset up to 2 meters along this fault (Machette,1992). The southern section boundary is at a 15-kilometer gap in Holocene and latest Pleistocene surface faulting where a large alluvial fan (Levan Ridge) extends westward from the San Pitch Mountains (Harty and others, 1997). Gravity data suggest the fault continues through and beneath Levan Ridge, but has been inactive for perhaps tens of thousands of years (Zoback, 1983; Machette and others, 1992). Faults associated with young scarps north of the town of Nephi are probably continuous with near-surface faults in the town identified from seismic-reflection data (Crone and Harding, 1984). A number of small faults in Quaternary deposits have been identified on the western flank of the Gunnison Plateau east of Nephi (Biek, 1991). Displacement per event for the last three surface-faulting earthquakes is 1.4-2.5 meters.

Age of faulted deposits: Holocene.

Paleoseismology studies: Hanson and others (1981) excavated three trenches at North Creek (site 2351h-1), about 6 kilometers northeast of the town of Mona (results also summarized in Schwartz and others, 1983; Schwartz and Coppersmith; 1984; Machette and others, 1992). Colluvial-wedge stratigraphy exposed in the trenches indicated two surface-faulting events; an older, third event was inferred from a tectonic strath terrace incised in an uplifted part of the North Creek alluvial fan. Charcoal obtained from deposits exposed in the trenches, although not from stratigraphically definitive positions, yielded radiocarbon age estimates that provide a maximum limiting age for the most recent event; scarp morphology suggests the age of this event may be considerably younger than the limiting radiocarbon age estimate. An organic-rich soil that formed on scarp-derived colluvium deposited after the penultimate event yielded a radiocarbon age estimate that provides a minimum limiting age for this event. Radiocarbon dating of a buried, offset burn layer in the North Creek alluvial-fan deposits provides a maximum limiting age for the antepenultimate event.

Jackson (1991) excavated one trench at Red Canyon near the southern end of the Nephi segment (site 2351h-2), about 3.5 kilometers north of the town of Nephi. The trench revealed colluvial-wedge stratigraphy indicating three surface-faulting events since about 4.5 ka. Thermoluminescence and radiocarbon age estimates from soil buried by the youngest colluvial wedge provide a maximum limiting age for the most recent event. Samples collected from colluvial-wedge material associated with the penultimate event yielded radiocarbon age estimates that constrain the upper age of this event. A maximum age for the antepenultimate event is thought to be close to the oldest radiocarbon age

estimate for the colluvium, about 4-4.5 ka.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).

Comments: Scarp morphology and continuity suggest very recent displacement (~300-500 years ago), although a combination of ^{14}C and TL dates suggest an age of about 1.2 ka for the most recent event (event Z). Schwartz and Coppersmith (1984) determined that the penultimate event (event Y) occurred before about 4 ka, whereas Jackson (1991) constrained the event between about 3 and 3.5 ka. Event X may have occurred between 4 and 4.5 ka (Jackson, 1991). Thus, actual middle to late Holocene recurrence intervals may vary from less than 1 to more than 3 ky. Three middle to late Holocene events post-date a late Pleistocene(?) fan at the southern end of the section (at Red Canyon), suggesting a possible hiatus in faulting activity during latest Pleistocene to early Holocene time (Jackson, 1991).
Recurrence interval: 1.7-2.7 ky (<5.5 ka).
Comments:
Slip rate: (B) 1-5 mm/yr.
Comments: 0.8-1.3 millimeters/year since 5.5 ka. The range of displacement and slip-rate values reflects a systematic decrease in slip between the middle (larger values) and southern end (smaller values) of the section.
Length: End to end (km): 43
Cumulative trace (km): 80
Average strike (azimuth): N4°E

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2351i, LEVAN SECTION

Section number: 2351i.
Section name: Levan section.
Comments: Hecker's (1993) fault number 13-22.
Reliability of location: Poor.
Comments: Mapping from Machette and others (1992).
Sense of movement: N.
Comments:
Dip: 68°W (Jackson, 1991).
Comments: Measured at the Skinner Peaks trench in sandstone bedrock in fault contact with Holocene mudflow and fluvial deposits.
Dip direction: W.
Geomorphic expression: A 15-kilometer-long gap in Holocene faulting marks the boundary between the Levan and Nephi sections (Harty and others, 1997). The range front in this area is marked by old, degraded scarps on middle(?) Pleistocene surfaces, with little evidence for latest Pleistocene faulting. In contrast to the planar fault geometry at the southern end of the Nephi section (Zoback, 1992), this section of the fault appears to have a listric subsurface geometry and/or to terminate at a shallow detachment fault (Standlee, 1982; Smith and Bruhn, 1984). Displacement from the most recent event was 1.8 to 2.0 meters.
Age of faulted deposits: Holocene.
Paleoseismology studies: Two natural exposures have provided paleoseismic data for the most recent surface-faulting event on the Levan section (Schwartz and Coppersmith, 1984; Machette and others, 1992). At Pigeon Creek (site 2351i-1), just east of the town of Levan, radiocarbon age estimates on charcoal from faulted alluvium provide a maximum limiting age for the most recent event. At Deep Creek (site 2351i-2), about 5 kilometers south of Levan, a radiocarbon age estimate on charcoal from within a debris-flow deposit on the upthrown block broadly constrains the maximum limiting age for the most recent event. Jackson (1991) also studied the Deep Creek exposure and obtained a thermoluminescence age estimate from a buried A horizon that formed on the ground surface prior to faulting. This age estimate is interpreted to closely approximate the timing of faulting at about 1 ka.

Jackson (1991) also excavated a trench (Skinner Peaks trench; site 2351i-3) 1.5 kilometers northwest of Skinner Peaks and about 200 meters east of Utah Highway 26. Although correlation of stratigraphy exposed in the trench from the footwall block to the hanging-wall block was problematic, Jackson's (1991) preferred interpretation indicates evidence for two surface-faulting earthquakes. Thermoluminescence and radiocarbon age estimates on samples from a burn horizon in the footwall block provide a maximum limiting age for the most recent surface-faulting event. Similarly derived age estimates on samples (including disseminated charcoal) from a buried incipient A horizon in the hanging-wall block provide a minimum limiting age for the penultimate event.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).
Comments: Stratigraphic relations indicate that 1 ka is a close maximum limiting age for the most recent event; TL and ^{14}C dates provide maximum ages of about 1.5 and 1.7 ka. An alluvial fan dated at 7.3 ka is crossed by a single-event scarp (~1 ka?), providing a minimum time interval since the penultimate event of ~6.3 ka. At one site, the penultimate event, which is inferred from greater stratigraphic thicknesses on the downthrown side of the fault, predates TL and ^{14}C dates of 3 to 4 ka.

Recurrence interval: No data.
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments: A maximum slip rate of ~0.3 mm/yr is indicated by a maximum displacement of 2.0 meters in a minimum 6.3 ka since the penultimate event, but evidence for only one Holocene event indicates that the slip rate is probably much lower.
Length: End to end (km): 30
Cumulative trace (km): 32
Average strike (azimuth): N17°E

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2351j, FAYETTE SECTION

Section number: 2351j.
Section name: Fayette section.
Comments: Hecker's (1993) fault number 13-23.
Reliability of location: Poor.
Comments: Mapping from Machette and others (1992).
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: W.
Geomorphic expression: The Fayette section is the southernmost WFZ section, and is similar in many aspects to the northern WFZ end-sections except that Lake Bonneville was shallower and remained below (west of) the main fault trace. The Fayette section consists of a concave-west southeast-trending eastern trace, and a shorter north-trending western trace. Fault scarps along the section are eroded at canyon mouths, but preserved on elevated streams terraces (2-5 meters above stream level). Some antiquity is suggested by the lack of scarp preservation at canyon mouths.

Age of faulted deposits: Late Pleistocene.
Paleoseismology studies: None.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).
Comments: Morphologically, the fault scarps plot between regression lines for data from the Drum Mountains fault scarps and the highest shoreline of Lake Bonneville, suggesting an age of 10-15 ka.
Recurrence interval:
Comments:
Slip rate: Unknown, probably <0.2 mm/yr.
Comments: Lack of evidence for Holocene events indicates a generally lower slip rate than central WFZ sections, perhaps similar to northern end-sections.
Length: End to end (km): 16
Cumulative trace (km): 20
Average strike (azimuth): N5°W

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2409, UTAH LAKE FAULTS AND FOLDS

Structure number: 2409.
Comments: Hecker's (1993) fault number 12-19.
Structure name: Utah Lake faults.
Comments:
Synopsis: Poorly understood questionable Holocene faults and folds beneath Utah Lake identified from seismic reflection data.
Date of compilation: 10/99.
Compiler and affiliation: Bill D. Black (Utah Geological Survey) and Suzanne Hecker (U.S. Geological Survey).
State: Utah
County: Utah.
1° x 2° sheet: Salt Lake City.
Province: Basin and Range.
Reliability of location: Poor.
Comments: Mapping from Brimhall and Merritt (1981). Faults and folds shown on map by Machette (1992). The features are subaqueous.
Geologic setting: Northeast- to northwest-trending faults and folds beneath Utah Lake in Utah Valley. Utah Valley is bounded on the east by the Provo section of the Wasatch fault zone and on the north by the east-west trending Traverse Mountains. Surficial geology of the valley is dominated by deposits of Pleistocene Lake Bonneville.
Sense of movement: N.
Comments:
Dip: No data.
Comments:
Dip direction: E and W.
Geomorphic expression: Fault and fold locations, based on widely spaced seismic reflection transects, are uncertain. Acoustical profiles show from <2 to 5 m of displacement across individual faults and folds beneath the lake in a persistent 8- to15-m-deep layer identified as the Provo Formation. Machette (1992) interpreted the layer as lake-bottom sediments probably deposited during the regressive phase of Lake Bonneville. The reflection profiles suggest that displacements decrease upward in strata above the marker horizon and occur within several meters of the lake bottom.
Age of faulted deposits: Latest Pleistocene to Holocene.
Paleoseismology studies: None.
Timing of most recent paleoevent: (2) Latest Quaternary (<15 ka).
Comments:
Recurrence interval: No data.
Comments:
Slip rate: (C) 0.2-1 mm/yr.
Comments: Displacements of <2 to 5 meters in the past 14-16 ka (period of the Bonneville regression) indicate slip rates from < 0.1 to about 0.4 millimeters/year.
Length: End to end (km): 31
Cumulative trace (km): 131
Average strike (azimuth): N8°E.

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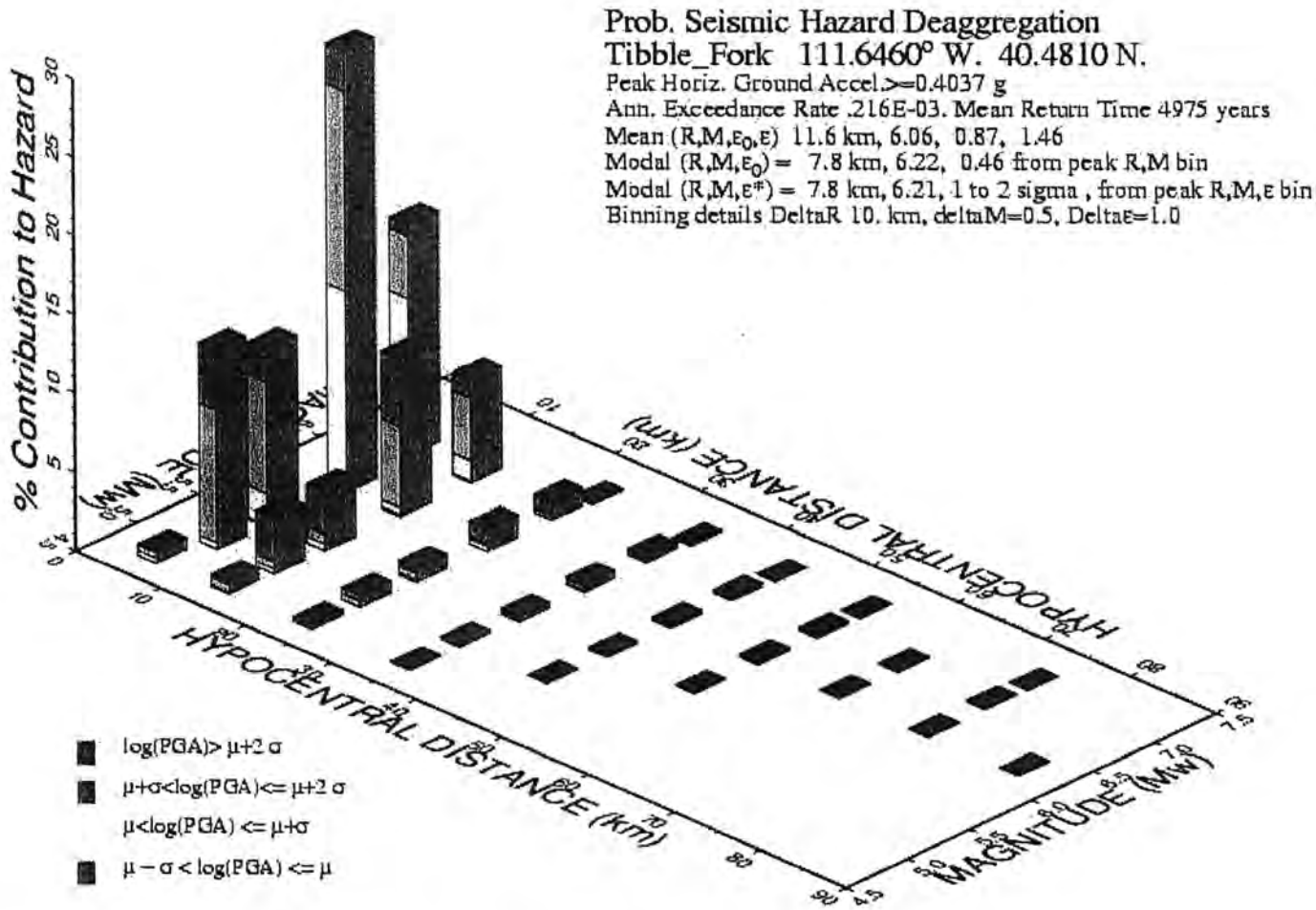
Appendix F2-Deaggregation of Seismic Hazard at One Period of Spectral Acceleration



GMT 2010 Apr 14 22:40:16 Distance (R), magnitude (M), epsilon (ε0,ε) deaggregation for a site on rock with average vs=760m/s top 30 m. USGS CGHT PSHA 1996 edition. Bins with <0.05% contrib. omitted

*** Deaggregation of Seismic Hazard for PGA & 3 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 1996 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 4975yrs. Exceedance PGA=0.4037472g. Computed annual rate=.20039E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.4	4.83	0.735	0.062	0.349	0.324	0.000	0.000	0.000
13.8	4.85	0.725	0.175	0.487	0.062	0.000	0.000	0.000
23.5	4.85	0.309	0.254	0.055	0.000	0.000	0.000	0.000
34.7	4.86	0.076	0.076	0.000	0.000	0.000	0.000	0.000
7.3	5.20	12.550	3.794	8.344	0.367	0.045	0.000	0.000
14.0	5.21	3.544	2.767	0.476	0.301	0.000	0.000	0.000
23.6	5.24	0.770	0.422	0.348	0.000	0.000	0.000	0.000
34.8	5.27	0.208	0.191	0.017	0.000	0.000	0.000	0.000
44.7	5.28	0.063	0.063	0.000	0.000	0.000	0.000	0.000
7.4	5.60	11.168	2.052	7.004	2.004	0.108	0.000	0.000
14.1	5.62	3.769	2.739	0.625	0.370	0.035	0.000	0.000
23.7	5.69	0.891	0.366	0.396	0.129	0.000	0.000	0.000
35.0	5.73	0.341	0.143	0.197	0.000	0.000	0.000	0.000
44.9	5.75	0.140	0.112	0.028	0.000	0.000	0.000	0.000
54.9	5.76	0.084	0.084	0.000	0.000	0.000	0.000	0.000
7.8	6.22	27.964	2.534	12.728	12.102	0.592	0.008	0.000
14.2	6.22	9.959	4.312	5.109	0.439	0.099	0.000	0.000
23.9	6.24	1.411	0.924	0.183	0.298	0.005	0.000	0.000
35.1	6.25	0.475	0.138	0.269	0.067	0.000	0.000	0.000
45.0	6.26	0.231	0.073	0.158	0.000	0.000	0.000	0.000
55.0	6.27	0.170	0.095	0.075	0.000	0.000	0.000	0.000
64.3	6.28	0.092	0.076	0.015	0.000	0.000	0.000	0.000
74.7	6.28	0.079	0.078	0.001	0.000	0.000	0.000	0.000
85.0	6.29	0.052	0.052	0.000	0.000	0.000	0.000	0.000
6.8	6.80	14.556	0.674	3.984	7.710	2.180	0.008	0.000
14.1	6.80	6.456	1.133	3.951	1.304	0.063	0.004	0.000
23.8	6.78	1.169	0.834	0.131	0.156	0.048	0.000	0.000
34.9	6.76	0.393	0.142	0.104	0.148	0.000	0.000	0.000
45.1	6.75	0.201	0.039	0.117	0.046	0.000	0.000	0.000
55.1	6.75	0.175	0.040	0.132	0.004	0.000	0.000	0.000
64.4	6.75	0.111	0.036	0.074	0.000	0.000	0.000	0.000
74.5	6.75	0.101	0.051	0.050	0.000	0.000	0.000	0.000
24.2	7.08	0.079	0.002	0.015	0.037	0.025	0.000	0.000
35.5	7.09	0.089	0.004	0.024	0.057	0.004	0.000	0.000
45.3	7.09	0.067	0.005	0.028	0.035	0.000	0.000	0.000
55.2	7.09	0.069	0.007	0.044	0.018	0.000	0.000	0.000
74.6	7.09	0.053	0.012	0.041	0.000	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 11.6 km; M= 6.06; e0= 0.87; e= 1.46 for all sources.
Modal src-site R= 7.8 km; M= 6.22; e0= 0.46 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.8km; M*= 6.21; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 12.728

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	89.38	9.6	6.09	0.88

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 4975yrs. 1.00 s. PSA =0.2597586g. Computed annual rate=.20093E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.4	5.22	1.913	1.786	0.125	0.002	0.000	0.000	0.000
14.2	5.24	0.824	0.814	0.010	0.000	0.000	0.000	0.000
23.8	5.24	0.169	0.169	0.000	0.000	0.000	0.000	0.000
7.5	5.61	4.031	1.910	2.068	0.051	0.002	0.000	0.000
14.3	5.63	2.287	2.055	0.214	0.018	0.000	0.000	0.000
23.9	5.66	0.661	0.596	0.065	0.000	0.000	0.000	0.000
34.6	5.70	0.173	0.157	0.016	0.000	0.000	0.000	0.000
44.9	5.76	0.058	0.055	0.003	0.000	0.000	0.000	0.000
7.8	6.27	24.655	2.529	12.740	8.947	0.438	0.000	0.000
15.0	6.27	14.531	4.706	8.616	1.203	0.006	0.000	0.000
24.6	6.31	4.881	3.305	1.506	0.070	0.000	0.000	0.000
34.7	6.33	1.450	1.274	0.162	0.014	0.000	0.000	0.000
44.8	6.32	0.482	0.401	0.080	0.001	0.000	0.000	0.000
54.8	6.33	0.241	0.184	0.057	0.000	0.000	0.000	0.000

64.4	6.32	0.123	0.096	0.027	0.000	0.000	0.000	0.000
74.7	6.33	0.110	0.093	0.018	0.000	0.000	0.000	0.000
85.2	6.32	0.081	0.075	0.006	0.000	0.000	0.000	0.000
95.5	6.32	0.076	0.075	0.001	0.000	0.000	0.000	0.000
105.7	6.32	0.055	0.055	0.000	0.000	0.000	0.000	0.000
114.8	6.32	0.061	0.061	0.000	0.000	0.000	0.000	0.000
124.5	6.32	0.050	0.050	0.000	0.000	0.000	0.000	0.000
134.6	6.32	0.056	0.056	0.000	0.000	0.000	0.000	0.000
6.8	6.80	18.065	0.673	4.021	9.187	4.154	0.030	0.000
14.8	6.81	12.391	1.136	6.026	5.185	0.043	0.000	0.000
24.6	6.80	6.048	1.584	4.117	0.339	0.007	0.000	0.000
34.6	6.82	2.695	1.607	1.006	0.082	0.000	0.000	0.000
44.6	6.76	1.196	1.052	0.110	0.035	0.000	0.000	0.000
54.7	6.82	0.575	0.440	0.118	0.017	0.000	0.000	0.000
64.7	6.79	0.234	0.140	0.089	0.004	0.000	0.000	0.000
74.4	6.79	0.200	0.109	0.091	0.000	0.000	0.000	0.000
85.1	6.79	0.082	0.051	0.031	0.000	0.000	0.000	0.000
94.8	6.78	0.058	0.037	0.021	0.000	0.000	0.000	0.000
24.2	7.09	0.060	0.002	0.015	0.036	0.008	0.000	0.000
35.5	7.09	0.065	0.004	0.024	0.037	0.000	0.000	0.000
45.3	7.09	0.051	0.005	0.027	0.019	0.000	0.000	0.000
55.4	7.07	0.136	0.087	0.042	0.007	0.000	0.000	0.000
63.8	7.07	0.080	0.043	0.036	0.000	0.000	0.000	0.000
74.7	7.09	0.054	0.012	0.042	0.000	0.000	0.000	0.000

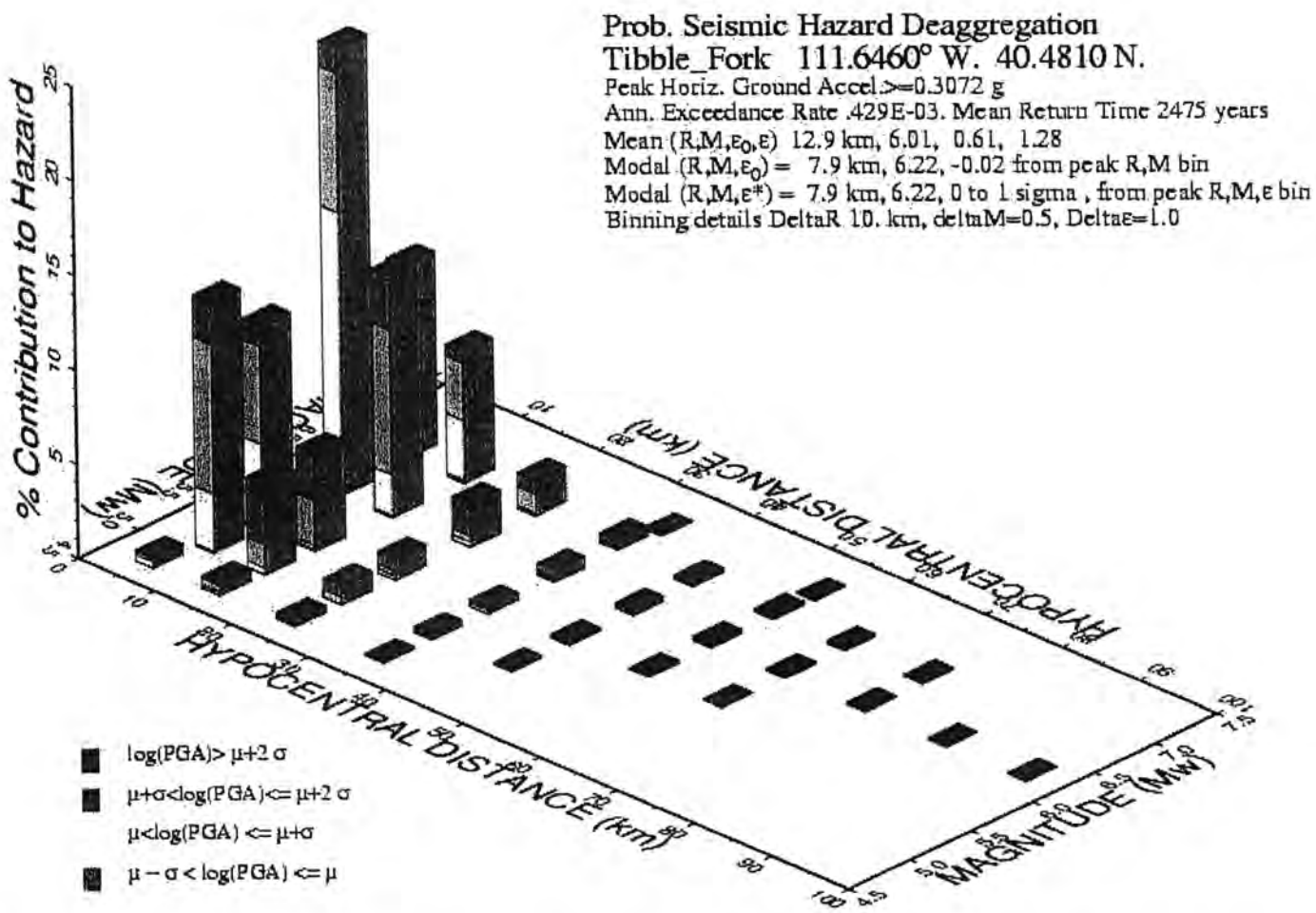
Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 16.4 km; M= 6.42; e0= 0.88; e= 1.49 for all sources.
Modal src-site R= 7.8 km; M= 6.27; e0= 0.57 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.8km; M*= 6.23; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 12.740

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	94.49	13.7	6.42	0.85

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 4975yrs. 0.20 s. PSA =0.8979851g. Computed annual rate=.20057E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.3	4.84	0.312	0.062	0.235	0.015	0.000	0.000	0.000
13.8	4.85	0.242	0.148	0.095	0.000	0.000	0.000	0.000
23.6	4.86	0.098	0.098	0.000	0.000	0.000	0.000	0.000
7.5	5.20	8.927	2.911	5.862	0.153	0.000	0.000	0.000
14.1	5.20	4.311	3.886	0.398	0.026	0.000	0.000	0.000
23.5	5.22	0.758	0.685	0.073	0.000	0.000	0.000	0.000
34.5	5.26	0.133	0.133	0.000	0.000	0.000	0.000	0.000
7.5	5.60	8.735	2.039	6.052	0.617	0.026	0.000	0.000
14.2	5.61	4.703	3.195	1.333	0.175	0.000	0.000	0.000
23.7	5.65	0.987	0.721	0.255	0.011	0.000	0.000	0.000
34.8	5.72	0.243	0.171	0.072	0.000	0.000	0.000	0.000
44.9	5.75	0.090	0.082	0.008	0.000	0.000	0.000	0.000
54.9	5.77	0.058	0.058	0.000	0.000	0.000	0.000	0.000
7.8	6.24	27.441	2.534	13.915	10.765	0.226	0.001	0.000
14.6	6.22	13.177	5.065	7.542	0.538	0.031	0.000	0.000
24.1	6.25	2.400	2.024	0.222	0.153	0.000	0.000	0.000
34.7	6.27	0.513	0.296	0.200	0.016	0.000	0.000	0.000
45.0	6.28	0.189	0.093	0.096	0.000	0.000	0.000	0.000
55.0	6.28	0.134	0.088	0.046	0.000	0.000	0.000	0.000
64.3	6.29	0.077	0.065	0.012	0.000	0.000	0.000	0.000
74.6	6.30	0.070	0.069	0.002	0.000	0.000	0.000	0.000
6.8	6.80	14.930	0.674	4.029	8.397	1.827	0.004	0.000
14.3	6.80	7.554	1.138	4.878	1.490	0.047	0.000	0.000
24.0	6.78	1.848	1.233	0.464	0.140	0.012	0.000	0.000
34.6	6.79	0.496	0.302	0.104	0.091	0.000	0.000	0.000
44.9	6.76	0.182	0.056	0.104	0.022	0.000	0.000	0.000
55.1	6.76	0.149	0.042	0.106	0.002	0.000	0.000	0.000
64.4	6.76	0.097	0.036	0.061	0.000	0.000	0.000	0.000
74.5	6.76	0.093	0.050	0.043	0.000	0.000	0.000	0.000
24.2	7.09	0.067	0.002	0.015	0.037	0.013	0.000	0.000
35.5	7.09	0.071	0.004	0.024	0.043	0.000	0.000	0.000
45.2	7.09	0.052	0.005	0.027	0.020	0.000	0.000	0.000



GMT 2010 Apr 14 22:43:19 Distance (R), magnitude (M), epsilon (ε0,ε) deaggregation for a site on rock with average vs=760m/s top 30 m. USGS CGHT PSHA 1996 edition. Bins with <0.05% contrib. omitted

*** Deaggregation of Seismic Hazard for PGA & 3 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 1996 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 2475yrs. Exceedance PGA=0.3072308g. Computed annual rate=.40354E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.5	4.83	0.533	0.031	0.184	0.304	0.014	0.000	0.000
14.0	4.84	0.630	0.089	0.385	0.155	0.000	0.000	0.000
23.6	4.85	0.345	0.180	0.166	0.000	0.000	0.000	0.000
34.8	4.86	0.107	0.107	0.000	0.000	0.000	0.000	0.000
7.4	5.20	13.281	2.177	7.979	3.038	0.087	0.000	0.000
14.1	5.20	4.784	3.199	1.249	0.325	0.012	0.000	0.000
23.6	5.22	0.997	0.595	0.365	0.037	0.000	0.000	0.000
34.8	5.26	0.269	0.183	0.085	0.000	0.000	0.000	0.000
44.8	5.27	0.087	0.085	0.003	0.000	0.000	0.000	0.000
7.6	5.59	10.850	1.066	5.235	4.468	0.077	0.003	0.000
14.1	5.61	5.123	2.440	2.384	0.230	0.070	0.000	0.000
23.7	5.66	1.106	0.670	0.218	0.217	0.000	0.000	0.000
34.9	5.71	0.373	0.130	0.231	0.013	0.000	0.000	0.000
45.0	5.74	0.160	0.078	0.082	0.000	0.000	0.000	0.000
54.9	5.76	0.106	0.087	0.019	0.000	0.000	0.000	0.000
64.3	5.76	0.052	0.051	0.001	0.000	0.000	0.000	0.000
7.9	6.22	23.641	1.258	7.413	12.448	2.499	0.023	0.000
14.5	6.22	12.789	2.847	7.702	2.157	0.080	0.003	0.000
24.1	6.24	2.260	1.674	0.343	0.211	0.033	0.000	0.000
34.9	6.25	0.568	0.283	0.150	0.135	0.000	0.000	0.000
45.0	6.26	0.250	0.084	0.143	0.024	0.000	0.000	0.000
55.0	6.26	0.185	0.064	0.121	0.000	0.000	0.000	0.000
64.4	6.27	0.106	0.055	0.051	0.000	0.000	0.000	0.000
74.7	6.28	0.097	0.072	0.026	0.000	0.000	0.000	0.000
85.1	6.28	0.067	0.060	0.007	0.000	0.000	0.000	0.000
95.4	6.28	0.059	0.057	0.002	0.000	0.000	0.000	0.000
7.0	6.80	10.198	0.335	2.000	4.739	2.971	0.152	0.000
14.5	6.80	6.973	0.565	3.084	3.163	0.155	0.007	0.000
24.0	6.78	1.878	0.766	0.981	0.079	0.052	0.000	0.000
34.5	6.79	0.513	0.335	0.051	0.117	0.009	0.000	0.000
44.9	6.75	0.219	0.088	0.059	0.072	0.000	0.000	0.000
55.1	6.76	0.171	0.043	0.093	0.035	0.000	0.000	0.000
64.5	6.75	0.110	0.026	0.079	0.005	0.000	0.000	0.000
74.5	6.75	0.105	0.030	0.075	0.000	0.000	0.000	0.000
35.5	7.09	0.057	0.002	0.012	0.030	0.013	0.000	0.000
55.3	7.09	0.057	0.007	0.022	0.028	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 12.9 km; M= 6.01; e0= 0.61; e= 1.28 for all sources.
Modal src-site R= 7.9 km; M= 6.22; e0= -0.02 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.9km; M*= 6.22; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 12.448

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	91.26	10.9	6.03	0.60

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 2475yrs. 1.00 s. PSA =0.1902548g. Computed annual rate=.40388E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.5	5.22	2.601	1.691	0.903	0.007	0.000	0.000	0.000
14.3	5.23	1.293	1.269	0.024	0.000	0.000	0.000	0.000
23.9	5.24	0.322	0.319	0.004	0.000	0.000	0.000	0.000
34.3	5.26	0.067	0.067	0.000	0.000	0.000	0.000	0.000
7.6	5.61	4.602	1.039	3.328	0.230	0.005	0.000	0.000
14.4	5.63	3.120	1.957	1.121	0.042	0.000	0.000	0.000
24.0	5.65	1.080	0.985	0.087	0.008	0.000	0.000	0.000
34.6	5.67	0.306	0.264	0.042	0.000	0.000	0.000	0.000
44.9	5.72	0.099	0.084	0.014	0.000	0.000	0.000	0.000
55.0	5.77	0.058	0.052	0.006	0.000	0.000	0.000	0.000
7.9	6.25	20.615	1.258	7.345	10.697	1.310	0.005	0.000
15.2	6.25	15.735	2.860	9.232	3.624	0.018	0.000	0.000
24.8	6.28	6.679	2.923	3.548	0.206	0.002	0.000	0.000
34.8	6.31	2.380	1.746	0.590	0.044	0.000	0.000	0.000
44.8	6.31	0.896	0.790	0.093	0.014	0.000	0.000	0.000

54.8	6.33	0.429	0.337	0.088	0.004	0.000	0.000	0.000
64.5	6.32	0.205	0.147	0.058	0.000	0.000	0.000	0.000
74.7	6.33	0.165	0.113	0.051	0.000	0.000	0.000	0.000
85.2	6.32	0.116	0.085	0.031	0.000	0.000	0.000	0.000
95.5	6.32	0.107	0.085	0.022	0.000	0.000	0.000	0.000
105.7	6.31	0.078	0.067	0.012	0.000	0.000	0.000	0.000
114.8	6.31	0.087	0.077	0.009	0.000	0.000	0.000	0.000
124.5	6.31	0.073	0.068	0.005	0.000	0.000	0.000	0.000
134.6	6.31	0.082	0.080	0.002	0.000	0.000	0.000	0.000
145.2	6.31	0.066	0.066	0.000	0.000	0.000	0.000	0.000
155.1	6.31	0.062	0.062	0.000	0.000	0.000	0.000	0.000
7.0	6.80	11.398	0.335	2.001	4.961	3.816	0.286	0.000
15.0	6.80	10.461	0.565	3.361	5.681	0.853	0.001	0.000
24.8	6.80	6.677	0.794	3.853	2.009	0.021	0.000	0.000
34.7	6.82	3.680	0.983	2.472	0.221	0.004	0.000	0.000
44.7	6.74	2.195	1.483	0.656	0.056	0.000	0.000	0.000
54.7	6.81	1.136	0.952	0.139	0.045	0.000	0.000	0.000
64.9	6.79	0.465	0.364	0.078	0.023	0.000	0.000	0.000
74.0	6.81	0.341	0.228	0.098	0.014	0.000	0.000	0.000
82.4	6.86	0.369	0.324	0.043	0.002	0.000	0.000	0.000
94.7	6.79	0.086	0.052	0.035	0.000	0.000	0.000	0.000
104.9	6.80	0.075	0.047	0.027	0.000	0.000	0.000	0.000
115.0	6.79	0.052	0.031	0.021	0.000	0.000	0.000	0.000
124.4	6.78	0.051	0.028	0.023	0.000	0.000	0.000	0.000
55.5	7.06	0.215	0.110	0.083	0.021	0.000	0.000	0.000
63.4	7.06	0.134	0.098	0.023	0.012	0.000	0.000	0.000

Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 20.3 km; M= 6.36; e0= 0.73; e= 1.39 for all sources.
Modal src-site R= 7.9 km; M= 6.25; e0= 0.15 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 8.0km; M*= 6.27; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 10.697

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	93.06	16.2	6.35	0.67

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 2475yrs. 0.20 s. PSA =0.6835068g. Computed annual rate=.40376E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.3	4.83	0.267	0.031	0.170	0.066	0.000	0.000	0.000
13.9	4.85	0.251	0.087	0.164	0.000	0.000	0.000	0.000
23.6	4.85	0.127	0.115	0.011	0.000	0.000	0.000	0.000
7.5	5.20	8.998	1.975	6.054	0.962	0.006	0.000	0.000
14.3	5.20	5.352	3.230	2.036	0.085	0.000	0.000	0.000
23.7	5.21	1.147	0.998	0.149	0.000	0.000	0.000	0.000
34.4	5.25	0.213	0.198	0.015	0.000	0.000	0.000	0.000
44.8	5.28	0.056	0.056	0.000	0.000	0.000	0.000	0.000
7.7	5.60	8.632	1.067	5.038	2.486	0.042	0.000	0.000
14.3	5.61	5.887	2.513	3.197	0.168	0.009	0.000	0.000
23.7	5.63	1.456	1.197	0.196	0.063	0.000	0.000	0.000
34.6	5.69	0.334	0.207	0.127	0.001	0.000	0.000	0.000
44.9	5.73	0.114	0.078	0.037	0.000	0.000	0.000	0.000
55.0	5.76	0.076	0.067	0.009	0.000	0.000	0.000	0.000
7.9	6.22	23.151	1.259	7.471	13.073	1.344	0.003	0.000
14.8	6.21	15.450	2.915	9.891	2.597	0.046	0.000	0.000
24.4	6.24	3.856	2.611	1.084	0.157	0.004	0.000	0.000
34.6	6.27	0.843	0.641	0.141	0.061	0.000	0.000	0.000
44.8	6.27	0.264	0.147	0.109	0.008	0.000	0.000	0.000
55.0	6.28	0.161	0.075	0.086	0.000	0.000	0.000	0.000
64.4	6.29	0.092	0.053	0.039	0.000	0.000	0.000	0.000
74.7	6.29	0.087	0.065	0.021	0.000	0.000	0.000	0.000
85.1	6.29	0.063	0.056	0.006	0.000	0.000	0.000	0.000
95.4	6.29	0.057	0.057	0.001	0.000	0.000	0.000	0.000
7.0	6.80	10.329	0.335	2.001	4.929	3.039	0.025	0.000
14.6	6.80	7.571	0.565	3.281	3.616	0.106	0.002	0.000
24.2	6.79	2.699	0.794	1.781	0.094	0.029	0.000	0.000
34.4	6.80	0.798	0.602	0.102	0.093	0.002	0.000	0.000
44.7	6.75	0.271	0.163	0.059	0.049	0.000	0.000	0.000
55.0	6.77	0.159	0.052	0.085	0.022	0.000	0.000	0.000

64.5	6.76	0.099	0.026	0.068	0.004	0.000	0.000	0.000
74.6	6.76	0.098	0.029	0.068	0.000	0.000	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 13.8 km; M= 6.08; e0= 0.75; e= 1.38 for all sources.
Modal src-site R= 7.9 km; M= 6.22; e0= 0.10 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.9km; M*= 6.23; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 13.073

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	94.02	12.1	6.09	0.73

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 2475yrs. 0.30 s. PSA =0.5940869g. Computed annual rate=.40372E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.3	4.85	0.116	0.030	0.084	0.002	0.000	0.000	0.000
13.7	4.87	0.088	0.058	0.031	0.000	0.000	0.000	0.000
7.5	5.20	7.060	2.045	4.927	0.088	0.000	0.000	0.000
14.2	5.21	3.790	2.989	0.784	0.016	0.000	0.000	0.000
23.7	5.22	0.772	0.729	0.043	0.000	0.000	0.000	0.000
34.3	5.25	0.129	0.128	0.001	0.000	0.000	0.000	0.000
7.7	5.60	7.987	1.067	5.060	1.841	0.020	0.000	0.000
14.3	5.61	5.235	2.510	2.613	0.111	0.000	0.000	0.000
23.8	5.63	1.320	1.149	0.152	0.018	0.000	0.000	0.000
34.5	5.68	0.284	0.219	0.065	0.000	0.000	0.000	0.000
44.9	5.73	0.084	0.070	0.013	0.000	0.000	0.000	0.000
54.9	5.77	0.050	0.048	0.002	0.000	0.000	0.000	0.000
7.9	6.23	23.748	1.259	7.481	13.422	1.586	0.001	0.000
14.9	6.22	16.402	2.921	10.382	3.070	0.030	0.000	0.000
24.5	6.25	4.631	2.836	1.677	0.117	0.001	0.000	0.000
34.5	6.28	1.090	0.926	0.132	0.032	0.000	0.000	0.000
44.7	6.28	0.321	0.233	0.084	0.004	0.000	0.000	0.000
54.9	6.29	0.162	0.101	0.061	0.000	0.000	0.000	0.000
64.4	6.30	0.084	0.058	0.026	0.000	0.000	0.000	0.000
74.7	6.30	0.074	0.061	0.013	0.000	0.000	0.000	0.000
85.1	6.30	0.053	0.049	0.003	0.000	0.000	0.000	0.000
7.0	6.80	10.953	0.335	2.001	4.995	3.546	0.075	0.000
14.7	6.80	8.744	0.565	3.341	4.575	0.263	0.001	0.000
24.4	6.79	3.693	0.794	2.642	0.237	0.020	0.000	0.000
34.4	6.81	1.259	0.840	0.341	0.077	0.001	0.000	0.000
44.6	6.75	0.478	0.384	0.058	0.036	0.000	0.000	0.000
54.9	6.79	0.210	0.118	0.077	0.015	0.000	0.000	0.000
64.5	6.77	0.105	0.043	0.059	0.003	0.000	0.000	0.000
74.5	6.77	0.096	0.037	0.058	0.000	0.000	0.000	0.000

Summary statistics for above 0.3s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 14.2 km; M= 6.16; e0= 0.71; e= 1.36 for all sources.
Modal src-site R= 7.9 km; M= 6.23; e0= 0.07 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.9km; M*= 6.23; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 13.422

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	95.50	12.8	6.16	0.70

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********

55.2	7.09	0.053	0.007	0.041	0.005	0.000	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 12.2 km; M= 6.13; e0= 0.99; e= 1.56 for all sources.
Modal src-site R= 7.8 km; M= 6.24; e0= 0.56 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.8km; M*= 6.21; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 13.915

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	93.30	10.7	6.14	0.99

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 4975yrs. 0.30 s. PSA =0.7871745g. Computed annual rate=.20060E-03

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.2	4.86	0.115	0.054	0.060	0.000	0.000	0.000	0.000
13.6	4.87	0.073	0.067	0.006	0.000	0.000	0.000	0.000
7.5	5.21	6.367	3.086	3.240	0.041	0.000	0.000	0.000
14.1	5.21	2.809	2.685	0.124	0.000	0.000	0.000	0.000
23.5	5.23	0.461	0.453	0.008	0.000	0.000	0.000	0.000
34.3	5.26	0.069	0.069	0.000	0.000	0.000	0.000	0.000
7.5	5.60	7.751	2.046	5.486	0.212	0.007	0.000	0.000
14.2	5.62	4.002	3.105	0.816	0.080	0.000	0.000	0.000
23.6	5.65	0.826	0.681	0.145	0.000	0.000	0.000	0.000
34.6	5.71	0.176	0.152	0.024	0.000	0.000	0.000	0.000
44.9	5.76	0.056	0.055	0.001	0.000	0.000	0.000	0.000
7.8	6.25	28.524	2.534	14.198	11.460	0.332	0.000	0.000
14.7	6.24	14.258	5.150	8.395	0.699	0.013	0.000	0.000
24.2	6.27	2.924	2.506	0.332	0.086	0.000	0.000	0.000
34.5	6.29	0.596	0.442	0.148	0.005	0.000	0.000	0.000
44.8	6.29	0.183	0.122	0.061	0.000	0.000	0.000	0.000
54.9	6.30	0.111	0.086	0.025	0.000	0.000	0.000	0.000
64.3	6.30	0.061	0.055	0.006	0.000	0.000	0.000	0.000
74.6	6.31	0.055	0.054	0.001	0.000	0.000	0.000	0.000
6.8	6.80	16.492	0.674	4.028	8.929	2.859	0.002	0.000
14.5	6.80	9.240	1.138	5.520	2.546	0.036	0.000	0.000
24.1	6.79	2.693	1.475	1.093	0.121	0.005	0.000	0.000
34.3	6.80	0.744	0.580	0.101	0.062	0.000	0.000	0.000
44.7	6.78	0.213	0.109	0.091	0.013	0.000	0.000	0.000
55.0	6.77	0.145	0.058	0.085	0.001	0.000	0.000	0.000
64.5	6.77	0.087	0.041	0.046	0.000	0.000	0.000	0.000
74.5	6.77	0.083	0.050	0.032	0.000	0.000	0.000	0.000
24.1	7.09	0.060	0.002	0.015	0.036	0.007	0.000	0.000
35.5	7.09	0.061	0.004	0.024	0.033	0.000	0.000	0.000

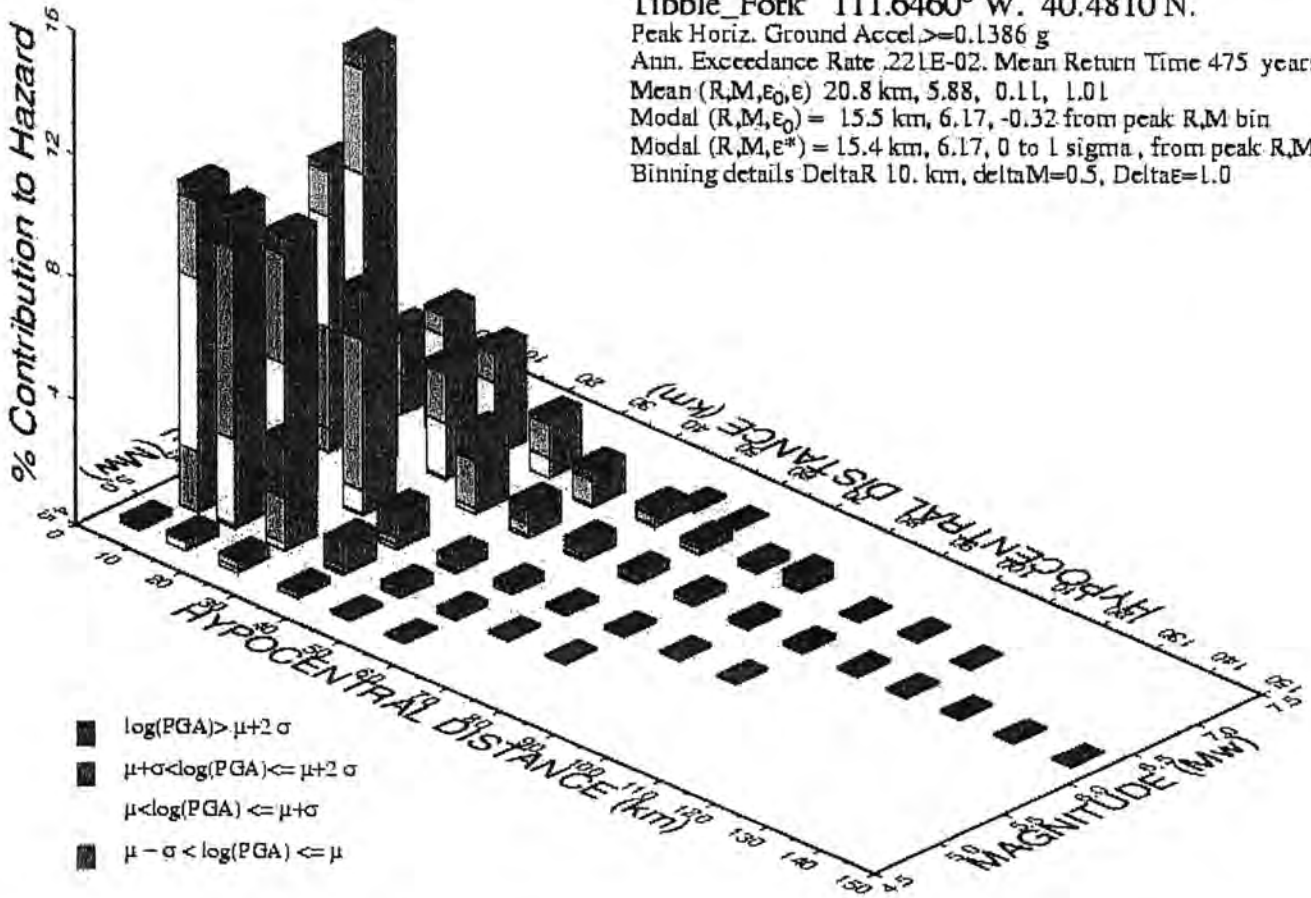
Summary statistics for above 0.3s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 12.3 km; M= 6.23; e0= 0.93; e= 1.52 for all sources.
Modal src-site R= 7.8 km; M= 6.25; e0= 0.53 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 7.8km; M*= 6.22; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 14.198

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	95.31	11.1	6.23	0.93

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********

Prob. Seismic Hazard Deaggregation
Tibble_Fork 111.6460° W. 40.4810 N.
Peak Horiz. Ground Accel.>=0.1386 g
Ann. Exceedance Rate .221E-02. Mean Return Time 475 years
Mean (R,M,ε_0,ε) 20.8 km, 5.88, 0.11, 1.01
Modal (R,M,ε_0) = 15.5 km, 6.17, -0.32 from peak R,M bin
Modal (R,M,ε^*) = 15.4 km, 6.17, 0 to 1 sigma, from peak R,M,ε bin
Binning details DeltaR 10. km, deltaM=0.5, Deltaε=1.0



GMT 2010 Apr 14 22:44:48 Distance (R), magnitude (M), epsilon (EO,E) deaggregation for a site on rock with average vs=760m/s top 30 m. USGS CGHT PSHA 1996 edition. Bins with lt 0.05% contrib. omitted

*** Deaggregation of Seismic Hazard for PGA & 3 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 1996 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 475yrs. Exceedance PGA=0.1386312g. Computed annual rate=.21032E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.6	4.82	0.199	0.006	0.035	0.089	0.067	0.002	0.000
14.4	4.82	0.373	0.017	0.102	0.208	0.046	0.000	0.000
23.9	4.83	0.387	0.039	0.215	0.134	0.000	0.000	0.000
35.1	4.84	0.221	0.064	0.156	0.001	0.000	0.000	0.000
45.0	4.84	0.099	0.065	0.034	0.000	0.000	0.000	0.000
54.9	4.85	0.063	0.061	0.002	0.000	0.000	0.000	0.000
7.8	5.19	10.547	0.428	2.555	5.647	1.903	0.014	0.000
14.5	5.20	10.302	1.288	6.214	2.722	0.076	0.002	0.000
24.0	5.20	3.513	1.871	1.423	0.204	0.016	0.000	0.000
34.6	5.22	1.013	0.776	0.159	0.077	0.000	0.000	0.000
45.0	5.23	0.336	0.219	0.113	0.004	0.000	0.000	0.000
54.9	5.24	0.184	0.119	0.065	0.000	0.000	0.000	0.000
64.5	5.25	0.091	0.074	0.017	0.000	0.000	0.000	0.000
74.7	5.27	0.066	0.062	0.004	0.000	0.000	0.000	0.000
7.9	5.59	6.437	0.205	1.222	3.003	1.847	0.160	0.000
14.6	5.59	8.695	0.616	3.566	4.363	0.143	0.008	0.000
24.3	5.79	7.255	1.611	4.867	0.720	0.058	0.000	0.000
34.6	5.63	1.176	0.814	0.222	0.134	0.006	0.000	0.000
45.1	5.65	0.429	0.284	0.079	0.065	0.000	0.000	0.000
55.0	5.68	0.261	0.132	0.108	0.021	0.000	0.000	0.000
64.6	5.69	0.147	0.072	0.074	0.001	0.000	0.000	0.000
74.8	5.72	0.122	0.058	0.063	0.000	0.000	0.000	0.000
85.0	5.73	0.086	0.052	0.034	0.000	0.000	0.000	0.000
95.3	5.74	0.073	0.053	0.020	0.000	0.000	0.000	0.000
8.2	6.20	9.356	0.241	1.442	3.623	3.309	0.723	0.017
15.5	6.17	13.579	0.566	3.379	7.172	2.383	0.078	0.000
25.0	6.40	3.646	0.268	1.588	1.718	0.068	0.004	0.000
34.9	6.23	2.533	0.845	1.521	0.130	0.037	0.000	0.000
44.8	6.22	1.004	0.598	0.321	0.075	0.009	0.000	0.000
54.8	6.24	0.533	0.338	0.115	0.079	0.000	0.000	0.000
64.7	6.24	0.296	0.191	0.062	0.042	0.000	0.000	0.000
74.8	6.26	0.235	0.126	0.084	0.026	0.000	0.000	0.000
85.2	6.25	0.166	0.080	0.077	0.009	0.000	0.000	0.000
95.4	6.26	0.142	0.059	0.079	0.003	0.000	0.000	0.000
105.5	6.26	0.097	0.043	0.054	0.000	0.000	0.000	0.000
114.7	6.26	0.095	0.041	0.054	0.000	0.000	0.000	0.000
124.4	6.27	0.074	0.037	0.037	0.000	0.000	0.000	0.000
134.5	6.27	0.073	0.040	0.032	0.000	0.000	0.000	0.000
145.1	6.27	0.053	0.035	0.018	0.000	0.000	0.000	0.000
7.3	6.79	2.743	0.064	0.384	0.964	0.962	0.338	0.032
15.3	6.79	3.943	0.108	0.648	1.626	1.330	0.229	0.002
24.8	6.79	3.431	0.152	0.909	1.951	0.413	0.005	0.000
34.6	6.81	1.891	0.189	1.072	0.605	0.024	0.001	0.000
44.7	6.72	1.163	0.336	0.772	0.036	0.019	0.000	0.000
54.9	6.79	0.543	0.214	0.272	0.046	0.012	0.000	0.000
64.8	6.72	0.321	0.155	0.120	0.043	0.002	0.000	0.000
74.3	6.78	0.224	0.110	0.067	0.048	0.000	0.000	0.000
82.5	6.78	0.482	0.397	0.068	0.017	0.000	0.000	0.000
94.3	6.74	0.074	0.049	0.014	0.011	0.000	0.000	0.000
104.2	6.78	0.088	0.069	0.012	0.007	0.000	0.000	0.000
114.9	6.75	0.053	0.038	0.011	0.004	0.000	0.000	0.000
55.7	7.06	0.077	0.019	0.039	0.011	0.007	0.000	0.000
63.4	7.07	0.054	0.012	0.026	0.011	0.005	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 20.8 km; M= 5.88; e0= 0.11; e= 1.01 for all sources.
Modal src-site R= 15.5 km; M= 6.17; e0= -0.32 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 15.4km; M*= 6.17; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 7.172

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	91.86	17.6	5.88	0.06

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.

Return period: 475yrs. 1.00 s. PSA =0.0841337g. Computed annual rate=.21030E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.7	5.21	3.811	0.428	2.282	1.098	0.002	0.000	0.000
14.6	5.22	3.076	1.200	1.859	0.016	0.000	0.000	0.000
24.2	5.22	1.282	1.095	0.183	0.003	0.000	0.000	0.000
34.6	5.24	0.403	0.386	0.017	0.000	0.000	0.000	0.000
44.9	5.25	0.125	0.119	0.006	0.000	0.000	0.000	0.000
54.8	5.27	0.056	0.053	0.003	0.000	0.000	0.000	0.000
7.8	5.60	3.977	0.205	1.223	2.334	0.215	0.000	0.000
14.7	5.61	4.760	0.617	2.932	1.200	0.011	0.000	0.000
24.4	5.62	2.820	1.065	1.702	0.051	0.002	0.000	0.000
34.8	5.63	1.172	0.893	0.251	0.028	0.000	0.000	0.000
45.0	5.65	0.451	0.393	0.047	0.011	0.000	0.000	0.000
54.9	5.67	0.237	0.183	0.048	0.005	0.000	0.000	0.000
64.7	5.70	0.125	0.090	0.034	0.001	0.000	0.000	0.000
74.8	5.74	0.093	0.058	0.035	0.000	0.000	0.000	0.000
85.0	5.75	0.070	0.046	0.023	0.000	0.000	0.000	0.000
95.3	5.77	0.064	0.045	0.019	0.000	0.000	0.000	0.000
114.7	5.78	0.051	0.040	0.011	0.000	0.000	0.000	0.000
8.1	6.21	8.485	0.242	1.444	3.609	2.898	0.290	0.002
15.7	6.20	11.948	0.566	3.375	6.373	1.600	0.034	0.000
25.2	6.22	8.777	0.800	4.126	3.548	0.302	0.000	0.000
35.2	6.25	5.101	0.940	3.071	1.079	0.012	0.000	0.000
45.0	6.26	2.930	0.983	1.794	0.150	0.004	0.000	0.000
54.8	6.29	1.714	0.857	0.802	0.053	0.001	0.000	0.000
64.8	6.29	0.924	0.619	0.268	0.037	0.000	0.000	0.000
74.8	6.32	0.641	0.458	0.146	0.036	0.000	0.000	0.000
85.2	6.31	0.400	0.294	0.083	0.023	0.000	0.000	0.000
95.4	6.31	0.304	0.194	0.092	0.018	0.000	0.000	0.000
105.4	6.31	0.216	0.129	0.076	0.010	0.000	0.000	0.000
114.8	6.30	0.207	0.104	0.094	0.009	0.000	0.000	0.000
124.6	6.31	0.184	0.096	0.083	0.005	0.000	0.000	0.000
134.7	6.30	0.188	0.084	0.101	0.003	0.000	0.000	0.000
145.0	6.30	0.160	0.074	0.086	0.000	0.000	0.000	0.000
155.0	6.30	0.154	0.072	0.081	0.000	0.000	0.000	0.000
165.3	6.30	0.127	0.063	0.065	0.000	0.000	0.000	0.000
174.9	6.30	0.129	0.066	0.063	0.000	0.000	0.000	0.000
185.1	6.31	0.109	0.060	0.049	0.000	0.000	0.000	0.000
194.6	6.30	0.101	0.055	0.046	0.000	0.000	0.000	0.000
205.5	6.29	0.079	0.043	0.036	0.000	0.000	0.000	0.000
215.1	6.29	0.072	0.042	0.029	0.000	0.000	0.000	0.000
224.9	6.29	0.065	0.042	0.023	0.000	0.000	0.000	0.000
234.5	6.30	0.065	0.045	0.020	0.000	0.000	0.000	0.000
244.8	6.30	0.062	0.045	0.017	0.000	0.000	0.000	0.000
255.0	6.30	0.062	0.048	0.014	0.000	0.000	0.000	0.000
265.4	6.30	0.052	0.043	0.009	0.000	0.000	0.000	0.000
275.2	6.30	0.052	0.045	0.007	0.000	0.000	0.000	0.000
7.2	6.79	2.757	0.064	0.384	0.965	0.965	0.350	0.028
15.4	6.79	4.057	0.109	0.648	1.628	1.447	0.225	0.000
25.1	6.79	4.391	0.152	0.910	2.233	1.075	0.020	0.000
35.1	6.81	3.904	0.189	1.127	2.239	0.349	0.000	0.000
44.8	6.72	4.250	0.352	2.161	1.716	0.021	0.000	0.000
55.0	6.80	2.854	0.319	1.794	0.729	0.012	0.000	0.000
65.0	6.73	1.885	0.413	1.387	0.079	0.007	0.000	0.000
74.0	6.80	1.248	0.320	0.869	0.055	0.004	0.000	0.000
82.6	6.80	3.718	1.492	2.201	0.024	0.001	0.000	0.000
94.1	6.75	0.418	0.253	0.144	0.021	0.000	0.000	0.000
104.1	6.80	0.627	0.406	0.204	0.017	0.000	0.000	0.000
114.9	6.75	0.380	0.297	0.069	0.014	0.000	0.000	0.000
124.4	6.79	0.213	0.152	0.045	0.016	0.000	0.000	0.000
134.7	6.81	0.155	0.120	0.024	0.012	0.000	0.000	0.000
147.6	6.82	0.293	0.271	0.015	0.008	0.000	0.000	0.000
155.3	6.80	0.238	0.221	0.011	0.006	0.000	0.000	0.000
164.5	6.80	0.164	0.151	0.009	0.004	0.000	0.000	0.000
174.8	6.81	0.101	0.090	0.009	0.003	0.000	0.000	0.000
184.8	6.81	0.059	0.051	0.006	0.002	0.000	0.000	0.000
55.5	7.05	0.352	0.021	0.134	0.191	0.006	0.000	0.000
63.1	7.05	0.271	0.021	0.134	0.112	0.004	0.000	0.000
104.8	7.17	0.110	0.028	0.072	0.010	0.001	0.000	0.000
114.2	7.20	0.106	0.030	0.069	0.007	0.000	0.000	0.000

147.6	7.10	0.055	0.026	0.024	0.005	0.000	0.000	0.000

Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 37.6 km; M= 6.24; e0= 0.47; e= 1.23 for all sources.
Modal src-site R= 15.7 km; M= 6.20; e0= -0.15 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 15.6km; M*= 6.19; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 6.373

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	84.56	26.8	6.18	0.34

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 475yrs. 0.20 s. PSA =0.3137828g. Computed annual rate=.21042E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.5	4.82	0.146	0.006	0.035	0.084	0.020	0.000	0.000
14.3	4.83	0.225	0.017	0.101	0.107	0.000	0.000	0.000
23.9	4.84	0.202	0.039	0.151	0.012	0.000	0.000	0.000
35.2	4.84	0.113	0.061	0.052	0.000	0.000	0.000	0.000
45.0	4.85	0.054	0.046	0.008	0.000	0.000	0.000	0.000
7.8	5.19	7.987	0.428	2.549	4.475	0.534	0.001	0.000
14.6	5.20	8.644	1.275	5.181	2.162	0.025	0.000	0.000
24.1	5.21	3.491	1.741	1.648	0.102	0.000	0.000	0.000
34.4	5.22	0.923	0.789	0.119	0.015	0.000	0.000	0.000
44.8	5.23	0.245	0.182	0.062	0.000	0.000	0.000	0.000
54.8	5.25	0.115	0.082	0.033	0.000	0.000	0.000	0.000
64.4	5.27	0.055	0.045	0.010	0.000	0.000	0.000	0.000
7.9	5.59	5.852	0.204	1.223	2.999	1.421	0.004	0.000
14.7	5.60	8.353	0.617	3.579	4.089	0.068	0.001	0.000
24.5	5.80	8.820	1.656	5.944	1.201	0.019	0.000	0.000
34.5	5.62	1.403	1.020	0.300	0.083	0.000	0.000	0.000
44.9	5.65	0.424	0.321	0.073	0.030	0.000	0.000	0.000
54.9	5.69	0.209	0.117	0.083	0.009	0.000	0.000	0.000
64.5	5.71	0.108	0.053	0.054	0.001	0.000	0.000	0.000
74.7	5.74	0.092	0.045	0.047	0.000	0.000	0.000	0.000
85.1	5.75	0.068	0.041	0.027	0.000	0.000	0.000	0.000
95.4	5.75	0.062	0.045	0.017	0.000	0.000	0.000	0.000
8.2	6.20	9.343	0.242	1.443	3.624	3.501	0.531	0.002
15.6	6.17	14.012	0.566	3.380	7.684	2.349	0.032	0.000
25.1	6.41	4.270	0.268	1.601	2.336	0.064	0.001	0.000
34.9	6.22	3.696	0.940	2.451	0.287	0.018	0.000	0.000
44.8	6.23	1.542	0.856	0.621	0.061	0.003	0.000	0.000
54.6	6.25	0.716	0.509	0.150	0.057	0.000	0.000	0.000
64.6	6.26	0.336	0.247	0.059	0.030	0.000	0.000	0.000
74.8	6.28	0.233	0.137	0.077	0.019	0.000	0.000	0.000
85.1	6.28	0.152	0.074	0.072	0.007	0.000	0.000	0.000
95.4	6.27	0.128	0.051	0.076	0.002	0.000	0.000	0.000
105.5	6.27	0.089	0.035	0.054	0.000	0.000	0.000	0.000
114.7	6.27	0.090	0.034	0.056	0.000	0.000	0.000	0.000
124.5	6.27	0.072	0.031	0.041	0.000	0.000	0.000	0.000
134.5	6.27	0.074	0.036	0.038	0.000	0.000	0.000	0.000
145.2	6.28	0.056	0.033	0.023	0.000	0.000	0.000	0.000
7.3	6.79	2.759	0.064	0.384	0.964	0.964	0.358	0.024
15.3	6.79	3.971	0.108	0.648	1.627	1.426	0.162	0.000
24.9	6.78	3.600	0.152	0.910	2.113	0.422	0.003	0.000
34.8	6.81	2.275	0.189	1.126	0.940	0.020	0.000	0.000
44.7	6.71	1.726	0.352	1.310	0.051	0.013	0.000	0.000
54.8	6.79	0.774	0.302	0.422	0.043	0.007	0.000	0.000
64.7	6.72	0.415	0.256	0.119	0.038	0.002	0.000	0.000
74.2	6.78	0.242	0.153	0.047	0.043	0.000	0.000	0.000
82.4	6.78	0.464	0.434	0.014	0.016	0.000	0.000	0.000
94.3	6.74	0.067	0.042	0.014	0.011	0.000	0.000	0.000
104.3	6.77	0.067	0.047	0.013	0.007	0.000	0.000	0.000
55.5	7.06	0.094	0.021	0.057	0.011	0.005	0.000	0.000
63.3	7.06	0.059	0.020	0.025	0.011	0.002	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 22.0 km; M= 5.94; e0= 0.25; e= 1.07 for all sources.
Modal src-site R= 15.6 km; M= 6.17; e0= -0.28 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL

MODE R*= 15.6km; M*= 6.16; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 7.684

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	92.65	18.8	5.93	0.19

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********

PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.6460 W., lat: 40.4810 N.
Return period: 475yrs. 0.30 s. PSA =0.2706757g. Computed annual rate=.21043E-02

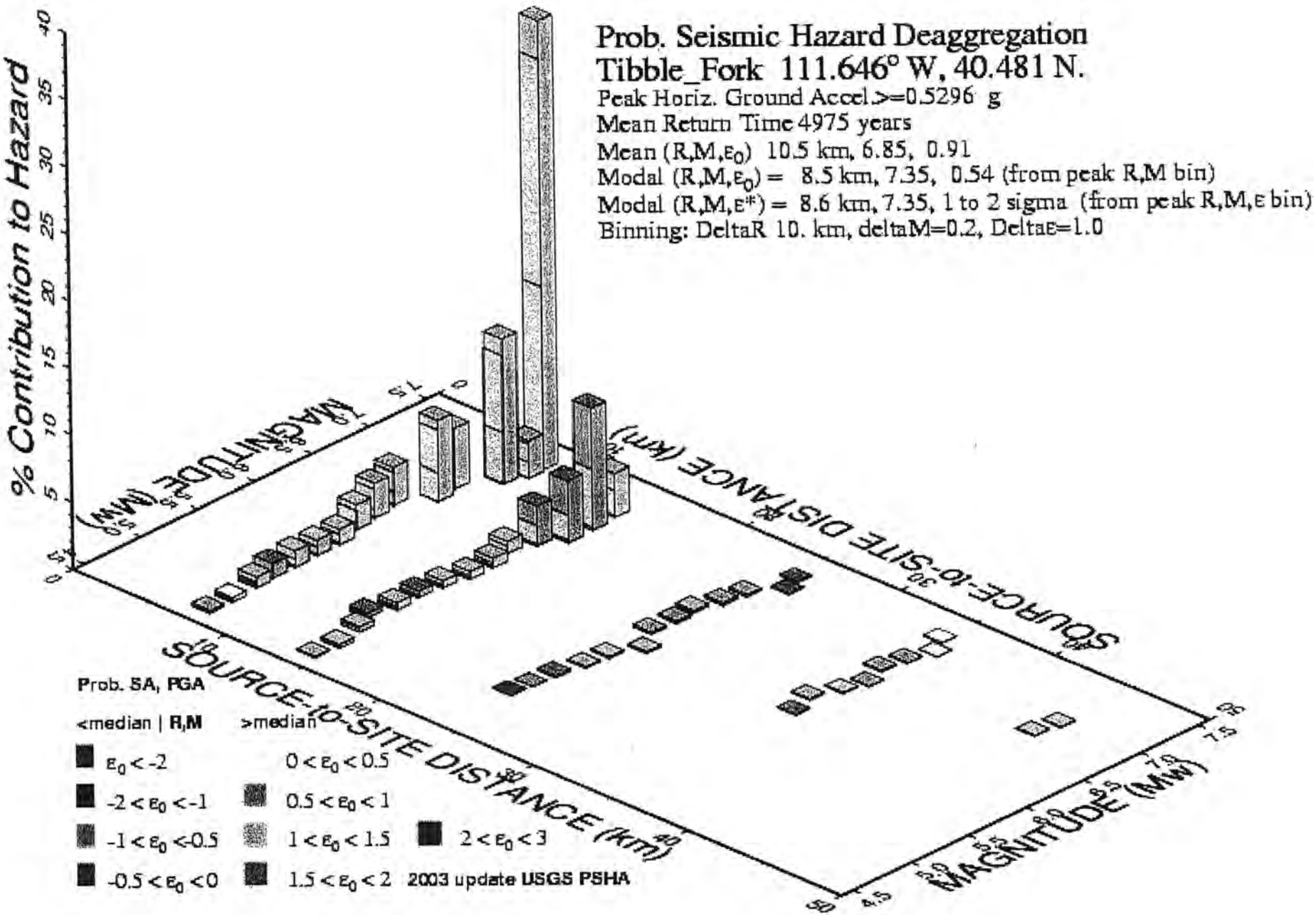
DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.5	4.84	0.092	0.006	0.035	0.050	0.001	0.000	0.000
14.1	4.84	0.115	0.017	0.072	0.026	0.000	0.000	0.000
23.7	4.86	0.082	0.035	0.047	0.000	0.000	0.000	0.000
7.8	5.20	7.259	0.428	2.554	4.137	0.139	0.000	0.000
14.6	5.20	7.205	1.279	4.887	1.034	0.006	0.000	0.000
24.1	5.21	2.804	1.725	1.043	0.036	0.000	0.000	0.000
34.4	5.23	0.738	0.668	0.068	0.001	0.000	0.000	0.000
44.8	5.24	0.189	0.167	0.023	0.000	0.000	0.000	0.000
54.7	5.26	0.079	0.071	0.007	0.000	0.000	0.000	0.000
7.9	5.59	5.619	0.205	1.223	2.980	1.209	0.002	0.000
14.7	5.60	7.735	0.617	3.573	3.510	0.035	0.000	0.000
24.3	5.61	4.132	1.125	2.858	0.143	0.007	0.000	0.000
34.6	5.63	1.393	1.048	0.296	0.049	0.000	0.000	0.000
45.0	5.64	0.436	0.361	0.062	0.013	0.000	0.000	0.000
54.8	5.68	0.205	0.141	0.061	0.003	0.000	0.000	0.000
64.6	5.70	0.100	0.065	0.035	0.000	0.000	0.000	0.000
74.8	5.74	0.075	0.049	0.027	0.000	0.000	0.000	0.000
85.0	5.75	0.054	0.040	0.014	0.000	0.000	0.000	0.000
8.2	6.20	9.305	0.241	1.443	3.624	3.482	0.511	0.003
15.6	6.17	13.969	0.566	3.380	7.633	2.354	0.036	0.000
25.0	6.20	9.122	0.799	4.530	3.703	0.090	0.000	0.000
35.0	6.22	4.222	0.940	2.819	0.453	0.011	0.000	0.000
44.9	6.24	1.916	0.923	0.940	0.051	0.002	0.000	0.000
54.7	6.26	0.932	0.631	0.257	0.044	0.000	0.000	0.000
64.7	6.27	0.444	0.340	0.084	0.021	0.000	0.000	0.000
74.8	6.30	0.293	0.211	0.070	0.013	0.000	0.000	0.000
85.2	6.28	0.182	0.115	0.063	0.004	0.000	0.000	0.000
95.4	6.28	0.143	0.076	0.066	0.000	0.000	0.000	0.000
105.5	6.29	0.098	0.050	0.047	0.000	0.000	0.000	0.000
114.7	6.28	0.095	0.045	0.050	0.000	0.000	0.000	0.000
124.5	6.29	0.078	0.040	0.038	0.000	0.000	0.000	0.000
134.6	6.28	0.079	0.042	0.037	0.000	0.000	0.000	0.000
145.1	6.29	0.061	0.038	0.023	0.000	0.000	0.000	0.000
155.0	6.29	0.054	0.037	0.017	0.000	0.000	0.000	0.000
7.3	6.79	2.770	0.064	0.384	0.964	0.964	0.364	0.029
15.3	6.79	4.069	0.108	0.648	1.627	1.482	0.203	0.000
24.9	6.78	3.947	0.152	0.910	2.214	0.668	0.002	0.000
34.9	6.81	2.789	0.189	1.127	1.440	0.034	0.000	0.000
44.7	6.72	2.355	0.352	1.786	0.207	0.010	0.000	0.000
54.8	6.79	1.175	0.318	0.811	0.041	0.005	0.000	0.000
64.8	6.72	0.654	0.325	0.293	0.034	0.001	0.000	0.000
74.1	6.79	0.379	0.204	0.137	0.038	0.000	0.000	0.000
82.4	6.79	0.889	0.699	0.176	0.014	0.000	0.000	0.000
94.1	6.74	0.110	0.086	0.014	0.010	0.000	0.000	0.000
104.1	6.78	0.132	0.113	0.013	0.006	0.000	0.000	0.000
114.8	6.75	0.074	0.059	0.011	0.004	0.000	0.000	0.000
55.5	7.06	0.144	0.021	0.108	0.011	0.004	0.000	0.000
63.1	7.06	0.093	0.021	0.059	0.011	0.001	0.000	0.000

Summary statistics for above 0.3s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 23.7 km; M= 6.01; e0= 0.28; e= 1.10 for all sources.
Modal src-site R= 15.6 km; M= 6.17; e0= -0.29 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 15.6km; M*= 6.16; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 7.633

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
Western US gridded seismicity	92.57	20.1	5.99	0.21

**********CONTERMINOUS USA SITE HAZARD DEAGGREGATION**********



GMT 2010 Apr 14 22:11:35 Distance (R), magnitude (M), epsilon (ε0,ε) deaggregation for a site on ROCK avg Vs=760 m/s top 30 m USGS CGHT PSHA2002v3 UPDATE Bins with lt 0.05% contrib. omitted

*** Deaggregation of Seismic Hazard for PGA & 2 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2002 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.646 W., lat: 40.481 N.
USGS 2002-03 update files and programs. dM=0.2. Site descr:ROCK
Return period: 4975 yrs. Exceedance PGA =0.5296 g.
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00034

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.3	4.60	0.180	0.018	0.093	0.062	0.008	0.000	0.000
14.2	4.61	0.103	0.042	0.059	0.001	0.000	0.000	0.000
7.4	4.80	0.377	0.028	0.167	0.158	0.025	0.000	0.000
14.3	4.80	0.269	0.079	0.171	0.019	0.000	0.000	0.000
7.1	5.04	0.809	0.404	0.218	0.159	0.028	0.000	0.000
13.8	5.04	0.385	0.150	0.190	0.046	0.000	0.000	0.000
23.7	5.04	0.077	0.071	0.006	0.000	0.000	0.000	0.000
7.0	5.20	1.119	0.697	0.332	0.076	0.013	0.000	0.000
13.1	5.21	0.363	0.235	0.088	0.040	0.000	0.000	0.000
23.8	5.21	0.051	0.035	0.016	0.000	0.000	0.000	0.000
7.0	5.40	1.221	0.568	0.490	0.133	0.029	0.002	0.000
13.6	5.40	0.543	0.284	0.155	0.103	0.002	0.000	0.000
23.9	5.40	0.128	0.060	0.068	0.000	0.000	0.000	0.000
6.9	5.60	1.140	0.455	0.578	0.076	0.028	0.002	0.000
13.4	5.61	0.501	0.309	0.094	0.093	0.006	0.000	0.000
24.2	5.62	0.106	0.031	0.075	0.000	0.000	0.000	0.000
6.9	5.80	1.157	0.372	0.671	0.075	0.037	0.003	0.000
13.6	5.80	0.558	0.331	0.110	0.109	0.009	0.000	0.000
24.3	5.81	0.128	0.026	0.097	0.004	0.000	0.000	0.000
6.4	6.02	1.821	0.420	1.088	0.257	0.052	0.004	0.000
13.8	6.00	0.578	0.329	0.137	0.101	0.012	0.000	0.000
25.2	6.01	0.120	0.022	0.083	0.015	0.000	0.000	0.000
34.8	6.02	0.054	0.024	0.030	0.000	0.000	0.000	0.000
6.2	6.20	2.560	0.466	1.472	0.564	0.055	0.004	0.000
13.8	6.21	0.723	0.355	0.227	0.113	0.027	0.001	0.000
24.0	6.21	0.162	0.032	0.084	0.047	0.000	0.000	0.000
34.2	6.22	0.085	0.024	0.061	0.000	0.000	0.000	0.000
5.9	6.40	2.783	0.364	1.447	0.916	0.051	0.004	0.000
13.3	6.41	0.927	0.380	0.422	0.088	0.035	0.001	0.000
24.1	6.42	0.171	0.043	0.062	0.066	0.000	0.000	0.000
34.9	6.42	0.086	0.016	0.067	0.003	0.000	0.000	0.000
7.2	6.62	6.025	0.717	3.195	2.078	0.031	0.004	0.000
13.7	6.60	2.945	1.397	1.443	0.069	0.035	0.001	0.000
23.9	6.60	0.144	0.056	0.037	0.050	0.001	0.000	0.000
35.3	6.59	0.062	0.009	0.046	0.007	0.000	0.000	0.000
6.9	6.81	4.492	0.613	2.217	1.576	0.074	0.011	0.000
14.6	6.76	4.576	2.526	1.892	0.102	0.054	0.003	0.000
24.4	6.79	0.190	0.048	0.048	0.087	0.007	0.000	0.000
34.6	6.79	0.123	0.012	0.075	0.036	0.000	0.000	0.000
44.6	6.79	0.076	0.017	0.058	0.001	0.000	0.000	0.000
8.2	7.06	10.817	1.233	5.775	3.748	0.052	0.008	0.000
14.5	6.98	9.072	4.595	4.281	0.155	0.038	0.003	0.000
24.6	6.97	0.151	0.046	0.030	0.066	0.009	0.000	0.000
34.9	6.98	0.079	0.006	0.039	0.034	0.000	0.000	0.000
44.8	6.98	0.053	0.008	0.040	0.005	0.000	0.000	0.000
8.6	7.22	2.782	0.242	1.382	1.132	0.021	0.005	0.000
14.3	7.20	3.239	1.288	1.820	0.103	0.025	0.003	0.000
25.9	7.16	0.077	0.002	0.019	0.045	0.011	0.000	0.000
35.5	7.16	0.051	0.003	0.022	0.026	0.000	0.000	0.000
8.5	7.35	33.495	2.843	16.978	13.645	0.023	0.006	0.000
11.2	7.49	1.194	0.154	0.982	0.028	0.026	0.003	0.000
25.3	7.32	0.071	0.001	0.016	0.039	0.015	0.000	0.000
34.6	7.32	0.064	0.003	0.022	0.038	0.001	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 10.5 km; M= 6.85; eps0= 0.91. Mean calculated for all sources.
Modal src-site R= 8.5 km; M= 7.35; eps0= 0.54 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 8.6km; M*= 7.35; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 16.978

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	22.98	7.6	6.24	1.16

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Wasatch front faults                    69.04    10.1   7.16    0.88
Individual fault hazard details if contrib.>1%:
Wasatch flt Ch_Mag, Salt L               4.93    15.2   7.00    1.75
Wasatch flt Ch_Mag, Provo               24.39     8.6   7.30    0.59
Wasatch FA Ch_M Salt Lake City se        2.30    15.3   7.20    1.63
Wasatch FA Ch_Mag Provo section'         9.81     8.6   7.50    0.47
Wasatch FB Ch_Mag Salt Lake City         1.27    15.2   6.80    1.80
Wasatch FB Ch_Mag Provo section          6.71     8.6   7.10    0.70
Wasatch flt GR_Mag, Salt L               4.13    15.9   6.77    1.88
Wasatch flt GR_Mag, Provo               15.50     9.8   6.93    0.96
******************* Intermountain Seismic Belt***********************************
PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork  long: 111.646 d W., lat: 40.481
N.
USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010
Return period: 4975 yrs. 1.00 s. PSA =0.5088   g.
#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.00002
DIST(km) MAG(MW) ALL_EPS EPSILON>2  1<EPS<2 0<EPS<1 -1<EPS<0 -2<EPS<-1 EPS<-2
    6.7     5.41   0.050    0.050   0.000   0.000    0.000    0.000    0.000
    6.5     5.61   0.113    0.110   0.003   0.000    0.000    0.000    0.000
    6.5     5.81   0.205    0.192   0.013   0.000    0.000    0.000    0.000
   12.6     5.82   0.060    0.058   0.002   0.000    0.000    0.000    0.000
    5.6     6.03   0.588    0.330   0.255   0.003    0.000    0.000    0.000
   13.3     6.01   0.139    0.132   0.007   0.000    0.000    0.000    0.000
    5.4     6.20   1.155    0.401   0.744   0.009    0.000    0.000    0.000
   13.6     6.21   0.287    0.250   0.036   0.000    0.000    0.000    0.000
    5.3     6.40   1.634    0.352   1.170   0.111    0.001    0.000    0.000
   13.4     6.41   0.546    0.357   0.183   0.006    0.000    0.000    0.000
   23.2     6.41   0.106    0.095   0.012   0.000    0.000    0.000    0.000
    6.8     6.62   4.016    0.822   2.736   0.457    0.001    0.000    0.000
   15.4     6.61   3.023    2.258   0.755   0.009    0.000    0.000    0.000
   23.8     6.62   0.266    0.256   0.010   0.000    0.000    0.000    0.000
   31.6     6.58   0.174    0.170   0.004   0.000    0.000    0.000    0.000
    6.2     6.80   3.768    0.460   2.364   0.939    0.005    0.000    0.000
   14.8     6.79   6.955    3.272   3.663   0.021    0.000    0.000    0.000
   23.8     6.82   0.273    0.243   0.028   0.002    0.000    0.000    0.000
   33.0     6.80   0.080    0.066   0.014   0.000    0.000    0.000    0.000
    8.2     7.06  12.513    1.300   7.498   3.701    0.014    0.000    0.000
   14.8     6.99  13.309    4.973   8.308   0.027    0.000    0.000    0.000
   23.2     6.96   0.232    0.177   0.049   0.006    0.000    0.000    0.000
   45.0     6.97   0.084    0.076   0.008   0.000    0.000    0.000    0.000
    8.6     7.27   2.034    0.156   0.990   0.881    0.007    0.000    0.000
   14.3     7.20   6.046    1.366   4.444   0.235    0.001    0.000    0.000
   45.6     7.19   0.197    0.191   0.007   0.000    0.000    0.000    0.000
    8.3     7.36  36.723    2.399  15.236  19.078    0.010    0.000    0.000
   10.9     7.36   4.811    0.601   3.748   0.460    0.002    0.000    0.000
   45.7     7.39   0.171    0.163   0.008   0.000    0.000    0.000    0.000

Summary statistics for above 1.0s PSA  deaggregation, R=distance, e=epsilon:
 Mean src-site R=   10.7 km; M= 7.08; eps0=   0.94. Mean calculated for all sources.
Modal src-site R=    8.3 km; M= 7.36; eps0=   0.42 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
 MODE R*=   8.3km; M*= 7.37; EPS.INTERVAL: 0 to 1 sigma  % CONTRIB.= 19.078

Principal sources (faults, subduction, random seismicity having >10% contribution)
Source Category:                        % contr.   R(km)    M   epsilon0 (mean values)
Extensional gridded (random)            13.20      8.0   6.57    1.23
Wasatch front faults                    85.55     10.8   7.17    0.89
Individual fault hazard details if contrib.>1%:
Wasatch flt Ch_Mag, Salt L               8.60     15.3   7.00    1.52
Wasatch flt Ch_Mag, Provo               28.65      8.6   7.30    0.55
Wasatch FA Ch_M Salt Lake City se        4.58     15.3   7.20    1.31
Wasatch FA Ch_Mag Provo section'        12.35      8.7   7.50    0.33
Wasatch FB Ch_Mag Salt Lake City         1.78     15.2   6.80    1.69
Wasatch FB Ch_Mag Provo section          7.05      8.6   7.10    0.76
Wasatch flt GR_Mag, Salt L               6.24     16.2   6.79    1.76
Wasatch flt GR_Mag, Provo               15.90     10.4   6.97    1.07
******************* Intermountain Seismic Belt***********************************
PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork  long: 111.646 d W., lat: 40.481
N.
USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010
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Return period: 4975 yrs. 0.20 s. PSA =1.2799 g.
#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.00011

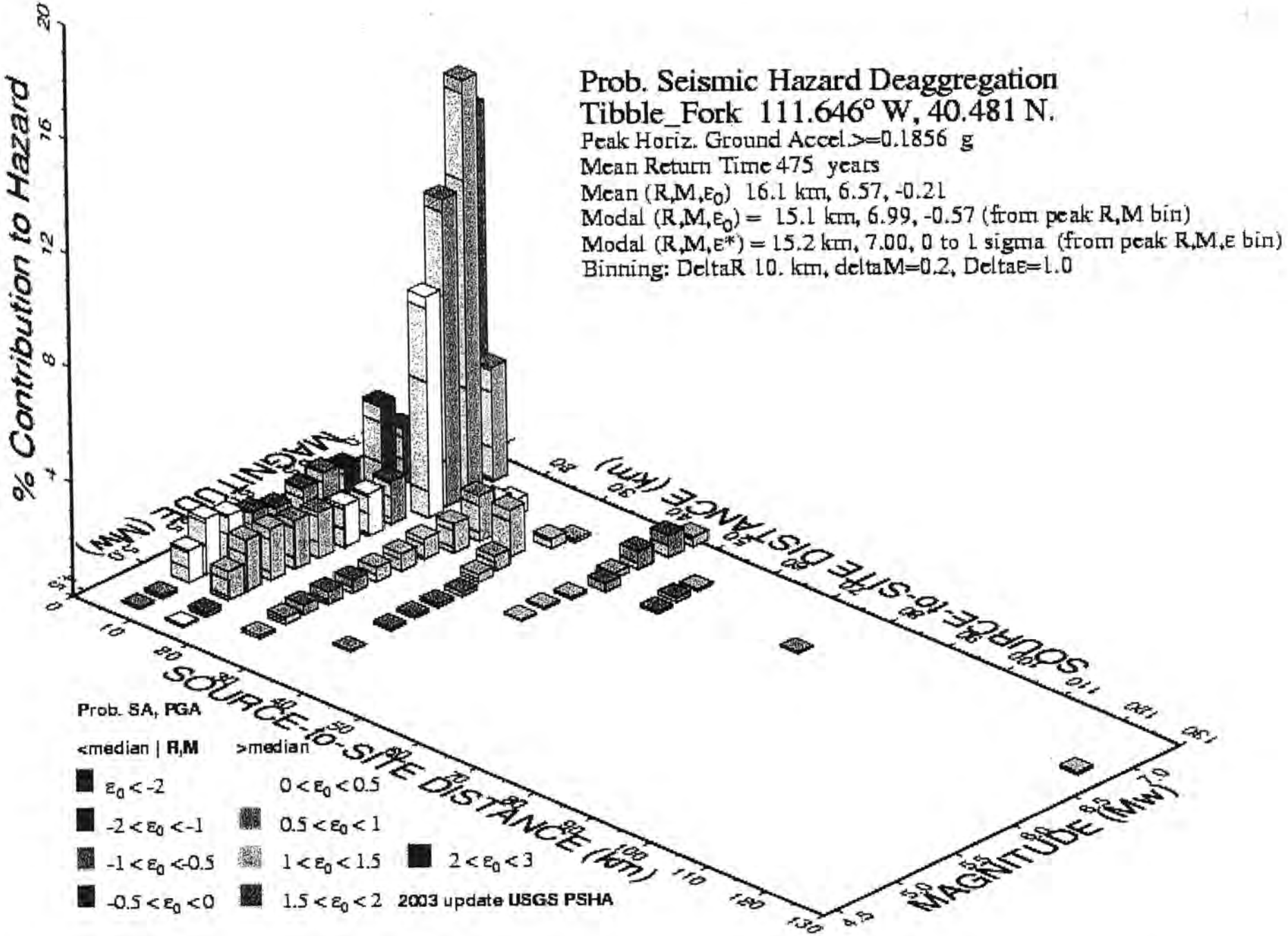
DIST(km)	MAG(Mw)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
6.9	4.80	0.079	0.029	0.043	0.007	0.000	0.000	0.000
7.0	5.05	0.584	0.447	0.126	0.011	0.000	0.000	0.000
12.7	5.05	0.149	0.134	0.016	0.000	0.000	0.000	0.000
7.0	5.20	1.028	0.743	0.278	0.008	0.000	0.000	0.000
12.4	5.20	0.265	0.248	0.017	0.000	0.000	0.000	0.000
7.0	5.40	1.091	0.576	0.484	0.031	0.000	0.000	0.000
12.8	5.40	0.374	0.317	0.057	0.000	0.000	0.000	0.000
6.9	5.60	1.095	0.474	0.583	0.037	0.001	0.000	0.000
12.9	5.61	0.435	0.371	0.060	0.004	0.000	0.000	0.000
6.8	5.80	1.141	0.400	0.689	0.050	0.002	0.000	0.000
13.1	5.80	0.536	0.429	0.091	0.016	0.000	0.000	0.000
6.3	6.02	1.820	0.478	1.139	0.197	0.005	0.000	0.000
13.5	6.00	0.612	0.450	0.138	0.024	0.000	0.000	0.000
24.3	6.02	0.059	0.030	0.029	0.000	0.000	0.000	0.000
6.1	6.20	2.575	0.502	1.605	0.452	0.016	0.000	0.000
13.6	6.21	0.802	0.504	0.248	0.050	0.000	0.000	0.000
23.2	6.22	0.106	0.056	0.049	0.001	0.000	0.000	0.000
5.8	6.40	2.782	0.376	1.639	0.742	0.025	0.000	0.000
13.3	6.40	1.065	0.522	0.480	0.061	0.002	0.000	0.000
23.4	6.42	0.148	0.087	0.051	0.009	0.000	0.000	0.000
7.3	6.62	6.268	0.862	3.621	1.766	0.020	0.000	0.000
14.2	6.58	3.115	1.700	1.342	0.066	0.006	0.000	0.000
23.6	6.60	0.191	0.146	0.033	0.012	0.000	0.000	0.000
6.9	6.81	4.680	0.502	2.605	1.528	0.044	0.000	0.000
14.6	6.76	7.266	3.743	3.432	0.078	0.013	0.000	0.000
23.9	6.79	0.223	0.142	0.047	0.033	0.000	0.000	0.000
34.5	6.79	0.070	0.014	0.053	0.003	0.000	0.000	0.000
8.2	7.07	11.446	1.294	6.510	3.606	0.036	0.001	0.000
14.7	6.99	11.957	5.496	6.292	0.153	0.015	0.000	0.000
23.6	6.96	0.163	0.097	0.030	0.035	0.000	0.000	0.000
8.7	7.27	1.824	0.188	0.991	0.624	0.020	0.002	0.000
14.7	7.21	3.371	1.267	1.986	0.104	0.014	0.000	0.000
25.8	7.16	0.051	0.002	0.019	0.030	0.000	0.000	0.000
8.6	7.36	31.546	2.997	16.563	11.961	0.023	0.002	0.000
15.7	7.32	0.053	0.000	0.007	0.028	0.017	0.000	0.000
25.2	7.32	0.051	0.001	0.016	0.032	0.001	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 10.4 km; M= 6.88; eps0= 1.04. Mean calculated for all sources.
Modal src-site R= 8.6 km; M= 7.36; eps0= 0.60 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 8.7km; M*= 7.35; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 16.563

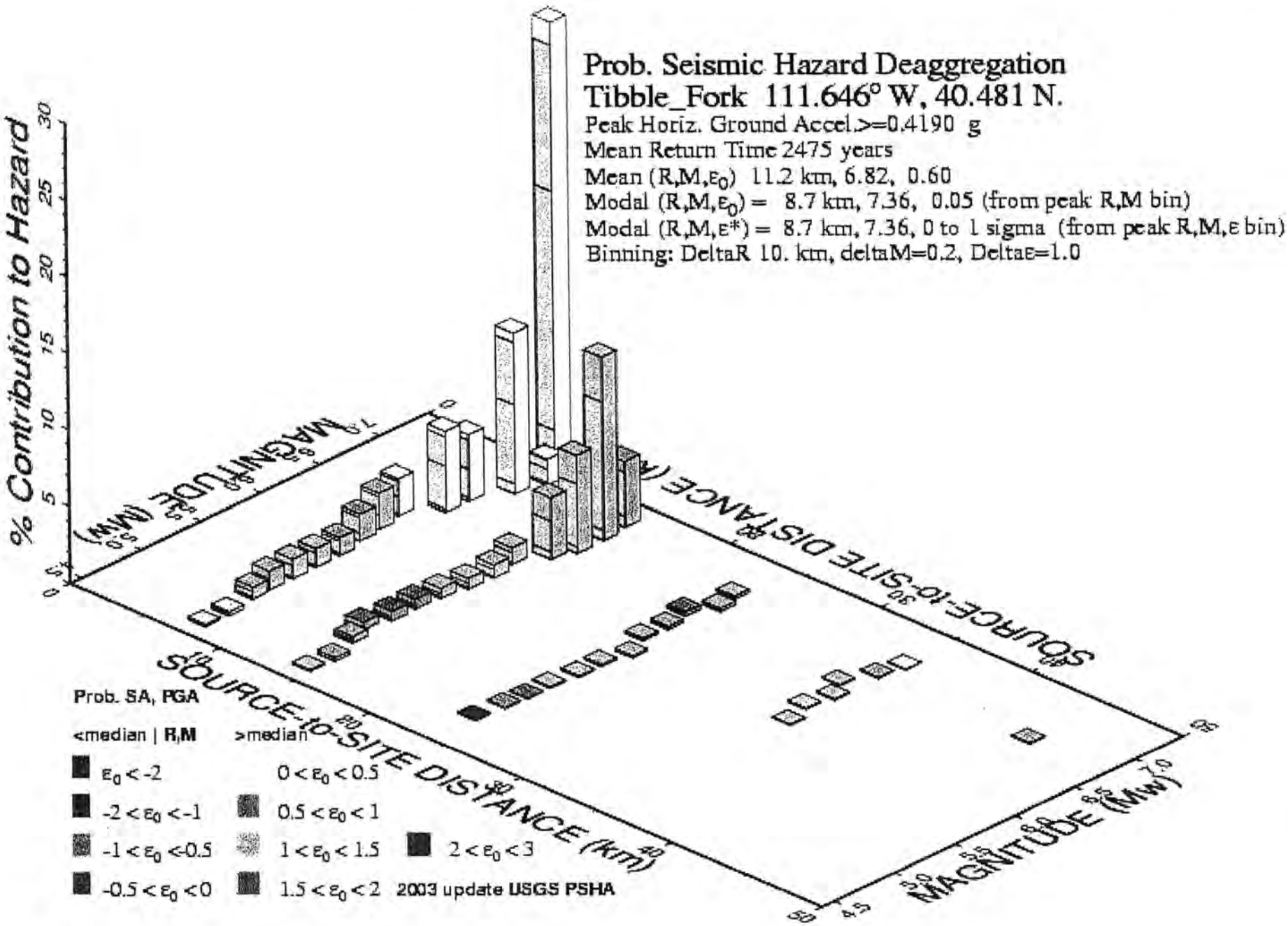
Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	24.39	8.0	6.24	1.26
Wasatch front faults	71.90	10.6	7.13	0.98
Individual fault hazard details if contrib.>1%:				
Wasatch flt Ch_Mag, Salt L	6.63	15.3	7.00	1.65
Wasatch flt Ch_Mag, Provo	22.72	8.6	7.30	0.63
Wasatch FA Ch_M Salt Lake City se	2.82	15.3	7.20	1.54
Wasatch FA Ch_Mag Provo section'	8.46	8.6	7.50	0.54
Wasatch FB Ch_Mag Salt Lake City	1.77	15.2	6.80	1.73
Wasatch FB Ch_Mag Provo section	6.67	8.5	7.10	0.73
Wasatch flt GR_Mag, Salt L	6.11	16.1	6.76	1.83
Wasatch flt GR_Mag, Provo	16.72	10.0	6.91	1.02

********** Intermountain Seismic Belt**********



GMT 2010 Apr 14 22:34:38 Distance (R), magnitude (M), epsilon (ε0,ε) deaggregation for a site on ROCK avg Vs=760 m/s top 30 m USGS CGHT PSHA2002v3 UP DATE Bins with lt 0.05% contrib. omitted



GMT 2010 Apr 14 22:16:53 Distance (R), magnitude (M), epsilon (ε0,ε) deaggregation for a site on ROCK avg Vs=760 m/s top 30 m USGS CGHT PSHA2002v3 UPDATE Bins with lt 0.05% contrib. omitted

*** Deaggregation of Seismic Hazard for PGA & 2 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2002 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.646 W., lat: 40.481 N.
USGS 2002-03 update files and programs. dM=0.2. Site descr:ROCK
Return period: 2475 yrs. Exceedance PGA =0.4190 g.
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00581

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.3	4.60	0.129	0.009	0.054	0.055	0.011	0.000	0.000
14.3	4.61	0.095	0.025	0.060	0.010	0.000	0.000	0.000
7.4	4.80	0.259	0.014	0.091	0.129	0.025	0.000	0.000
14.4	4.80	0.233	0.042	0.148	0.042	0.000	0.000	0.000
23.7	4.81	0.061	0.054	0.007	0.000	0.000	0.000	0.000
7.0	5.04	0.799	0.299	0.358	0.116	0.024	0.001	0.000
13.7	5.04	0.416	0.207	0.133	0.075	0.000	0.000	0.000
23.8	5.04	0.086	0.051	0.035	0.000	0.000	0.000	0.000
6.9	5.20	1.248	0.494	0.690	0.048	0.014	0.001	0.000
13.1	5.20	0.504	0.379	0.080	0.043	0.002	0.000	0.000
23.9	5.21	0.053	0.022	0.031	0.000	0.000	0.000	0.000
6.9	5.40	1.283	0.406	0.768	0.075	0.031	0.003	0.000
13.4	5.40	0.643	0.394	0.142	0.100	0.008	0.000	0.000
23.9	5.40	0.125	0.035	0.090	0.000	0.000	0.000	0.000
6.8	5.60	1.199	0.308	0.817	0.047	0.024	0.002	0.000
13.4	5.61	0.624	0.389	0.148	0.077	0.009	0.000	0.000
24.1	5.62	0.101	0.022	0.070	0.008	0.000	0.000	0.000
6.8	5.80	1.168	0.223	0.774	0.142	0.028	0.002	0.000
13.5	5.80	0.684	0.376	0.216	0.076	0.017	0.000	0.000
24.1	5.81	0.123	0.028	0.070	0.024	0.000	0.000	0.000
6.4	6.02	1.739	0.255	0.972	0.475	0.035	0.002	0.000
13.7	6.00	0.706	0.329	0.294	0.066	0.016	0.001	0.000
24.5	6.01	0.128	0.043	0.053	0.031	0.000	0.000	0.000
34.9	6.01	0.051	0.013	0.038	0.000	0.000	0.000	0.000
6.2	6.20	2.343	0.256	1.150	0.889	0.042	0.004	0.000
13.8	6.21	0.853	0.316	0.437	0.071	0.027	0.001	0.000
23.6	6.21	0.174	0.074	0.045	0.055	0.001	0.000	0.000
34.3	6.22	0.075	0.012	0.057	0.006	0.000	0.000	0.000
5.9	6.40	2.398	0.188	0.978	1.111	0.115	0.006	0.000
13.4	6.40	1.075	0.304	0.614	0.125	0.030	0.001	0.000
23.7	6.41	0.196	0.102	0.034	0.057	0.004	0.000	0.000
34.6	6.42	0.079	0.015	0.047	0.016	0.000	0.000	0.000
7.3	6.62	5.251	0.357	1.914	2.781	0.196	0.004	0.000
14.4	6.60	3.993	1.518	1.983	0.465	0.025	0.002	0.000
23.3	6.61	0.269	0.198	0.029	0.038	0.005	0.000	0.000
33.8	6.57	0.075	0.030	0.028	0.017	0.000	0.000	0.000
7.3	6.81	4.332	0.358	1.906	1.835	0.225	0.008	0.000
14.8	6.76	6.323	1.847	4.042	0.394	0.036	0.004	0.000
24.2	6.79	0.234	0.126	0.039	0.055	0.014	0.000	0.000
34.6	6.79	0.098	0.011	0.040	0.047	0.000	0.000	0.000
44.6	6.79	0.064	0.008	0.046	0.010	0.000	0.000	0.000
8.3	7.06	10.488	0.645	4.096	5.137	0.604	0.006	0.000
14.8	6.98	11.901	2.917	8.337	0.622	0.023	0.003	0.000
23.7	6.96	0.191	0.106	0.033	0.037	0.014	0.000	0.000
34.9	6.98	0.059	0.005	0.020	0.034	0.001	0.000	0.000
8.9	7.27	1.711	0.094	0.598	0.879	0.135	0.003	0.000
14.6	7.19	4.273	0.694	2.902	0.660	0.014	0.002	0.000
8.7	7.36	29.817	1.500	9.528	15.649	3.136	0.004	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 11.2 km; M= 6.82; eps0= 0.60. Mean calculated for all sources.
Modal src-site R= 8.7 km; M= 7.36; eps0= 0.05 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 8.7km; M*= 7.36; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 15.649

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	24.30	8.4	6.18	0.93
Wasatch front faults	69.68	10.9	7.12	0.51
Individual fault hazard details if contrib.>1%:				
Wasatch flt Ch_Mag, Salt L	7.09	15.3	7.00	1.23
Wasatch flt Ch_Mag, Provo	21.30	8.7	7.30	0.09
Wasatch FA Ch_M Salt Lake City se	3.16	15.3	7.20	1.10

Wasatch FA Ch_Mag Provo section'	8.17	8.7	7.50	-0.04
Wasatch FB Ch_Mag Salt Lake City	1.83	15.3	6.80	1.33
Wasatch FB Ch_Mag Provo section	6.09	8.6	7.10	0.21
Wasatch flt GR_Mag, Salt L	6.32	16.1	6.76	1.45
Wasatch flt GR_Mag, Provo	15.72	10.2	6.92	0.55

********** Intermountain Seismic Belt**********

PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork long: 111.646 d W., lat: 40.481 N.

USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010

Return period: 2475 yrs. 1.00 s. PSA =0.3793 g.

#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.00441

DIST(km)	MAG(Mw)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
6.6	5.21	0.051	0.051	0.000	0.000	0.000	0.000	0.000
6.5	5.41	0.110	0.108	0.002	0.000	0.000	0.000	0.000
6.5	5.61	0.193	0.172	0.020	0.000	0.000	0.000	0.000
12.7	5.61	0.065	0.064	0.002	0.000	0.000	0.000	0.000
6.5	5.81	0.296	0.172	0.123	0.001	0.000	0.000	0.000
13.3	5.81	0.145	0.141	0.005	0.000	0.000	0.000	0.000
5.8	6.02	0.714	0.221	0.480	0.013	0.000	0.000	0.000
13.7	6.01	0.250	0.208	0.042	0.000	0.000	0.000	0.000
5.6	6.20	1.267	0.247	0.855	0.164	0.000	0.000	0.000
13.8	6.21	0.439	0.262	0.174	0.003	0.000	0.000	0.000
23.3	6.21	0.111	0.104	0.007	0.000	0.000	0.000	0.000
5.5	6.40	1.619	0.189	0.917	0.510	0.002	0.000	0.000
13.6	6.41	0.736	0.283	0.443	0.011	0.000	0.000	0.000
23.5	6.41	0.204	0.172	0.030	0.001	0.000	0.000	0.000
31.5	6.41	0.202	0.194	0.007	0.000	0.000	0.000	0.000
6.9	6.61	3.741	0.335	1.899	1.504	0.003	0.000	0.000
15.8	6.62	4.450	2.058	2.324	0.068	0.000	0.000	0.000
24.1	6.60	0.451	0.353	0.096	0.002	0.000	0.000	0.000
31.7	6.58	0.480	0.473	0.007	0.000	0.000	0.000	0.000
46.6	6.60	0.069	0.066	0.004	0.000	0.000	0.000	0.000
6.5	6.78	3.035	0.251	1.334	1.394	0.055	0.000	0.000
14.9	6.78	8.535	1.803	6.492	0.239	0.001	0.000	0.000
23.8	6.78	0.449	0.251	0.190	0.007	0.000	0.000	0.000
33.0	6.81	0.169	0.145	0.023	0.001	0.000	0.000	0.000
45.6	6.76	0.096	0.085	0.011	0.000	0.000	0.000	0.000
55.6	6.81	0.086	0.081	0.005	0.000	0.000	0.000	0.000
8.4	7.05	11.578	0.708	4.496	6.294	0.080	0.000	0.000
15.1	6.98	14.711	2.621	10.191	1.896	0.003	0.000	0.000
23.7	6.95	0.465	0.222	0.233	0.010	0.000	0.000	0.000
34.4	6.96	0.067	0.048	0.016	0.003	0.000	0.000	0.000
45.2	6.97	0.329	0.319	0.010	0.000	0.000	0.000	0.000
8.6	7.26	1.852	0.085	0.541	1.167	0.058	0.000	0.000
14.3	7.18	7.778	0.799	4.610	2.367	0.003	0.000	0.000
45.6	7.19	0.631	0.609	0.023	0.000	0.000	0.000	0.000
8.6	7.35	32.236	1.419	9.016	19.629	2.172	0.001	0.000
11.0	7.50	1.489	0.075	0.475	0.935	0.004	0.000	0.000
45.8	7.39	0.368	0.273	0.094	0.002	0.000	0.000	0.000

Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 12.1 km; M= 7.03; eps0= 0.62. Mean calculated for all sources.
Modal src-site R= 8.6 km; M= 7.35; eps0= -0.01 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 8.6km; M*= 7.35; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 19.629

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	14.83	9.7	6.52	1.00
Wasatch front faults	83.39	11.9	7.13	0.54
Individual fault hazard details if contrib.>1%:				
Wasatch flt Ch_Mag, Salt L	10.43	15.3	7.00	1.04
Wasatch flt Ch_Mag, Provo	23.79	8.7	7.30	0.06
Wasatch FA Ch_M Salt Lake City se	5.13	15.4	7.20	0.82
Wasatch FA Ch_Mag Provo section'	9.53	8.7	7.50	-0.16
Wasatch FB Ch_Mag Salt Lake City	2.29	15.3	6.80	1.24
Wasatch FB Ch_Mag Provo section	6.30	8.7	7.10	0.29
Wasatch flt GR_Mag, Salt L	8.41	16.4	6.78	1.34
Wasatch flt GR_Mag, Provo	16.19	10.9	6.95	0.67

********** Intermountain Seismic Belt**********

PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork long: 111.646 d W., lat: 40.481 N.
USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010
Return period: 2475 yrs. 0.20 s. PSA =1.0053 g.
#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.00483

DIST(km)	MAG(Mw)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.0	4.80	0.071	0.015	0.044	0.012	0.000	0.000	0.000
7.0	5.05	0.632	0.262	0.353	0.016	0.000	0.000	0.000
12.9	5.05	0.252	0.221	0.031	0.000	0.000	0.000	0.000
7.0	5.20	1.134	0.426	0.694	0.014	0.000	0.000	0.000
12.8	5.20	0.466	0.432	0.034	0.000	0.000	0.000	0.000
6.9	5.40	1.169	0.370	0.759	0.037	0.002	0.000	0.000
13.1	5.40	0.572	0.468	0.098	0.006	0.000	0.000	0.000
6.8	5.60	1.152	0.310	0.809	0.031	0.003	0.000	0.000
13.2	5.60	0.637	0.486	0.135	0.016	0.000	0.000	0.000
6.7	5.80	1.157	0.233	0.835	0.084	0.005	0.000	0.000
13.4	5.80	0.735	0.485	0.225	0.026	0.000	0.000	0.000
23.4	5.81	0.072	0.043	0.029	0.000	0.000	0.000	0.000
6.4	6.02	1.744	0.259	1.086	0.386	0.014	0.000	0.000
13.6	6.00	0.800	0.443	0.325	0.032	0.000	0.000	0.000
23.5	6.01	0.111	0.077	0.032	0.001	0.000	0.000	0.000
6.2	6.20	2.353	0.256	1.290	0.788	0.018	0.000	0.000
13.8	6.20	0.981	0.416	0.515	0.048	0.003	0.000	0.000
23.3	6.21	0.186	0.138	0.038	0.010	0.000	0.000	0.000
5.9	6.40	2.392	0.188	1.080	1.067	0.057	0.000	0.000
13.5	6.40	1.227	0.365	0.751	0.103	0.008	0.000	0.000
24.5	6.40	0.285	0.223	0.041	0.021	0.000	0.000	0.000
7.5	6.62	5.516	0.433	2.453	2.516	0.114	0.001	0.000
15.2	6.62	6.070	2.368	3.234	0.457	0.010	0.000	0.000
25.4	6.58	0.518	0.453	0.047	0.018	0.000	0.000	0.000
32.8	6.63	0.083	0.060	0.021	0.003	0.000	0.000	0.000
7.3	6.83	4.908	0.328	2.081	2.338	0.158	0.003	0.000
14.9	6.78	7.112	1.819	5.096	0.177	0.019	0.000	0.000
24.0	6.78	0.319	0.221	0.062	0.036	0.000	0.000	0.000
34.1	6.80	0.079	0.028	0.037	0.013	0.000	0.000	0.000
8.3	7.08	8.460	0.541	3.440	4.285	0.191	0.003	0.000
14.7	6.99	14.395	2.730	10.737	0.912	0.016	0.000	0.000
23.5	6.95	0.264	0.170	0.062	0.030	0.001	0.000	0.000
8.7	7.22	2.231	0.121	0.769	1.236	0.103	0.002	0.000
14.8	7.21	3.978	0.634	2.728	0.605	0.011	0.000	0.000
8.6	7.35	26.772	1.498	9.517	13.744	2.010	0.003	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 11.3 km; M= 6.83; eps0= 0.74. Mean calculated for all sources.
Modal src-site R= 8.6 km; M= 7.35; eps0= 0.15 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 8.6km; M*= 7.35; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 13.744

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	25.65	9.0	6.19	1.04
Wasatch front faults	71.07	11.3	7.09	0.62
Individual fault hazard details if contrib.>1%:				
Wasatch flt Ch_Mag, Salt L	8.38	15.3	7.00	1.19
Wasatch flt Ch_Mag, Provo	19.45	8.6	7.30	0.17
Wasatch FA Ch_M Salt Lake City se	3.46	15.3	7.20	1.06
Wasatch FA Ch_Mag Provo section'	7.02	8.6	7.50	0.08
Wasatch FB Ch_Mag Salt Lake City	2.26	15.3	6.80	1.29
Wasatch FB Ch_Mag Provo section	5.87	8.6	7.10	0.27
Wasatch flt GR_Mag, Salt L	8.20	16.3	6.76	1.42
Wasatch flt GR_Mag, Provo	16.41	10.5	6.90	0.64

********** Intermountain Seismic Belt**********

*** Deaggregation of Seismic Hazard for PGA & 2 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2002 version ***
PSHA Deaggregation. %contributions. site: Tibble_Fork long: 111.646 W., lat: 40.481 N.
USGS 2002-03 update files and programs. dM=0.2. Site descr:ROCK
Return period: 475 yrs. Exceedance PGA =0.1856 g.
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.05817

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.3	4.60	0.054	0.002	0.011	0.027	0.014	0.001	0.000
14.8	4.60	0.080	0.005	0.031	0.040	0.004	0.000	0.000
7.3	4.80	0.097	0.003	0.018	0.044	0.030	0.002	0.000
14.9	4.80	0.163	0.008	0.052	0.086	0.018	0.000	0.000
24.1	4.80	0.117	0.018	0.082	0.017	0.000	0.000	0.000
6.7	5.05	1.126	0.092	0.532	0.475	0.024	0.003	0.000
13.7	5.05	1.011	0.324	0.564	0.099	0.023	0.001	0.000
23.6	5.04	0.246	0.131	0.074	0.040	0.000	0.000	0.000
34.9	5.04	0.059	0.024	0.034	0.000	0.000	0.000	0.000
6.6	5.20	1.934	0.139	0.820	0.964	0.010	0.002	0.000
13.6	5.20	1.791	0.517	1.139	0.121	0.012	0.001	0.000
23.4	5.20	0.348	0.268	0.052	0.028	0.001	0.000	0.000
6.6	5.40	1.677	0.096	0.597	0.938	0.042	0.003	0.000
13.7	5.40	1.788	0.375	1.140	0.246	0.025	0.001	0.000
23.6	5.40	0.450	0.290	0.095	0.061	0.004	0.000	0.000
34.5	5.40	0.100	0.042	0.051	0.008	0.000	0.000	0.000
6.6	5.60	1.397	0.066	0.423	0.786	0.119	0.002	0.000
13.8	5.60	1.693	0.262	1.053	0.359	0.017	0.002	0.000
23.7	5.60	0.460	0.282	0.132	0.040	0.006	0.000	0.000
34.3	5.61	0.104	0.060	0.028	0.015	0.000	0.000	0.000
6.6	5.80	1.150	0.046	0.294	0.621	0.187	0.002	0.000
13.9	5.80	1.610	0.181	0.905	0.503	0.018	0.002	0.000
23.7	5.80	0.509	0.244	0.218	0.037	0.010	0.000	0.000
34.4	5.80	0.140	0.089	0.026	0.026	0.000	0.000	0.000
6.8	6.02	1.403	0.049	0.315	0.705	0.321	0.012	0.000
14.2	6.00	1.476	0.128	0.718	0.594	0.034	0.002	0.000
23.9	6.01	0.590	0.205	0.341	0.033	0.011	0.000	0.000
34.4	6.00	0.155	0.109	0.019	0.027	0.001	0.000	0.000
44.5	6.01	0.053	0.020	0.021	0.012	0.000	0.000	0.000
6.6	6.20	1.576	0.049	0.310	0.746	0.434	0.036	0.000
14.3	6.20	1.486	0.098	0.593	0.705	0.086	0.003	0.000
23.8	6.20	0.709	0.175	0.438	0.081	0.014	0.001	0.000
33.1	6.20	0.282	0.156	0.088	0.032	0.005	0.000	0.000
44.4	6.21	0.079	0.037	0.020	0.022	0.000	0.000	0.000
6.2	6.40	1.299	0.036	0.228	0.567	0.407	0.060	0.000
14.1	6.40	1.506	0.076	0.476	0.748	0.204	0.003	0.000
25.3	6.38	1.006	0.251	0.578	0.163	0.013	0.001	0.000
32.5	6.37	0.519	0.203	0.283	0.024	0.008	0.000	0.000
44.9	6.41	0.088	0.051	0.015	0.022	0.000	0.000	0.000
7.9	6.62	3.189	0.087	0.554	1.393	0.973	0.182	0.001
16.2	6.61	7.695	0.406	2.578	3.797	0.905	0.008	0.000
25.4	6.59	1.602	0.351	0.944	0.298	0.008	0.001	0.000
31.1	6.57	1.643	0.415	1.208	0.013	0.007	0.000	0.000
46.6	6.62	0.308	0.277	0.013	0.016	0.001	0.000	0.000
55.6	6.62	0.095	0.074	0.010	0.012	0.000	0.000	0.000
7.5	6.83	1.937	0.048	0.302	0.764	0.663	0.157	0.002
15.7	6.79	10.753	0.466	2.960	5.777	1.526	0.024	0.000
23.9	6.80	0.892	0.078	0.434	0.364	0.014	0.002	0.000
33.4	6.81	0.329	0.076	0.216	0.023	0.013	0.001	0.000
44.9	6.78	0.193	0.116	0.046	0.025	0.006	0.000	0.000
55.1	6.80	0.161	0.125	0.014	0.023	0.000	0.000	0.000
76.2	6.79	0.061	0.036	0.017	0.007	0.000	0.000	0.000
124.7	6.78	0.078	0.019	0.059	0.000	0.000	0.000	0.000
8.7	7.06	5.070	0.125	0.796	2.003	1.827	0.309	0.010
15.1	6.99	14.447	0.476	3.022	7.306	3.559	0.084	0.000
23.8	6.95	0.559	0.042	0.258	0.239	0.019	0.002	0.000
34.4	6.96	0.113	0.022	0.070	0.012	0.008	0.001	0.000
45.2	6.96	0.623	0.403	0.201	0.013	0.006	0.000	0.000
54.9	6.99	0.078	0.051	0.009	0.016	0.002	0.000	0.000
9.1	7.27	0.760	0.018	0.114	0.287	0.281	0.058	0.003
15.2	7.20	3.961	0.120	0.765	1.923	1.072	0.081	0.000
45.8	7.19	0.760	0.369	0.379	0.007	0.004	0.000	0.000
8.9	7.35	12.269	0.285	1.808	4.543	4.534	1.036	0.062

45.9	7.39	0.330	0.100	0.220	0.005	0.004	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 16.1 km; M= 6.57; eps0= -0.21. Mean calculated for all sources.
Modal src-site R= 15.1 km; M= 6.99; eps0= -0.57 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 15.2km; M*= 7.00; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 7.306

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	35.29	13.3	5.96	0.34
Wasatch front faults	57.55	14.4	7.00	-0.66
Individual fault hazard details if contrib.>1%:				
West Valley FZ, Taylor	2.23	30.1	6.49	1.41
Wasatch flt Ch_Mag, Salt L	9.74	15.5	7.00	-0.47
Wasatch flt Ch_Mag, Provo	9.04	8.9	7.30	-1.63
Wasatch FA Ch_M Salt Lake City se	3.64	15.5	7.20	-0.67
Wasatch FA Ch_Mag Provo section'	3.10	8.9	7.50	-1.79
Wasatch FB Ch_Mag Salt Lake City	2.83	15.4	6.80	-0.26
Wasatch FB Ch_Mag Provo section	2.90	8.8	7.10	-1.44
Wasatch flt GR_Mag, Salt L	12.11	17.0	6.74	-0.03
Wasatch flt GR_Mag, Provo	12.39	12.7	6.86	-0.71

********** Intermountain Seismic Belt**********
PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork long: 111.646 d W., lat: 40.481 N.
USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010
Return period: 475 yrs. 1.00 s. PSA =0.14779 g.
#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.05582

DIST(km)	MAG(Mw)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
6.3	5.05	0.135	0.073	0.062	0.000	0.000	0.000	0.000
13.2	5.05	0.061	0.061	0.000	0.000	0.000	0.000	0.000
6.3	5.20	0.345	0.128	0.216	0.000	0.000	0.000	0.000
13.4	5.21	0.198	0.177	0.020	0.000	0.000	0.000	0.000
6.4	5.40	0.452	0.096	0.347	0.009	0.000	0.000	0.000
13.6	5.41	0.335	0.218	0.116	0.000	0.000	0.000	0.000
23.5	5.41	0.067	0.066	0.001	0.000	0.000	0.000	0.000
6.4	5.60	0.536	0.067	0.351	0.118	0.000	0.000	0.000
13.8	5.60	0.495	0.208	0.284	0.003	0.000	0.000	0.000
23.7	5.61	0.139	0.128	0.011	0.000	0.000	0.000	0.000
6.5	5.80	0.586	0.046	0.280	0.258	0.001	0.000	0.000
13.9	5.80	0.664	0.173	0.453	0.038	0.000	0.000	0.000
23.9	5.81	0.241	0.160	0.081	0.001	0.000	0.000	0.000
34.3	5.81	0.080	0.076	0.004	0.000	0.000	0.000	0.000
6.4	6.02	0.924	0.050	0.315	0.493	0.065	0.000	0.000
14.2	6.00	0.804	0.129	0.512	0.164	0.001	0.000	0.000
24.1	6.01	0.405	0.170	0.231	0.004	0.000	0.000	0.000
34.6	6.01	0.147	0.113	0.032	0.001	0.000	0.000	0.000
44.8	6.01	0.056	0.051	0.006	0.000	0.000	0.000	0.000
6.3	6.20	1.212	0.049	0.312	0.645	0.205	0.000	0.000
14.3	6.20	1.008	0.099	0.523	0.382	0.004	0.000	0.000
24.0	6.20	0.608	0.168	0.396	0.045	0.000	0.000	0.000
33.4	6.20	0.350	0.157	0.189	0.003	0.000	0.000	0.000
44.6	6.21	0.119	0.081	0.038	0.001	0.000	0.000	0.000
55.1	6.21	0.058	0.048	0.010	0.000	0.000	0.000	0.000
6.0	6.40	1.137	0.036	0.230	0.547	0.320	0.004	0.000
14.1	6.40	1.202	0.076	0.469	0.602	0.054	0.000	0.000
26.0	6.41	1.214	0.355	0.665	0.193	0.001	0.000	0.000
32.3	6.36	0.967	0.251	0.687	0.030	0.000	0.000	0.000
45.1	6.41	0.194	0.090	0.100	0.004	0.000	0.000	0.000
55.7	6.41	0.143	0.077	0.064	0.002	0.000	0.000	0.000
65.3	6.41	0.059	0.038	0.020	0.001	0.000	0.000	0.000
126.0	6.41	0.057	0.041	0.017	0.000	0.000	0.000	0.000
7.9	6.62	2.765	0.085	0.539	1.349	0.763	0.030	0.000
16.2	6.62	8.100	0.433	2.748	4.190	0.730	0.000	0.000
26.2	6.60	2.437	0.345	1.518	0.573	0.001	0.000	0.000
32.1	6.58	2.133	0.298	1.352	0.482	0.000	0.000	0.000
46.9	6.60	0.998	0.437	0.556	0.005	0.000	0.000	0.000
56.3	6.63	0.633	0.327	0.304	0.002	0.000	0.000	0.000
64.5	6.60	0.230	0.127	0.102	0.001	0.000	0.000	0.000
77.6	6.65	0.478	0.291	0.186	0.001	0.000	0.000	0.000

83.6	6.63	0.410	0.307	0.103	0.000	0.000	0.000	0.000
95.6	6.63	0.096	0.087	0.009	0.000	0.000	0.000	0.000
114.1	6.64	0.182	0.174	0.007	0.000	0.000	0.000	0.000
164.3	6.65	0.053	0.053	0.000	0.000	0.000	0.000	0.000
7.4	6.81	1.993	0.050	0.316	0.793	0.733	0.101	0.000
15.9	6.78	8.704	0.390	2.480	4.949	0.884	0.001	0.000
24.5	6.82	1.143	0.081	0.509	0.539	0.014	0.000	0.000
33.5	6.81	0.664	0.079	0.375	0.209	0.001	0.000	0.000
46.2	6.77	1.083	0.338	0.701	0.043	0.000	0.000	0.000
55.6	6.79	0.886	0.345	0.534	0.007	0.000	0.000	0.000
65.0	6.81	0.183	0.073	0.105	0.004	0.000	0.000	0.000
77.4	6.82	0.523	0.274	0.247	0.002	0.000	0.000	0.000
84.2	6.82	0.082	0.039	0.041	0.001	0.000	0.000	0.000
95.6	6.86	0.276	0.155	0.121	0.001	0.000	0.000	0.000
107.3	6.85	0.126	0.102	0.024	0.000	0.000	0.000	0.000
127.4	6.80	0.135	0.087	0.048	0.000	0.000	0.000	0.000
174.4	6.80	0.063	0.038	0.025	0.000	0.000	0.000	0.000
8.7	7.05	4.444	0.111	0.704	1.768	1.673	0.188	0.000
15.3	6.98	15.829	0.518	3.288	8.237	3.779	0.008	0.000
23.8	6.96	0.642	0.033	0.207	0.354	0.048	0.000	0.000
34.6	6.95	0.226	0.022	0.125	0.077	0.002	0.000	0.000
45.5	6.97	2.756	0.463	1.836	0.456	0.000	0.000	0.000
55.2	6.99	0.652	0.202	0.390	0.060	0.000	0.000	0.000
65.0	6.95	0.068	0.030	0.034	0.005	0.000	0.000	0.000
77.6	6.96	0.301	0.140	0.156	0.004	0.000	0.000	0.000
83.4	6.98	0.080	0.035	0.041	0.003	0.000	0.000	0.000
95.3	7.05	0.196	0.098	0.095	0.002	0.000	0.000	0.000
104.0	6.92	0.108	0.067	0.041	0.000	0.000	0.000	0.000
113.8	7.04	0.160	0.084	0.074	0.002	0.000	0.000	0.000
163.9	6.98	0.087	0.087	0.000	0.000	0.000	0.000	0.000
174.7	6.97	0.052	0.017	0.035	0.000	0.000	0.000	0.000
9.0	7.19	1.474	0.034	0.219	0.550	0.550	0.121	0.000
14.9	7.19	4.790	0.134	0.849	2.133	1.580	0.094	0.000
45.8	7.20	3.269	0.372	1.959	0.937	0.001	0.000	0.000
54.5	7.13	0.106	0.022	0.078	0.006	0.000	0.000	0.000
78.5	7.16	0.225	0.090	0.130	0.005	0.000	0.000	0.000
105.1	7.23	0.102	0.024	0.077	0.000	0.000	0.000	0.000
113.4	7.20	0.063	0.054	0.009	0.000	0.000	0.000	0.000
8.9	7.35	12.513	0.286	1.817	4.562	4.562	1.279	0.006
46.0	7.40	1.252	0.094	0.598	0.559	0.001	0.000	0.000

Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 23.7 km; M= 6.82; eps0= -0.03. Mean calculated for all sources.
Modal src-site R= 15.3 km; M= 6.98; eps0= -0.48 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 15.4km; M*= 6.98; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 8.237

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	23.59	19.8	6.33	0.52
Wasatch front faults	66.05	18.5	7.01	-0.44
Individual fault hazard details if contrib.>1%:				
West Valley FZ, Taylor	3.38	30.3	6.51	1.09
Wasatch flt Ch_Mag, Weber	2.44	46.0	7.20	0.76
Wasatch flt Ch_Mag, Salt L	10.23	15.5	7.00	-0.47
Wasatch flt Ch_Mag, Provo	9.22	8.9	7.30	-1.54
Wasatch flt Ch_Mag, Nephi	1.10	44.7	7.00	0.99
Wasatch FA Ch_M Weber section'	1.20	46.1	7.40	0.48
Wasatch FA Ch_M Salt Lake City se	3.94	15.5	7.20	-0.75
Wasatch FA Ch_Mag Provo section'	3.16	8.9	7.50	-1.77
Wasatch FB Ch_Mag Salt Lake City	2.81	15.4	6.80	-0.18
Wasatch FB Ch_Mag Provo section	2.93	8.8	7.10	-1.27
Wasatch flt GR_Mag, Weber	1.33	52.8	6.92	1.25
Wasatch flt GR_Mag, Salt L	12.20	17.2	6.74	0.02
Wasatch flt GR_Mag, Provo	12.60	13.4	6.87	-0.53
Wasatch flt GR_Mag, Nephi	1.09	49.4	6.78	1.35

********** Intermountain Seismic Belt**********
PSHA Deaggregation. %contributions. ROCK site: Tibble_Fork long: 111.646 d W., lat: 40.481 N.
USGS 2002-2003 update files and programs. Analysis on DaMoYr:14/04/2010

Tibble_Fork_2002 interactive Deaggregations 475 years.txt

Return period: 475 yrs. 0.20 s. PSA =0.4433 g.

#Pr[at least one eq with median motion>=PSA in 50 yrs]=0.05793

DIST(km)	MAG(Mw)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.1	4.80	0.054	0.003	0.018	0.029	0.004	0.000	0.000
14.6	4.80	0.062	0.008	0.041	0.013	0.000	0.000	0.000
6.8	5.05	0.857	0.092	0.398	0.361	0.006	0.000	0.000
13.7	5.05	0.834	0.277	0.522	0.036	0.000	0.000	0.000
23.5	5.05	0.169	0.134	0.034	0.000	0.000	0.000	0.000
6.8	5.20	1.560	0.139	0.725	0.692	0.004	0.000	0.000
13.7	5.20	1.601	0.477	1.041	0.082	0.001	0.000	0.000
23.5	5.20	0.318	0.278	0.038	0.002	0.000	0.000	0.000
6.7	5.40	1.451	0.096	0.579	0.761	0.014	0.000	0.000
13.8	5.40	1.670	0.368	1.114	0.183	0.004	0.000	0.000
23.6	5.40	0.419	0.317	0.090	0.012	0.000	0.000	0.000
33.8	5.41	0.074	0.054	0.020	0.000	0.000	0.000	0.000
6.7	5.60	1.284	0.067	0.421	0.740	0.057	0.000	0.000
13.9	5.60	1.670	0.262	1.110	0.292	0.006	0.000	0.000
23.7	5.60	0.487	0.317	0.153	0.017	0.000	0.000	0.000
34.0	5.61	0.105	0.086	0.018	0.001	0.000	0.000	0.000
6.6	5.80	1.104	0.046	0.293	0.633	0.130	0.001	0.000
14.0	5.80	1.644	0.181	0.982	0.472	0.008	0.000	0.000
23.7	5.80	0.573	0.270	0.279	0.023	0.000	0.000	0.000
34.1	5.81	0.158	0.132	0.022	0.004	0.000	0.000	0.000
6.8	6.02	1.382	0.049	0.315	0.742	0.274	0.002	0.000
14.3	6.00	1.544	0.128	0.772	0.628	0.015	0.000	0.000
23.9	6.01	0.688	0.217	0.445	0.025	0.001	0.000	0.000
34.4	6.00	0.196	0.159	0.026	0.011	0.000	0.000	0.000
44.4	6.01	0.056	0.038	0.016	0.002	0.000	0.000	0.000
6.6	6.20	1.562	0.049	0.310	0.774	0.413	0.015	0.000
14.4	6.20	1.562	0.098	0.621	0.793	0.050	0.001	0.000
24.5	6.20	0.927	0.215	0.637	0.070	0.005	0.000	0.000
34.2	6.21	0.264	0.161	0.083	0.020	0.000	0.000	0.000
44.3	6.21	0.093	0.067	0.019	0.006	0.000	0.000	0.000
6.2	6.40	1.295	0.036	0.228	0.575	0.421	0.035	0.000
14.2	6.40	1.561	0.076	0.482	0.861	0.141	0.001	0.000
26.7	6.37	1.560	0.346	1.050	0.156	0.007	0.000	0.000
34.1	6.40	0.325	0.136	0.169	0.019	0.001	0.000	0.000
44.8	6.41	0.114	0.081	0.022	0.011	0.000	0.000	0.000
55.1	6.41	0.052	0.034	0.014	0.004	0.000	0.000	0.000
7.6	6.61	2.596	0.068	0.436	1.095	0.883	0.113	0.000
16.0	6.64	11.718	0.559	3.553	6.605	0.999	0.001	0.000
26.7	6.59	3.542	0.540	2.513	0.482	0.006	0.000	0.000
32.9	6.59	0.753	0.251	0.487	0.012	0.001	0.000	0.000
46.5	6.60	0.397	0.323	0.064	0.010	0.000	0.000	0.000
55.9	6.61	0.165	0.150	0.009	0.006	0.000	0.000	0.000
64.2	6.61	0.053	0.040	0.010	0.002	0.000	0.000	0.000
7.8	6.84	2.573	0.067	0.425	1.069	0.894	0.118	0.000
15.2	6.83	8.195	0.319	2.030	4.644	1.196	0.006	0.000
24.1	6.81	0.983	0.083	0.508	0.381	0.010	0.000	0.000
33.1	6.80	0.439	0.083	0.319	0.030	0.006	0.000	0.000
45.8	6.75	0.366	0.247	0.098	0.020	0.001	0.000	0.000
55.1	6.78	0.213	0.185	0.014	0.013	0.000	0.000	0.000
76.4	6.78	0.063	0.044	0.015	0.003	0.000	0.000	0.000
124.0	6.79	0.081	0.021	0.060	0.000	0.000	0.000	0.000
8.6	7.08	4.341	0.108	0.688	1.731	1.562	0.251	0.001
15.2	7.00	13.203	0.449	2.854	7.130	2.754	0.016	0.000
23.6	6.95	0.547	0.035	0.222	0.276	0.013	0.000	0.000
34.4	6.95	0.129	0.022	0.088	0.014	0.005	0.000	0.000
45.3	6.96	0.866	0.493	0.359	0.012	0.002	0.000	0.000
55.1	6.96	0.136	0.113	0.011	0.012	0.000	0.000	0.000
9.0	7.27	0.728	0.018	0.113	0.287	0.268	0.043	0.000
14.9	7.19	4.215	0.130	0.829	2.082	1.112	0.062	0.000
45.8	7.19	0.935	0.383	0.543	0.007	0.002	0.000	0.000
8.8	7.35	11.716	0.284	1.806	4.537	4.364	0.711	0.014
46.0	7.39	0.340	0.094	0.238	0.005	0.003	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:

Mean src-site R= 16.7 km; M= 6.60; eps0= -0.06. Mean calculated for all sources.

Modal src-site R= 15.2 km; M= 7.00; eps0= -0.43 from peak (R,M) bin

Gridded source distance metrics: Rseis Rrup and Rjb

Tibble_Fork_2002 interactive Deaggregations 475 years.txt

MODE R*= 15.3km; M*= 7.00; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 7.130

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
Extensional gridded (random)	35.50	14.3	6.00	0.44
Wasatch front faults	57.84	14.9	6.99	-0.50
Individual fault hazard details if contrib.>1%:				
West Valley FZ, Taylor	2.93	29.9	6.49	1.31
Wasatch flt Ch_Mag, Salt L	9.62	15.5	7.00	-0.38
Wasatch flt Ch_Mag, Provo	8.66	8.8	7.30	-1.37
Wasatch FA Ch_M Salt Lake City se	3.49	15.5	7.20	-0.54
Wasatch FA Ch_Mag Provo section'	2.93	8.8	7.50	-1.46
Wasatch FB Ch_Mag Salt Lake City	2.87	15.4	6.80	-0.20
Wasatch FB Ch_Mag Provo section	2.81	8.8	7.10	-1.24
Wasatch flt GR_Mag, Salt L	12.63	17.0	6.73	0.02
Wasatch flt GR_Mag, Provo	12.47	12.9	6.86	-0.57

********** Intermountain Seismic Belt**********

*** Deaggregation of Seismic Hazard at One Period of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2008 version ***
PSHA Deaggregation. %contributions. site: Unnamed long: 111.646 W., lat: 40.481 N.
Vs30(m/s)= 760.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 4975 yrs. Exceedance PGA =0.4277 g. Weight * Computed_Rate_Ex 0.204E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00042
#This deaggregation corresponds to Mean Hazard w/all GMPEs

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.2	4.60	0.314	0.032	0.187	0.095	0.000	0.000	0.000
14.4	4.61	0.156	0.081	0.076	0.000	0.000	0.000	0.000
7.3	4.80	0.660	0.052	0.311	0.296	0.000	0.000	0.000
14.5	4.80	0.405	0.150	0.255	0.000	0.000	0.000	0.000
23.8	4.81	0.101	0.101	0.000	0.000	0.000	0.000	0.000
7.4	5.04	1.351	0.545	0.478	0.324	0.005	0.000	0.000
14.4	5.04	0.516	0.167	0.343	0.006	0.000	0.000	0.000
23.9	5.04	0.151	0.143	0.008	0.000	0.000	0.000	0.000
7.4	5.20	1.976	0.890	0.928	0.145	0.013	0.000	0.000
14.0	5.21	0.441	0.247	0.158	0.037	0.000	0.000	0.000
24.0	5.21	0.095	0.066	0.029	0.000	0.000	0.000	0.000
7.5	5.40	2.292	0.697	1.273	0.284	0.038	0.000	0.000
14.3	5.40	0.779	0.374	0.275	0.130	0.000	0.000	0.000
24.0	5.40	0.231	0.109	0.122	0.000	0.000	0.000	0.000
35.1	5.40	0.065	0.065	0.000	0.000	0.000	0.000	0.000
7.5	5.60	2.083	0.544	1.200	0.297	0.042	0.000	0.000
14.2	5.61	0.728	0.436	0.160	0.132	0.000	0.000	0.000
24.1	5.62	0.194	0.057	0.137	0.000	0.000	0.000	0.000
35.2	5.62	0.066	0.061	0.005	0.000	0.000	0.000	0.000
7.6	5.80	1.890	0.393	1.104	0.340	0.053	0.000	0.000
14.3	5.80	0.806	0.467	0.169	0.170	0.000	0.000	0.000
24.0	5.81	0.245	0.061	0.184	0.001	0.000	0.000	0.000
35.3	5.81	0.089	0.066	0.023	0.000	0.000	0.000	0.000
7.2	6.01	2.278	0.360	1.351	0.499	0.069	0.000	0.000
14.2	6.01	0.984	0.511	0.292	0.176	0.005	0.000	0.000
24.7	6.01	0.250	0.068	0.152	0.030	0.000	0.000	0.000
35.1	6.01	0.099	0.043	0.056	0.000	0.000	0.000	0.000
7.5	6.21	3.031	0.417	1.704	0.810	0.099	0.001	0.000
14.7	6.20	1.024	0.457	0.358	0.191	0.018	0.000	0.000
25.0	6.21	0.309	0.094	0.154	0.060	0.000	0.000	0.000
34.4	6.21	0.133	0.036	0.097	0.000	0.000	0.000	0.000
44.5	6.22	0.067	0.047	0.020	0.000	0.000	0.000	0.000
7.7	6.40	3.164	0.365	1.683	1.030	0.083	0.003	0.000
15.5	6.41	0.953	0.400	0.364	0.163	0.026	0.000	0.000
24.9	6.41	0.273	0.106	0.084	0.083	0.000	0.000	0.000
34.3	6.42	0.152	0.032	0.114	0.005	0.000	0.000	0.000
44.8	6.42	0.074	0.031	0.043	0.000	0.000	0.000	0.000
6.3	6.60	3.478	0.441	1.831	1.120	0.083	0.003	0.000
14.8	6.61	4.289	2.720	1.436	0.103	0.030	0.000	0.000
23.7	6.61	0.492	0.364	0.052	0.076	0.000	0.000	0.000
34.2	6.60	0.133	0.049	0.071	0.013	0.000	0.000	0.000
44.9	6.60	0.064	0.021	0.043	0.000	0.000	0.000	0.000
6.8	6.80	3.288	0.404	1.772	1.006	0.099	0.006	0.000
14.3	6.81	5.084	2.904	2.022	0.109	0.049	0.000	0.000
24.5	6.79	0.450	0.224	0.083	0.141	0.002	0.000	0.000
34.8	6.78	0.191	0.065	0.088	0.039	0.000	0.000	0.000
45.3	6.78	0.098	0.026	0.072	0.000	0.000	0.000	0.000
55.4	6.78	0.054	0.026	0.029	0.000	0.000	0.000	0.000
7.8	6.99	2.661	0.379	1.554	0.696	0.030	0.002	0.000
14.5	6.99	9.239	4.292	4.827	0.102	0.018	0.000	0.000
24.0	6.96	0.198	0.119	0.033	0.041	0.004	0.000	0.000
35.3	6.97	0.071	0.031	0.021	0.020	0.000	0.000	0.000
45.2	6.98	0.067	0.039	0.025	0.002	0.000	0.000	0.000
8.5	7.20	9.122	1.322	5.602	2.194	0.003	0.001	0.000
13.9	7.20	4.188	1.457	2.569	0.157	0.006	0.000	0.000
24.7	7.19	0.066	0.034	0.018	0.012	0.002	0.000	0.000
45.5	7.19	0.084	0.074	0.008	0.002	0.000	0.000	0.000
8.4	7.40	19.653	2.514	11.652	5.487	0.000	0.000	0.000
13.7	7.40	0.763	0.223	0.476	0.064	0.000	0.000	0.000
24.2	7.40	0.099	0.066	0.034	0.000	0.000	0.000	0.000
8.3	7.60	6.580	0.756	3.689	2.135	0.000	0.000	0.000

13.8	7.60	0.154	0.038	0.098	0.018	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 100.0
Mean src-site R= 11.4 km; M= 6.74; eps0= 0.98. Mean calculated for all sources.
Modal src-site R= 8.4 km; M= 7.40; eps0= 0.73 from peak (R,M) bin
MODE R*= 8.4km; M*= 7.40; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 11.652

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values).
Wasatch Segmented Char	37.57	10.3	7.30	0.96
Wasatch Segmented GR	15.87	12.3	6.88	1.42
Wasatch Unsegmented M7.4	8.10	10.0	7.36	0.88
Extensional Zones gridded	26.92	8.7	6.10	1.05
CEUS gridded	11.46	21.1	5.77	0.38

Individual fault hazard details if its contribution to mean hazard > 2%:

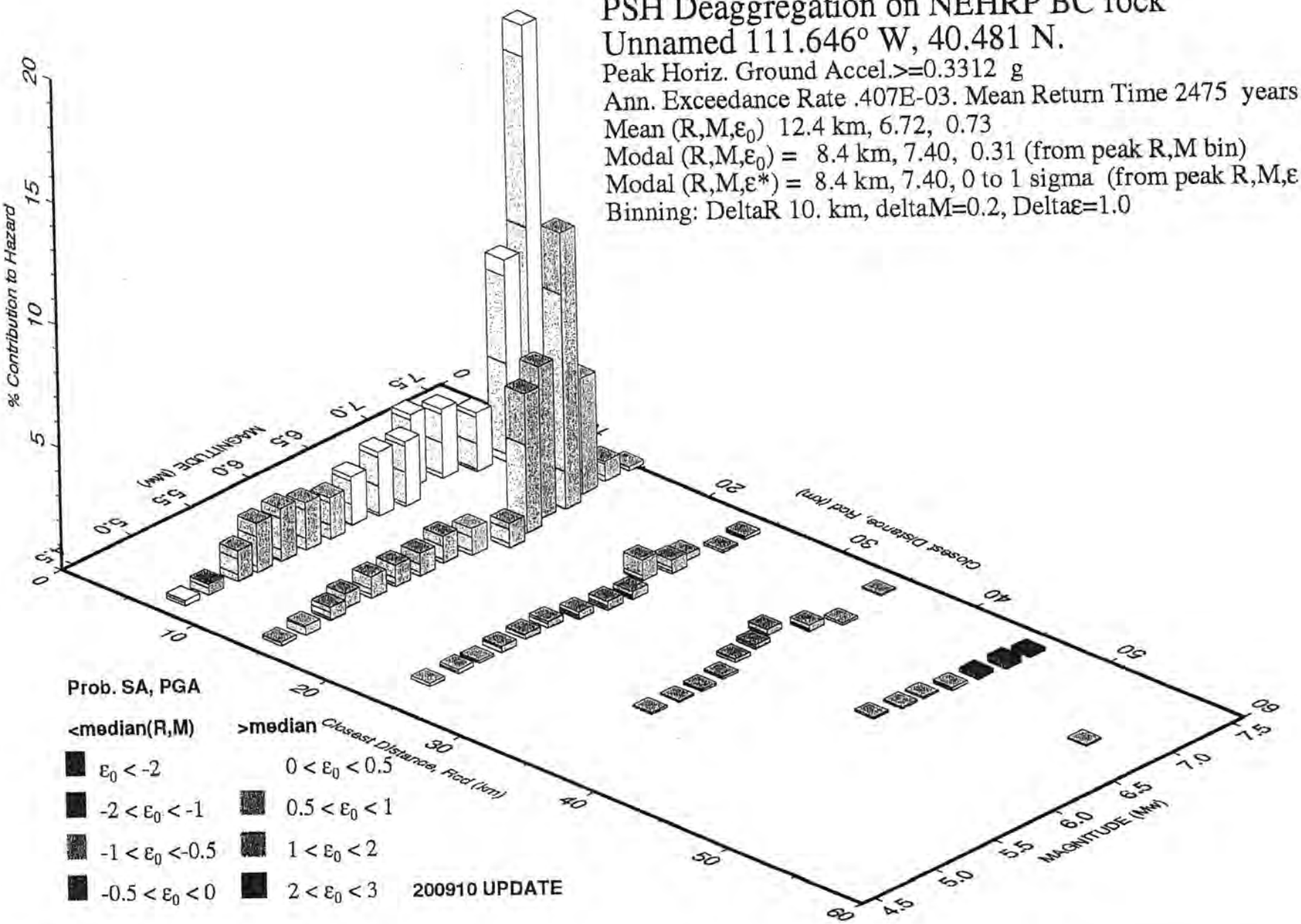
Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
Wasatch f-Ch, Salt Lake City sec	6.47	14.9	7.02	1.54	-84.0
Wasatch f-Char, Provo sec., 50d	15.99	8.3	7.41	0.71	-93.8
Wasatch f-Ch, Salt Lake City sec	2.16	14.9	7.02	1.54	-84.0
Wasatch f-Char, Provo sec., 40d	5.33	8.3	7.41	0.71	-93.8
Wasatch f-Ch, Salt Lake City sec	2.16	14.9	7.02	1.54	-84.0
Wasatch f-Char, Provo sec., 60d	5.33	8.3	7.41	0.71	-93.8
Wasatch flt,GR, Salt Lake City s	2.17	16.9	6.74	1.97	-61.8
Wasatch flt,GR, Provo sec.; 50d	7.05	10.9	6.92	1.24	-115.0
Wasatch flt,GR, Provo sec.; 40d	3.18	11.0	6.93	1.25	-115.0
Wasatch fault, float M7.4. 50d d	4.79	10.0	7.36	0.88	-98.6
Wasatch fault, float M7.4. 40d d	2.43	10.0	7.36	0.88	-98.6

#*********End of deaggregation corresponding to Mean Hazard w/all GMPEs *********#

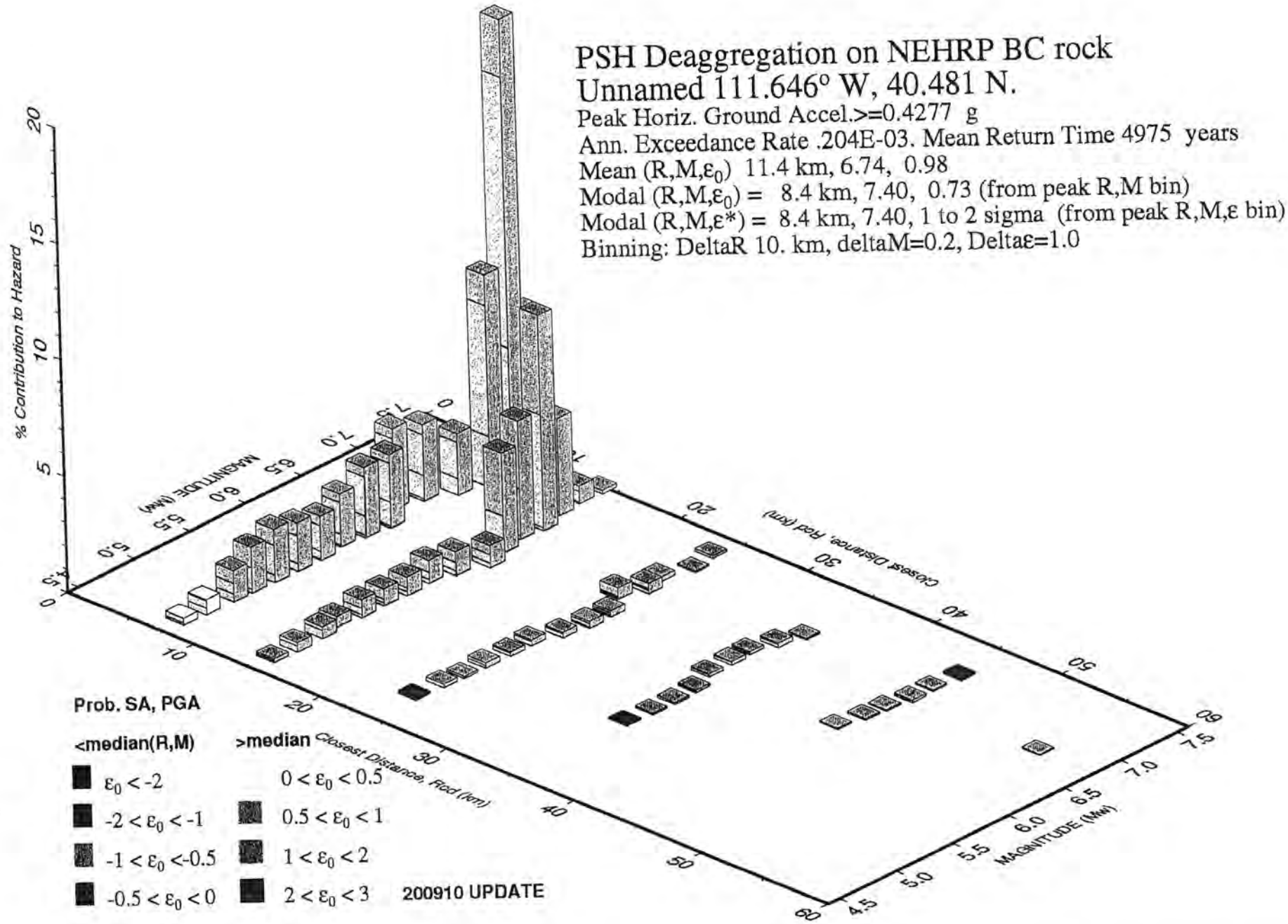
********** Intermountain Seismic Belt**********

PSH Deaggregation on NEHRP BC rock
Unnamed 111.646° W, 40.481 N.

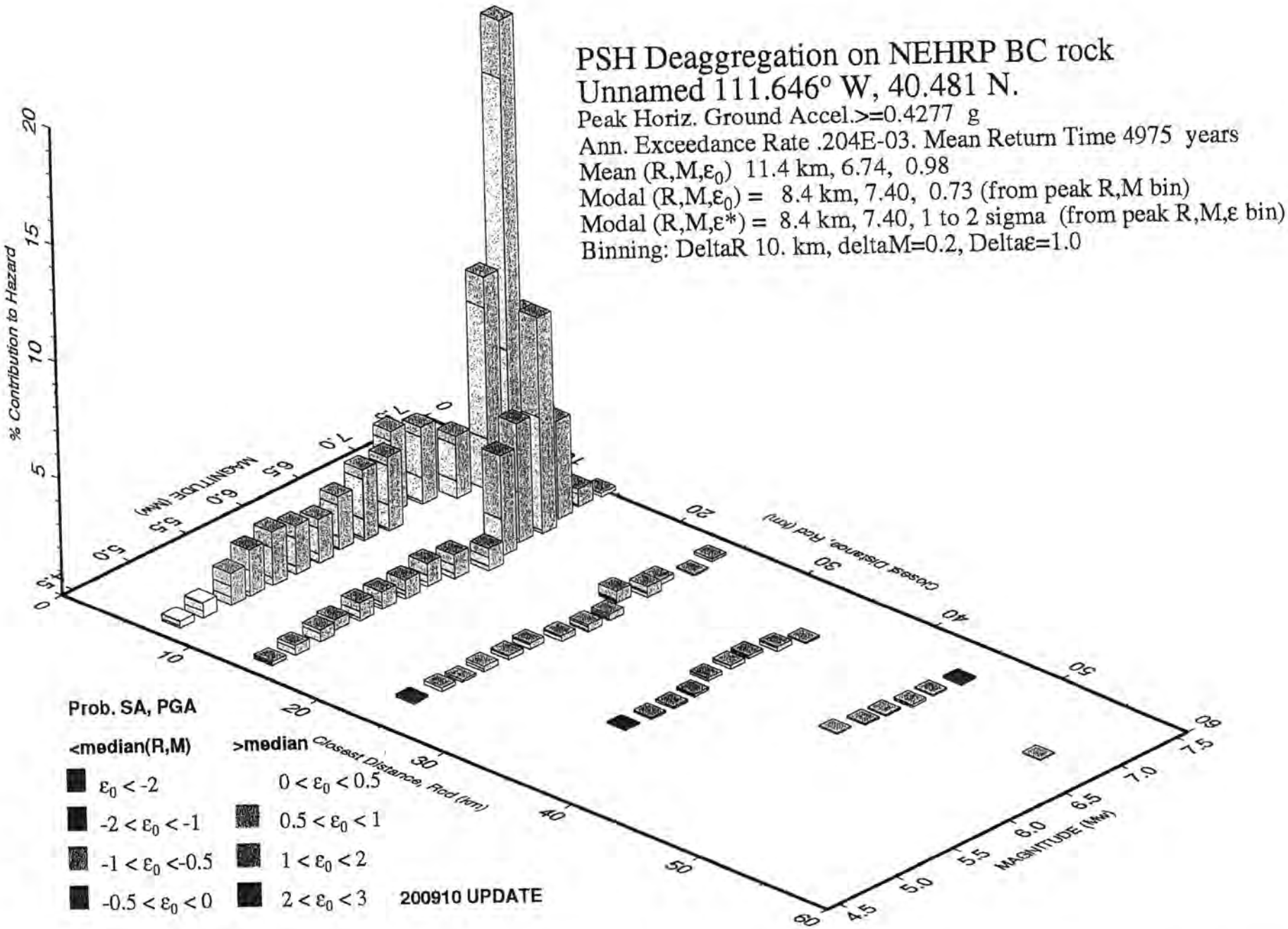
Peak Horiz. Ground Accel.>=0.3312 g
Ann. Exceedance Rate .407E-03. Mean Return Time 2475 years
Mean (R,M,ε_0) 12.4 km, 6.72, 0.73
Modal (R,M,ε_0) = 8.4 km, 7.40, 0.31 (from peak R,M bin)
Modal (R,M,ε*) = 8.4 km, 7.40, 0 to 1 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0



GMT 2010 Apr 14 22:49:49 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs= 760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted



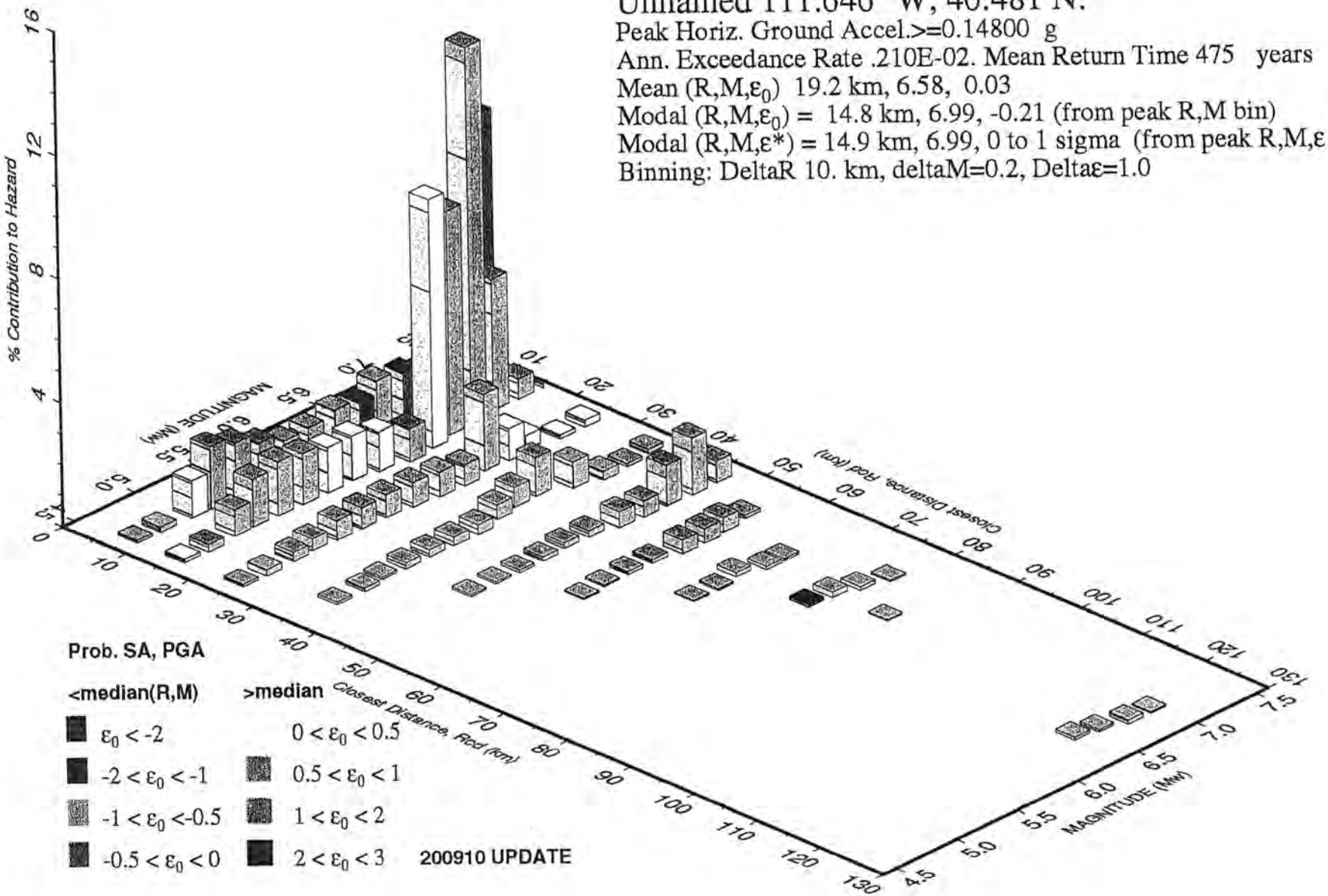
GMT 2010 Apr 14 22:48:21 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs=.760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE. Bins with lt 0.05% contrib. omitted



GMT 2010 Apr 14 22:48:21 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs=.760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

PSH Deaggregation on NEHRP BC rock
Unnamed 111.646° W, 40.481 N.

Peak Horiz. Ground Accel.>=0.14800 g
Ann. Exceedance Rate .210E-02. Mean Return Time 475 years
Mean (R,M,ε_0) 19.2 km, 6.58, 0.03
Modal (R,M,ε_0) = 14.8 km, 6.99, -0.21 (from peak R,M bin)
Modal (R,M,ε*) = 14.9 km, 6.99, 0 to 1 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0



GMT 2010 Apr 14 22:52:19 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs= 760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

*** Deaggregation of Seismic Hazard at One Period of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2008 version ***
PSHA Deaggregation, %contributions, site: Unnamed long: 111.646 W., lat: 40.481 N.
Vs30(m/s)= 760.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 475 yrs. Exceedance PGA =0.14800 g. Weight * Computed_Rate_Ex 0.210E-02
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.05467
#This deaggregation corresponds to Mean Hazard w/all GMPEs

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.6	4.60	0.091	0.003	0.018	0.046	0.023	0.000	0.000
15.0	4.60	0.122	0.009	0.053	0.060	0.000	0.000	0.000
24.2	4.61	0.084	0.019	0.065	0.000	0.000	0.000	0.000
7.6	4.80	0.165	0.005	0.030	0.076	0.053	0.001	0.000
15.1	4.80	0.249	0.015	0.087	0.146	0.001	0.000	0.000
24.2	4.80	0.199	0.032	0.153	0.015	0.000	0.000	0.000
35.3	4.81	0.086	0.051	0.035	0.000	0.000	0.000	0.000
7.7	5.05	1.185	0.081	0.464	0.551	0.087	0.003	0.000
14.5	5.05	0.850	0.229	0.469	0.134	0.018	0.000	0.000
23.9	5.04	0.296	0.115	0.121	0.060	0.000	0.000	0.000
35.3	5.04	0.108	0.037	0.071	0.000	0.000	0.000	0.000
7.8	5.20	2.008	0.120	0.693	1.063	0.131	0.002	0.000
14.4	5.20	1.532	0.354	1.023	0.142	0.013	0.000	0.000
23.6	5.21	0.393	0.270	0.078	0.045	0.000	0.000	0.000
34.7	5.21	0.084	0.038	0.045	0.000	0.000	0.000	0.000
7.8	5.40	1.755	0.084	0.495	0.953	0.219	0.005	0.000
14.6	5.40	1.726	0.251	1.085	0.356	0.034	0.000	0.000
23.8	5.40	0.633	0.317	0.214	0.102	0.000	0.000	0.000
34.8	5.40	0.198	0.094	0.091	0.013	0.000	0.000	0.000
45.1	5.40	0.065	0.024	0.041	0.000	0.000	0.000	0.000
7.9	5.60	1.400	0.058	0.344	0.728	0.267	0.004	0.000
14.7	5.60	1.624	0.173	0.904	0.523	0.024	0.000	0.000
23.9	5.60	0.684	0.271	0.342	0.067	0.004	0.000	0.000
34.6	5.61	0.228	0.140	0.059	0.029	0.000	0.000	0.000
45.0	5.62	0.066	0.027	0.038	0.001	0.000	0.000	0.000
7.9	5.80	1.089	0.040	0.239	0.551	0.250	0.010	0.000
14.8	5.80	1.455	0.120	0.684	0.620	0.031	0.001	0.000
24.0	5.80	0.736	0.203	0.446	0.075	0.012	0.000	0.000
34.7	5.80	0.294	0.168	0.080	0.046	0.000	0.000	0.000
45.0	5.81	0.097	0.048	0.043	0.006	0.000	0.000	0.000
55.1	5.81	0.053	0.019	0.034	0.000	0.000	0.000	0.000
7.7	6.01	1.106	0.036	0.213	0.524	0.316	0.017	0.000
14.7	6.01	1.441	0.094	0.551	0.736	0.058	0.002	0.000
24.4	6.00	0.787	0.158	0.519	0.094	0.016	0.000	0.000
34.7	6.00	0.320	0.158	0.115	0.046	0.000	0.000	0.000
44.9	6.01	0.129	0.074	0.034	0.020	0.000	0.000	0.000
54.6	6.01	0.062	0.026	0.034	0.002	0.000	0.000	0.000
8.2	6.21	1.338	0.041	0.243	0.608	0.415	0.032	0.000
15.4	6.19	1.281	0.073	0.433	0.685	0.089	0.002	0.000
24.9	6.20	0.804	0.119	0.503	0.162	0.020	0.000	0.000
33.7	6.21	0.472	0.172	0.247	0.049	0.004	0.000	0.000
44.5	6.21	0.182	0.097	0.050	0.035	0.000	0.000	0.000
54.4	6.21	0.101	0.047	0.041	0.013	0.000	0.000	0.000
64.8	6.21	0.055	0.022	0.034	0.000	0.000	0.000	0.000
8.5	6.40	1.237	0.036	0.212	0.534	0.417	0.039	0.000
16.4	6.40	1.095	0.055	0.328	0.610	0.100	0.003	0.000
25.1	6.39	0.682	0.073	0.395	0.198	0.016	0.000	0.000
33.0	6.39	0.650	0.174	0.414	0.051	0.011	0.000	0.000
44.5	6.41	0.204	0.091	0.078	0.035	0.000	0.000	0.000
54.5	6.41	0.122	0.065	0.034	0.024	0.000	0.000	0.000
64.9	6.42	0.066	0.032	0.030	0.005	0.000	0.000	0.000
121.1	6.43	0.090	0.056	0.034	0.000	0.000	0.000	0.000
7.3	6.60	1.469	0.043	0.259	0.645	0.477	0.044	0.000
15.9	6.61	8.036	0.434	2.588	4.476	0.536	0.003	0.000
24.1	6.61	2.446	0.262	1.390	0.782	0.011	0.000	0.000
32.9	6.58	1.232	0.284	0.848	0.091	0.009	0.000	0.000
45.5	6.61	0.528	0.258	0.242	0.027	0.001	0.000	0.000
55.4	6.62	0.441	0.321	0.101	0.019	0.000	0.000	0.000
64.0	6.61	0.138	0.107	0.023	0.008	0.000	0.000	0.000
75.4	6.61	0.105	0.084	0.019	0.002	0.000	0.000	0.000
121.7	6.59	0.073	0.032	0.041	0.000	0.000	0.000	0.000

7.7	6.80	1.379	0.039	0.236	0.591	0.469	0.043	0.000
14.8	6.81	7.210	0.323	1.928	4.153	0.801	0.004	0.000
24.4	6.80	1.032	0.086	0.488	0.437	0.020	0.001	0.000
34.6	6.80	0.840	0.150	0.557	0.120	0.013	0.000	0.000
45.6	6.80	0.522	0.190	0.294	0.032	0.006	0.000	0.000
55.3	6.80	0.475	0.280	0.166	0.028	0.000	0.000	0.000
65.2	6.79	0.111	0.065	0.028	0.018	0.000	0.000	0.000
75.8	6.79	0.180	0.142	0.026	0.011	0.000	0.000	0.000
84.5	6.79	0.057	0.025	0.027	0.005	0.000	0.000	0.000
122.9	6.78	0.124	0.035	0.088	0.000	0.000	0.000	0.000
8.3	7.00	1.273	0.037	0.222	0.554	0.426	0.033	0.000
14.8	6.99	12.168	0.520	3.105	6.845	1.691	0.007	0.000
24.0	6.96	0.469	0.033	0.196	0.228	0.011	0.001	0.000
35.7	6.99	0.282	0.041	0.180	0.056	0.004	0.000	0.000
45.6	6.99	1.311	0.411	0.819	0.078	0.003	0.000	0.000
55.0	6.97	0.468	0.237	0.221	0.009	0.001	0.000	0.000
65.1	6.95	0.069	0.044	0.018	0.008	0.000	0.000	0.000
76.8	6.97	0.122	0.100	0.016	0.006	0.000	0.000	0.000
122.9	6.97	0.051	0.009	0.040	0.002	0.000	0.000	0.000
8.5	7.20	4.428	0.129	0.771	1.923	1.485	0.119	0.000
14.3	7.20	4.219	0.162	0.966	2.215	0.867	0.010	0.000
24.8	7.20	0.131	0.009	0.052	0.064	0.007	0.000	0.000
35.4	7.20	0.111	0.014	0.064	0.032	0.001	0.000	0.000
45.8	7.20	1.828	0.463	1.191	0.173	0.001	0.000	0.000
54.4	7.18	0.112	0.040	0.066	0.006	0.000	0.000	0.000
77.9	7.16	0.062	0.045	0.015	0.002	0.000	0.000	0.000
8.4	7.40	8.669	0.245	1.464	3.676	2.981	0.304	0.000
14.4	7.40	0.660	0.024	0.144	0.336	0.153	0.004	0.000
24.9	7.40	0.222	0.014	0.079	0.117	0.013	0.000	0.000
34.9	7.40	0.145	0.015	0.078	0.052	0.001	0.000	0.000
45.7	7.40	0.691	0.134	0.462	0.096	0.000	0.000	0.000
8.3	7.60	2.672	0.074	0.440	1.106	0.934	0.119	0.000
14.5	7.60	0.117	0.004	0.024	0.057	0.031	0.001	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 100.0
Mean src-site R= 19.2 km; M= 6.58; eps0= 0.03. Mean calculated for all sources.
Modal src-site R= 14.8 km; M= 6.99; eps0= -0.21 from peak (R,M) bin
MODE R*= 14.9km; M*= 6.99; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 6.845

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values).
Wasatch Segmented Char	28.86	15.5	7.18	-0.39
Wasatch Segmented GR	22.69	17.2	6.79	0.02
Wasatch Unsegmented M7.4	5.11	14.3	7.35	-0.59
Extensional Zones gridded	33.18	16.3	5.93	0.30
CEUS gridded	6.57	45.5	5.73	0.22

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
Wasatch f-Ch, Salt Lake City sec	8.48	14.9	7.01	-0.21	-84.0
Wasatch f-Char, Provo sec., 50d	6.98	8.3	7.40	-1.04	-93.8
Wasatch f-Ch, Salt Lake City sec	2.83	14.9	7.01	-0.21	-84.0
Wasatch f-Char, Provo sec., 40d	2.33	8.3	7.40	-1.04	-93.8
Wasatch f-Ch, Salt Lake City sec	2.83	14.9	7.01	-0.21	-84.0
Wasatch f-Char, Provo sec., 60d	2.33	8.3	7.40	-1.04	-93.8
Wasatch flt,GR, Salt Lake City s	5.58	17.9	6.71	0.23	-58.1
Wasatch flt,GR, Provo sec.; 50d	6.96	13.6	6.85	-0.29	-129.8
Wasatch flt,GR, Salt Lake City s	2.55	18.3	6.71	0.25	-59.2
Wasatch flt,GR, Provo sec.; 40d	3.23	13.9	6.85	-0.26	-129.3
Wasatch fault, float M7.4, 50d d	3.02	14.3	7.35	-0.59	-99.0

#*********End of deaggregation corresponding to Mean Hazard w/all GMPEs *********#

********** Intermountain Seismic Belt**********

*** Deaggregation of Seismic Hazard at One Period of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2008 version ***
PSHA Deaggregation. %contributions. site: Unnamed long: 111.646 W., lat: 40.481 N.
Vs30(m/s)= 760.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 2475 yrs. Exceedance PGA =0.3312 g. Weight * Computed_Rate_EX 0.407E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00313
#This deaggregation corresponds to Mean Hazard w/all GMPEs

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.3	4.60	0.225	0.016	0.095	0.115	0.000	0.000	0.000
14.6	4.61	0.150	0.046	0.105	0.000	0.000	0.000	0.000
7.4	4.80	0.454	0.026	0.156	0.263	0.009	0.000	0.000
14.7	4.80	0.365	0.075	0.279	0.010	0.000	0.000	0.000
23.9	4.81	0.129	0.118	0.010	0.000	0.000	0.000	0.000
7.5	5.04	1.253	0.342	0.647	0.234	0.030	0.000	0.000
14.4	5.04	0.515	0.193	0.239	0.084	0.000	0.000	0.000
24.0	5.04	0.170	0.100	0.070	0.000	0.000	0.000	0.000
7.5	5.20	2.022	0.563	1.204	0.236	0.020	0.000	0.000
14.0	5.21	0.575	0.399	0.116	0.061	0.000	0.000	0.000
24.0	5.21	0.103	0.042	0.061	0.000	0.000	0.000	0.000
7.6	5.40	2.181	0.415	1.298	0.412	0.055	0.000	0.000
14.3	5.40	0.893	0.517	0.215	0.161	0.000	0.000	0.000
24.0	5.40	0.239	0.072	0.167	0.000	0.000	0.000	0.000
35.2	5.40	0.079	0.070	0.009	0.000	0.000	0.000	0.000
7.6	5.60	1.950	0.289	1.189	0.431	0.041	0.000	0.000
14.2	5.60	0.885	0.522	0.238	0.123	0.002	0.000	0.000
23.8	5.62	0.209	0.067	0.129	0.013	0.000	0.000	0.000
35.3	5.62	0.072	0.042	0.030	0.000	0.000	0.000	0.000
7.6	5.80	1.701	0.204	0.916	0.538	0.042	0.001	0.000
14.4	5.80	0.932	0.459	0.335	0.127	0.011	0.000	0.000
23.8	5.81	0.267	0.095	0.125	0.046	0.000	0.000	0.000
35.3	5.81	0.094	0.037	0.057	0.000	0.000	0.000	0.000
7.4	6.01	1.980	0.184	0.943	0.798	0.053	0.002	0.000
14.2	6.01	1.101	0.409	0.551	0.122	0.020	0.000	0.000
24.3	6.01	0.293	0.137	0.090	0.066	0.000	0.000	0.000
35.1	6.01	0.099	0.026	0.073	0.000	0.000	0.000	0.000
7.7	6.21	2.577	0.209	1.171	1.091	0.102	0.004	0.000
14.7	6.19	1.099	0.341	0.587	0.141	0.030	0.000	0.000
24.7	6.21	0.356	0.173	0.092	0.091	0.000	0.000	0.000
34.2	6.22	0.140	0.037	0.092	0.010	0.000	0.000	0.000
44.5	6.22	0.068	0.025	0.044	0.000	0.000	0.000	0.000
7.9	6.40	2.614	0.183	1.057	1.247	0.120	0.007	0.000
15.6	6.41	1.011	0.271	0.571	0.130	0.039	0.000	0.000
24.9	6.40	0.326	0.179	0.067	0.079	0.001	0.000	0.000
33.9	6.42	0.176	0.068	0.072	0.036	0.000	0.000	0.000
44.8	6.42	0.074	0.019	0.055	0.000	0.000	0.000	0.000
6.6	6.60	2.937	0.223	1.225	1.305	0.178	0.005	0.000
15.1	6.61	5.672	2.082	3.305	0.255	0.030	0.000	0.000
23.7	6.62	0.852	0.647	0.143	0.058	0.004	0.000	0.000
33.3	6.59	0.238	0.166	0.039	0.033	0.000	0.000	0.000
44.8	6.60	0.076	0.028	0.046	0.002	0.000	0.000	0.000
7.1	6.80	2.789	0.203	1.160	1.248	0.170	0.008	0.000
14.4	6.81	6.163	1.674	4.106	0.345	0.038	0.000	0.000
24.3	6.80	0.544	0.291	0.148	0.091	0.015	0.000	0.000
34.6	6.79	0.257	0.153	0.046	0.057	0.000	0.000	0.000
45.3	6.79	0.117	0.044	0.061	0.012	0.000	0.000	0.000
55.3	6.78	0.061	0.022	0.039	0.000	0.000	0.000	0.000
8.0	7.00	2.378	0.192	1.056	1.036	0.093	0.002	0.000
14.6	6.99	11.253	2.560	7.179	1.501	0.012	0.001	0.000
23.8	6.96	0.256	0.133	0.092	0.023	0.008	0.000	0.000
35.5	6.98	0.100	0.064	0.017	0.020	0.000	0.000	0.000
45.4	6.99	0.171	0.147	0.015	0.010	0.000	0.000	0.000
8.5	7.20	8.251	0.665	3.571	3.704	0.310	0.001	0.000
14.0	7.20	4.677	0.830	2.891	0.951	0.004	0.000	0.000
24.6	7.19	0.081	0.034	0.038	0.006	0.003	0.000	0.000
45.7	7.20	0.273	0.264	0.004	0.005	0.000	0.000	0.000
8.4	7.40	17.288	1.262	6.935	8.262	0.828	0.000	0.000
13.9	7.40	0.814	0.122	0.487	0.204	0.000	0.000	0.000
24.4	7.40	0.139	0.056	0.080	0.003	0.000	0.000	0.000
34.5	7.40	0.052	0.037	0.015	0.000	0.000	0.000	0.000

45.7	7.40	0.133	0.120	0.014	0.000	0.000	0.000	0.000
8.3	7.60	5.647	0.379	2.133	2.793	0.343	0.000	0.000
14.0	7.60	0.158	0.021	0.092	0.045	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 100.0
Mean src-site R= 12.4 km; M= 6.72; eps0= 0.73. Mean calculated for all sources.
Modal src-site R= 8.4 km; M= 7.40; eps0= 0.31 from peak (R,M) bin
MODE R*= 8.4km; M*= 7.40; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 8.262

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values).
Wasatch Segmented Char	36.86	11.1	7.27	0.62
Wasatch Segmented GR	18.75	13.2	6.85	1.08
Wasatch Unsegmented M7.4	7.65	10.6	7.35	0.51
Extensional Zones gridded	27.52	9.9	6.05	0.83
CEUS gridded	8.92	25.0	5.75	0.31

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
Wasatch f-Ch, Salt Lake City sec	7.83	14.9	7.02	1.13	-84.0
Wasatch f-Char, Provo sec., 50d	14.02	8.3	7.41	0.30	-93.8
Wasatch f-Ch, Salt Lake City sec	2.61	14.9	7.02	1.13	-84.0
Wasatch f-Char, Provo sec., 40d	4.67	8.3	7.41	0.30	-93.8
Wasatch f-Ch, Salt Lake City sec	2.61	14.9	7.02	1.13	-84.0
Wasatch f-Char, Provo sec., 60d	4.67	8.3	7.41	0.30	-93.8
Wasatch flt,GR, Salt Lake City s	3.23	17.1	6.73	1.56	-60.7
Wasatch flt,GR, Provo sec.; 50d	7.63	11.4	6.90	0.88	-118.2
Wasatch flt,GR, Provo sec.; 40d	3.46	11.6	6.91	0.89	-118.1
Wasatch flt,GR, Provo sec.; 60d	2.06	11.2	6.89	0.86	-118.2
Wasatch fault, float M7.4. 50d d	4.52	10.6	7.35	0.51	-98.7
Wasatch fault, float M7.4. 40d d	2.29	10.6	7.35	0.51	-98.8

#*********End of deaggregation corresponding to Mean Hazard w/all GMPEs *********#

********** Intermountain Seismic Belt**********

Appendix F3-All Earthquakes from University of Utah Seismic Station (2010)

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
428313.155	4511241.059	1850	222.000000	40.749000	-111.849167	3.7	-18
428705.200	4395457.498	1853	1201.000000	39.706000	-111.831667	4.3	-1
444242.212	4454508.970	1853	1201.000000	40.239167	-111.655500	4.3	-1
339229.272	4189857.798	1859	828.000000	37.842000	-112.827167	3.7	
449372.451	4357021.548	1868	1017.000000	39.361167	-111.587667	3.0	THREE SHOCKS (1)
428313.155	4511241.059	1872	327.000000	40.749000	-111.849167	2.3	
356584.159	4238042.844	1873	731.000000	38.279000	-112.639667	4.3	INT=5-6
466990.922	4675057.714	1873	1218.000000	42.227000	-111.400000	3.7	ASSGN PARIS,ID (1)
425574.337	4536821.185	1873	1227.000000	40.979167	-111.884667	3.7	
428313.155	4511241.059	1874	618.000000	40.749000	-111.849167	3.7	
428313.155	4511241.059	1874	618.000000	40.749000	-111.849167	3.7	-1
450022.627	4375459.399	1876	322.000000	39.527333	-111.581500	5.0	THREE SHOCKS (1)
450022.627	4375459.399	1876	324.000000	39.527333	-111.581500	2.3	SEVERAL SHOCKS (1)
477915.292	4649810.614	1876	406.000000	42.000000	-111.266667	2.3	LOC ASSUMED,EARLY AM (1)
317836.920	4172633.639	1876	1130.000000	37.682833	-113.065833	3.0	
405858.047	4291718.784	1876	1230.000000	38.769167	-112.083667	3.0	F'SHOCK? (1)
405858.047	4291718.784	1877	101.000000	38.769167	-112.083667	3.7	
390685.853	4270917.062	1877	115.000000	38.580000	-112.255000	3.0	
428313.155	4511241.059	1877	305.000000	40.749000	-111.849167	2.3	
428313.155	4511241.059	1878	721.000000	40.749000	-111.849167	2.3	
362414.149	4273573.375	1878	814.000000	38.600000	-112.580000	4.3	(1)*
362414.149	4273573.375	1878	815.000000	38.600000	-112.580000	2.3	A'SHOCK (1)*
362414.149	4273573.375	1878	815.000000	38.600000	-112.580000	2.3	A'SHOCK (1)*
362414.149	4273573.375	1878	816.000000	38.600000	-112.580000	3.7	A'SHOCK (1)*
428313.155	4511241.059	1878	821.000000	40.749000	-111.849167	3.0	
428313.155	4511241.059	1878	907.000000	40.749000	-111.849167	3.0	
373822.100	4187107.973	1878	1202.000000	37.822667	-112.433667	2.3	SEVERAL SHOCKS (1)
398095.749	4647880.178	1880	712.000000	41.976333	-112.230000	4.3	INT=5-6,TWO SHOCKS (1)
428313.155	4511241.059	1880	917.000000	40.749000	-111.849167	3.7	INT=4-5
444242.212	4454508.970	1880	917.000000	40.239167	-111.655500	2.3	PROVO? (1)
324431.812	4618619.500	1880	1227.000000	41.700000	-113.110000	3.0	TWO SHOCKS,LATE PM (1)
252757.670	4163272.955	1881	326.000000	37.583333	-113.800000	4.3	HEBRON,UT LOC FROM (16)
356584.159	4238042.844	1881	804.000000	38.279000	-112.639667	3.0	SEVERAL SHOCKS (1)
356584.159	4238042.844	1881	804.000000	38.279000	-112.639667	2.3	A'SHOCK? (1)
460831.606	4377061.901	1881	1016.000000	39.542333	-111.455833	3.0	
403415.904	4418379.281	1883	928.000000	39.910000	-112.130000	3.7	
362414.149	4273573.375	1883	1104.000000	38.600000	-112.580000	2.3	(1)*
477915.292	4649810.614	1884	1110.000000	42.000000	-111.266667	6.3	LOC ASSUMED (1,3)
477915.292	4649810.614	1884	1110.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1110.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1110.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1110.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1111.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1111.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1112.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1112.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1112.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1113.000000	42.000000	-111.266667	2.3	A'SHOCK (1)
477915.292	4649810.614	1884	1113.000000	42.000000	-111.266667	2.3	A'SHOCK (1)

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
419606.037	4564085.657	1884	1208.000000	41.224167	-111.959167	3.0	
364628.368	4101206.865	1885	905.000000	37.047333	-112.522333	3.0	
331579.008	4231401.191	1885	1026.000000	38.214833	-112.923833	3.0	
300111.541	4256009.767	1885	1026.000000	38.430000	-113.290000	3.0	FRISCO,UT (1) SEE (16,17)
300111.541	4256009.767	1885	1026.000000	38.430000	-113.290000	3.0	A'SHOCK? (1)
388653.955	4225662.489	1885	1217.000000	38.172000	-112.271167	3.7	
458020.785	4237546.080	1885	1217.000000	38.285000	-111.480000	3.0	
364628.368	4101206.865	1887	1205.000000	37.047333	-112.522333	5.7	INT=6-7
445031.879	4346248.558	1889	1207.000000	39.263833	-111.637167	3.7	
271318.232	4109767.945	1891	420.000000	37.106333	-113.573500	5.0	ASSGN ST. GEORGE,UT (1)
317836.920	4172633.639	1891	913.000000	37.682833	-113.065833	3.0	
357500.171	4647968.374	1893	830.000000	41.970833	-112.719833	3.7	
295266.961	4403852.001	1894	108.000000	39.760000	-113.390000	4.3	(4) HAS WRONG DATE
375079.265	4296120.540	1894	205.000000	38.805000	-112.438667	3.7	
375079.265	4296120.540	1894	206.000000	38.805000	-112.438667	3.0	A'SHOCK (1)
419606.037	4564085.657	1894	718.000000	41.224167	-111.959167	5.0	INT=5-7
460831.606	4377061.901	1895	727.000000	39.542333	-111.455833	3.7	
429291.618	4334092.712	1896	607.000000	39.153167	-111.818333	3.0	
428705.200	4395457.498	1896	913.000000	39.706000	-111.831667	3.7	
430910.193	4620983.814	1896	1003.000000	41.737667	-111.830833	3.0	
525331.050	4247463.178	1896	1014.000000	38.375000	-110.710000	2.3	
415228.448	4595890.994	1897	918.000000	41.510167	-112.015833	2.3	-1
406639.403	4600790.314	1898	221.000000	41.553333	-112.119500	2.3	-1
356584.159	4238042.844	1899	1110.000000	38.279000	-112.639667	3.7	
428313.155	4511241.059	1899	1213.000000	40.749000	-111.849167	3.7	
404842.375	4423079.284	1900	801.000000	39.952500	-112.114000	5.7	
404842.375	4423079.284	1900	801.000000	39.952500	-112.114000	2.3	A'SHOCK (1)
404842.375	4423079.284	1900	801.000000	39.952500	-112.114000	2.3	A'SHOCK (1)
404842.375	4423079.284	1900	801.000000	39.952500	-112.114000	2.3	A'SHOCK (1)
428313.155	4511241.059	1901	811.000000	40.749000	-111.849167	3.0	
444242.212	4454508.970	1901	811.000000	40.239167	-111.655500	3.0	
405858.047	4291718.784	1901	1114.000000	38.769167	-112.083667	7.0	INT=8-9
405858.047	4291718.784	1901	1114.000000	38.769167	-112.083667	2.3	NUMEROUS A'SHOCKS (1)
466990.922	4675057.714	1902	105.000000	42.227000	-111.400000	3.0	LOC ASSUMED (1)
356584.159	4238042.844	1902	601.000000	38.279000	-112.639667	3.0	SEVERAL SHOCKS (1)
356584.159	4238042.844	1902	731.000000	38.279000	-112.639667	4.3	-1
276920.513	4141450.855	1902	1117.000000	37.393000	-113.520000	6.3	INT=7-8,FOUR SHOCKS (1)
276925.456	4141635.804	1902	1205.000000	37.394667	-113.520000	5.0	NUMEROUS A'SHOCKS (1)
405858.047	4291718.784	1903	712.000000	38.769167	-112.083667	3.0	
423003.655	4548412.698	1903	723.000000	41.083333	-111.916667	3.0	LOC ASSUMED (1)
271318.232	4109767.945	1903	1104.000000	37.106333	-113.573500	3.0	F'SHOCK?
271318.232	4109767.945	1903	1123.000000	37.106333	-113.573500	4.3	
214245.305	4755655.172	1905	1111.000000	42.900000	-114.500000	5.7	(4,6)
357555.410	4647967.265	1905	1111.000000	41.970833	-112.719167	4.3	SHOSHONE,ID SHOCK? (1)
400003.951	4282208.293	1906	221.000000	38.682833	-112.149667	2.3	-1
419606.037	4564085.657	1906	524.000000	41.224167	-111.959167	4.3	THREE SHOCKS (1)
467133.523	4705370.588	1906	1019.000000	42.500000	-111.400000	4.3	-4
324697.884	4251328.225	1908	415.000000	38.393000	-113.007333	5.0	FIVE SHOCKS,EARLY AM (1)
361465.290	4625212.348	1909	1006.000000	41.766667	-112.666667	6.3	INT=7-9

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
361465.290	4625212.348	1909	1016.000000	41.766667	-112.666667	2.3	A'SHOCK (1)
403380.908	4622042.856	1909	1117.000000	41.744333	-112.162000	4.3	
403380.908	4622042.856	1909	1117.000000	41.744333	-112.162000	2.3	A'SHOCK (1)
403380.908	4622042.856	1909	1119.000000	41.744333	-112.162000	2.3	A'SHOCK (1)
400003.951	4282208.293	1910	110.000000	38.682833	-112.149667	5.0	INT=6-7
400003.951	4282208.293	1910	110.000000	38.682833	-112.149667	2.3	-1
400003.951	4282208.293	1910	110.000000	38.682833	-112.149667	2.3	-1
400003.951	4282208.293	1910	110.000000	38.682833	-112.149667	2.3	-1
400003.951	4282208.293	1910	110.000000	38.682833	-112.149667	2.3	-1
400003.951	4282208.293	1910	111.000000	38.682833	-112.149667	2.3	-1
400003.951	4282208.293	1910	112.000000	38.682833	-112.149667	5.0	-1
400003.951	4282208.293	1910	112.000000	38.682833	-112.149667	2.3	A'SHOCK (1)
428313.155	4511241.059	1910	503.000000	40.749000	-111.849167	2.3	TWO SHOCKS,F'SHOCKS? (1)
428313.155	4511241.059	1910	522.000000	40.749000	-111.849167	5.7	
428313.155	4511241.059	1910	522.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
428313.155	4511241.059	1910	522.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
428313.155	4511241.059	1910	523.000000	40.749000	-111.849167	3.0	A'SHOCK (1)
428313.155	4511241.059	1910	526.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
641889.288	4595659.236	1910	726.000000	41.500000	-109.300000	4.3	(4,6)
490987.236	3983953.076	1910	924.000000	36.000000	-111.100000	5.0	(1,3,4,6)
455222.200	4039524.301	1912	818.000000	36.500000	-111.500000	5.7	INT=6-7 (4,5)
417572.112	4683569.891	1913	412.000000	42.300000	-112.000000	4.3	ASSGN SWAN LAKE,ID (1,2)
373822.100	4187107.973	1913	1020.000000	37.822667	-112.433667	3.7	
422887.047	4537311.486	1914	408.000000	40.983333	-111.916667	4.3	LOC ASSUMED (1)
419606.037	4564085.657	1914	513.000000	41.224167	-111.959167	5.7	INT=6-7
419606.037	4564085.657	1914	513.000000	41.224167	-111.959167	2.3	A'SHOCK (1)
260392.953	4161882.492	1914	1214.000000	37.572833	-113.713167	4.3	-1
260392.953	4161882.492	1914	1221.000000	37.572833	-113.713167	3.0	LOC ASSUMED,A'SHOCK? (1)
260392.953	4161882.492	1915	212.000000	37.572833	-113.713167	3.7	A'SHOCK? (1)
260392.953	4161882.492	1915	213.000000	37.572833	-113.713167	3.7	A'SHOCK? (1)
478748.529	4308611.839	1915	426.000000	38.926167	-111.245167	2.3	
444242.212	4454508.970	1915	715.000000	40.239167	-111.655500	5.0	
403380.908	4622042.856	1915	730.000000	41.744333	-112.162000	4.3	ASSGN GARLAND,UT (1)
360186.072	4484562.381	1915	811.000000	40.500000	-112.650000	4.3	INT=5-8,LOC ASSUMED (1)
458169.387	4427095.248	1915	920.000000	39.993000	-111.490000	3.0	TWO SHOCKS (1)
428313.155	4511241.059	1915	1002.000000	40.749000	-111.849167	2.3	F'SHOCK? (1)
428313.155	4511241.059	1915	1003.000000	40.749000	-111.849167	3.0	-1
412586.392	4641412.749	1915	1004.000000	41.919833	-112.054167	3.0	
244274.729	4443170.817	1915	1005.000000	40.100000	-114.000000	4.3	INT=5-7,LOC FROM (4)
394100.890	4276605.549	1915	1025.000000	38.631667	-112.216667	3.0	
433293.065	4425034.137	1916	205.000000	39.972833	-111.781167	4.3	ASSGN SANTAQUIN,UT (1,3)
475547.487	4760858.455	1917	1212.000000	43.000000	-111.300000	4.3	-4
412586.392	4641412.749	1918	1016.000000	41.919833	-112.054167	3.0	
450022.627	4375459.399	1919	507.000000	39.527333	-111.581500	3.7	
356584.159	4238042.844	1920	818.000000	38.279000	-112.639667	3.0	
415228.448	4595890.994	1920	918.000000	41.510167	-112.015833	4.3	INT=5-6
415228.448	4595890.994	1920	919.000000	41.510167	-112.015833	4.3	INT=5-6
415228.448	4595890.994	1920	1120.000000	41.510167	-112.015833	4.3	INT=5-6
271318.232	4109767.945	1920	1126.000000	37.106333	-113.573500	4.3	INT=5-6

X	Y	Year	Date_UTC_	Latitude	Longitude	Magnitude	Comments
415228.448	4595890.994	1920	1217.000000	41.510167	-112.015833	3.7	A'SHOCK? (1)
415228.448	4595890.994	1920	1217.000000	41.510167	-112.015833	2.3	A'SHOCK? (1)
317836.920	4172633.639	1921	602.000000	37.682833	-113.065833	3.0	
405858.047	4291718.784	1921	912.000000	38.769167	-112.083667	4.3	INT=4-5 (1,7)
405858.047	4291718.784	1921	912.000000	38.769167	-112.083667	2.3	A'SHOCK (1,7)
405858.047	4291718.784	1921	912.000000	38.769167	-112.083667	3.7	A'SHOCK (1,7)
405858.047	4291718.784	1921	913.000000	38.769167	-112.083667	4.3	TWO SHOCKS (1)
400003.951	4282208.293	1921	919.000000	38.682833	-112.149667	2.3	F'SHOCK (1,7)
400003.951	4282208.293	1921	928.000000	38.682833	-112.149667	2.3	SEVERAL F'SHOCKS (1,7)
400003.951	4282208.293	1921	929.000000	38.682833	-112.149667	6.3	SEE (5) RE M=5.2 SHOCK
400003.951	4282208.293	1921	929.000000	38.682833	-112.149667	2.3	23 A'SHOCKS (7)
400003.951	4282208.293	1921	930.000000	38.682833	-112.149667	5.7	A'SHOCK? (1,7)
400003.951	4282208.293	1921	930.000000	38.682833	-112.149667	2.3	A'SHOCK (1)
400003.951	4282208.293	1921	1001.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1001.000000	38.682833	-112.149667	6.3	
400003.951	4282208.293	1921	1001.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1002.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1004.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1004.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1008.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1010.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1010.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1015.000000	38.682833	-112.149667	2.3	A'SHOCK (1,7)
400003.951	4282208.293	1921	1015.000000	38.682833	-112.149667	3.0	A'SHOCK (1,7)
400003.951	4282208.293	1921	1027.000000	38.682833	-112.149667	4.3	INT=5-7,TWO A'SHOCKS (1)
400003.951	4282208.293	1921	1101.000000	38.682833	-112.149667	3.7	A'SHOCK (3,4)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	3.0	A'SHOCK (1)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	3.7	A'SHOCK (1,7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
400003.951	4282208.293	1921	1220.000000	38.682833	-112.149667	2.3	A'SHOCK (7)
304352.077	4226664.267	1923	514.000000	38.166667	-113.233333	4.3	NADA,UT (1) LOC FROM (17)
430910.193	4620983.814	1923	607.000000	41.737667	-111.830833	4.3	
433097.156	4641319.734	1923	609.000000	41.921000	-111.806833	2.3	A'SHOCK? (1)
433097.156	4641319.734	1923	907.000000	41.921000	-111.806833	3.7	
359009.921	4131263.137	1924	101.000000	37.317333	-112.591167	2.3	
458916.887	4705414.187	1924	1125.000000	42.500000	-111.500000	4.3	LOC FROM (4,6)
242063.362	4188779.619	1925	714.000000	37.810000	-113.930000	3.7	
428313.155	4511241.059	1925	1201.000000	40.749000	-111.849167	3.0	
428313.155	4511241.059	1926	503.000000	40.749000	-111.849167	2.3	
359009.921	4131263.137	1926	515.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	601.000000	37.317333	-112.591167	2.3	SWARM (1)
359009.921	4131263.137	1926	605.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	622.000000	37.317333	-112.591167	2.3	SWARM (1)
359009.921	4131263.137	1926	628.000000	37.317333	-112.591167	2.3	TWO SHOCKS,SWARM (1)

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
359009.921	4131263.137	1926	712.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	715.000000	37.317333	-112.591167	2.3	SWARM (1)
427196.820	4646855.714	1926	728.000000	41.970333	-111.878667	3.0	
427196.820	4646855.714	1926	729.000000	41.970333	-111.878667	3.0	
359009.921	4131263.137	1926	1001.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	1004.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	1023.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	1112.000000	37.317333	-112.591167	3.0	SWARM (1)
359009.921	4131263.137	1926	1116.000000	37.317333	-112.591167	3.0	SWARM (1)
417994.270	4422648.896	1926	1219.000000	39.950000	-111.960000	3.7	
405858.047	4291718.784	1927	522.000000	38.769167	-112.083667	3.0	
359009.921	4131263.137	1927	1123.000000	37.317333	-112.591167	2.3	TWO SHOCKS,SWARM? (1)
359009.921	4131263.137	1927	1123.000000	37.317333	-112.591167	3.0	SWARM? (1)
517099.513	4383418.605	1928	602.000000	39.600333	-110.800833	2.3	ASSGN PRICE,UT (1)
483488.440	4672001.742	1929	1001.000000	42.200000	-111.200000	2.3	(6,8)
500000.000	4716397.034	1930	612.000000	42.600000	-111.000000	5.8	(4,5,6)
641889.288	4595659.236	1930	728.000000	41.500000	-109.300000	2.3	(6,8)
400003.951	4282208.293	1931	309.000000	38.682833	-112.149667	2.3	
317836.920	4172633.639	1931	410.000000	37.682833	-113.065833	2.3	-1
286223.935	4209611.813	1931	603.000000	38.009000	-113.435000	2.3	-1
412320.188	4297286.577	1932	522.000000	38.820000	-112.010000	2.3	-1
339229.272	4189857.798	1932	618.000000	37.842000	-112.827167	2.3	
460086.437	4485285.354	1932	1111.000000	40.517333	-111.471167	3.7	
428313.155	4511241.059	1932	1221.000000	40.749000	-111.849167	3.0	
339229.272	4189857.798	1933	120.000000	37.842000	-112.827167	5.0	
428313.155	4511241.059	1934	130.000000	40.749000	-111.849167	3.0	
428313.155	4511241.059	1934	130.000000	40.749000	-111.849167	2.3	A'SHOCK? (1)
350227.266	4618033.753	1934	312.000000	41.700000	-112.800000	6.6	INT=8-9,PAS (5,8,9)
350227.266	4618033.753	1934	312.000000	41.700000	-112.800000	6.1	A'SHOCK,PAS (5,8,9)
350227.266	4618033.753	1934	315.000000	41.700000	-112.800000	5.1	INT ASSUMED,A'SHOCK (5)
350227.266	4618033.753	1934	315.000000	41.700000	-112.800000	4.8	INT ASSUMED,A'SHOCK (5)
408995.312	4625374.603	1934	317.000000	41.775000	-112.095000	3.0	
374804.073	4595350.264	1934	414.000000	41.500000	-112.500000	5.6	A'SHOCK (1,5,6,8,9)
350227.266	4618033.753	1934	506.000000	41.700000	-112.800000	5.6	A'SHOCK,PAS (5,8,9)
428313.155	4511241.059	1934	602.000000	40.749000	-111.849167	2.3	
357555.410	4647967.265	1934	704.000000	41.970833	-112.719167	3.7	
364628.368	4101206.865	1934	1225.000000	37.047333	-112.522333	3.7	
417664.843	4634726.541	1935	530.000000	41.860167	-111.992000	2.3	
428313.155	4511241.059	1935	604.000000	40.749000	-111.849167	2.3	
428313.155	4511241.059	1935	709.000000	40.749000	-111.849167	3.7	INT=4-5
428313.155	4511241.059	1935	709.000000	40.749000	-111.849167	2.3	-1
462486.700	4197524.074	1935	1006.000000	37.924500	-111.426833	3.7	
428313.155	4511241.059	1935	1106.000000	40.749000	-111.849167	2.3	
404104.035	4164394.665	1935	1205.000000	37.621667	-112.086667	2.3	
275515.935	4020124.115	1936	122.000000	36.300000	-113.500000	4.3	INT ASSUMED,NEV (5)
326347.770	4124402.671	1936	509.000000	37.250000	-112.958000	4.3	INT=5-6,TWO SHOCKS (1)
379373.611	4262200.022	1936	902.000000	38.500000	-112.383333	3.0	KIMBERLY,UT (1,16,17)
298052.894	4208311.262	1936	921.000000	38.000000	-113.300000	4.7	INT ASSUMED,NEV (5)
373822.100	4187107.973	1937	218.000000	37.822667	-112.433667	4.3	INT=4-5,SWARM (1)

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373822.100	4187107.973	1937	218.000000	37.822667	-112.433667	2.3	SWARM (1)
373822.100	4187107.973	1937	218.000000	37.822667	-112.433667	3.7	SWARM (1)
373822.100	4187107.973	1937	221.000000	37.822667	-112.433667	3.0	SWARM (1)
373822.100	4187107.973	1937	226.000000	37.822667	-112.433667	3.7	SWARM (1)
373822.100	4187107.973	1937	313.000000	37.822667	-112.433667	2.3	SWARM (1)
373822.100	4187107.973	1937	401.000000	37.822667	-112.433667	2.3	SWARM (1)
139398.302	3991354.133	1937	1112.000000	36.000000	-115.000000	5.0	INT=5-6 (4,6)
260194.776	4664949.742	1937	1118.000000	42.100000	-113.900000	5.4	NEV (1,2,5)
458169.387	4427095.248	1938	318.000000	39.993000	-111.490000	3.0	
428313.155	4511241.059	1938	630.000000	40.749000	-111.849167	4.3	SALT LK VALLEY? (1)
428313.155	4511241.059	1938	701.000000	40.749000	-111.849167	2.3	A'SHOCK? (1)
157870.666	4001730.403	1938	706.000000	36.100000	-114.800000	2.3	(6,8)
258798.380	4064991.098	1938	817.000000	36.700000	-113.700000	3.0	(6,8)
148417.729	3990988.060	1938	1001.000000	36.000000	-114.900000	2.3	(6,8)
428313.155	4511241.059	1938	1203.000000	40.749000	-111.849167	2.3	
157436.824	3990631.297	1938	1217.000000	36.000000	-114.800000	2.3	-6
233037.880	4099080.693	1938	1228.000000	37.000000	-114.000000	3.0	(6,8)
157436.824	3990631.297	1939	130.000000	36.000000	-114.800000	2.3	-6
428313.155	4511241.059	1939	331.000000	40.749000	-111.849167	3.7	
157436.824	3990631.297	1939	504.000000	36.000000	-114.800000	5.0	(6,8)
157436.824	3990631.297	1939	504.000000	36.000000	-114.800000	2.3	A'SHOCK (6)
157436.824	3990631.297	1939	504.000000	36.000000	-114.800000	3.0	A'SHOCK,PAS (6,8)
157436.824	3990631.297	1939	504.000000	36.000000	-114.800000	2.3	A'SHOCK? (6) DUPLICATE?
157436.824	3990631.297	1939	507.000000	36.000000	-114.800000	3.0	A'SHOCK,PAS (6,8)
157436.824	3990631.297	1939	507.000000	36.000000	-114.800000	3.0	A'SHOCK,PAS (6,8)
141693.186	4046854.684	1939	1121.000000	36.500000	-115.000000	3.0	PAS (6,8)
430910.193	4620983.814	1940	229.000000	41.737667	-111.830833	2.3	
144015.394	4102357.626	1940	310.000000	37.000000	-115.000000	3.0	(6,8)
144015.394	4102357.626	1940	311.000000	37.000000	-115.000000	3.0	A'SHOCK (6,8)
144015.394	4102357.626	1940	407.000000	37.000000	-115.000000	3.0	A'SHOCK (6,8)
141693.186	4046854.684	1940	920.000000	36.500000	-115.000000	3.0	(6,8)
324396.629	4207702.367	1940	1026.000000	38.000000	-113.000000	3.0	(6,8)
445031.879	4346248.558	1940	1123.000000	39.263833	-111.637167	3.7	
445031.879	4346248.558	1940	1123.000000	39.263833	-111.637167	2.3	A'SHOCK
445031.879	4346248.558	1940	1125.000000	39.263833	-111.637167	2.3	A'SHOCK?
445031.879	4346248.558	1940	1125.000000	39.263833	-111.637167	2.3	A'SHOCK?
445031.879	4346248.558	1940	1125.000000	39.263833	-111.637167	3.7	A'SHOCK?
720105.622	4186569.196	1941	228.000000	37.800000	-108.500000	3.0	(6,8)
175474.050	3989945.687	1941	322.000000	36.000000	-114.600000	3.0	(6,8)
207493.243	4133261.013	1941	506.000000	37.300000	-114.300000	3.0	(6,8)
430910.193	4620983.814	1941	620.000000	41.737667	-111.830833	3.0	
157436.824	3990631.297	1941	1214.000000	36.000000	-114.800000	3.0	(6,8)
388653.955	4225662.489	1942	328.000000	38.172000	-112.271167	3.7	LOC CIRCLEVILLE,UT(1,6,8)
388653.955	4225662.489	1942	328.000000	38.172000	-112.271167	2.3	A'SHOCK? (1)
391497.245	4595079.932	1942	418.000000	41.500000	-112.300000	4.3	HANSEL VALLEY? (1,6,8)
148417.729	3990988.060	1942	604.000000	36.000000	-114.900000	4.3	-4
444177.535	4381344.775	1942	604.000000	39.580000	-111.650000	4.3	TWO SHOCKS (1)
317836.920	4172633.639	1942	830.000000	37.682833	-113.065833	5.0	SWARM (1)
148417.729	3990988.060	1942	909.000000	36.000000	-114.900000	4.3	-4

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317836.920	4172633.639	1942	918.000000	37.682833	-113.065833	3.0	SWARM (1)
317836.920	4172633.639	1942	918.000000	37.682833	-113.065833	3.0	SWARM (1)
317836.920	4172633.639	1942	918.000000	37.682833	-113.065833	3.7	SWARM (1)
317836.920	4172633.639	1942	926.000000	37.682833	-113.065833	2.3	SWARM (1)
317836.920	4172633.639	1942	926.000000	37.682833	-113.065833	4.3	SWARM (1)
317836.920	4172633.639	1942	926.000000	37.682833	-113.065833	2.3	SWARM (1)
317836.920	4172633.639	1942	926.000000	37.682833	-113.065833	5.0	SWARM (1)
326347.770	4124402.671	1942	928.000000	37.250000	-112.958000	3.7	
164952.489	3990341.104	1942	1001.000000	36.000000	-114.716667	3.0	-6
317836.920	4172633.639	1943	116.000000	37.682833	-113.065833	4.3	INT=4-5 (1,6,8)
408758.943	4506015.878	1943	222.000000	40.700000	-112.080000	5.0	W. SALT LK VALLEY (1,6,8)
408758.943	4506015.878	1943	223.000000	40.700000	-112.080000	2.3	A'SHOCK? (1)
408758.943	4506015.878	1943	223.000000	40.700000	-112.080000	2.3	A'SHOCK? (1)
408758.943	4506015.878	1943	223.000000	40.700000	-112.080000	2.3	A'SHOCK? (1)
225590.360	4143758.534	1943	306.000000	37.400000	-114.100000	3.0	(6,8)
449372.451	4357021.548	1943	312.000000	39.361167	-111.587667	3.7	
408758.943	4506015.878	1943	410.000000	40.700000	-112.080000	4.3	W. SALT LK VALLEY (1,8)
408758.943	4506015.878	1943	411.000000	40.700000	-112.080000	3.0	A'SHOCK
390250.323	4270923.024	1943	1103.000000	38.580000	-112.260000	4.3	
390250.323	4270923.024	1943	1103.000000	38.580000	-112.260000	3.0	A'SHOCK
390250.323	4270923.024	1943	1104.000000	38.580000	-112.260000	3.0	A'SHOCK
212117.512	4138656.636	1943	1106.000000	37.350000	-114.250000	2.3	1ST OF THREE SHOCKS (6,8)
212117.512	4138656.636	1943	1106.000000	37.350000	-114.250000	3.7	(6,8)
212117.512	4138656.636	1943	1106.000000	37.350000	-114.250000	2.3	(6,8)
317836.920	4172633.639	1943	1209.000000	37.682833	-113.065833	3.7	SWARM? (1)
317836.920	4172633.639	1943	1209.000000	37.682833	-113.065833	2.3	SWARM? (1)
317836.920	4172633.639	1943	1210.000000	37.682833	-113.065833	2.3	SWARM? (1)
317836.920	4172633.639	1943	1210.000000	37.682833	-113.065833	2.3	SWARM? (1)
375267.072	4084694.224	1944	131.000000	36.900000	-112.400000	3.0	(6,8)
221906.891	4166102.618	1944	308.000000	37.600000	-114.150000	3.0	(6,8)
233739.542	4121276.068	1944	320.000000	37.200000	-114.000000	3.0	(6,8)
271318.232	4109767.945	1944	503.000000	37.106333	-113.573500	3.7	
402231.918	4277075.304	1944	605.000000	38.636833	-112.123333	2.3	
317836.920	4172633.639	1944	613.000000	37.682833	-113.065833	2.3	
335006.939	4296297.293	1944	1108.000000	38.800000	-112.900000	3.0	(6,8)
154749.052	4146390.277	1945	111.000000	37.400000	-114.900000	3.8	(6,8)
428705.200	4395457.498	1945	328.000000	39.706000	-111.831667	2.3	
412201.582	4206286.758	1945	1118.000000	38.000000	-112.000000	3.0	-6
414265.504	4291161.217	1945	1118.000000	38.765000	-111.986833	5.0	
306486.077	4632415.767	1946	219.000000	41.820000	-113.330000	2.3	
306486.077	4632415.767	1946	220.000000	41.820000	-113.330000	2.3	
406020.818	4620416.041	1946	506.000000	41.730000	-112.130000	4.3	LOC ASSUMED (1)
406660.806	4507152.212	1946	1025.000000	40.710000	-112.105000	3.0	
428313.155	4511241.059	1947	307.000000	40.749000	-111.849167	3.0	
424771.483	4501950.720	1947	328.000000	40.665000	-111.890000	3.7	INT=4-5
445031.879	4346248.558	1948	1104.000000	39.263833	-111.637167	4.3	
428313.155	4511241.059	1949	307.000000	40.749000	-111.849167	5.0	
428313.155	4511241.059	1949	307.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
428313.155	4511241.059	1949	307.000000	40.749000	-111.849167	3.7	INT=4-6,A'SHOCK (1,4)

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
428313.155	4511241.059	1949	307.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
428313.155	4511241.059	1949	307.000000	40.749000	-111.849167	2.3	A'SHOCK (1)
582166.504	4705777.529	1949	609.000000	42.500000	-110.000000	3.0	(6,8)
271318.232	4109767.945	1949	1102.000000	37.106333	-113.573500	4.7	LOC ST.GEORGE,UT(1,5,6,8)
416536.705	4594746.871	1950	102.000000	41.500000	-112.000000	4.3	(5,6,8)
542367.014	4483374.791	1950	118.000000	40.500000	-110.500000	4.3	
437779.162	4432303.619	1950	219.000000	40.038667	-111.729333	2.3	F'SHOCK? (8)
437779.162	4432303.619	1950	220.000000	40.038667	-111.729333	3.7	
414639.538	4428236.065	1950	225.000000	40.000000	-112.000000	3.0	-6
393160.739	4233019.179	1950	505.000000	38.238833	-112.220833	3.7	
404842.375	4423079.284	1950	508.000000	39.952500	-112.114000	2.3	-8
437779.162	4432303.619	1950	508.000000	40.038667	-111.729333	4.3	
430910.193	4620983.814	1950	721.000000	41.737667	-111.830833	3.7	TWO SHOCKS (8)
428705.200	4395457.498	1951	123.000000	39.706000	-111.831667	2.3	1ST OF TWO SHOCKS (8)
428705.200	4395457.498	1951	123.000000	39.706000	-111.831667	3.7	
581508.648	4761299.925	1951	221.000000	43.000000	-110.000000	3.0	(6,8)
362972.265	4095980.778	1951	305.000000	37.000000	-112.540000	3.7	LOC ASSUMED (8)
444242.212	4454508.970	1951	812.000000	40.239167	-111.655500	4.3	
166455.595	3990283.840	1952	208.000000	36.000000	-114.700000	4.3	F'SHOCK? (6,8)
166455.595	3990283.840	1952	220.000000	36.000000	-114.700000	5.0	(6,8)
297614.797	4124065.745	1952	502.000000	37.241167	-113.281667	3.7	1ST OF TWO SHOCKS (8)
297614.797	4124065.745	1952	502.000000	37.241167	-113.281667	2.3	-8
166877.973	4001382.555	1952	524.000000	36.100000	-114.700000	5.0	INT=5-6 (4,6,8)
166877.973	4001382.555	1952	524.000000	36.100000	-114.700000	3.7	A'SHOCK (6,8)
166877.973	4001382.555	1952	524.000000	36.100000	-114.700000	3.7	A'SHOCK (6,8)
166877.973	4001382.555	1952	525.000000	36.100000	-114.700000	3.7	A'SHOCK (6,8)
433293.065	4425034.137	1952	721.000000	39.972833	-111.781167	3.7	
428313.155	4511241.059	1952	723.000000	40.749000	-111.849167	3.7	
426960.351	4472158.889	1952	928.000000	40.396833	-111.860667	4.3	
426960.351	4472158.889	1952	928.000000	40.396833	-111.860667	2.3	A'SHOCK (8)
426960.351	4472158.889	1952	929.000000	40.396833	-111.860667	2.3	A'SHOCK (8)
402231.918	4277075.304	1953	418.000000	38.636833	-112.123333	3.7	
184492.198	3989616.833	1953	518.000000	36.000000	-114.500000	3.0	(6,8)
457632.986	4483374.791	1953	524.000000	40.500000	-111.500000	4.3	INT=4-6 (4,6,8,11)
572422.659	4316831.790	1953	730.000000	38.997500	-110.163667	4.3	
189554.253	4128349.766	1953	809.000000	37.250000	-114.500000	3.0	-6
419837.931	4514769.531	1953	816.000000	40.780000	-111.950000	2.3	1ST OF THREE SHOCKS (8)
419837.931	4514769.531	1953	816.000000	40.780000	-111.950000	3.7	
419837.931	4514769.531	1953	816.000000	40.780000	-111.950000	2.3	A'SHOCK? (8)
373822.100	4187107.973	1953	1022.000000	37.822667	-112.433667	4.3	
373822.100	4187107.973	1953	1024.000000	37.822667	-112.433667	2.3	A'SHOCK? (8)
255466.981	4765182.933	1954	201.000000	43.000000	-114.000000	4.3	(6,8)
670725.494	4429672.973	1954	221.000000	40.000000	-109.000000	3.7	(6,8)
428313.155	4511241.059	1954	309.000000	40.749000	-111.849167	2.3	
572422.659	4316831.790	1954	331.000000	38.997500	-110.163667	3.7	
428313.155	4511241.059	1954	512.000000	40.749000	-111.849167	2.3	-15
428313.155	4511241.059	1954	513.000000	40.749000	-111.849167	2.3	-15
430910.193	4620983.814	1954	1101.000000	41.737667	-111.830833	3.7	
188529.923	4100601.713	1955	110.000000	37.000000	-114.500000	4.3	

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
421248.239	4515124.457	1955	202.000000	40.783333	-111.933333	4.3	INT=4-5,FEB 4? (4,8,12)
478135.369	4237281.755	1955	327.000000	38.283333	-111.250000	3.7	
520459.512	4733083.629	1955	508.000000	42.750000	-110.750000	3.0	-6
426118.314	4529543.787	1955	512.000000	40.913667	-111.877333	4.3	LOC ASSUMED (8)
443281.199	4543620.301	1955	625.000000	41.041833	-111.674833	3.7	
242277.479	4109901.991	1955	1120.000000	37.100000	-113.900000	3.7	
624682.541	4479538.583	1956	212.000000	40.457167	-109.529500	3.7	
624682.541	4479538.583	1956	212.000000	40.457167	-109.529500	2.3	TWO A'SHOCKS? (8)
575116.876	4594655.163	1956	1003.000000	41.500000	-110.100000	3.7	
542679.945	4427876.924	1957	718.000000	40.000000	-110.500000	3.7	
333070.262	4596195.167	1957	721.000000	41.500000	-113.000000	3.0	-6
500000.000	4427757.219	1957	1025.000000	40.000000	-111.000000	3.0	-6
500000.000	4427757.219	1957	1026.000000	40.000000	-111.000000	3.0	A'SHOCK? (6)
458916.887	4705414.187	1957	1103.000000	42.500000	-111.500000	3.0	-6
500000.000	4705293.080	1957	1103.000000	42.500000	-111.000000	3.7	(6,8)
373845.668	4539840.582	1958	105.000000	41.000000	-112.500000	3.0	-6
462629.533	4465772.889	1958	213.000000	40.341667	-111.440000	5.0	(6,8,10)
328035.231	4374174.030	1958	217.000000	39.500000	-113.000000	3.0	-6
148417.729	3990988.060	1958	419.000000	36.000000	-114.900000	5.0	(4,8)
428568.168	4396087.750	1958	1128.000000	39.711667	-111.833333	4.3	INT=4-5 (4,8,13)
428568.168	4396087.750	1958	1201.000000	39.711667	-111.833333	4.3	INT=4-5 (4,8,13)**
428568.168	4396087.750	1958	1201.000000	39.711667	-111.833333	3.7	INT=3-4,A'SHOCK(4,6,8,13)
428568.168	4396087.750	1958	1202.000000	39.711667	-111.833333	4.3	INT=4-5,A'SHOCK(4,6,8,13)
498281.159	4375594.126	1958	1211.000000	39.530000	-111.020000	3.7	-8
428568.168	4396087.750	1958	1214.000000	39.711667	-111.833333	2.3	A'SHOCK (8)
467028.980	4683163.213	1959	104.000000	42.300000	-111.400000	4.3	LOC ASSUMED (8)
368300.331	4206876.523	1959	227.000000	38.000000	-112.500000	5.0	
366531.656	4095923.937	1959	721.000000	37.000000	-112.500000	5.5	MAG=5.50-5.75 (8)
307825.751	4156928.355	1959	727.000000	37.539333	-113.175167	3.7	
392668.896	4256332.354	1959	917.000000	38.448833	-112.230000	3.7	
459245.787	4760936.073	1960	424.000000	43.000000	-111.500000	3.0	-6
500000.000	4372264.508	1960	506.000000	39.500000	-111.000000	3.0	-6
416536.705	4594746.871	1960	709.000000	41.500000	-112.000000	3.0	-6
458916.887	4705414.187	1960	723.000000	42.500000	-111.500000	3.0	SWARM (6)
458916.887	4705414.187	1960	723.000000	42.500000	-111.500000	3.0	SWARM (6)
458916.887	4705414.187	1960	723.000000	42.500000	-111.500000	3.0	SWARM (6)
458916.887	4705414.187	1960	724.000000	42.500000	-111.500000	2.3	SWARM (8)
458916.887	4705414.187	1960	724.000000	42.500000	-111.500000	2.3	SWARM (8)
458916.887	4705414.187	1960	725.000000	42.500000	-111.500000	3.0	SWARM (6)
458916.887	4705414.187	1960	725.000000	42.500000	-111.500000	3.0	SWARM (6)
458851.484	4694310.389	1960	807.000000	42.400000	-111.500000	5.0	SWARM (6,8)
467133.523	4705370.588	1960	807.000000	42.500000	-111.400000	3.0	SWARM (6,8)
458851.484	4694310.389	1960	808.000000	42.400000	-111.500000	2.3	THREE SHOCKS,SWARM (8)
458916.887	4705414.187	1960	810.000000	42.500000	-111.500000	4.3	SWARM
442483.580	4705530.453	1960	820.000000	42.500000	-111.700000	3.0	SWARM (6)
442575.323	4716634.480	1960	820.000000	42.600000	-111.700000	3.0	SWARM (6)
475271.743	4683129.325	1960	820.000000	42.300000	-111.300000	4.3	SWARM
450700.240	4705467.475	1960	820.000000	42.500000	-111.600000	3.0	SWARM (6,8)
467185.946	4716474.566	1960	820.000000	42.600000	-111.400000	3.0	SWARM (6)

X	Y	Year	Date__UTC_	Latitude	Longitude	Magnitude	Comments
458851.484	4694310.389	1960	820.000000	42.400000	-111.500000	3.0	SWARM (6,8)
450700.240	4705467.475	1960	820.000000	42.500000	-111.600000	3.0	SWARM (6,8)
450621.755	4694363.660	1960	821.000000	42.400000	-111.600000	3.0	SWARM (6)
483540.610	4694208.691	1960	826.000000	42.400000	-111.200000	3.0	SWARM (6)
439470.875	4328106.986	1960	912.000000	39.100000	-111.700000	3.0	-6
456643.128	4305798.371	1961	221.000000	38.900000	-111.500000	3.0	-6
443123.717	4354715.519	1961	416.000000	39.340000	-111.660000	5.0	INT=4-6 (4,6,8,14)
449372.451	4357021.548	1961	416.000000	39.361167	-111.587667	2.3	A'SHOCK? (8)
449372.451	4357021.548	1961	416.000000	39.361167	-111.587667	2.3	A'SHOCK? (8)
568684.964	4383668.330	1961	506.000000	39.600000	-110.200000	4.3	
425697.690	4672374.396	1961	525.000000	42.200000	-111.900000	3.0	-6
205977.532	4173987.663	1961	926.000000	37.666000	-114.333333	3.0	-6
465460.963	4339047.380	1961	1015.000000	39.200000	-111.400000	3.0	-6
456826.164	4339090.244	1961	1016.000000	39.200000	-111.500000	3.0	A'SHOCK? (6)
456826.164	4339090.244	1961	1017.000000	39.200000	-111.500000	3.0	A'SHOCK? (6)
371957.878	4428834.709	1961	1017.000000	40.000000	-112.500000	3.0	-6
375267.072	4084694.224	1962	215.000000	36.900000	-112.400000	4.5	(6,8)
330936.851	4096559.717	1962	215.000000	37.000000	-112.900000	3.0	A'SHOCK? (6)
447753.478	4272560.351	1962	217.000000	38.600000	-111.600000	3.0	-6
753596.863	4243081.053	1962	317.000000	38.300000	-108.100000	3.0	-6
403421.489	4206385.831	1962	605.000000	38.000000	-112.100000	3.0	-6

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
0	40.7153	-112.0888	5.2	1	9	5	1962	16	4	27.78	7	1	9	188	21.1	0.41	1.1	1.3		408036.536	4507723.46
1	39.962	-111.8158	1.4	0	9	13	1962	18	56	39.47	7	1	5	172	88.9	0.8	71.5	71.5		430324.554	4423858.208
2	40.7632	-112.1073	2.3	0	2	3	1963	0	40	14.54	7	1	5	226	21.9	0.21	2.5	8.8		406541.011	4513060.259
3	40.6878	-112.0092	2.4	0	6	20	1963	23	47	24.95	7	1	5	187	16	0.2	2.5	9.8		414724.843	4504590.481
4	40.0283	-111.1902	4	1	7	9	1963	20	25	25.8	7	1	6	92	57.3	0.78	1.1	2.4		483771.284	4430915.574
5	40.02	-111.2492	3.7	1	7	10	1963	18	32	49.76	7	1	7	93	59.6	0.39	1.1	2.4		478734.558	4430006.765
6	40.4005	-111.026	2.7	0	8	17	1963	10	23	8.61	7	1	7	127	80.4	0.44	0.9	2		497793.668	4472210.668
7	40.5075	-112.1877	2.5	0	8	24	1963	3	15	45.91	7	1	5	168	40.5	0.11	1.4	2.2		399371.666	4484764.746
8	40.6922	-112.1588	2.4	0	11	15	1963	2	33	54.44	7	1	6	208	27.5	0.29	1.4	1.6		402090.172	4505234.849
9	40.7965	-111.8205	1.3	0	1	27	1964	20	21	50.54	7	1	6	214	4.3	0.28	4.7	0.9		430782.542	4516490.863
10	41.1157	-111.5787	2.4	0	2	15	1964	22	33	29.14	7	1	7	231	45.2	0.36	2.5	1.7		451415.538	4551762.334
11	39.9707	-111.7817	1.3	0	4	17	1964	20	36	52.26	7	1	5	170	91.4	0.14	10.3	9.3		433245.446	4424797.754
12	39.8615	-111.9223	1.8	0	5	6	1964	22	21	3.9	7	1	5	189	84.6	0.2	17.9	14.6		421113.308	4412792.223
13	40.5123	-111.3167	1.6	0	5	9	1964	5	4	3.98	7	1	6	156	52.9	0.47	1.7	1.9		473169.668	4484668.201
14	39.9548	-111.7683	1.6	0	6	2	1964	1	29	33.79	7	1	5	172	91.1	0.43	13	11		434374.573	4423023.049
15	40.8145	-111.8513	1.1	0	11	29	1964	0	58	8.28	7	1	6	236	5.6	0.38	2.8	1.3		428203.626	4518513.769
16	40.7257	-111.5887	1.6	0	5	1	1965	1	47	5.46	7	1	6	184	22.3	0.21	2.1	1.6		450284.61	4508474.527
17	40.9663	-111.5193	2.7	1	5	11	1965	1	50	25.41	7	1	6	241	35.7	0.31	2.6	1.3		456303.752	4535145.88
18	40.7748	-111.8112	1.3	0	6	9	1965	21	31	11.26	7	1	6	216	3.3	0.3	2	1		431544.819	4514074.712
19	40.8212	-111.8225	1.7	0	6	15	1965	21	54	30.64	7	1	5	236	6.7	0.16	2.1	1.9		430639.546	4519234.329
20	40.3687	-111.3485	2.8	0	7	27	1965	20	23	57.3	7	1	7	110	60.9	0.15	1.2	1.6		470412.727	4468738.901
21	40.5205	-111.9435	1.7	0	11	22	1965	18	11	29.15	7	1	5	133	28.2	0.23	2.3	18.3		420077.377	4485957.802
22	40.4047	-112.014	1.2	0	12	5	1965	14	43	51.61	7	1	5	199	136	0.14	3.4	4.1		413957.678	4473170.071
23	40.8783	-112.2018	1.3	0	12	22	1965	22	45	55.6	7	1	5	251	32.5	0.41	3.2	2.6		398740.019	4525942.425
24	39.96	-111.6995	2.5	0	6	9	1966	22	28	27.49	7	1	5	168	86.1	0.44	1	35.8		440255.802	4423551.858
25	40.33	-111.0932	1.3	0	6	23	1966	8	43	16.16	7	1	5	186	84	0.37	1.5	1.9		492082.904	4464389.205
26	40.6555	-111.5612	1	0	1	15	1967	15	8	40.79	7	1	5	166	27	0.62	69.7	69.7		452557.217	4500666.818
27	40.7573	-111.9732	2.1	0	3	10	1967	5	34	58.74	7	1	7	138	10.6	0.15	0.9	1.2		417852.308	4512271.125
28	40.3582	-110.9952	1.9	0	4	7	1967	6	14	17.95	7	1	5	150	85	0.09	1.2	2.2		500407.578	4467515.159
29	39.874	-111.9948	1.9	0	5	26	1967	6	8	8.42	7	1	5	191	78.5	0.4	1.5	2.3		414927.531	4414246.107
30	39.7935	-111.583	2.1	0	8	29	1967	19	4	55.47	7	1	6	186	69.9	0.32	2.9	3.6		450085.557	4405000.682
31	41.163	-111.532	2.7	0	9	2	1967	10	4	7.17	7	1	8	118	51.7	0.25	0.7	1.3		455368.305	4556988.251
32	40.7075	-112.1025	2.4	0	9	24	1967	4	46	48.54	7	1	7	145	22.4	0.08	0.8	1.5		406868.501	4506872.041
33	40.7077	-112.0983	3	0	9	24	1967	5	0	28.58	7	1	8	145	22.1	0.17	0.8	1.4		407223.572	4506889.798
34	40.3835	-112.0308	2.2	0	9	25	1967	21	54	17.87	7	1	5	161	45	0.52	6.5	10.2		412504.661	4470833.346
35	40.0398	-111.805	1.8	0	10	18	1967	16	52	57.61	7	1	5	162	87.7	0.46	18.1	16		431324.958	4432485.018
36	40.9212	-111.721	2	0	10	20	1967	7	44	26	7	1	6	241	20.5	0.38	0.8	1.1		439290.406	4530259.786
37	40.3278	-111.5352	1.9	0	12	28	1967	8	56	22.36	7	1	5	120	55.2	0.32	1.3	31.7		454534.581	4464278.269
38	40.8257	-111.7912	1	0	1	29	1968	18	45	59.69	7	1	5	236	8.4	0.36	4.7	1.7		433283.573	4519709.563
39	39.9932	-111.8143	2.1	0	2	8	1968	18	31	26.29	7	1	6	168	88.1	0.36	9.9	9.2		430484.29	4427319.981

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	fpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
40	39.9493	-111.788	1.2	0	2	27	1968	21	39	20.39	7	1	5	173	91.6	0.25	10.6	9.3		432686.46	4422427.274
41	40.7317	-111.026	2.1	0	5	17	1968	13	10	37.82	7	1	5	168	69.5	0.19	3.3	2.3		497804.517	4508974.237
42	40.6573	-112.1467	2.3	0	11	4	1968	18	38	50.55	7	1	5	197	27.9	0.3	2.7	10.9		403062.009	4501347.306
43	39.7963	-111.5128	2	0	1	14	1969	13	7	48.22	7	1	5	183	64.3	0.13	2.9	6.2		456097.65	4405274.66
44	40.727	-111.632	2.5	0	1	23	1969	23	10	33.03	7	1	5	161	18.7	0.33	1.5	1.9		446628.965	4508644.249
45	40.8002	-111.7967	2	0	2	16	1969	11	29	53.09	7	1	6	275	5.9	0.03	2.1	1.3		432794.064	4516883.075
46	40.4077	-111.3962	1.5	0	6	21	1969	1	48	7.83	7	1	5	115	55	0.42	1.2	2.4		466382.436	4473084.874
47	40.0308	-111.9215	2.9	0	7	30	1969	23	59	56.33	7	1	6	85	78.2	0.64	2.1	4.1		421375.796	4431582.418
48	40.5575	-111.5757	2	0	9	22	1969	13	6	58.61	7	1	5	150	32.5	0.58	4.4	8.8		451260.264	4489796.471
49	40.7275	-111.6345	1.9	0	9	22	1969	13	11	36.01	7	1	5	161	18.5	0.03	4.5	3.2		446418.246	4508701.274
50	40.324	-111.338	2.3	0	10	5	1969	17	53	7.52	7	1	7	113	65.2	0.47	1	1.9		471285.218	4463773.867
51	40.6892	-111.681	1.6	0	10	31	1969	13	14	24.45	7	1	5	162	16.4	0.46	2.4	10.5		442458.464	4504479.195
52	41.0838	-111.621	1.4	0	7	29	1970	6	30	17.45	7	1	6	230	141.2	0.67	2.6	2.1		447839.012	4548245.491
53	40.1497	-111.9898	1.9	0	7	30	1970	8	57	48.7	7	1	7	155	70.3	0.75	1.5	1.7		415695.044	4444842.226
54	40.6843	-110.7432	2.4	0	9	30	1970	12	26	27.74	7	1	9	161	87.2	0.61	0.8	1.3		521700.005	4503744.031
55	40.8378	-112.2597	2.1	0	10	8	1970	6	1	59.76	7	1	8	234	35.7	1.1	0.9	1.7		393796.755	4521515.087
56	40.9207	-111.4157	1.5	0	11	15	1970	16	0	59.57	7	1	5	229	40.4	0.26	3.9	1.9		464997.081	4530037.244
57	40.6997	-112.0735	1.7	0	11	18	1970	10	4	22.56	7	1	7	201	20.4	0.34	1.3	1.5		409307.681	4505975.845
58	40.8707	-111.5858	1.2	0	11	26	1970	22	38	25.86	7	1	7	228	25.1	0.23	1.6	1.1		450637.046	4524568.824
59	40.0402	-111.8375	1.5	0	1	14	1971	21	43	3.21	7	1	5	201	59.8	0.35	4.3	7.6		428552.747	4432554.983
60	40.7352	-111.8205	1.2	0	3	20	1971	0	12	29.52	7	1	5	139	3.9	0.35	1.2	1.2		430718.909	4509686.155
61	40.7393	-111.8263	1.5	0	3	20	1971	21	28	35.89	7	1	6	137	3.3	0.07	1.1	1.2		430233.449	4510145.873
62	40.1643	-111.094	1.2	0	4	6	1971	3	18	1.92	7	1	6	134	66.7	0.33	1.1	1.7		491995.451	4445997.406
63	39.948	-112.1327	2.3	0	5	4	1971	20	18	52.56	7	1	6	187	64.2	0.17	1.4	1.6		403238.647	4422599.929
64	40.7248	-111.5018	1.5	0	6	3	1971	18	29	22.41	7	1	5	223	27.6	0.19	3.2	2.1		457622.727	4508329.056
65	40.852	-111.5423	1.7	0	6	6	1971	9	29	19.48	7	1	7	198	27.6	0.49	1.9	1.6		454289.774	4522469.369
66	40.8097	-111.559	1.5	0	6	7	1971	10	41	14.61	7	1	7	210	24.9	0.16	1.4	1.5		452852.177	4517782.623
67	40.4085	-111.976	1.7	0	6	11	1971	20	12	3.68	7	1	5	153	25.9	0.06	1.2	1.9		417186.853	4473555.574
68	40.0922	-111.862	2	0	6	15	1971	19	47	13.89	7	1	5	195	54.3	0.43	4.6	7.7		426518.518	4438346.598
69	40.4957	-111.9945	2.5	0	7	27	1971	15	32	18.76	7	1	6	138	21.5	0.1	1.3	11		415726.128	4483252.412
70	40.4452	-111.9622	1.5	0	7	27	1971	18	32	7.13	7	1	5	160	22.2	0.18	43.8	33.3		418402.163	4477616.469
71	41.1913	-111.6382	2	0	8	4	1971	7	24	57	7	1	6	237	50.7	0.25	3.4	3.3		446481.74	4560189.831
72	41.145	-111.3983	2	0	9	12	1971	9	54	25.03	7	1	9	230	56.8	0.61	2.1	1.5		466575.842	4554930.081
73	40.4958	-112.196	1.4	0	10	17	1971	16	11	54.12	7	1	5	167	37.8	0.98	4.5	4		398650.819	4483475.506
74	40.0337	-111.765	1.9	0	10	20	1971	19	9	53.61	7	1	6	161	60.2	0.4	1.6	26.1		434731.604	4431777.883
75	40.6838	-111.8083	1.1	0	1	3	1972	2	30	3.13	7	1	6	123	9.5	0.6	1	1.1		431696.555	4503970.914
76	40.0532	-111.8222	1.3	0	1	26	1972	20	58	20.97	7	1	5	161	58.2	0.38	0.9	2.2		429871.332	4433985.731
77	40.6508	-111.5847	1.5	0	2	7	1972	7	22	8.75	7	1	8	141	17.3	0.75	1.2	1.3		450567.092	4500158.044
78	40.1167	-111.7892	1.2	0	3	8	1972	16	19	49.66	7	1	6	192	50.8	0.37	1.2	16		432748.58	4441008.357
79	39.9892	-111.8073	1.8	0	3	8	1972	21	42	34.8	7	1	7	169	88.8	0.24	7.8	6.6		431077.857	4426870.577

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
80	40.6558	-111.5728	1.5	0	3	30	1972	1	3	24.08	7	1	6	165	18.4	0.15	1.4	1.6		451576.787	4500706.442
81	40.6245	-111.944	1.8	0	4	1	1972	7	15	23.12	7	1	8	151	16.2	0.84	0.8	4		420158.743	4497502.628
82	39.8605	-111.368	2.4	0	4	8	1972	22	59	10.12	7	1	5	143	55.9	0.22	4.9	5.7		468523.763	4412339.057
83	40.9432	-111.5833	1.6	0	4	16	1972	8	6	55.02	7	1	9	219	29.9	0.75	1.9	1.2		450901.366	4532615.535
84	40.1382	-111.7807	2	0	4	25	1972	16	45	2.96	7	1	5	190	48.6	0.67	3.7	46.4		433493.87	4443388.343
85	40.0358	-111.827	1.3	0	5	24	1972	20	20	7.42	7	1	5	163	60.2	0.37	0.9	2.2		429443.98	4432058.243
86	39.8005	-111.4708	1.7	0	6	3	1972	14	39	14.76	7	1	7	180	61	0.27	1.5	2.3		459695.863	4405721.05
87	39.9683	-111.9788	1.7	0	7	20	1972	0	48	39.3	7	1	6	178	69.9	0.22	0.9	2.2		416410.584	4424697.505
88	40.7037	-111.7663	1.2	0	7	21	1972	12	47	19.67	7	1	6	149	9.6	0.32	0.9	1.9		435264.962	4506148.121
89	40.8393	-111.5262	1.9	0	8	28	1972	2	20	49.27	7	1	5	194	28.4	0.38	1.5	1.7		455638.373	4521051.301
90	40.7005	-111.847	1.5	0	9	1	1972	20	30	25.98	7	1	5	124	7	0.57	0.9	1.4		428444.138	4505855.501
91	40.506	-111.3485	4.3	1	10	1	1972	19	42	29.52	7	1	13	90	36	0.53	0.8	1.1		470472.853	4483979.058
92	40.5852	-111.342	1.8	0	10	1	1972	19	52	28.5	7	1	6	150	35.7	0.14	2.2	2.3		471057.688	4492768.184
93	40.6182	-111.317	2.2	0	10	1	1972	19	53	44.83	7	1	7	148	38.1	0.4	2	2.1		473186.547	4496423.337
94	40.6058	-111.3395	2.5	0	10	1	1972	20	6	26.72	7	1	6	148	36	0.2	2.1	2.2		471278.072	4495054.007
95	40.5427	-111.3628	2.1	0	10	1	1972	20	11	48.12	7	1	7	153	34.1	0.22	1.9	2.1		469278.024	4488057.668
96	40.4392	-111.3507	2.4	0	10	3	1972	2	57	39.66	7	1	7	144	38.1	0.32	1.5	1.7		470256.996	4476565.021
97	40.4212	-111.0162	3.4	1	10	16	1972	21	49	31.19	7	1	9	129	65.6	0.53	1.1	1.8		498625.707	4474508.13
98	40.3762	-111.0177	1.4	0	10	17	1972	7	1	41.58	7	1	7	164	67	0.25	0.9	1.9		498497.457	4469513.25
99	40.4447	-111.3743	1.6	0	11	8	1972	13	32	52.97	7	1	6	144	36	0.38	1.5	2.1		468258.053	4477183.73
100	40.237	-111.7912	1.7	0	12	9	1972	11	7	16.72	7	1	5	180	37.7	0.17	5.9	47.1		432697.114	4454362.62
101	40.435	-111.4088	2	0	12	24	1972	17	58	35.16	7	1	6	196	33.8	0.26	4.4	3.3		465327.342	4476120.009
102	40.4425	-111.9863	2.1	0	12	29	1972	18	7	42.75	7	1	6	163	24	0.62	1.5	2.5		416355.022	4477339.312
103	40.4838	-112.0117	1.9	0	12	29	1972	19	59	6.17	7	1	6	179	23.4	0.39	1.6	2.3		414253.43	4481948.057
104	40.2747	-111.148	1.5	0	1	7	1973	21	0	24.61	7	1	9	122	62	0.66	0.6	1.6		487417.531	4458257.462
105	39.8007	-111.6813	0.9	0	1	16	1973	2	56	28.85	7	1	6	188	78.2	0.21	1.6	20.5		441675.466	4405859.227
106	39.9023	-111.8547	2.7	0	2	6	1973	10	23	59.52	7	1	5	182	75.1	0.22	1.4	2		426938.708	4417263.148
107	41.0863	-111.5538	2.2	0	6	19	1973	6	56	7.74	7	1	8	133	43.5	0.85	0.8	1.7		453485.275	4548484.99
108	40.7035	-111.8045	1.8	0	6	29	1973	20	1	33.7	7	1	5	131	7.6	0.51	1.1	1.4		432037.69	4506154.77
109	40.411	-111.6365	1.8	0	8	5	1973	3	39	13.72	7	1	8	118	21.2	0.29	0.9	7.8		445995.512	4473570.286
110	39.9778	-111.6145	1.8	0	8	8	1973	16	29	23.55	7	1	5	163	67.6	0.54	1.2	20.7		447529.304	4425474.025
111	40.284	-111.4333	2.7	0	8	19	1973	19	13	4.8	7	1	8	121	42.8	0.61	0.9	2.1		463167.267	4459369.268
112	40.6518	-111.7833	1	0	11	3	1973	7	33	10.95	7	1	6	168	8.6	0.28	1.2	2.4		433777.492	4500399.635
113	40.7285	-111.8135	1.2	0	2	14	1974	16	37	47.24	7	1	6	202	4.9	0.24	2.5	3.2		431303.087	4508936.914
114	39.9475	-111.5655	1.7	0	2	19	1974	10	4	40.62	7	1	5	298	27	0.26	2.1	9.2		451692.003	4422083.332
115	39.931	-111.4687	1.6	0	2	20	1974	4	43	51.86	7	1	7	162	34.9	0.38	1.1	1.4		459951.589	4420204.081
116	39.9032	-111.4963	1.6	0	2	20	1974	8	5	1.83	7	1	6	167	34.6	0.24	1.7	2.3		457576.126	4417131.324
117	39.9958	-111.521	1.1	0	4	1	1974	4	30	49.9	7	1	5	156	27.7	0.28	1.3	2.8		455524.764	4427421.029
118	41.0862	-111.6132	1.5	0	4	16	1974	4	43	32.19	7	1	7	285	40.9	0.21	2.1	1.7		448496.051	4548507.282
119	40.7737	-111.9773	0.9	0	4	28	1974	17	2	9.47	7	1	6	153	9.6	0.42	1.6	3.2		417526.501	4514095.492

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
120	40.6973	-111.575	0.9	0	5	8	1974	7	51	30.25	7	1	5	269	20.9	0.19	2.1	1.6		451420.936	4505314.325
121	40.1678	-111.5412	1.8	0	5	15	1974	13	20	43.76	7	1	5	157	25.6	0.14	1	8.4		453916.491	4446522.038
122	40.9845	-111.6528	1.8	0	6	3	1974	16	51	16.14	7	1	6	209	29.5	0.14	1.7	1.8		445085.492	4537241.596
123	40.7895	-111.6428	1.4	0	7	15	1974	20	1	29.74	7	1	5	297	14	0.04	4.5	11.6		445767.742	4515588.736
124	41.1832	-111.5577	2.2	0	7	16	1974	18	6	37.74	7	1	5	296	49.4	0.16	2.6	2.8		453226.586	4559244.22
125	39.8052	-111.6145	2.1	0	9	3	1974	11	22	51.99	7	1	6	185	72.8	0.34	1.8	35.4		447397.532	4406317.275
126	39.9875	-111.7192	2.3	0	9	12	1974	17	38	31.64	7	1	5	213	12.6	0.23	2.6	10.6		438597.827	4426617.498
127	40.7908	-111.5665	1.1	0	9	18	1974	5	9	44.6	7	1	6	288	23.9	0.19	2.3	1.7		452206.046	4515688.662
128	40.7462	-111.71	1.1	0	9	27	1974	19	9	21.13	7	1	9	263	11.8	0.15	2.2	2.2		440059.222	4510825.892
129	40.4477	-111.9448	1	0	10	31	1974	9	44	46.59	17.78	0	5	138	9.1	0.12	2	3.8		419880.733	4477878.04
130	40.7405	-111.7345	1.3	0	11	1	1974	21	10	17.15	1	0	5	261	9.9	0.05	3.7	62.3		437985.532	4510210.177
131	40.3473	-111.7973	0	0	11	3	1974	13	37	59.81	7	1	5	178	13.8	0.57	5.3	20.9		432288.398	4466610.304
132	40.4527	-111.9247	0.1	0	11	18	1974	0	6	23.81	1.94	0	6	138	7.3	0.23	1	23.8		421591.053	4478415.004
133	39.8607	-111.6097	2.3	0	11	18	1974	15	37	56.12	7	1	10	290	15.9	0.22	2.3	1.4		447850.414	4412474.307
134	39.8397	-111.572	2.3	0	11	18	1974	23	17	31.57	7	1	10	175	19.6	0.18	1.1	1.1		451060.125	4410122.239
135	40.8088	-111.4392	1.17	0	11	19	1974	4	11	25.68	7	1	7	258	37.7	0.41	4	1.7		462956.02	4517625.191
136	40.4643	-111.9288	1.4	0	11	19	1974	8	13	43.62	1.28	0	6	147	7.3	0.25	0.9	62.3		421256.939	4479706.269
137	40.3112	-111.4862	2.1	0	11	29	1974	0	55	42.95	7.59	0	11	149	11.9	0.12	0.7	1.9		458687.048	4462411.707
138	40.4748	-111.9433	1.4	0	12	9	1974	14	9	48.1	1.94	0	7	157	8.4	0.31	1.1	14.6		420040.076	4480884.821
139	40.3347	-111.9242	1.3	0	12	14	1974	0	3	23.56	0.06	0	11	118	5.8	0.41	0.5	1.2		421496.525	4465316.544
140	41.0717	-111.5425	1	0	12	14	1974	19	47	42.34	7	1	7	298	22	0.25	10.1	9.4		454424.303	4546858.252
141	39.8485	-111.8983	0.9	0	12	15	1974	18	50	5.83	7	1	8	152	10.2	0.29	1.6	2.8		423151.622	4411328.448
142	40.4378	-111.4455	2	0	12	19	1974	10	47	35.33	9.81	0	10	144	7.4	0.29	0.8	1.1		462216.164	4476445.858
143	41.0577	-111.5842	1	0	12	20	1974	21	1	44.49	7	1	8	306	55.6	0.3	4.1	26.8		450910.639	4545326.722
144	39.9823	-111.9022	1.1	0	12	25	1974	2	4	20.36	3.66	0	6	217	13.6	0.12	1.8	9		422968.037	4426182.411
145	40.6555	-111.6882	0.6	0	12	25	1974	7	48	18.43	7	1	8	273	8.2	0.16	2.4	2.4		441820.806	4500743.087
146	40.7885	-111.8345	0.5	0	12	25	1974	20	37	1.4	0.68	0	7	261	2.4	0.27	1.6	0.5		429593.038	4515613.951
147	39.872	-111.1488	1.2	0	12	26	1974	1	52	35.21	7	1	10	144	41.7	0.21	1.1	18.1		487274.79	4413561.221
148	39.9905	-111.8438	1.2	0	12	26	1974	9	17	17.27	7	1	6	178	11	0.09	1.7	3.5		427963.046	4427043.723
149	40.8332	-111.7478	0.9	0	1	2	1975	13	48	39.5	3.5	0	5	122	14.7	0.11	2	37.8		436950.331	4520509.986
150	40.0168	-111.9117	1.2	0	1	5	1975	10	11	31.89	0.94	0	7	197	11	0.17	1.3	62.3		422196.061	4430019.909
151	41.0768	-111.5707	1.3	0	1	10	1975	21	1	26.17	7	1	6	300	24.8	0.38	7.4	2.7		452058.902	4547439.533
152	40.8622	-111.5592	1	0	1	11	1975	6	33	15.25	7	1	6	288	30.7	0.19	9	19.3		452872.503	4523610.603
153	40.3218	-111.7975	1.6	0	1	14	1975	22	33	18.79	2.88	0	9	74	12.6	0.31	0.6	13.7		432245.911	4463779.998
154	40.2507	-111.898	0.9	0	1	18	1975	0	31	20.2	12.18	0	6	300	4.9	0.26	2.2	1.7		423627.527	4455969.795
155	40.8392	-111.665	2	0	1	19	1975	6	34	32.31	9.81	0	11	148	17.5	0.18	0.9	1.4		443936.597	4521119.749
156	40.8073	-111.7213	0.9	0	1	19	1975	6	44	6.39	7	1	7	323	24.9	0.25	3.1	10.2		439160.997	4517616.166
157	40.7282	-111.7723	1.4	0	1	23	1975	21	39	29.21	1.29	0	14	96	6.6	0.28	0.6	8.1		434782.007	4508872.195
158	40.9692	-111.6352	1.6	0	1	23	1975	23	6	26.11	0.18	0	17	122	13.6	0.25	0.6	9.6		446553.691	4535532.228
159	40.254	-111.9655	1.1	0	1	24	1975	18	44	59.25	1.11	0	5	123	4	0.13	1	1.9		417890.735	4456396.414

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
160	41.1738	-111.614	1.8	0	2	12	1975	8	6	42.05	7	1	14	168	64.6	0.24	1.2	19.7		448497.408	4558232.483
161	40.3148	-111.8222	1.6	0	2	12	1975	12	45	36.19	7	1	8	103	10.4	0.08	0.8	4.8		430140.208	4463022.204
162	40.3223	-111.8168	1.6	0	2	12	1975	12	57	34.73	2.71	0	9	103	11.1	0.32	0.7	12.5		430606.714	4463850.445
163	40.7348	-111.7497	1.8	0	3	10	1975	19	40	3.33	2.3	0	16	163	8.9	0.15	0.7	10.7		436696.769	4509588.293
164	40.718	-111.777	1.4	0	4	29	1975	19	45	56.59	0.11	0	12	140	7.9	0.23	0.9	9		434375.087	4507743.439
165	40.864	-111.632	0.5	0	5	11	1975	10	57	12.41	7	1	10	223	30.2	0.2	1.5	10.7		446738.571	4523852.145
166	40.6708	-111.6678	0.7	0	5	13	1975	23	47	40.57	7	1	8	281	9.1	0.15	2	2.1		443558.297	4502428.153
167	41.0388	-111.7772	0.7	0	5	20	1975	13	47	10.47	7	1	8	228	51	0.28	1.2	16.9		434674.355	4543355.155
168	40.3847	-111.9015	0.7	0	5	23	1975	3	38	15.76	12.14	0	7	177	11.4	0.22	1.1	3.6		423481.291	4470846.627
169	40.379	-111.9	0.8	0	5	23	1975	7	32	56.18	9.5	0	9	123	11.9	0.17	0.8	2.5		423602.172	4470212.632
170	40.7132	-112.1982	0.8	0	5	30	1975	22	41	37.86	2.18	0	5	168	4.5	0.11	1.7	9		398792.894	4507610.657
171	40.6982	-112.3075	0.9	0	6	16	1975	20	1	4.02	7	1	6	134	9.8	0.06	1.2	3.9		389535.747	4506077.235
172	40.2738	-111.229	1.3	0	6	16	1975	22	3	46.61	7	1	9	162	15.6	0.23	1.3	4.9		480530.917	4458172.212
173	40.3588	-111.4473	0.7	0	6	23	1975	13	4	55.02	7.9	0	8	241	9.1	0.1	1.4	2.6		462019.133	4467677.754
174	40.5152	-111.4797	0.6	0	6	24	1975	9	23	55.76	8.88	0	10	206	12	0.13	1	2.1		459362.269	4485052.449
175	41.0605	-111.5752	1.4	0	6	27	1975	19	28	58.79	7	1	13	179	21	0.21	1.5	2		451668.947	4545632.528
176	40.0138	-111.8718	0.6	0	6	28	1975	3	10	52.56	1.81	0	5	196	9.3	0.28	2	36.7		425597.893	4429652.851
177	40.443	-111.55	0.8	0	6	29	1975	5	25	26.62	3.91	0	7	173	3.8	0.3	1.6	2.7		453356.843	4477072.998
178	40.1523	-111.7412	1.9	0	7	1	1975	11	42	54.47	7	1	12	89	10	0.31	0.6	2.6		436871.876	4444924.556
179	40.7997	-111.5875	2.5	0	7	7	1975	10	11	5.9	7	0	23	118	9.4	0.22	0.5	0.8		450440.947	4516688.275
180	39.9412	-111.416	1.5	0	7	7	1975	23	22	2.94	7	1	14	134	32.7	0.31	0.7	1		464459.87	4421313.859
181	40.6552	-111.6148	0.1	0	7	11	1975	11	32	20.73	7.43	0	6	305	7.3	0.08	2.7	1.6		448025.716	4500663.814
182	39.9925	-111.4057	1.1	0	7	13	1975	2	50	59.63	7	1	8	146	35	0.15	1.8	1.4		465365.73	4427003.599
183	40.7933	-111.5342	1.5	0	7	13	1975	21	48	26.14	7	1	11	206	24	0.33	1.1	1.4		454932.805	4515949.076
184	40.431	-111.4713	0.6	0	7	17	1975	14	15	28.57	7	1	8	243	20.4	0.39	1.4	5.3		460023.974	4475702.419
185	40.3495	-111.3887	1.6	0	8	1	1975	12	54	40.07	7	1	8	127	20.3	0.22	0.8	1.8		466990.42	4466621.97
186	41.0727	-111.5552	1.1	0	8	1	1975	19	14	6.23	7	1	7	142	43.4	0.25	0.8	1.9		453358.072	4546975.979
187	40.8333	-111.5548	1.3	0	8	15	1975	12	31	54.01	7	1	15	174	22.2	0.35	0.8	1.8		453223.004	4520400.133
188	40.7165	-111.9812	1.9	0	8	23	1975	11	42	27.29	4.16	0	13	100	12.4	0.22	0.7	1.4		417126.399	4507749.565
189	41.025	-111.525	1.1	0	9	5	1975	2	14	53.8	7	1	9	157	26.2	0.14	1.2	2.4		455863.297	4541665.036
190	41.026	-111.4998	0.8	0	9	12	1975	2	18	13.83	7	1	8	183	28.4	0.09	1.4	2		457982.502	4541763.61
191	40.9445	-111.6515	0.8	0	9	19	1975	11	38	35.33	7	1	7	158	18.1	0.34	1.8	9		445161.748	4532800.387
192	41.1327	-111.5597	1.2	0	9	22	1975	2	57	58.36	7	1	7	189	26.1	0.15	4.7	19.1		453022.805	4553639.127
193	40.3188	-111.4608	0.8	0	9	22	1975	23	48	46.46	4.93	0	6	258	11.9	0.07	3.1	6.3		460849.711	4463243.744
194	40.7558	-111.9885	1.1	0	9	23	1975	17	43	46.34	2.14	0	12	103	15.5	0.39	0.6	27.6		416558.943	4512119.049
195	40.2142	-112.0605	0.4	0	9	27	1975	12	6	16.82	7	1	5	228	13	0.32	1.9	4.8		409758.657	4452071.009
196	40.9772	-111.6727	1.3	0	9	27	1975	21	58	46.03	2.18	0	8	237	14.9	0.36	2.2	44.5		443405.224	4536443.922
197	40.7638	-110.8735	0.9	0	9	29	1975	3	53	46.09	7	1	6	333	67.6	0.15	42.5	37.6		510676.734	4512544.856
198	39.9543	-111.9775	2.3	0	10	1	1975	6	47	22.92	3.16	0	9	176	17.5	0.11	0.9	13.4		416504.577	4423142.394
199	40.4178	-111.9645	0.3	0	10	8	1975	8	27	20.61	13.01	0	7	119	12.1	0.13	0.9	2.4		418173.905	4474577.168

FID_1	lat	lon	mag	Iwa	month_	day_	year_	hour_	min_	sec	depth	Ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
200	40.5728	-111.2517	1.2	0	10	10	1975	5	53	38.84	1.21	0	10	147	11.7	0.35	0.9	4.5		478695.55	4491366.007
201	40.5682	-111.2315	1.2	0	10	10	1975	5	54	23.05	3.8	0	9	157	11.9	0.31	0.9	7.9		480403.982	4490850.712
202	40.5648	-111.1918	1.4	0	10	10	1975	8	2	44.66	1.17	0	13	209	12.5	0.17	1.2	62.3		483763.69	4490465.234
203	40.5943	-111.2488	0.8	0	10	10	1975	8	46	12.71	0.88	0	9	146	9.3	0.43	1	5.3		478947.754	4493751.845
204	40.5705	-111.187	0.9	0	10	10	1975	15	0	30.59	5.24	0	11	212	12	0.23	2.1	5.2		484171.364	4491097.068
205	40.5552	-111.1942	2.7	1	10	11	1975	0	9	56.31	3.21	0	14	208	13.5	0.16	1.1	1.8		483558.175	4489400.069
206	40.57	-111.1973	0.7	0	10	11	1975	0	14	33.03	2.45	0	8	205	11.9	0.32	1.3	20.3		483299.394	4491043.469
207	40.5628	-111.1875	0.3	0	10	11	1975	0	18	11.36	1.41	0	7	212	12.8	0.14	1.1	64.7		484127.222	4490242.449
208	40.5408	-111.21	0.2	0	10	11	1975	0	59	15.92	4.9	0	6	199	14.8	0.08	1.6	10.2		482216.669	4487804.724
209	40.564	-111.1778	0.8	0	10	11	1975	1	49	22.73	7	1	7	218	12.9	0.13	1.5	5		484948.643	4490373.948
210	40.5773	-111.2417	1.5	0	10	11	1975	22	43	9.59	0.34	0	13	151	11	0.35	1	5.1		479543.343	4491863.143
211	40.5217	-111.3668	-0.2	0	10	12	1975	11	58	7.56	1.78	0	9	116	15.3	0.26	1	58.4		468929.605	4485728.052
212	40.3863	-111.5973	0.8	0	10	14	1975	21	51	40.93	1.03	0	8	101	6.7	0.4	0.7	62.3		449302.971	4470805.398
213	40.3902	-111.9783	1.2	0	10	16	1975	22	37	45.58	5.13	0	9	137	12.2	0.29	0.7	3.5		416969.215	4471526.422
214	41.0215	-111.5917	1.3	0	10	17	1975	1	56	28.93	7	1	15	165	46.3	0.31	0.8	1		450253.174	4541312.368
215	40.5128	-111.3668	0.6	0	10	19	1975	2	2	12.66	3.83	0	9	105	14.6	0.26	1	11.4		468925.496	4484740.148
216	41.022	-111.597	1.3	0	10	22	1975	3	33	30.39	9.35	0	9	184	17.3	0.24	1.2	1.9		449807.957	4541370.908
217	40.757	-111.6227	2.6	0	10	22	1975	23	34	14.79	8.59	0	26	67	15	0.32	0.5	0.7		447437.957	4511968.803
218	40.7238	-111.55	0.6	0	10	23	1975	22	8	41.94	7	1	7	209	16.8	0.2	3.3	2.7		453551.498	4508242.428
219	40.558	-111.1642	1.4	0	10	26	1975	3	11	34.92	7	1	12	202	17.9	0.22	1.1	1.5		486098.687	4489705.707
220	40.5635	-111.2192	1.5	0	10	26	1975	5	14	45.13	7	1	15	228	17	0.24	1.3	1.2		481443.856	4490326.343
221	40.5542	-111.2232	1.1	0	10	26	1975	7	39	40.44	7	1	12	161	16	0.31	1.3	1.8		481102.625	4489294.883
222	40.5932	-111.1203	0.9	0	10	26	1975	17	18	11.9	7	1	7	302	23.1	0.14	13.7	20.5		489820.636	4493606.954
223	40.53	-111.224	0.3	0	11	2	1975	2	33	28.8	7.95	0	8	191	13.3	0.28	2.2	4.6		481028.066	4486608.836
224	40.5632	-111.1502	0.5	0	11	2	1975	2	37	40.15	7	1	7	251	19	0.17	1.9	6.3		487284.924	4490280.798
225	40.5785	-111.0208	1.1	0	11	9	1975	3	3	58.26	7	1	11	248	20	0.36	2.4	1.6		498239.592	4491968.486
226	40.0298	-111.3548	0.4	0	11	29	1975	0	56	5.73	7	1	9	236	40.4	0.35	1.5	9.5		469727.514	4431125.022
227	41.1628	-111.5788	0.9	0	11	30	1975	17	28	6.41	7	1	9	163	26.4	0.18	0.8	6.5		451441.893	4556991.1
228	40.9403	-111.4597	0.5	0	12	1	1975	19	13	8.35	7	1	5	255	9.7	0.33	3.7	2.3		461303.603	4532231.553
229	40.9073	-111.536	0.4	0	12	2	1975	2	54	51.5	5.39	0	5	299	3.7	0.15	3.1	1.9		454858.386	4528604.836
230	40.9128	-111.5452	0.5	0	12	2	1975	19	23	8.04	1.64	0	6	244	4.4	0.55	2.6	17.9		454087.369	4529220.17
231	40.9692	-111.5425	1.2	0	12	5	1975	5	0	5.76	5.84	0	14	185	10.6	0.22	1.3	1.2		454353.59	4535479.667
232	40.4162	-111.9552	0.9	0	12	5	1975	8	45	21.61	2.3	0	14	120	11.6	0.23	0.6	14		418960.989	4474390.996
233	40.7193	-112.0607	2	0	12	5	1975	17	55	17.48	8.1	0	18	50	11.2	0.16	0.4	1		410415.354	4508138.443
234	40.6698	-112.0673	1.1	0	12	6	1975	0	52	24	10.63	0	16	62	10.9	0.28	0.5	2.1		409791.174	4502650.374
235	40.6553	-112.051	0.6	0	12	6	1975	0	53	37.27	2.8	0	10	88	12.4	0.22	0.6	15		411149.643	4501024.19
236	40.6543	-112.0635	1.8	0	12	6	1975	2	31	14.81	9.03	0	16	59	11.4	0.17	0.5	2.4		410091.546	4500925.89
237	40.6537	-112.062	1.5	0	12	6	1975	2	47	38.09	8.92	0	10	60	11.5	0.13	0.6	2.8		410217.554	4500857.754
238	40.016	-111.8913	1.4	0	12	13	1975	8	58	10.28	1.43	0	5	204	9.9	0.1	1.9	65.7		423936.122	4429913.5
239	41.1392	-111.6788	1.1	0	12	16	1975	10	26	38.1	7	1	7	213	26.9	0.05	1.8	6.7		443031.973	4554431.786

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
240	40.0217	-111.8788	0.8	0	12	16	1975	18	55	34.86	6.74	0	5	197	8.8	0.04	2.1	3.2		425009.132	4430535.563
241	40.7555	-111.4753	0.1	0	12	17	1975	10	8	39.86	3.5	0	5	246	14.1	0.03	5.5	62.3		459879.124	4511724.46
242	40.0197	-111.8498	0.9	0	12	20	1975	12	45	50.76	2.89	0	8	145	8	0.19	1	6.4		427481.711	4430289.569
243	40.0157	-111.8792	0.9	0	12	20	1975	13	19	23.44	0.95	0	10	151	9.4	0.21	1.2	1.1		424968.426	4429869.942
244	40.0665	-111.718	0.7	0	12	20	1975	19	12	46.16	7	1	5	175	9.3	0.25	1.7	3.6		438770.952	4435385.061
245	40.7972	-111.9563	0.8	0	1	13	1976	21	49	2.16	3.25	0	14	56	12.6	0.2	0.5	9.7		419327.142	4516684.64
246	41.1317	-111.5838	0.2	0	1	27	1976	10	51	47.42	14.26	0	7	219	24.3	0.23	2.1	2.2		450999.271	4553541.393
247	40.4802	-111.5822	0.2	0	1	28	1976	0	22	34.48	1.46	0	11	126	8.7	0.17	0.5	68.9		450653.313	4481219.701
248	40.9383	-111.4562	0.6	0	1	28	1976	16	22	25.54	7	1	9	188	9.7	0.38	1.1	2.7		461597.067	4532007.992
249	40.2418	-111.8913	1	0	1	29	1976	17	58	1.3	0.22	0	9	152	6	0.1	0.9	2		424187.422	4454976.171
250	40.6673	-111.3228	0.2	0	1	31	1976	14	35	13.02	0.16	0	8	122	8.7	0.19	0.8	1.2		472715.954	4501875.36
251	40.7033	-111.4853	0.8	0	2	4	1976	1	10	21.08	7	1	10	110	17.9	0.26	0.7	4.7		459002.979	4505934.626
252	40.7055	-111.5117	0	0	2	4	1976	1	12	7.04	7	1	6	226	16.6	0.22	1.9	6.3		456774.182	4506191.49
253	40.1253	-111.222	1.1	0	2	20	1976	1	40	30.06	7	1	10	265	32	0.36	1.9	1.2		481084.821	4441688.06
254	40.1673	-111.3077	1.8	0	2	27	1976	1	17	44.66	7	1	17	193	27.6	0.3	1.1	0.9		473799.011	4446371.532
255	41.0757	-111.579	2.6	0	2	27	1976	5	44	37.41	7	1	21	152	22.3	0.28	0.6	0.9		451360.854	4547322.016
256	39.9723	-111.8995	1.4	0	3	1	1976	14	10	21.01	2.81	0	11	152	13.1	0.08	0.9	12.5		423187.376	4425070.16
257	40.7203	-112.0573	0.7	0	3	2	1976	18	14	4.15	6.64	0	7	118	12.9	0.09	1	4.8		410703.853	4508245.987
258	40.4885	-110.8622	1.1	0	3	6	1976	4	16	7.72	7	1	12	230	34.4	0.33	1.2	7.4		511678.321	4481987.353
259	39.9757	-111.9182	1.1	0	3	7	1976	2	51	22.08	3.66	0	5	195	14.5	0.15	2.1	8.3		421594.355	4425463.808
260	41.0033	-111.6523	0.8	0	3	16	1976	14	51	35.8	10.91	0	11	175	15.7	0.11	0.9	1.9		445143.14	4539328.277
261	40.5573	-111.2663	1	0	3	17	1976	14	16	4.28	6.48	0	7	160	13.7	0.2	2.5	11.7		477454.571	4489649.121
262	40.3917	-111.771	0.2	0	3	21	1976	18	0	31.26	0.25	0	10	104	11.4	0.15	0.5	0.9		434564.936	4471518.866
263	40.379	-111.7702	0.1	0	3	21	1976	18	22	51.51	10.47	0	7	109	12.6	0.26	0.9	2.4		434620.554	4470108.584
264	40.5128	-111.3395	0.7	0	3	22	1976	5	1	18.21	8.35	0	5	201	13.2	0.13	2	10.1		471238.297	4484730.887
265	40.5047	-111.3707	0.7	0	3	23	1976	1	35	41.68	2.49	0	10	155	14.1	0.22	1.1	30.6		468591.317	4483842.426
266	40.5085	-111.3502	1.7	0	3	23	1976	6	21	0.95	6.83	0	15	164	13.3	0.19	0.7	0.8		470329.92	4484257.13
267	40.7218	-112.007	0.6	0	3	23	1976	12	41	30.12	4.66	0	12	94	12.2	0.28	0.5	5.8		414954.006	4508362.566
268	40.5523	-111.5633	0.5	0	4	3	1976	7	37	38.09	6.72	0	7	117	7.7	0.13	1.2	2.3		452306.385	4489212.477
269	41.0018	-111.292	0.7	0	4	7	1976	11	51	40.78	7	1	13	228	24.8	0.37	1.4	7.7		475443.006	4538997.934
270	40.0943	-111.2942	0.7	0	4	19	1976	6	10	37.25	7	1	8	236	34	0.23	1.9	14.8		474921.736	4438265.149
271	39.8957	-111.8815	1.3	0	4	30	1976	22	15	59.59	3.44	0	6	108	7.7	0.19	1.1	6.5		424640.535	4416552.878
272	41.023	-111.7342	1	0	5	7	1976	17	17	19.66	7	1	15	151	41.9	0.27	0.6	0.9		438273.888	4541569.874
273	40.5688	-111.583	0	0	5	13	1976	4	31	26.48	1.5	0	7	237	17.9	0.3	1.6	70.3		450650.531	4491054.857
274	40.5605	-111.5892	0.1	0	5	13	1976	4	34	58.7	7.1	0	7	233	17.1	0.19	2.4	5.7		450119.552	4490137.032
275	39.9737	-111.897	0.6	0	5	14	1976	13	12	57.28	1.46	0	5	151	13	0.22	0.8	65.7		423402.429	4425223.398
276	39.992	-111.891	1.2	0	5	14	1976	13	33	25.86	2.85	0	6	143	12.2	0.27	0.9	12.4		423935.093	4427249.42
277	39.9733	-111.9318	0.6	0	5	14	1976	13	34	39.63	4.61	0	5	160	15.2	0.22	1.2	10		420430.242	4425209.473
278	39.9853	-111.9123	2.3	0	5	14	1976	13	36	19.69	3.98	0	8	151	13.8	0.09	0.8	1.9		422109.069	4426524.163
279	39.9788	-111.8927	0.6	0	5	14	1976	13	48	22.54	1.77	0	6	148	13.2	0.32	1.1	43.1		423775.292	4425785.774

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
280	39.9863	-111.9002	1.4	0	5	14	1976	14	19	51.03	1.39	0	5	147	13.1	0.27	0.8	62.3		423143.287	4426624.654
281	39.9738	-111.2295	1.3	0	5	16	1976	15	46	17.98	7	1	7	262	47.2	0.26	2.2	23.1		480402.455	4424874.497
282	40.5158	-111.3528	0.5	0	5	17	1976	8	3	38.57	6.06	0	7	138	14.1	0.11	1.2	1.7		470112.88	4485068.31
283	40.7355	-111.7772	1.4	0	5	21	1976	20	0	54.71	7	1	14	98	26.7	0.27	0.6	1.2		434375.388	4509686.189
284	40.4538	-111.3517	1.1	0	6	1	1976	7	11	28.64	5.65	0	13	150	9.3	0.29	0.8	0.9		470178.639	4478185.946
285	39.7633	-111.6852	1.6	0	6	3	1976	20	33	46.9	7.54	0	11	170	16.6	0.39	1	1.2		441309.828	4401710.844
286	40.0103	-111.7863	2.1	0	6	10	1976	20	20	11.84	0.49	0	10	149	9.2	0.43	0.8	11.4		432891.384	4429196.485
287	40.7282	-112.0875	0.6	0	6	13	1976	13	53	26.79	3.23	0	7	150	11.1	0.56	1	11.3		408164.074	4509154.091
288	41.035	-111.4837	0.6	0	7	3	1976	20	48	16.67	7	1	8	196	18.3	0.28	1.2	5.3		459341.549	4542755.081
289	40.5363	-111.9793	0.6	0	7	16	1976	15	21	41.78	2.46	0	12	83	13.2	0.32	0.5	12.8		417064.242	4487744.713
290	40.4107	-111.9808	0.7	0	7	21	1976	18	4	29.8	2	0	6	126	11	0.06	1	40.7		416782.279	4473804.284
291	41.1338	-111.3558	0.6	0	7	22	1976	23	14	16.94	7	1	5	306	32.5	0.18	15.2	10.8		470137.243	4553671.299
292	41.0317	-111.5275	0.8	0	7	24	1976	16	19	1.41	2.98	0	7	180	17.5	0.16	1.2	16.6		455657.616	4542410.075
293	40.798	-111.6032	0.5	0	7	24	1976	17	57	25.25	8.29	0	12	111	10.3	0.05	0.9	3.2		449115.255	4516508.557
294	41.0255	-111.5305	0.9	0	7	28	1976	2	46	52.23	4.65	0	9	159	16.8	0.18	0.9	7.7		455401.248	4541723.337
295	41.0202	-111.5433	1	0	7	30	1976	23	45	41.76	1.31	0	9	203	16.2	0.19	1.3	62.3		454321.495	4541141.6
296	39.8317	-111.4102	1.1	0	8	1	1976	10	34	49.72	7	1	7	221	33.2	0.33	2.2	14.4		464899.586	4409158.319
297	40.4638	-111.9738	0.2	0	8	1	1976	16	21	26.3	8.77	0	10	89	11.1	0.18	0.7	1.7		417441.199	4479691.88
298	40.5135	-111.3715	0.3	0	8	4	1976	17	32	38.72	1.87	0	6	114	14.9	0.16	1.2	68.3		468527.648	4484819.514
299	40.5068	-111.3707	0.9	0	8	5	1976	6	47	10.89	2.16	0	9	103	14.3	0.23	0.8	36.2		468592.297	4484075.527
300	40.5347	-111.3515	0.4	0	8	5	1976	12	38	40.46	1.41	0	6	232	15.8	0.14	2.3	65.1		470231.372	4487165.783
301	40.508	-111.364	0.4	0	8	5	1976	12	48	46.01	1.37	0	7	111	14	0.09	0.9	1.4		469160.508	4484206.363
302	41.0308	-111.4893	0.6	0	8	7	1976	19	47	35.75	7	1	6	194	17.8	0.25	1.3	5.8		458868.213	4542291.46
303	40.4708	-111.9672	1	0	8	8	1976	9	22	12.86	1.82	0	11	74	10.4	0.17	0.6	21.6		418009.269	4480462.741
304	40.4782	-111.9707	0.7	0	8	9	1976	6	55	40.03	5.86	0	12	82	10.7	0.29	0.5	2.3		417721.599	4481287.412
305	41.063	-111.6392	1.6	0	8	9	1976	11	55	57.39	7	1	17	127	22.8	0.31	0.6	1		446293.366	4545947.492
306	40.242	-111.9103	0.8	0	8	9	1976	20	58	18.96	0.05	0	5	168	5.1	0.09	2.4	1.2		422571.517	4455014.786
307	40.4693	-111.971	0.2	0	8	11	1976	0	30	21.86	6.51	0	6	159	10.8	0.11	1.3	4.3		417685.302	4480299.775
308	40.468	-111.9693	0.9	0	8	11	1976	1	0	43.06	6.26	0	11	85	10.6	0.15	0.6	2.7		417827.834	4480153.889
309	41.0348	-111.517	0.9	0	8	12	1976	0	27	22.42	7	1	10	147	17.9	0.19	0.8	4.7		456542.303	4542748.927
310	40.4713	-111.9692	0.6	0	8	12	1976	1	34	54.34	6.69	0	12	74	10.6	0.15	0.5	2.3		417840.334	4480520.101
311	40.4558	-111.9637	0.4	0	8	12	1976	21	7	6.01	6.66	0	6	147	10.4	0.2	0.9	5.1		418287.797	4478794.471
312	40.0043	-111.8038	1.5	0	8	13	1976	19	47	35.55	7	1	9	130	12.9	0.19	0.9	4.2		431391.782	4428543.858
313	40.4708	-111.9722	-0.1	0	8	14	1976	14	33	6.56	4.91	0	6	161	10.9	0.11	1.1	4.3		417585.407	4480467.397
314	40.4697	-111.9732	0.5	0	8	16	1976	21	6	8.6	10.34	0	5	160	10.9	0.09	1.5	4.5		417499.288	4480346.229
315	40.7517	-111.6763	0.3	0	8	18	1976	9	2	2.51	7	1	8	196	18.2	0.17	2	3.7		442909.023	4511413.957
316	40.7863	-111.596	0.9	0	8	19	1976	17	41	29.88	2.64	0	8	160	11.1	0.22	1.6	18		449713.809	4515205.629
317	41.0328	-111.4755	0.9	0	8	21	1976	23	30	5.89	7	1	10	187	18.3	0.23	1.3	1.6		460029.489	4542507.069
318	40.4652	-111.9757	1.3	0	8	23	1976	7	50	59.24	6.63	0	13	91	10.9	0.11	0.7	1.1		417281.832	4479849.061
319	40.4575	-111.9678	0.4	0	8	23	1976	7	55	18.09	6.95	0	8	91	10.7	0.16	0.7	2.9		417942.221	4478986.976

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
320	40.484	-111.9848	-0.3	0	8	25	1976	0	22	3.02	9	0	7	175	10.8	0.11	1.2	2.1		416533.622	4481944.465
321	41.0303	-111.509	0.6	0	8	25	1976	19	31	44.33	4.11	0	5	187	17.5	0.14	1.4	13.1		457211.852	4542245.426
322	40.625	-111.3582	1	0	9	3	1976	1	23	31.06	5.1	0	6	95	12.9	0.13	0.8	9.7		469704.71	4497191.522
323	41.0313	-111.5028	0.8	0	9	4	1976	19	5	46.36	2.04	0	7	182	17.6	0.21	1.1	42.2		457733.685	4542353.415
324	40.3888	-110.9415	1	0	9	7	1976	16	4	40.73	7	1	6	299	26.8	0.24	9.7	8.9		504965.106	4470913.311
325	41.0335	-111.5247	0.6	0	9	10	1976	0	46	18.47	7	1	6	181	17.7	0.22	1.4	5		455894.191	4542608.476
326	40.7702	-111.6302	0.6	0	9	10	1976	8	13	5.1	1.81	0	7	132	14.1	0.26	0.9	48.3		446815.403	4513438.6
327	41.0332	-111.5257	1	0	9	11	1976	3	0	30.12	7	1	9	145	17.7	0.16	0.8	4.7		455809.931	4542575.678
328	41.0235	-111.4802	0.3	0	9	11	1976	18	8	1.53	7	1	5	198	17.2	0.15	3.5	6.5		459628.726	4541476.834
329	40.8652	-111.622	0.8	0	9	14	1976	13	4	18.14	4.19	0	8	203	7.5	0.11	1.2	1.7		447582.267	4523979.32
330	40.8773	-111.5667	0.9	0	9	15	1976	2	45	0.8	0.13	0	6	151	2.8	0.27	2.2	3.2		452251.274	4525290.883
331	40.8347	-111.5927	0.7	0	9	15	1976	18	38	53.53	5.35	0	5	158	6.6	0.09	1.7	6.6		450028.566	4520576.467
332	41.1095	-111.5205	0.9	0	9	16	1976	13	30	56.16	7	1	10	179	26.2	0.13	1	6.8		456297.597	4551043.236
333	40.4665	-111.9773	0.1	0	9	19	1976	21	7	58.18	8.61	0	7	159	10.8	0.12	1.1	2.1		417147.782	4479994.864
334	40.4938	-111.9807	-0.5	0	9	20	1976	3	43	43.12	5.94	0	5	181	11.6	0.02	2.6	5.9		416893.213	4483028.417
335	40.4673	-111.9748	-0.4	0	9	20	1976	6	47	57.45	8.65	0	6	159	11.1	0.1	1.4	3.5		417360.707	4480081.322
336	41.0352	-111.4998	0.7	0	9	24	1976	2	9	6.21	7	1	7	190	18.1	0.23	1.4	5.2		457988.351	4542784.909
337	40.2598	-111.3197	0.6	0	9	26	1976	2	9	0.32	12.82	0	6	207	17.8	0.01	1.4	4.2		472814.184	4456642.142
338	41.0323	-111.5108	1	0	10	6	1976	21	53	45.85	7	1	7	249	27.4	0.19	3	9.1		457061.837	4542468.331
339	41.0512	-111.6122	1.1	0	10	7	1976	18	46	39.72	7	1	7	183	19.1	0.19	1.7	7.4		448552.769	4544621.283
340	41.0315	-111.5113	1.1	0	10	7	1976	23	32	46.37	7	1	6	222	27.4	0.12	1.7	11		457019.286	4542379.769
341	40.5685	-111.6583	0.4	0	10	8	1976	22	16	16.89	2.19	0	11	89	8.9	0.24	0.5	13.9		444276.287	4491066.462
342	41.0247	-111.5483	0.7	0	10	10	1976	1	11	28.17	7	1	8	203	24.3	0.08	1.7	9.2		453904.251	4541643.776
343	40.9763	-111.6002	0.4	0	10	13	1976	14	9	4.44	2.02	0	5	228	12.6	0.06	2.3	62.2		449504.053	4536299.581
344	41.0385	-111.4973	0.1	0	10	13	1976	22	12	24.67	7	1	5	252	18.5	0.19	3.3	6.9		458200.581	4543150.044
345	40.9137	-111.6167	-0.2	0	10	16	1976	3	46	35.29	8.25	0	5	178	8.2	0.12	1	4.3		448066.851	4529360.063
346	40.0508	-111.0743	1.3	0	10	16	1976	15	17	26.46	7	1	8	176	43	0.34	1.1	1.9		493662.476	4433398.191
347	41.0358	-111.5163	1	0	10	16	1976	19	12	5.2	7	1	13	147	18	0.2	0.7	4.4		456601.8	4542859.589
348	41.0338	-111.5235	0.4	0	10	19	1976	21	16	1.51	7	1	7	227	17.7	0.21	2.2	5.2		455995.262	4542641.173
349	41.1005	-111.32	1.4	0	10	21	1976	12	49	26.4	7	1	19	189	30.9	0.21	1	2.3		473128.411	4549962.943
350	41.044	-111.4972	0.5	0	10	21	1976	22	16	24.87	7	1	5	253	19.1	0.16	3.3	6.2		458212.465	4543760.556
351	40.7573	-111.3957	1	0	10	26	1976	17	17	19.91	7	1	11	164	17.4	0.25	1.1	5.2		466599.213	4511890.928
352	41.0633	-111.6982	1.1	0	10	27	1976	11	8	54.16	7	1	10	150	25.1	0.18	1.2	2		441336.323	4546018.803
353	40.4267	-111.0617	1	0	10	28	1976	20	9	11.64	1.54	0	9	284	16.6	0.1	1.7	66.1		494766.235	4475120.323
354	41.0253	-111.528	-0.2	0	10	28	1976	22	17	7.82	1.38	0	5	243	16.8	0.1	2.8	62.3		455611.288	4541699.861
355	40.8213	-111.6465	0.6	0	10	30	1976	0	37	34.53	1.53	0	13	93	11.2	0.27	0.6	64.9		445481.606	4519121.046
356	40.009	-111.7878	2	0	11	10	1976	20	29	48.17	1.44	0	10	136	9.3	0.33	0.8	62.3		432762.086	4429053.326
357	41.0317	-111.5113	1.2	0	11	11	1976	1	50	19.96	7	1	17	159	17.6	0.34	0.8	1.1		457019.416	4542401.971
358	40.0087	-111.7902	1.8	0	11	11	1976	18	33	13.32	2.45	0	17	135	9.3	0.32	0.7	1.7		432556.951	4429021.842
359	40.4383	-111.9925	-0.2	0	11	14	1976	11	42	8.81	7.38	0	5	156	9.3	0.04	1.6	4		415823.972	4476878.997

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
360	39.9523	-111.1687	1.9	0	11	16	1976	6	12	4.43	7	1	6	293	51.6	0.02	8.2	26.8		485589.8	4422476.63
361	40.5455	-110.8433	1	0	11	17	1976	0	15	13.16	7	1	6	236	38	0.39	2.3	15.9		513268.823	4488317.039
362	40.4492	-112.0078	-0.2	0	11	21	1976	3	9	47.62	8.79	0	5	170	8	0.03	1.2	3.5		414540.132	4478103.607
363	40.4528	-111.9967	-0.1	0	11	21	1976	3	11	31.03	8.17	0	8	150	9	0.09	1.1	2.1		415485.921	4478492.529
364	40.455	-112.0052	-0.2	0	11	21	1976	3	23	28.17	8.89	0	6	154	8.3	0.11	1.6	3.5		414767.941	4478744.904
365	40.4372	-111.4542	0.9	0	11	22	1976	23	8	0.17	1.4	0	5	148	6.7	0.29	1	62.3		461477.953	4476383.016
366	40.4658	-111.9775	0.1	0	11	25	1976	19	34	49.46	7.52	0	5	158	10.8	0.14	1.4	5.4		417129.966	4479917.35
367	40.4737	-111.978	0	0	11	25	1976	19	38	23.48	5.63	0	5	165	11	0.12	1.4	6.7		417097.293	4480794.734
368	40.4727	-111.978	1	0	11	26	1976	10	18	26.44	0.99	0	9	86	10.9	0.11	0.6	62.3		417096.063	4480683.733
369	41.0545	-111.3732	0.6	0	11	26	1976	22	49	17.32	7	1	5	263	24.2	0.29	4	10.5		468639.145	4544874.188
370	40.0142	-111.8332	1.8	0	12	2	1976	21	13	21.21	1.19	0	14	118	8.3	0.36	0.7	8.3		428892.593	4429665.73
371	40.4708	-111.819	0.6	0	12	9	1976	18	20	59.06	7.58	0	9	83	2.3	0.24	0.7	1.5		430572.514	4480335.625
372	40.5238	-111.35	0.8	0	12	11	1976	2	35	0.08	7	1	11	114	14.7	0.24	0.7	4.1		470353.604	4485955.37
373	41.0398	-111.4748	0.7	0	12	14	1976	1	2	16.12	7	1	5	242	19.1	0.06	6.2	10		460092.559	4543283.824
374	40.7137	-112.0213	0.7	0	12	15	1976	17	46	15.52	1.74	0	10	83	12.6	0.38	0.7	54.6		413735.827	4507477.359
375	41.0247	-111.5077	1.5	0	12	16	1976	21	41	49.35	7	1	11	148	16.9	0.22	0.8	1.7		457317.518	4541623.13
376	40.4575	-111.402	1	0	12	17	1976	23	26	50.52	7	1	8	133	11.7	0.58	0.8	1.1		465915.458	4478614.845
377	40.5152	-111.3487	0.2	0	12	20	1976	19	38	22.85	4.75	0	7	114	13.9	0.16	1.2	9.7		470459.945	4485000.329
378	40.5127	-111.3397	1.1	0	12	20	1976	20	54	12.65	7.33	0	10	118	13.2	0.12	1.3	5.2		471221.311	4484719.852
379	40.5148	-111.3285	1.8	0	12	21	1976	0	47	36.52	6.34	0	16	124	12.9	0.33	0.6	0.8		472171.022	4484949.359
380	40.5003	-111.3347	0.7	0	12	23	1976	3	12	42.69	1.43	0	6	119	11.8	0.2	0.7	62.3		471639.679	4483341.829
381	39.961	-111.7745	1.3	0	12	23	1976	17	43	17.23	3.5	0	7	149	8.2	0.28	1.8	12.8		433850.96	4423715.773
382	41	-111.5813	0.9	0	12	24	1976	16	18	57.3	7.94	0	11	150	14.5	0.15	0.9	1.2		451111.661	4538919.768
383	40.4625	-111.9993	-0.2	0	12	26	1976	10	1	12.33	1.2	0	6	93	8.9	0.41	0.8	1.9		415277.64	4479571.738
384	40.5058	-111.346	0.9	0	12	29	1976	14	38	56.58	7.11	0	7	114	12.9	0.15	0.9	1.7		470684.583	4483956.025
385	40.494	-111.3205	0.7	0	12	29	1976	17	29	50.45	15.45	0	6	126	10.6	0.25	1.9	1.8		472840.357	4482638.061
386	40.9468	-111.6698	1.3	0	1	4	1977	15	42	9.07	4.5	0	11	129	14	0.13	0.7	1.2		443623.341	4533067.348
387	41.0373	-111.4955	1	0	1	22	1977	19	9	10.06	7	1	11	165	18.4	0.19	0.9	1.2		458351.12	4543015.97
388	40.9652	-111.6635	0.3	0	1	30	1977	13	8	41.54	4.74	0	6	198	14.9	0.26	3.8	5.7		444169.117	4535105.883
389	40.4927	-111.8757	1.7	0	2	5	1977	23	45	16.53	1.32	0	6	151	3.1	0.09	1	2		425790.06	4482812.7
390	40.4677	-111.8368	1.7	0	2	8	1977	19	10	55.92	5.04	0	6	100	1.3	0.19	1	1.7		429060.31	4480005.674
391	40.9052	-111.6365	0.7	0	2	10	1977	10	55	29.72	1.64	0	7	121	9.3	0.33	1.2	53.9		446392.591	4528428.432
392	40.9535	-111.6875	1.8	0	2	15	1977	7	25	11.54	8.85	0	24	128	14.9	0.18	0.6	0.7		442139.383	4533822.678
393	40.063	-111.3155	1.3	0	2	24	1977	21	0	40.8	7	1	10	132	34.9	0.32	0.8	1.6		473093.757	4434797.321
394	41.1538	-111.6172	2.3	1	3	9	1977	15	10	52.62	7	1	21	155	30.5	0.22	0.6	1		448213.246	4556014.111
395	40.4537	-111.4035	0.9	0	3	15	1977	23	35	29.12	2.66	0	5	149	11.4	0.4	10.2	14.7		465786.349	4478193.628
396	40.5512	-112.034	0.5	0	4	2	1977	6	9	4.91	16.51	0	7	191	13.1	0.38	1.3	2.1		412451.091	4489451.57
397	40.4602	-111.981	1.7	0	4	2	1977	10	5	50.97	8.41	0	12	153	10.4	0.15	0.8	1.1		416826.332	4479299.032
398	40.4583	-111.9812	0.7	0	4	2	1977	12	39	27.59	7.84	0	10	137	10.4	0.14	0.8	2.3		416807.031	4479088.318
399	40.4597	-111.9755	1	0	4	2	1977	21	0	59.36	6.72	0	9	81	10.9	0.18	0.7	2.5		417292.042	4479238.364

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
400	40.9602	-111.4775	0.6	0	4	3	1977	21	34	12.21	9.5	0	8	240	10.7	0.18	1.4	1.6		459817.306	4534448.664
401	41.069	-111.5527	1.2	0	4	5	1977	20	42	5.29	7	1	9	156	21.7	0.27	0.9	1.4		453565.493	4546563.902
402	40.9512	-111.5363	1.2	0	4	10	1977	21	51	35.12	11.74	0	10	190	8.5	0.25	1	1		454863.004	4533478.278
403	40.748	-112.204	0.2	0	4	25	1977	16	50	37.39	11.35	0	5	180	8.4	0.22	1.5	1.9		398355.957	4511480.434
404	40.7468	-112.0475	0.6	0	4	28	1977	9	24	52.55	2.26	0	9	102	15.1	0.19	0.7	28		411566.642	4511177.757
405	40.7665	-111.4968	1.2	0	4	29	1977	8	44	50.93	11.18	0	14	128	12.4	0.12	0.6	1		458071.179	4512955.572
406	41.0523	-111.5872	0.9	0	4	29	1977	16	27	49.6	7	1	8	201	20.3	0.27	1.4	4.8		450654.517	4544728.953
407	40.9473	-111.6792	0.7	0	5	6	1977	13	50	6.75	2.63	0	12	157	14.7	0.14	0.7	11.7		442832.575	4533128.958
408	40.9133	-111.6043	0.8	0	5	7	1977	6	18	37.64	7	1	6	119	7.4	0.17	1.6	4.9		449110.77	4529308.372
409	40.8945	-111.6683	1.8	0	5	22	1977	15	52	49.29	7.82	0	21	89	11.5	0.13	0.6	0.7		443705.238	4527260.609
410	40.034	-111.3428	1.2	0	5	24	1977	9	1	51.69	7	1	11	214	41.6	0.28	1.5	1.2		470753.182	4431587.176
411	39.9997	-111.7958	1.6	0	6	2	1977	21	9	48.78	5.47	0	14	133	12.3	0.19	0.8	1.1		432070.07	4428027.166
412	40.9195	-111.2877	1.6	0	6	18	1977	16	31	32.1	7	1	16	195	21.4	0.24	1.2	1.8		475774.56	4529860.699
413	41.0303	-111.491	0.5	0	6	28	1977	2	26	37.36	5.63	0	7	227	17.7	0.16	2	2.3		458724.994	4542236.757
414	41.0278	-111.5172	1.1	0	6	29	1977	22	15	19.71	7	1	8	206	17.1	0.21	1.4	1.6		456520.887	4541971.951
415	40.3622	-111.4183	1.8	0	7	1	1977	19	48	9.56	5.08	0	14	143	10.8	0.17	0.7	0.8		464483.355	4468043.1
416	40.356	-111.4015	1.2	0	7	1	1977	19	48	57.65	5.97	0	13	188	12.4	0.29	0.8	0.9		465906.676	4467348.306
417	40.3632	-111.4158	1.5	0	7	1	1977	21	9	38.99	4.49	0	15	143	11	0.28	0.7	0.8		464696.146	4468153.097
418	40.349	-111.4167	0.4	0	7	1	1977	22	42	49.06	6.89	0	9	229	11.8	0.18	1.9	1.4		464612.307	4466577.292
419	41.0433	-111.4978	1.8	0	7	2	1977	3	12	36.5	7	1	17	161	19	0.27	0.7	1		458161.595	4543683.135
420	40.6832	-111.4852	1	0	7	6	1977	11	45	16.2	7	1	13	103	21.6	0.41	0.5	0.9		458999.107	4503703.396
421	41.0383	-111.5123	1.7	0	7	6	1977	22	18	39.07	7	1	16	159	18.3	0.21	0.8	0.9		456939.655	4543135.135
422	39.9983	-111.7772	0.2	0	7	7	1977	21	8	10.69	7	1	5	162	63.9	0.06	1.2	2.1		433656.438	4427857.767
423	39.9905	-111.7473	1	0	7	7	1977	21	9	1.76	7	1	9	166	50.6	0.37	0.9	1.4		436201.539	4426970.204
424	40.0665	-111.7637	1.1	0	7	13	1977	8	2	0.96	7	1	7	139	19.9	0.18	1.1	6.5		434873.744	4435417.499
425	41.0323	-111.5182	0.8	0	7	20	1977	19	8	59.35	1.91	0	7	176	17.6	0.15	1.3	57.9		456439.786	4542471.998
426	40.4745	-111.1405	1.8	0	7	21	1977	2	40	28.84	6.99	0	13	180	12	0.25	1	0.8		488090.385	4480433.721
427	40.0173	-111.8245	2.2	0	7	21	1977	21	16	52	0.67	0	21	80	14.6	0.34	0.6	3.3		429638.266	4430002.9
428	40.6663	-111.2815	1.6	0	7	28	1977	4	32	52.08	7	1	11	208	28.3	0.35	1.4	1.1		476206.406	4501752.361
429	41.0347	-111.4407	1.1	0	8	3	1977	21	34	35.65	7	1	15	174	19.5	0.7	0.7	1.5		462955.849	4542702.635
430	41.0735	-111.5335	0.8	0	8	6	1977	19	47	52.16	7	1	13	172	41.1	0.35	0.9	1		455181.623	4547053.408
431	39.9475	-111.9155	2.2	0	8	7	1977	9	26	8.41	2.86	0	15	91	12.4	0.24	0.6	1.2		421792.789	4422331.463
432	40.4895	-112.171	1.8	0	8	10	1977	15	46	7.7	7	1	11	110	20.4	0.34	0.7	1.6		400760.087	4482747.763
433	40.978	-111.1535	0.3	0	8	14	1977	5	34	17.17	7	1	6	217	34.1	0.31	1.9	2		487086.121	4536326.202
434	39.9195	-111.935	1.3	0	8	17	1977	0	45	51.71	7	1	11	152	48.8	0.43	1	1.1		420094.405	4419240.973
435	40.8637	-111.5693	1.4	0	8	19	1977	7	32	27.26	7	1	14	159	28.9	0.33	0.9	1		452022.387	4523782.599
436	41.0503	-111.1262	1.3	0	8	25	1977	2	13	7.26	7	1	11	214	55.7	0.23	1.5	1.4		489394.458	4544348.534
437	41.0403	-111.498	1.8	0	9	8	1977	1	9	51.77	7	1	16	151	18.7	0.28	0.7	0.9		458142.884	4543350.199
438	39.9375	-111.9847	1.6	0	9	21	1977	12	57	25.27	7	1	12	98	17.4	0.25	0.7	1.3		415868.984	4421284.491
439	40.952	-111.5973	1.1	0	9	22	1977	16	45	47.9	10.55	0	6	141	10.2	0.31	1.2	2.8		449729.6	4533600.374

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
440	40.5577	-110.791	2.36	0	9	30	1977	10	27	28.07	7	1	8	290	38.6	0.18	10.8	4.2		517694.2	4489680.438
441	40.7893	-111.561	0.6	0	10	8	1977	13	3	30.17	3.74	0	12	100	9.7	0.33	0.6	1.7		452669.002	4515519.17
442	40.3602	-111.3043	0.9	0	10	9	1977	17	30	13.64	9.19	0	7	250	7.1	0.1	1.8	1.6		474162.02	4467781.576
443	40.3682	-111.291	1.2	0	10	9	1977	17	48	9.76	9.5	0	6	253	5.8	0.15	3.1	1.7		475294.24	4468665.756
444	41.1178	-111.4507	0.6	0	10	11	1977	9	16	56.16	7	1	8	202	27.9	0.17	1	8.4		462162.953	4551931.978
445	41.119	-111.4557	1.4	0	10	11	1977	9	29	34.67	7	1	6	200	28	0.08	1.6	15.7		461743.89	4552067.376
446	41.0617	-111.5108	0.8	0	10	14	1977	20	14	22.22	7	1	8	181	20.9	0.48	1.1	7.6		457080.944	4545732.055
447	41.0422	-111.6368	0.9	0	10	18	1977	2	55	20.13	7.58	0	13	186	16.9	0.22	0.9	1		446478.164	4543636.979
448	40.7665	-111.9905	0.5	0	10	19	1977	7	31	43.55	1.69	0	7	155	15.5	0.2	1.3	70.3		416403.525	4513308.732
449	41.1715	-111.6828	0.4	0	10	23	1977	12	25	27.29	7	1	10	205	20.7	0.43	0.9	4.6		442724.396	4558020.148
450	41.1615	-111.678	1.1	0	10	23	1977	12	29	46.39	7	1	16	136	20.1	0.39	0.6	1.1		443118.391	4556906.863
451	40.7762	-111.9863	0.6	0	10	25	1977	0	55	25.25	2.57	0	9	97	15	0.19	0.8	19.3		416770.108	4514381.511
452	40.9143	-111.5577	1.3	0	10	27	1977	10	18	53.74	8.17	0	6	165	4.9	0.23	1.1	1.9		453035.77	4529393.318
453	40.0558	-111.3138	1.4	0	11	3	1977	0	55	21.97	7	1	11	217	35.6	0.37	1.1	1.6		473235.919	4433997.668
454	40.0573	-111.334	1.2	0	11	3	1977	0	58	55.57	7	1	7	214	34.3	0.31	2.7	24		471513.677	4434170.424
455	40.972	-111.4508	2	0	11	6	1977	17	9	25.55	5.95	0	21	154	12.9	0.2	0.7	0.9		462070.934	4535746.642
456	40.7848	-111.5007	0.6	0	11	6	1977	22	33	15.51	8.56	0	6	199	10.3	0.06	1.8	5		457753.62	4514988.849
457	40.891	-111.3045	0.6	0	11	9	1977	1	36	42.96	11.17	0	7	259	19.4	0.08	1.5	4.2		474348.924	4526701.763
458	40.548	-111.0362	1.3	0	11	17	1977	11	59	35.41	7	1	6	279	21	0.03	6	1.6		496934.822	4488583.376
459	40.9677	-112.063	0.6	0	11	20	1977	16	51	7.44	7	1	5	228	16.3	0.29	5.2	6.4		410555.713	4535715.493
460	40.2307	-111.1407	1.2	0	12	5	1977	6	16	2.2	7	1	6	249	22.4	0.45	2	1.5		488030.404	4453372.666
461	40.2425	-111.1498	1.6	0	12	5	1977	6	54	1.75	7	1	5	248	20.9	0.3	2	1.5		487258.462	4454683.672
462	40.7315	-111.7945	1.2	0	12	7	1977	21	8	47.98	1.07	0	13	89	5.6	0.25	0.8	18.8		432910.592	4509255.24
463	39.9903	-111.8483	1	0	12	15	1977	8	21	7.23	0.16	0	6	145	11.1	0.25	1	2.6		427578.656	4427025.171
464	41.0863	-111.478	0.9	0	1	1	1978	23	47	56.3	7	1	11	221	24	0.13	1.4	7.2		459851.884	4548447.315
465	40.817	-111.7912	0.5	0	1	4	1978	18	8	28.09	5.99	0	14	73	4.3	0.21	0.6	0.8		433274.854	4518743.797
466	41.0877	-111.5332	1.3	0	1	5	1978	5	35	49.94	7	1	11	209	23.7	0.25	1.3	5.1		455216.466	4548629.62
467	40.0422	-111.8167	1	0	1	12	1978	21	6	34.35	7	1	7	232	48.1	0.16	2	18.6		430329.255	4432760.489
468	39.8698	-111.9797	1.8	0	1	25	1978	10	16	41.75	2.11	0	12	111	16.2	0.33	0.5	2.7		416213.752	4413765.679
469	39.8388	-111.9615	1.6	0	1	26	1978	14	57	19.68	9.34	0	8	135	15.5	0.31	0.9	3.9		417733.281	4410308.077
470	39.8563	-111.988	1.3	0	1	26	1978	15	29	38.13	2.94	0	8	137	17.2	0.25	0.6	16.8		415487.342	4412275.121
471	39.8598	-112.0003	0.5	0	1	27	1978	6	55	42.83	2.64	0	7	233	18.1	0.32	2.2	24.4		414439.538	4412675.289
472	41.0612	-111.1145	1.2	0	1	29	1978	18	2	20.08	7	1	12	215	73	0.31	1.5	1.2		490379.286	4545557.193
473	39.8803	-111.9698	1.1	0	1	30	1978	7	22	31.56	2.82	0	9	132	15.3	0.43	0.6	10.7		417073.086	4414921.847
474	39.8648	-111.9637	1.2	0	1	30	1978	13	5	16.41	7.87	0	9	133	15	0.22	0.8	3.7		417576.15	4413195.849
475	39.859	-111.9527	1.2	0	1	30	1978	14	24	21.29	9.26	0	8	132	14.2	0.26	0.8	3.1		418510.118	4412542.019
476	39.8757	-111.963	1.1	0	1	31	1978	4	29	4.71	8.38	0	6	131	14.7	0.34	0.7	4.8		417649.057	4414405.001
477	39.855	-111.3653	1.2	0	2	7	1978	18	53	19.44	7	1	6	278	62.6	0.34	4	2.2		468752.209	4411727.676
478	40.5508	-112.0137	0.5	0	2	7	1978	21	45	32.64	9.71	0	16	93	13.9	0.15	0.6	1.5		414169.413	4489387.197
479	40.575	-112.0178	0.3	0	2	8	1978	0	18	35.84	3.5	0	8	134	16	0.42	1	13.3		413853.292	4492077.491

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
480	40.304	-111.264	1.4	0	2	19	1978	22	37	4.85	1.15	0	18	148	12.1	0.19	0.6	1.1		477565.277	4461532.566
481	40.684	-111.5672	0.9	0	2	20	1978	20	3	49.98	7	1	16	84	21.3	0.37	0.5	1.8		452070.396	4503833.684
482	40.7407	-111.8005	1.7	0	2	25	1978	16	16	26.14	1.16	0	8	117	4.5	0.21	0.7	1.8		432413.245	4510281.098
483	40.7443	-112.2028	2.7	1	2	28	1978	0	20	6.5	10.56	0	15	85	30	0.35	0.5	1.2		398451.637	4511068.315
484	41.1067	-111.592	2.5	0	3	1	1978	23	5	2.37	11.55	0	16	137	22.4	0.27	0.7	1.3		450292.15	4550770.723
485	40.7508	-112.2005	2	0	3	3	1978	17	8	26.04	7	1	21	84	31.1	0.33	0.5	0.7		398655.692	4511787.21
486	40.7565	-112.2028	1.2	0	3	3	1978	17	11	55.66	7	1	16	84	30.6	0.28	0.5	1.6		398470.198	4512422.616
487	40.7668	-112.085	1.4	0	3	9	1978	4	49	53.78	0.06	0	13	76	14.1	0.18	0.5	1.1		408428.165	4513436.373
488	40.7488	-112.0848	2.3	0	3	9	1978	5	51	12.16	9.42	0	15	69	12.7	0.21	0.5	1.1		408420.343	4511438.024
489	40.7462	-112.0732	0.9	0	3	9	1978	6	7	6.91	1.52	0	6	146	13.2	0.1	1.3	68.3		409396.112	4511137.365
490	40.7637	-112.0878	3.2	1	3	9	1978	6	30	51.88	8.75	0	18	70	13.7	0.26	0.5	0.9		408187.579	4513095.174
491	40.7623	-112.0878	2.5	1	3	9	1978	6	46	20.01	7.63	0	24	70	13.6	0.31	0.4	0.7		408185.653	4512939.763
492	40.7547	-112.091	2.7	1	3	13	1978	13	35	43.7	8.33	0	18	71	7.4	0.23	0.5	0.8		407905.067	4512099.457
493	40.7532	-112.0507	1.8	0	3	13	1978	20	18	41.5	1.49	0	14	112	7.6	0.45	0.6	2		411304.988	4511891.434
494	40.7492	-112.0788	1	0	3	13	1978	22	18	52.32	1.49	0	10	129	13.1	0.09	0.9	69.7		408927.422	4511476.183
495	41.0635	-111.1167	1.6	0	3	31	1978	22	32	54.84	7	1	16	226	44	0.42	1.3	0.9		490194.776	4545812.763
496	40.4677	-111.4028	0.4	0	4	6	1978	5	31	9.29	9.34	0	7	124	12.1	0.1	1.9	5.6		465852.794	4479747.35
497	39.7778	-111.5833	1.3	0	4	7	1978	18	32	42.37	7	1	8	188	69.4	0.24	1.8	3		450048.519	4403258.351
498	40.3602	-111.6732	0.4	0	5	1	1978	13	26	39.83	7.83	0	8	204	13.8	0.07	1.3	2.7		442838.712	4467954.615
499	40.5195	-111.3465	0.1	0	5	8	1978	0	59	16.55	3.95	0	7	115	14.1	0.07	1	8.7		470648.193	4485476.896
500	40.7115	-112.0695	0.2	0	5	10	1978	6	17	52.37	8.37	0	6	177	11.6	0.18	1.5	2.6		409661.567	4507281.603
501	40.0233	-111.813	1.5	0	5	10	1978	21	20	52.24	7	1	8	235	49.7	0.14	2	21.9		430625.75	4430659.837
502	40.534	-112.165	0.9	0	6	2	1978	16	47	49.69	7	1	8	132	15.6	0.09	0.8	5.1		401333.841	4487680.696
503	40.7225	-112.055	2.7	1	6	3	1978	8	42	45.8	6.35	0	11	107	10.9	0.29	0.5	1		410901.041	4508487.866
504	40.7063	-112.0507	1.7	0	6	3	1978	8	50	12.87	6.64	0	10	99	12.7	0.19	0.8	3.5		411242.686	4506685.202
505	40.7545	-112.0815	0.1	0	6	4	1978	23	36	52.07	5.7	0	10	100	7.3	0.26	0.5	2.2		408706.734	4512067.329
506	40.3382	-111.8625	0.5	0	6	11	1978	20	17	40.06	1.74	0	10	194	15.5	0.25	0.9	65.7		426741.305	4465652.144
507	40.7363	-112.0443	0.6	0	6	12	1978	5	59	20.65	6.63	0	10	118	9.6	0.16	0.8	2.7		411822.934	4510008.961
508	40.3465	-111.9263	1.7	0	6	14	1978	20	9	0.45	0.71	0	17	85	16.1	0.24	0.5	62.3		421331.853	4466628.199
509	40.757	-112.0693	0.9	0	6	19	1978	23	18	11.53	8.56	0	12	101	7	0.24	0.5	1.9		409739.979	4512332.228
510	40.7525	-112.0715	1.8	0	6	20	1978	5	37	39.81	8.35	0	28	67	7.5	0.24	0.4	0.6		409548.174	4511834.959
511	40.8802	-111.5003	0.4	0	6	20	1978	9	50	2.18	12.4	0	6	194	2.9	0.21	1.4	1.2		457847.834	4525578.712
512	40.7408	-112.0462	1.4	0	6	20	1978	16	48	23.11	4.15	0	17	70	9	0.29	0.5	1.6		411668.455	4510510.404
513	40.6328	-111.6038	0.2	0	6	21	1978	17	5	50.73	6.82	0	10	69	14.9	0.16	0.6	5.3		448938.577	4498170.892
514	39.9143	-111.3038	2	0	6	23	1978	15	8	31.62	7	1	6	219	41.8	0.72	2.1	2.1		474035.312	4418289.596
515	40.7323	-112.0482	0.9	0	6	30	1978	15	19	8.12	6.36	0	8	113	9.9	0.13	0.8	3.3		411488.325	4509568.857
516	40.7493	-112.0507	2.2	0	7	3	1978	12	44	8.2	3.01	0	20	61	8	0.32	0.5	1		411299.805	4511458.505
517	40.7365	-112.0467	0.3	0	7	3	1978	12	47	5.3	1.65	0	10	84	9.5	0.17	0.8	44.8		411620.548	4510033.576
518	40.7275	-112.0508	0.3	0	7	3	1978	13	4	17.53	1.89	0	9	80	10.4	0.18	0.8	28.7		411262.396	4509038.648
519	40.357	-111.8635	0.5	0	7	17	1978	6	6	9.38	7	1	9	84	22.5	0.28	0.7	4.7		426676.729	4467739.753

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
520	40.7353	-112.0603	0.7	0	8	12	1978	3	6	2.27	6.58	0	13	61	9.4	0.27	0.5	2.3		410470.586	4509914.148
521	40.1658	-111.2577	2.1	0	9	3	1978	1	20	48.89	7	1	22	145	27.4	0.45	0.7	0.8		478056.087	4446191.491
522	40.2525	-111.3235	1.5	0	9	8	1978	22	35	36.47	7	1	11	160	24.9	0.38	0.9	1		472488.092	4455833.048
523	39.917	-111.6252	1.6	0	9	19	1978	13	22	33.3	2.26	0	21	99	14.6	0.39	0.5	0.8		446568.369	4418732.161
524	40.274	-111.1802	1	0	9	27	1978	23	3	41.66	0.63	0	9	254	16.7	0.58	2.9	2.5		484679.835	4458184.834
525	41.195	-111.5377	0.6	0	9	29	1978	19	1	11.84	2.58	0	5	302	15.1	0.23	4.3	51.1		454912.058	4560543.624
526	41.1908	-111.5758	0.9	0	9	29	1978	19	30	43.76	1.53	0	5	305	12.3	0.07	2.1	65.7		451714.145	4560097.813
527	40.8883	-111.4343	0.9	0	9	30	1978	22	26	6.88	1.29	0	11	158	8.5	0.37	0.9	1.9		463413.061	4526448.191
528	40.3038	-111.2285	1.4	0	10	3	1978	21	5	31.39	0.23	0	8	244	12.3	0.51	2.7	7.6		480582.013	4461501.98
529	40.7837	-111.8578	0.4	0	10	26	1978	20	51	17.61	11.1	0	11	88	2.4	0.53	1	1.2		427621.978	4515100.084
530	40.7427	-111.5518	1.5	0	10	27	1978	20	37	40.57	7	1	18	95	22	0.47	0.7	0.8		453412.669	4510341.378
531	40.738	-111.543	0.4	0	10	27	1978	20	43	50.02	7	1	10	118	22.9	0.22	0.6	6		454152.411	4509815.02
532	40.0722	-111.7498	0.8	0	11	11	1978	6	50	28.65	7	1	11	142	20.7	0.33	0.7	5.7		436064.44	4436040.082
533	39.9438	-111.9708	0.7	0	11	12	1978	12	46	40.19	2.96	0	8	125	16.5	0.33	0.7	18.1		417064.203	4421970.728
534	40.4462	-111.8955	1	0	11	18	1978	18	13	13.52	3.67	0	13	173	17.5	0.33	0.8	1.1		424059.752	4477667.977
535	40.7138	-112.0625	0.9	0	11	19	1978	4	26	20.6	6.79	0	20	60	11.8	0.23	0.4	1.8		410255.941	4507529.743
536	39.9078	-112.0132	1.7	0	11	20	1978	9	43	44.33	7	1	17	160	19.1	0.42	0.8	0.9		413396.536	4418015.29
537	40.0288	-111.9523	1.7	0	11	20	1978	18	52	53.04	7	1	12	294	48	0.28	3	1.2		418745.464	4431388.073
538	40.726	-112.0808	1.4	0	11	24	1978	1	30	7.35	4	0	17	101	10.4	0.36	0.5	1.1		408726.872	4508902.889
539	41.0508	-111.53	0	0	11	25	1978	12	2	20.63	8.54	0	8	194	19.6	0.11	4.7	6.4		455460.341	4544531.658
540	40.7537	-111.3943	1.7	0	11	28	1978	23	26	2.79	1.62	0	16	136	17.1	0.2	0.5	2		466715.591	4511490.777
541	40.8022	-111.9143	0.8	0	11	30	1978	22	2	0.62	1.68	0	7	210	9.2	0.23	2.2	59.1		422876.069	4517201.885
542	40.728	-112.0277	1.3	0	12	1	1978	12	12	48.4	3.72	0	16	87	10.9	0.3	0.4	5.2		413213.818	4509071.062
543	40.7225	-112.0217	1.7	1	12	1	1978	15	45	38.9	1.97	0	22	49	11.6	0.32	0.4	1.1		413713.404	4508454.611
544	40.885	-111.8022	1.2	0	12	7	1978	22	14	43.3	7	1	7	337	39.3	0.3	5.3	23.1		432416.305	4526300.787
545	40.8062	-111.5623	1	0	12	8	1978	10	53	2.14	10.37	0	16	99	7.9	0.29	0.5	1.5		452571.352	4517395.88
546	40.8067	-111.5537	2.3	1	12	10	1978	6	35	29.83	7	1	17	184	21.7	0.36	0.9	0.9		453297.095	4517446.766
547	40.8085	-111.5645	1.5	0	12	10	1978	7	4	48.51	7	1	17	183	20.8	0.43	0.9	1.1		452387.43	4517652.387
548	40.846	-111.674	1	0	12	10	1978	14	58	17.06	7	1	6	351	43	0.32	8.8	23		443183.646	4521880.399
549	40.812	-111.5652	2.7	1	12	10	1978	14	59	7.18	6.86	0	29	129	7.4	0.36	0.5	0.7		452330.893	4518041.291
550	40.825	-111.8857	1.4	0	12	27	1978	22	32	11.67	5.85	0	17	89	8.2	0.32	0.4	2.2		425314.167	4519708.099
551	40.9022	-111.346	1	0	12	29	1978	23	50	48.21	7	1	7	193	41.3	0.32	2.1	17.2		470857.875	4527958.042
552	40.0083	-111.6742	1.3	0	12	31	1978	5	52	51.07	0.14	0	6	141	16.7	0.37	1.6	6.1		442457.226	4428896.099
553	40.7203	-112.0133	0.8	0	1	6	1979	7	49	0.52	5.65	0	12	176	18.6	0.36	0.8	1.8		414420.011	4508202.176
554	40.3605	-111.8683	2.4	0	1	7	1979	13	58	1.71	4.15	0	21	79	13.1	0.53	0.4	4.9		426272.949	4468132.239
555	41.199	-111.5922	1	0	1	9	1979	1	52	23.43	1.88	0	7	277	10.6	0.1	3.4	34.4		450345.053	4561017.36
556	41.0385	-111.1085	1	0	1	11	1979	21	54	15.61	7	1	10	229	41.4	0.31	2	11.5		490880.295	4543036.611
557	41.0498	-111.1425	1.2	0	1	11	1979	22	3	2.53	7	1	9	223	42.1	0.36	2.5	18.5		488024.555	4544295.138
558	40.8233	-111.9108	0.7	0	1	21	1979	0	2	51.21	2.18	0	10	208	9.9	0.43	1.6	15.9		423195.646	4519541.079
559	40.7307	-111.9727	1.6	0	1	28	1979	15	29	55.34	2.1	0	12	131	15	0.28	0.9	2.2		417861.793	4509317.872

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
560	41.2012	-111.6377	1.1	0	1	28	1979	15	44	21.17	1.39	0	7	306	7.1	0.38	8.1	5.8		446531.726	4561288.564
561	40.4642	-111.449	0.1	0	1	28	1979	20	22	28.94	10.79	0	6	170	8.7	0.03	1.2	1.9		461934.219	4479377.746
562	40.8815	-112.0115	0.7	0	1	31	1979	9	42	5.79	7	1	6	334	46.4	0.2	18.8	68.3		414778.483	4526094.946
563	40.3583	-110.9878	1.5	0	1	31	1979	20	18	19.43	7	1	11	197	23.5	0.42	1.6	2.1		501035.925	4467526.319
564	41.031	-111.1358	-0.1	0	2	1	1979	22	30	0.97	7	1	5	223	40.1	0.12	3.1	54.8		488584.363	4542207.246
565	41.0468	-111.0928	0.8	0	2	6	1979	19	18	48.01	7	1	9	225	42.6	0.25	2.4	20		492200.901	4543956.474
566	40.9228	-111.6103	1.7	0	2	11	1979	7	5	6.66	6.21	0	24	122	22.3	0.3	0.5	0.8		448612.854	4530366.463
567	40.5238	-111.4692	1.2	0	2	13	1979	5	5	7.11	7	1	7	150	13.2	0.45	4.1	20.2		460256.858	4486002.271
568	40.9553	-111.6563	0.3	0	3	3	1979	19	24	40.97	7	1	7	216	23.2	0.08	1.9	5.3		444766.72	4534002.312
569	40.4692	-111.8955	1.7	0	3	3	1979	22	47	16.05	3.07	0	21	118	4.4	0.25	0.5	0.9		424085.646	4480221.005
570	40.2832	-111.3645	0.7	0	3	6	1979	6	3	54.12	1.11	0	7	237	17.1	0.18	2.3	2.6		469015.271	4459254.144
571	41.0947	-111.9875	1	0	3	22	1979	0	23	32.06	7	1	5	213	79.7	0.48	8.1	65.7		417068.154	4549739.529
572	40.4958	-111.3683	0.5	0	3	22	1979	10	32	0.17	8.42	0	10	102	13.3	0.18	0.7	2.9		468790.54	4482853.672
573	40.7202	-112.0408	0.4	0	3	23	1979	17	44	11.55	5.73	0	9	85	11.4	0.4	0.7	3.2		412097.282	4508218.239
574	40.7428	-112.0568	1.4	0	3	24	1979	2	5	43.03	2.68	0	11	103	14.2	0.27	0.5	13		410776.146	4510743.139
575	40.466	-111.881	2	0	3	27	1979	21	4	19.59	1	0	14	64	3.3	0.27	0.5	1.6		425311.328	4479853.431
576	41.1232	-111.4907	1.6	0	4	4	1979	21	42	55.24	7	1	11	200	28.9	0.63	1	1.7		458808.249	4552549.587
577	40.4825	-111.8887	1.5	0	4	6	1979	1	3	31.64	0.8	0	13	75	3.8	0.26	0.5	1.1		424676.977	4481691.499
578	40.06	-111.2807	0.9	0	4	6	1979	3	10	9	7	1	6	270	39.2	0.19	2.2	14.5		476060.5	4434454.408
579	40.3727	-111.3885	1.4	0	4	12	1979	12	50	20.55	1.57	0	11	161	12.1	0.3	0.9	62.5		467018.712	4469197.039
580	40.909	-111.4522	1.7	0	4	18	1979	3	11	24.07	7	1	16	155	32.5	0.51	0.6	1.3		461916.973	4528753.694
581	40.4863	-111.8865	1.5	0	4	20	1979	16	19	38.92	0.13	0	15	114	3.7	0.36	0.5	0.7		424867.681	4482111.429
582	40.3202	-111.3782	0.7	0	4	24	1979	21	8	31.91	7	1	8	212	14.6	0.2	1.3	4		467868.219	4463365.892
583	40.4782	-111.8792	1.2	0	4	27	1979	0	35	27.83	1.1	0	12	115	2.9	0.37	0.7	1.7		425477.418	4481206.126
584	40.2845	-111.6023	1.4	0	4	29	1979	12	44	39.93	0.85	0	11	181	0.8	0.23	1	0.5		448801.698	4459508.714
585	40.721	-112.104	1.5	0	5	6	1979	7	48	40.48	6.49	0	11	77	11.3	0.29	0.7	4		406760.626	4508372.228
586	40.471	-111.9328	0.4	0	5	12	1979	17	6	58.32	9.18	0	8	152	7.5	0.29	0.9	1.5		420925.676	4480453.555
587	40.4733	-111.9222	0.6	0	5	12	1979	21	38	51.82	7.13	0	13	79	6.6	0.23	0.5	1.9		421826.928	4480699.416
588	39.9547	-111.9023	0.6	0	5	13	1979	7	22	14.96	14.41	0	7	126	12	0.47	4.5	4.1		422928.507	4423119.117
589	39.9618	-111.9113	1.4	0	5	13	1979	7	31	8.47	13.43	0	6	130	13.1	0.3	5.1	5		422167.795	4423914.973
590	40.4792	-111.9313	1.3	0	5	14	1979	1	18	43.55	9.05	0	15	79	7.4	0.25	0.5	1.2		421062.438	4481362.426
591	40.4802	-111.9227	0.9	0	5	14	1979	4	38	2.45	8.83	0	12	120	6.6	0.25	0.6	1.2		421792.55	4481465.771
592	40.4802	-111.9182	1.3	0	5	15	1979	8	48	6.18	3.74	0	15	78	6.2	0.38	0.5	1.5		422173.973	4481461.793
593	39.8868	-111.741	1	0	5	26	1979	9	52	47.18	16.42	0	7	207	4.3	0.28	2	1.5		436643.823	4415455.98
594	39.9	-111.901	2.5	0	5	26	1979	9	55	26.97	5.08	0	25	67	9.4	0.32	0.6	0.8		422978.269	4417046.772
595	39.8955	-111.8913	0.9	0	5	26	1979	10	3	22.79	6.71	0	6	114	8.6	0.14	10	13.3		423802.499	4416538.994
596	39.8867	-111.8645	0.9	0	5	26	1979	10	7	41.2	8.98	0	12	107	6.2	0.35	1.2	1.3		426084.218	4415539.76
597	39.904	-111.9292	1.7	0	5	26	1979	10	13	48.69	1.96	0	19	65	11.9	0.37	0.5	1.5		420572.182	4417515.435
598	39.9395	-111.9197	0.8	0	5	26	1979	10	14	49.5	2.67	0	10	96	12.3	0.52	0.8	1.6		421424.844	4421447.219
599	39.8705	-111.8422	0.5	0	5	26	1979	10	35	9.75	7.47	0	5	157	4.8	0.18	2.4	3		427973.973	4413723.509

Post-1962

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
600	39.8967	-111.9317	2.6	0	5	26	1979	11	9	50.81	1.75	0	17	75	12	0.24	0.6	1.1		420350.027	4416707.428
601	39.902	-111.913	1.4	0	5	26	1979	11	20	49.48	5.34	0	12	119	10.5	0.31	1.4	2.2		421954.706	4417279.171
602	39.8892	-111.8825	0.8	0	5	26	1979	11	24	4.87	7.65	0	6	169	7.8	0.24	2.4	3.7		424547.916	4415832.284
603	39.8943	-111.8777	1.1	0	5	26	1979	11	29	4.14	8.62	0	11	80	7.4	0.36	1	1.3		424963.875	4416394.292
604	39.8952	-111.8945	1.1	0	5	26	1979	11	30	56.21	5.82	0	10	114	8.8	0.38	1.6	2.3		423528.592	4416508.431
605	39.8975	-111.9	1	0	5	26	1979	11	33	13.27	5.62	0	10	116	9.3	0.36	1.6	2.3		423060.959	4416768.433
606	39.8862	-111.8967	0.8	0	5	26	1979	11	35	13.4	1.38	0	8	114	9	0.27	0.7	1.1		423330.483	4415511.402
607	39.904	-111.8955	1.7	0	5	26	1979	11	47	24.51	7.88	0	13	72	9	0.31	0.9	1.4		423452.893	4417486.006
608	39.8978	-111.9353	1.2	0	5	26	1979	12	4	22.89	1.01	0	5	185	12.3	0.11	1.4	1.9		420043.54	4416832.734
609	39.898	-111.9087	1.8	0	5	26	1979	12	27	12.33	6.46	0	11	118	10.1	0.31	0.9	1.6		422317.768	4416831.459
610	39.8957	-111.8967	0.9	0	5	26	1979	13	2	26.4	2.8	0	6	115	9	0.18	1.5	3		423341.067	4416565.813
611	39.9073	-111.9043	1.4	0	5	26	1979	13	52	52.77	7.31	0	13	87	9.9	0.39	0.8	1.4		422704.369	4417859.856
612	39.8997	-111.9033	1.2	0	5	26	1979	14	16	45.21	5.09	0	7	117	9.6	0.24	1.8	2.7		422781.314	4417015.461
613	39.8942	-111.8767	0.4	0	5	26	1979	14	24	0.42	6.96	0	5	168	7.3	0.23	2.4	4.7		425049.259	4416382.353
614	39.899	-111.9188	1.3	0	5	26	1979	15	16	10.24	4.84	0	11	120	10.9	0.23	1.6	2.6		421455.476	4416951.283
615	40.0905	-111.2922	1.2	0	6	2	1979	12	53	25.89	7	1	12	192	34.4	0.45	1.3	12.5		475090.836	4437842.817
616	39.8667	-111.7117	1.1	0	6	2	1979	23	4	1.76	9.66	0	9	161	7.3	0.4	1.4	2.5		439131.256	4413204.725
617	40.4763	-111.8967	0.7	0	6	6	1979	0	9	9.47	3.35	0	8	87	15.8	0.27	0.6	9		423991.924	4481010.148
618	40.4812	-111.8737	1.3	0	6	23	1979	1	0	51.52	3.43	0	14	74	2.5	0.32	0.5	1.2		425946.91	4481534.501
619	39.9798	-111.6225	1.2	0	6	25	1979	14	26	37.72	3.01	0	5	240	17.7	0.16	3.2	17		446847.748	4425700.745
620	41.0842	-111.1947	1.6	0	7	14	1979	21	36	51.48	7	1	9	230	45.5	0.41	1.1	1.7		483646.283	4548122.389
621	40.467	-111.9015	1.3	0	7	18	1979	21	46	5.94	1.05	0	12	91	5	0.29	0.6	1.2		423574.507	4479981.979
622	39.8435	-111.9018	1.4	0	7	26	1979	4	57	0.54	7	1	11	110	28	0.66	1	1.6		422846.601	4410776.514
623	40.753	-111.9597	0.9	0	7	28	1979	21	32	14.51	4.06	0	9	152	12.1	0.28	1.1	4.3		418986.638	4511781.244
624	40.7588	-111.9583	2.1	0	7	29	1979	0	51	35.02	2.04	0	19	92	11.8	0.34	0.4	1		419111.852	4512423.794
625	40.7552	-111.9575	1	0	7	29	1979	6	21	37.32	1.52	0	9	113	12.1	0.24	0.6	69.5		419175.019	4512023.431
626	40.1848	-111.1795	1.2	0	8	10	1979	22	44	30.68	7	1	9	165	26.1	0.54	0.8	7		484719.314	4448283.984
627	40.7542	-111.6248	1.7	0	8	12	1979	6	12	0.51	5.58	0	13	110	15.8	0.32	0.6	1.6		447258.483	4511659.247
628	41.1807	-111.6385	1.6	0	8	18	1979	20	26	25.48	1.89	0	15	167	16.3	0.42	0.7	42.5		446447.947	4559013.267
629	40.726	-111.9865	1.9	0	8	22	1979	1	33	3.66	6.24	0	22	67	12.7	0.38	0.4	0.7		416690.593	4508809.142
630	40.2415	-111.759	0.6	0	8	25	1979	7	7	35.85	7	1	6	203	27.5	0.59	4.4	2		435440.487	4454838.167
631	40.7767	-111.6698	1	0	9	7	1979	0	26	21.38	7	1	13	143	23.7	0.39	0.9	1.1		443478.919	4514184.9
632	40.5417	-111.4077	1.1	0	9	10	1979	11	42	39.91	9.77	0	6	280	17.4	0.15	2.7	1.3		465475.361	4487963.284
633	40.34	-111.929	2.1	0	10	4	1979	16	29	2.32	0.4	0	19	154	16.9	0.28	0.7	4.8		421094.972	4465909.108
634	40.691	-111.4937	1.4	0	10	8	1979	22	35	54.94	14.99	0	7	164	23.2	0.21	1.3	3.7		458285.692	4504573.228
635	40.6977	-111.4813	1	0	10	16	1979	23	14	20.44	0.14	0	8	124	22.2	0.44	0.8	1.4		459337.486	4505311.143
636	41.0715	-111.2035	1.9	0	10	17	1979	21	41	38.52	7	1	13	183	44	0.27	1.1	1.2		482903.842	4546714.236
637	40.6645	-111.4593	1.1	0	10	27	1979	20	12	1.62	1.54	0	7	107	20.3	0.52	0.7	2.3		461176.899	4501615.866
638	40.0757	-111.3388	1.4	0	10	28	1979	4	37	6.58	7	1	7	129	38.1	0.5	0.7	16		471112.065	4436214.22
639	40.6947	-111.5035	1.7	0	11	15	1979	0	18	8.07	0.05	0	14	144	24	0.37	0.5	0.9		457460.009	4504988.641

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
640	40.416	-111.821	0.1	0	11	17	1979	22	20	53.41	7	1	6	143	24.1	0.3	0.9	5.3		430346.425	4474254.368
641	40.8605	-111.569	1.7	0	11	28	1979	4	18	27.27	7	1	14	121	35.9	0.26	0.7	1		452045.362	4523427.21
642	41.0443	-111.363	0.7	0	12	2	1979	20	9	56.13	7	1	5	319	42.7	0.4	18.7	5.1		469491.565	4543738.262
643	40.5402	-111.363	0.5	0	12	4	1979	7	16	17.29	3.5	0	8	122	16.8	0.38	0.8	14.1		469259.946	4487780.235
644	41.0198	-111.3572	1.1	0	12	7	1979	16	18	38.14	7	1	8	168	40	0.26	1.6	1.6		469967.897	4541016.495
645	40.0898	-111.1625	1.4	0	12	12	1979	14	31	51.33	7	1	7	225	56.3	0.42	1.3	19.8		486147.233	4437736.868
646	41.155	-111.6243	1.4	0	12	21	1979	10	43	0.52	9.55	0	15	174	19.4	0.44	0.9	1		447618.466	4556151.574
647	40.7708	-111.4567	0.8	0	1	25	1980	3	41	9	7	1	10	197	22.6	0.34	1.2	1.5		461458.026	4513414.507
648	40.7478	-111.4668	1	0	1	25	1980	3	45	51.62	7	1	10	174	22.3	0.51	0.8	1.5		460592.08	4510865.869
649	41.0255	-111.1645	0.9	0	1	31	1980	20	25	38.51	7	1	5	205	39.2	0.34	2.5	1.8		486170.629	4541600.841
650	41.0892	-111.6665	1.3	0	2	19	1980	22	1	42.33	7	1	8	179	25.1	0.59	1.6	5.4		444021.793	4548873.176
651	40.8888	-111.6075	2.3	0	2	23	1980	15	0	22.03	8.33	0	17	158	20.8	0.32	0.9	0.8		448822.409	4526590.531
652	40.825	-111.6313	1.2	0	2	24	1980	23	3	32.29	4.72	0	11	200	15.7	0.21	1	1.6		446766.366	4519522.428
653	40.3205	-111.9193	1.7	0	3	1	1980	19	34	18.72	0.03	0	16	150	18.5	0.28	0.7	0.9		421896.379	4463736.026
654	40.3682	-112.0802	1.3	0	3	17	1980	21	3	55.91	16.5	0	8	157	8.8	0.44	2.2	1.4		408290.717	4469185.09
655	40.9652	-112.1792	0.9	0	3	19	1980	1	50	19.95	7	1	6	312	53.6	0.54	11	65.1		400774.334	4535563.413
656	41.0485	-112.1005	0.8	0	3	19	1980	1	51	40.52	7	1	8	108	11.1	0.27	0.8	4		407513.348	4544724.37
657	41.0453	-112.1177	0.9	0	3	19	1980	1	56	3.21	7	1	9	109	9.6	0.34	0.7	3		406063.274	4544387.505
658	40.3298	-111.922	2.1	0	3	21	1980	23	33	13.01	1.62	0	22	61	17.6	0.25	0.4	0.9		421677.735	4464770.7
659	39.8548	-111.2588	0.8	0	4	3	1980	20	29	16.42	7	1	7	228	54.7	0.62	3.5	33.3		477862.177	4411673.682
660	39.9477	-111.9743	3.5	1	4	6	1980	10	45	4.03	4.41	0	28	70	16.9	0.25	0.5	0.9		416769.918	4422406.856
661	39.9515	-111.9773	2	0	4	6	1980	11	23	19.31	4.85	0	17	73	17.3	0.25	0.6	1.1		416518.257	4422831.429
662	39.9492	-111.9727	2.4	0	4	6	1980	11	24	14.85	4.97	0	22	74	16.9	0.31	0.5	0.8		416908.416	4422571.853
663	39.8352	-111.3188	2.1	0	4	18	1980	15	35	59.09	7	1	8	165	55.5	0.45	0.9	1.2		472721.996	4409514.905
664	39.8453	-111.6075	2.1	1	4	29	1980	22	10	4.8	7	1	18	82	43.5	0.45	0.7	0.9		448026.974	4410763.803
665	40.7315	-112.1832	1.6	0	5	7	1980	23	48	50.47	1.13	0	15	86	6.7	0.31	0.6	1.7		400087.283	4509624.92
666	40.7598	-112.0318	1.8	0	5	17	1980	11	48	38.79	7	1	15	105	7.5	0.29	0.5	1.2		412909.075	4512605.153
667	39.9368	-111.9598	4.4	1	5	24	1980	10	3	36.47	7	1	17	113	60.8	0.37	0.7	0.9		417995.596	4421183.619
668	39.9358	-111.9932	1.9	0	5	24	1980	12	58	39.33	7	1	13	144	73.7	0.3	0.6	1		415140.646	4421103.852
669	39.9302	-111.9663	1.3	0	5	24	1980	22	6	5.52	7.11	0	8	120	4.6	0.23	0.8	0.9		417432.302	4420457.067
670	39.9297	-111.9565	2.7	0	5	24	1980	22	12	14.28	7	1	13	114	61.6	0.31	0.8	1		418269.104	4420392.551
671	39.9177	-111.9605	1.1	0	5	24	1980	22	13	2.64	6.21	0	5	178	5.2	0.02	2.5	3.8		417912.977	4419064.323
672	39.9587	-111.9862	0.8	0	5	28	1980	1	40	43.8	8.49	0	10	128	4.3	0.23	0.8	2		415766.833	4423638.939
673	40.5487	-111.1352	1.7	0	6	2	1980	5	45	45.4	1.48	0	10	217	18.3	0.47	1.7	1.3		488552.269	4488669.227
674	40.7632	-112.1458	1.7	0	6	3	1980	18	17	15.03	7	1	7	130	35.5	0.38	0.9	1.9		403291.448	4513101.982
675	39.846	-111.9815	2.9	0	6	3	1980	21	59	5.47	2.28	0	16	105	16.9	0.35	0.6	1		416030.806	4411125.796
676	40.7263	-111.6547	1.5	0	6	5	1980	18	14	26.02	7	1	9	194	19.1	0.54	2	1.5		444711.408	4508580.59
677	39.8093	-111.6052	1.4	0	8	2	1980	18	4	36.01	7	1	10	198	36.1	0.5	1.2	1.1		448196.714	4406766.9
678	40.4683	-111.9005	2	0	8	15	1980	22	11	26.86	0.34	0	16	78	16.6	0.3	0.5	1		423660.756	4480125.415
679	40.8848	-111.7073	0.6	0	8	20	1980	3	10	32.62	9.42	0	10	127	14.4	0.32	0.8	1.1		440411.317	4526209.645

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
680	40.7115	-112.0713	1.8	0	8	30	1980	6	46	32.67	11.54	0	21	65	11.4	0.34	0.4	0.6		409509.522	4507283.456
681	40.7622	-112.1698	1.5	0	9	6	1980	6	22	26.53	7	1	11	131	30.6	0.33	0.7	1.2		401264.262	4513017.705
682	41.0692	-111.7197	1.3	0	9	14	1980	3	42	59.47	12.98	0	7	306	19.7	0.23	2.3	1.4		439535.257	4546688.458
683	41.051	-111.6395	2.4	0	9	14	1980	3	55	28.71	10.31	0	9	246	16.8	0.3	1.3	1.6		446258.393	4544615.539
684	40.6265	-111.6043	1	0	9	19	1980	0	45	37.11	7.69	0	10	116	14.6	0.2	0.6	1.2		448891.49	4497471.861
685	40.8552	-111.5617	0.9	0	9	30	1980	12	8	0.33	6.75	0	8	125	22.4	0.43	1.7	11.5		452656.827	4522834.898
686	40.8427	-111.5833	1.4	0	9	30	1980	12	25	45.93	11.92	0	11	108	20.2	0.41	0.6	1.4		450827.011	4521459.206
687	40.1505	-111.7425	1.5	0	10	23	1980	13	9	14.97	8.44	0	11	151	9.7	0.27	1	0.9		436759.484	4444725.69
688	40.9547	-112.115	1.3	0	11	5	1980	18	57	6.72	9.83	0	12	148	13.6	0.45	0.8	0.9		406161.773	4534326.873
689	41.019	-111.544	2	0	11	7	1980	21	39	35.76	7	1	7	298	34.5	0.3	3.2	15.6		454261.811	4541008.754
690	40.7363	-111.748	1.7	0	11	20	1980	20	35	38.54	1.39	0	10	197	17.9	0.31	1.5	1.2		436841.733	4509753.577
691	40.5727	-111.975	0.4	0	12	2	1980	22	42	48.93	3.54	0	17	128	17.7	0.29	0.6	0.9		417473.118	4491781.2
692	40.6915	-111.604	0	0	12	7	1980	7	58	33.43	8.28	0	9	133	18.6	0.35	0.6	1.2		448966.423	4504686.937
693	40.8277	-111.9248	0.4	0	12	8	1980	21	37	30.75	1.81	0	8	194	11.1	0.35	1	44.8		422020.218	4520041.88
694	40.8332	-111.9052	1.2	0	12	20	1980	0	9	9.69	6.96	0	16	70	22.2	0.26	0.5	1.4		423679.231	4520635.168
695	40.8405	-111.9015	0.53	0	1	2	1981	23	54	10.42	7.72	0	13	119	21.3	0.22	0.7	1.8		423999.534	4521442.313
696	40.3693	-111.8295	1.3	0	1	7	1981	19	27	21.95	2.72	0	27	100	23.6	0.29	0.6	1.2		429576.642	4469077.419
697	40.3523	-111.5433	1.49	0	1	16	1981	22	30	5.75	1.44	0	30	127	25.2	0.37	0.8	1.3		453863.173	4467001.901
698	41.1062	-111.2285	0.84	0	1	18	1981	21	13	17.32	5.57	0	22	179	36.4	0.3	1.1	1.3		480813.672	4550571.531
699	40.9438	-111.5075	0.38	0	1	18	1981	23	45	50.12	6.17	0	13	191	8.1	0.2	0.9	1.4		457282.16	4532642.339
700	40.9512	-111.4857	0.22	0	1	20	1981	0	24	33.51	5.88	0	12	202	9.5	0.15	0.9	1.4		459121.703	4533453.383
701	40.8242	-111.9063	1.32	0	1	21	1981	0	27	31.51	1.02	0	27	55	9.6	0.34	0.8	1.9		423576.152	4519637.053
702	39.9878	-111.8955	1.21	0	1	23	1981	4	33	41.84	4.49	0	21	104	12.8	0.35	0.8	1.3		423546.238	4426787.102
703	39.9903	-111.9047	1.68	0	1	23	1981	8	44	18.09	3.93	0	20	102	12.9	0.35	0.7	1.4		422763.588	4427072.513
704	41.0452	-111.1132	1.1	0	1	23	1981	17	49	34.83	0.14	0	12	198	40.2	0.45	2.7	22.3		490486.213	4543780.882
705	40.8137	-111.9523	0.86	0	2	6	1981	1	2	47.86	1.15	0	19	136	12.7	0.51	1.6	5.5		419684.481	4518512.6
706	40.3218	-111.7365	3.84	0	2	20	1981	9	13	0.86	0.28	0	29	109	19.6	0.35	0.9	6.3		437428.405	4463735.103
707	39.9755	-111.7033	1.18	0	2	27	1981	14	53	19.05	1.42	0	11	106	12.2	0.26	1	0.8		439944.807	4425274.772
708	40.0118	-111.8242	1.92	0	4	22	1981	19	43	22.92	0.86	0	23	120	14.1	0.46	1.6	9.3		429658.221	4429392.204
709	41.0707	-111.1807	1.83	0	5	2	1981	11	24	10.47	5.36	0	31	187	44.1	0.32	1.1	1		484819.1	4546621.208
710	41.0353	-111.0867	1.19	0	5	15	1981	21	57	32.11	0.87	0	13	203	41.5	0.74	4.6	23.3		492712.288	4542679.329
711	40.3735	-111.4073	1.08	0	5	30	1981	15	47	14.22	6.87	0	11	223	11.1	0.23	1.2	1.6		465423.111	4469293.017
712	40.6977	-111.4993	1.65	0	5	30	1981	23	30	33.96	0.48	0	17	88	23.6	0.33	0.9	2		457816.755	4505319.629
713	41.0707	-111.5502	1.1	0	7	31	1981	20	50	2.62	2.44	0	15	133	21.9	0.25	0.7	22.4		453776.719	4546751.293
714	41.1993	-111.642	1.21	0	8	8	1981	3	54	27.85	11.29	0	23	144	19.9	0.31	0.6	1.5		446169.632	4561080.289
715	40.4812	-110.9035	0.88	0	8	15	1981	1	33	43.85	1.4	0	18	195	30.8	0.37	3.3	2.8		508179.1	4481172.41
716	40.3792	-111.939	1.71	0	8	20	1981	22	35	19.89	2.18	0	27	81	26.4	0.39	1	1.3		420291.788	4470269.254
717	40.8335	-110.9815	1.45	0	8	20	1981	22	39	41.45	1.25	0	13	229	26.7	0.32	2.8	10.9		501559.787	4520274.415
718	40.857	-111.5202	0.39	0	8	24	1981	22	52	57.28	14.02	0	7	161	2.2	0.15	0.9	1.5		456155.877	4523013.108
719	40.5407	-112.1528	1.21	0	8	27	1981	17	44	26	2.09	0	19	96	15.1	0.41	1.1	1.7		402376.832	4488410.839

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
720	40.822	-111.046	1.59	0	8	29	1981	19	2	8.54	0.29	0	14	230	22	0.45	3.3	15.4		496120.941	4518998.697
721	39.8362	-111.8095	0.94	0	9	14	1981	5	40	31.69	8.18	0	5	285	6	0.03	1.3	0.9		430736.084	4409890.73
722	40.0043	-111.905	1.58	0	10	2	1981	10	59	47.42	0.97	0	17	77	10.1	0.4	1	2.7		422753.753	4428626.669
723	40.0033	-111.8963	1	0	10	2	1981	11	3	46.3	2.07	0	5	142	9.8	0.08	0.6	12.2		423495.236	4428508.172
724	40.0052	-111.8942	0.53	0	10	2	1981	15	33	19.65	8.22	0	5	143	9.5	0.07	0.5	2.7		423676.602	4428717.258
725	40.3653	-111.8982	1.25	0	10	12	1981	2	15	11.67	1.3	0	23	122	26	0.28	0.8	1.2		423739.527	4468690.384
726	40.7235	-111.624	1.38	0	10	13	1981	1	42	28.86	5.57	0	18	76	16.8	0.4	1	3		447301.791	4508250.899
727	40.4962	-112.1333	0.94	0	10	22	1981	15	28	15.33	5.86	0	9	196	53.1	0.25	1.1	3.6		403964.708	4483449.761
728	40.3592	-112.3137	1.57	0	10	24	1981	0	18	1.53	7.03	0	8	267	49.3	0.11	1.5	15.5		388451.148	4468454.358
729	41.113	-111.5368	1.35	0	11	2	1981	21	48	22.83	4.93	0	12	147	26.6	0.25	1	1.9		454931.399	4551440.082
730	40.7575	-111.5115	0.94	0	11	2	1981	22	53	34.62	8.91	0	6	171	13.1	0.26	1.9	5.5		456824.703	4511963.65
731	39.9283	-111.7493	0.92	0	11	3	1981	10	41	51.22	5.63	0	6	200	5.7	0.17	1.5	3.2		435972.805	4420067.989
732	41.1105	-111.5463	1.12	0	11	6	1981	2	55	30.77	9.63	0	17	157	26.1	0.22	0.7	2.3		454132.055	4551167.508
733	41.0583	-111.1785	1.06	0	11	9	1981	18	0	28.19	5.82	0	12	188	36.2	0.28	1.8	24.9		485001.109	4545244.294
734	41.083	-111.5565	1.27	0	11	10	1981	21	39	24.69	6.01	0	21	133	23.3	0.22	0.6	1.2		453256.157	4548120.095
735	39.9125	-111.6712	0.9	0	11	23	1981	16	3	1.92	3.69	0	5	288	10.6	0.19	2.1	9		442633.273	4418261.247
736	40.8568	-111.4907	1.28	0	12	2	1981	5	40	22.1	10.78	0	6	235	4.1	0.17	2.5	2.1		458642.116	4522976.557
737	40.7027	-111.609	0.68	0	12	2	1981	13	43	12.93	2.94	0	7	112	17.5	0.1	0.4	12.7		448552.574	4505933.104
738	40.728	-111.8117	1.05	0	12	9	1981	18	36	34.92	7.11	0	14	115	5.8	0.42	1.4	1.7		431454.579	4508880.004
739	40.3255	-111.6338	2.1	0	12	17	1981	10	47	43.37	0.43	0	37	100	24.6	0.45	1.1	1.6		446156.599	4464078.276
740	39.9033	-111.839	1.35	0	12	23	1981	10	8	18.99	1.25	0	10	95	4.4	0.3	0.9	2.7		428281.833	4417361.413
741	40.0223	-111.8675	0.92	0	12	27	1981	7	40	21.2	2.53	0	5	138	6.8	0.07	0.8	13.3		425974.059	4430592.708
742	40.0497	-111.846	1.26	0	12	27	1981	7	43	37.65	7.24	0	15	125	3.2	0.24	0.7	0.9		427837.62	4433616.273
743	40.0318	-111.2115	1.18	0	1	22	1982	16	14	3.69	1.59	0	18	153	42.5	0.32	1.3	1.7		481954.794	4431308.14
744	40.3268	-111.2065	0.69	0	2	1	1982	10	33	5.81	1.34	0	9	292	10.4	0.18	4.8	2.9		482457.533	4464050.307
745	40.1218	-111.4342	1.62	0	2	28	1982	14	12	36.51	4.74	0	27	112	33.4	0.39	1	1.3		463002.693	4441366.309
746	40.7625	-112.0268	0.77	0	3	8	1982	10	23	4.84	1.94	0	17	93	18.5	0.29	0.6	44.3		413334.623	4512899.923
747	40.0432	-111.725	0.62	0	3	9	1982	15	19	9.13	5.87	0	6	266	10	0.13	1.2	2.5		438152.946	4432803.767
748	39.85	-111.8413	0.56	0	3	16	1982	14	43	39.15	13.34	0	5	255	6.1	0.15	1.5	2.1		428029.529	4411447.495
749	40.5855	-111.5815	0.79	0	3	21	1982	6	56	10.26	1.66	0	11	85	11.2	0.21	0.6	42.7		450789.741	4492907.754
750	40.5963	-111.5777	0.65	0	3	21	1982	7	5	14.05	1.86	0	9	118	10.8	0.28	1	32.6		451119.188	4494104.465
751	39.786	-111.5845	1.03	0	3	29	1982	2	33	26.5	6.82	0	10	127	21	0.38	1.4	10.6		449951.696	4404169.116
752	40.8568	-111.572	1.59	0	3	30	1982	16	27	21.64	8.94	0	25	65	3.7	0.26	0.6	0.8		451789.842	4523018.129
753	39.938	-111.351	1.83	0	4	9	1982	21	32	55.57	0.29	0	23	114	36.8	0.28	0.8	2.1		470011.632	4420934.83
754	40.8365	-111.9053	1.73	0	4	13	1982	0	4	54.88	1.46	0	16	58	10.2	0.42	0.9	7.2		423674.585	4521001.583
755	40.7493	-111.97	1.45	0	4	18	1982	12	15	26.41	3.94	0	23	64	11.7	0.48	0.9	3.9		418112.608	4511380.077
756	40.8177	-111.8962	0.7	0	4	23	1982	0	8	25.57	1.64	0	8	188	8.4	0.16	1.2	37.8		424420.467	4518906.742
757	40.0013	-111.8843	1.02	0	4	28	1982	9	59	16.45	1.82	0	6	135	9.4	0.19	0.8	23		424517.322	4428275.955
758	40.7243	-111.5375	1.39	0	5	2	1982	6	49	48.24	9.8	0	27	92	15.4	0.35	0.7	1.1		454607.49	4508291.394
759	40.8278	-111.9118	1.22	0	5	5	1982	0	4	3.01	2.21	0	9	81	10.2	0.42	1.3	34.9		423116.516	4520041.493

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
760	40.6362	-111.4957	1.79	0	5	5	1982	21	36	20.34	1.65	0	7	104	5.4	0.25	1.1	33.5		458082.411	4498491.18
761	41.1253	-111.6032	1.25	0	5	12	1982	19	34	5.6	4.08	0	32	135	22.5	0.35	0.8	2.2		449366.021	4552842.006
762	40.7373	-111.2878	1.91	0	5	16	1982	22	29	41.34	1.34	0	34	153	8.9	0.42	1	1.8		475699.718	4509635.365
763	39.9692	-111.9107	1.03	0	5	17	1982	0	11	15.45	9.05	0	8	133	13.6	0.12	0.5	1.4		422227.427	4424735.791
764	39.9708	-111.9017	1.14	0	5	18	1982	9	52	48.61	2.95	0	10	106	13.2	0.58	1.5	14.7		422997.822	4424905.569
765	39.955	-111.9242	0.16	0	5	18	1982	9	55	28.94	2.96	0	6	147	12.8	0.3	1.1	20.2		421058.197	4423171.564
766	39.9697	-111.9017	1.5	0	5	18	1982	12	6	4.39	3.58	0	20	93	13.1	0.22	0.6	1		422996.587	4424783.477
767	39.985	-111.9175	1.9	0	5	18	1982	12	19	7.41	0.96	0	22	91	12.4	0.31	0.8	7.4		421664.751	4426495.421
768	39.9642	-111.9127	0.73	0	5	19	1982	1	44	14.84	5.65	0	6	137	13.4	0.06	0.4	2.8		422050.948	4424182.577
769	40.8187	-111.9998	1.09	0	5	21	1982	20	1	31.41	2.45	0	19	73	16.6	0.32	0.7	19.3		415684.676	4519112.252
770	41.1047	-111.5688	0.81	0	5	31	1982	3	31	56.58	2.04	0	13	159	24.1	0.15	0.7	24.9		452238.72	4550535.725
771	40.931	-111.601	0.82	0	6	2	1982	12	17	38.19	4.96	0	19	151	22.5	0.35	1	1.9		449402.172	4531271.314
772	40.432	-111.393	1	0	6	3	1982	5	46	34.35	1.63	0	17	122	11.5	0.39	0.9	3.5		466665.952	4475780.931
773	40.3015	-111.4468	1.02	0	6	8	1982	16	12	38.83	4.84	0	11	180	14.2	0.29	1.2	7.5		462029.49	4461317.404
774	40.9035	-111.7	1.04	0	6	13	1982	3	18	7.84	5.69	0	25	85	14.4	0.36	0.8	1.8		441042.937	4528280.563
775	40.4825	-111.3305	0.61	0	6	13	1982	20	33	53.4	10.14	0	7	118	10	0.32	1.2	4.4		471988.16	4481364.688
776	40.6288	-111.4987	1.13	0	6	15	1982	18	38	27.87	1.68	0	7	75	5.1	0.22	0.9	24.7		457824.067	4497671.191
777	40.3087	-111.4628	1.39	0	6	17	1982	20	58	15.06	4.38	0	25	174	12.9	0.27	0.8	1.4		460673.929	4462123.562
778	40.6842	-111.5923	1.17	0	6	19	1982	22	10	36.47	9.58	0	13	85	15.1	0.23	0.6	1.9		449949.531	4503869.876
779	40.3243	-111.4655	1.35	0	6	24	1982	5	3	22.7	1.22	0	19	116	11.2	0.31	0.8	1.5		460453.6	4463856.316
780	40.5023	-111.3602	1.42	0	6	25	1982	22	58	4.87	7.46	0	16	107	13.3	0.29	0.8	1.2		469479.875	4483572.34
781	40.3188	-111.4723	1.88	0	6	27	1982	7	55	34.32	0.14	0	28	87	11.5	0.34	0.8	1.8		459872.65	4463248.892
782	40.498	-111.3342	0.67	0	7	3	1982	11	4	29.83	12.08	0	9	119	11.6	0.15	0.6	1.7		471681.079	4483086.368
783	40.6783	-111.5935	0.81	0	7	14	1982	4	54	33.29	1.99	0	11	149	14.8	0.21	0.7	20		449843.706	4503215.635
784	40.6802	-111.5673	1.34	0	7	19	1982	10	42	17.73	8.49	0	25	84	13.2	0.36	0.6	1.6		452059.223	4503411.923
785	40.0543	-111.597	0.86	0	7	21	1982	5	55	42.78	2.96	0	8	210	20.3	0.2	1.2	20.9		449080.487	4433954.731
786	40.5022	-111.3578	1.43	0	8	12	1982	23	29	23.69	4.89	0	19	108	13.2	0.29	0.8	1.3		469683.185	4483560.412
787	40.3205	-111.4592	0.89	0	8	13	1982	14	17	50.43	3.55	0	11	225	11.9	0.28	1.3	8.1		460986.629	4463431.732
788	39.8247	-111.6888	0.83	0	8	17	1982	19	23	52.41	0.82	0	6	191	11.2	0.41	3.6	3.4		441053.907	4408527.855
789	39.995	-111.7852	2.11	0	8	20	1982	16	9	47.61	0.23	0	13	141	11.9	0.34	1.1	1.8		432970.306	4427497.478
790	40.323	-111.4575	1.28	0	8	28	1982	7	6	7.63	4.65	0	17	150	11.7	0.33	1	2.4		461132.494	4463708.477
791	40.314	-111.464	2.24	0	8	28	1982	9	8	14.41	0.58	0	26	89	12.3	0.36	0.9	2.2		460575.041	4462712.378
792	40.8792	-111.668	2.8	0	8	29	1982	12	7	54.32	4.96	0	33	81	11.3	0.31	0.7	1.1		443717.546	4525561.988
793	40.9362	-111.6192	1.2	0	9	6	1982	4	55	42.28	11.1	0	16	152	9.9	0.22	0.8	1.7		447874.004	4531859.252
794	40.3548	-111.8427	0.91	0	9	16	1982	19	3	13.21	5.91	0	15	182	13.7	0.35	1.4	2.5		428440.636	4467478.524
795	40.326	-111.8382	1.52	0	9	21	1982	5	44	2.58	2.93	0	26	99	26	0.31	0.6	1.2		428792.49	4464278.131
796	40.3448	-111.838	1.23	0	9	21	1982	6	17	16.3	1.36	0	16	101	25	0.38	1	3.1		428829.238	4466364.745
797	40.3272	-111.848	1.39	0	9	21	1982	6	53	41.52	1.67	0	22	98	25.2	0.31	0.7	1.5		427961.218	4464419.258
798	40.3298	-111.8288	1.14	0	9	21	1982	6	57	35.4	3.36	0	15	106	26.5	0.31	0.9	2.1		429595.006	4464692.407
799	40.3235	-111.8673	0.94	0	9	21	1982	6	58	45.04	3.91	0	8	103	24.1	0.43	1.5	36.8		426317.612	4464024.448

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
800	40.3208	-111.8168	0.89	0	9	22	1982	9	49	5.88	4.96	0	14	116	26.6	0.45	1.2	3.3		430605.178	4463683.947
801	40.3325	-111.8342	1.19	0	9	23	1982	6	41	13.94	4.43	0	17	105	26	0.34	0.9	2.7		429139.105	4464996.412
802	40.3335	-111.8452	1.28	0	9	23	1982	12	12	30.14	1.2	0	22	95	25.1	0.3	0.7	1.8		428205.762	4465116.274
803	40.3362	-111.8465	1.35	0	9	23	1982	12	14	5.37	0.67	0	22	95	24.9	0.38	0.9	3		428098.2	4465417.026
804	40.3105	-111.742	1.13	0	9	23	1982	12	16	54.01	2.69	0	13	139	21.6	0.25	0.8	2.3		436950.621	4462484.729
805	40.3208	-111.8428	1.55	0	9	24	1982	0	23	14.22	5.66	0	18	106	17.4	0.29	0.7	2.1		428396.208	4463704.65
806	40.3127	-112.208	2.28	0	9	27	1982	23	33	40.76	3.22	0	14	96	41.2	0.27	0.9	2		397356.121	4463164.898
807	40.3062	-111.4595	0.71	0	10	23	1982	19	43	23.68	7.23	0	9	230	13.2	0.23	1.4	3.6		460952.905	4461844.61
808	41.1535	-111.686	1.24	0	10	24	1982	5	3	46.41	3.12	0	16	134	16.9	0.31	0.9	14.4		442440.219	4556024.012
809	41.1553	-111.7462	0.53	0	10	24	1982	5	23	27.73	10.69	0	7	240	12.1	0.16	1.5	1.2		437390.73	4556265.385
810	40.758	-111.5185	1.24	0	10	30	1982	18	23	30.27	7.32	0	15	116	12.9	0.28	0.8	3.6		456234.164	4512022.621
811	41.1445	-111.4927	0.89	0	11	1	1982	19	43	13.11	11.15	0	21	151	30.2	0.34	1	1.5		458653.735	4554915.104
812	40.4637	-111.559	1.4	0	11	4	1982	7	13	24.67	3.11	0	12	114	6.2	0.18	0.6	5.8		452608.133	4479375.485
813	40.7373	-112.0048	1.4	0	11	18	1982	21	16	9.69	14.04	0	6	299	27.2	0.13	3.2	2.6		415159.5	4510081.044
814	40.7337	-112.2278	1.89	0	11	24	1982	17	57	17.18	4.94	0	33	91	7.3	0.23	0.5	0.8		396324.464	4509920.852
815	40.8282	-111.5945	0.98	0	11	24	1982	23	27	4.32	5.61	0	8	109	7.2	0.21	1	3.1		449871.909	4519855.949
816	40.7882	-111.4572	1.48	0	12	7	1982	1	8	48.94	5.51	0	21	121	11.6	0.29	0.7	1.3		461425.896	4515346.227
817	40.9288	-111.698	1.53	0	12	9	1982	17	33	22.25	12.48	0	16	98	15.1	0.19	0.5	0.9		441233.797	4531087.746
818	40.0058	-111.852	0.68	0	12	20	1982	13	21	25.15	2.07	0	6	147	8.1	0.04	0.4	12.6		427279.219	4428748.565
819	40.004	-111.8585	0.97	0	12	20	1982	13	29	2.42	2.97	0	10	128	8.4	0.48	1.7	3.2		426722.492	4428554.103
820	40.72	-112.0545	0.98	0	12	26	1982	9	47	10.32	6.55	0	14	59	13.1	0.14	0.4	2.7		410939.936	4508209.841
821	40.0138	-111.8547	0.87	0	12	30	1982	19	4	32.25	2.17	0	7	145	7.2	0.32	1.1	23.2		427057.279	4429638.712
822	40.0095	-111.8405	0.95	0	1	4	1983	23	27	2.75	4.81	0	5	136	7.6	0.04	0.5	1.8		428264.664	4429149.916
823	40.7217	-112.1727	1.12	0	1	9	1983	13	31	5.34	1.05	0	21	85	5.9	0.39	0.8	1.4		400959.421	4508525.148
824	40.5072	-111.3335	0.6	0	1	10	1983	8	54	11.54	5.62	0	8	121	12.4	0.11	0.4	3.6		471744.255	4484107.346
825	41.0785	-111.4062	0.96	0	1	13	1983	4	12	50.74	3.93	0	14	186	25.1	0.39	1.7	28.6		465878.482	4547550.844
826	40.9147	-111.635	1.65	0	1	14	1983	23	17	4.2	4.44	0	28	106	9.6	0.33	0.8	1.6		446526.579	4529482.097
827	40.8282	-111.8885	0.92	0	1	21	1983	0	4	30.06	0.64	0	15	120	8.6	0.2	0.9	1.7		425081.659	4520065.715
828	39.9498	-111.9447	2.92	0	1	22	1983	11	44	48.66	1.28	0	35	56	11.1	0.27	0.6	1.5		419301.022	4422612.747
829	40.0885	-111.7388	0.82	0	1	25	1983	18	52	3.8	17.06	0	7	123	8.2	0.38	2.3	2.8		437017.442	4437841.429
830	40.9118	-111.6485	1.21	0	2	9	1983	19	39	25	3.59	0	10	185	19.9	0.25	1.4	18.5		445387.35	4529168.511
831	40.8982	-111.667	1.29	0	2	9	1983	23	8	39.22	8.61	0	17	91	11.5	0.35	0.9	1.7		443817.875	4527670.506
832	40.0678	-111.4732	0.92	0	2	14	1983	23	29	38.6	5.25	0	9	182	30.7	0.32	1.7	24.2		459647.688	4435389.661
833	40.503	-111.3515	1.2	0	2	25	1983	4	2	18.37	9.62	0	8	111	12.9	0.23	0.8	2.8		470217.347	4483647.066
834	40.5022	-111.3582	0.95	0	2	25	1983	4	13	12.02	5.38	0	13	108	13.2	0.36	1	5.4		469649.293	4483560.55
835	40.5082	-111.3485	1.06	0	2	25	1983	9	21	26.33	4.43	0	8	114	13.2	0.32	1.2	12.7		470473.818	4484223.259
836	39.993	-111.9505	1.19	0	3	4	1983	23	20	30.64	2.39	0	12	84	11.4	0.44	1	4.1		418856.666	4427412.879
837	40.0028	-111.9468	0.59	0	3	5	1983	2	9	8.77	7.75	0	6	165	12.1	0.04	0.4	1.8		419184.091	4428497.248
838	41.1402	-111.6723	2.71	0	3	6	1983	10	53	35.66	8.96	0	38	123	18.5	0.28	0.7	0.8		443578.344	4554538.567
839	40.5015	-111.3608	1.18	0	3	20	1983	15	11	10.26	7.6	0	18	141	13.2	0.4	1	1.6		469428.673	4483483.747

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
840	40.502	-111.363	0.93	0	3	20	1983	17	8	55.43	8.63	0	11	167	13.3	0.22	0.9	2.1		469242.491	4483540.012
841	40.5108	-111.351	1.38	0	3	20	1983	20	16	1.55	6.93	0	21	147	13.2	0.37	0.8	1.4		470263.157	4484512.7
842	40.4962	-111.3425	0.59	0	3	20	1983	20	41	29.95	1.56	0	7	180	11.8	0.13	0.6	999.9		470976.989	4482889.266
843	40.511	-111.3453	1.06	0	3	20	1983	21	8	30.08	9.94	0	11	175	13.3	0.3	1.2	2.5		470746.151	4484532.994
844	40.326	-111.842	0.84	0	3	26	1983	1	32	4.6	2.49	0	10	105	25.8	0.39	1.2	57.5		428469.666	4464281.195
845	40.4977	-111.3353	0.62	0	4	2	1983	3	31	24.12	1.56	0	11	119	11.6	0.34	0.9	999.9		471587.742	4483053.422
846	40.7377	-112.2065	1.03	0	4	2	1983	23	23	22.39	7.86	0	16	136	7.3	0.24	0.7	1		398129.181	4510339.948
847	40.5015	-111.3542	0.8	0	4	7	1983	18	0	28.74	9.39	0	11	110	12.9	0.25	0.7	2.4		469987.906	4483481.481
848	40.0057	-111.9535	0.99	0	4	7	1983	21	40	51.21	7.7	0	8	152	11.8	0.15	0.6	1.7		418615.634	4428825.225
849	40.01	-111.953	0.9	0	4	7	1983	22	33	16.7	2.18	0	7	175	12.1	0.36	1.4	30.1		418663.416	4429302.038
850	40.0035	-111.9477	0.54	0	4	7	1983	22	36	14.33	3.12	0	5	166	12.1	0.11	0.6	11.3		419108.095	4428575.759
851	40.5108	-111.353	1.24	0	4	7	1983	22	51	49.92	4.02	0	20	112	13.1	0.39	1	1.8		470093.716	4484513.376
852	40.4987	-111.349	0.9	0	4	8	1983	1	50	8.77	2.13	0	12	112	12.4	0.36	0.8	25.6		470427.284	4483168.924
853	40.5022	-111.349	0.83	0	4	8	1983	2	46	17.1	9.41	0	10	113	12.7	0.26	0.7	2.9		470428.821	4483557.425
854	40.5013	-111.3523	1.46	0	4	8	1983	4	25	10.62	4.99	0	19	110	12.8	0.38	0.9	1.4		470148.809	4483458.636
855	40.7632	-111.62	0.59	0	4	9	1983	10	0	32.49	10.96	0	8	111	14.3	0.23	0.9	3.3		447670.728	4512655.425
856	40.5097	-111.3515	1.24	0	4	9	1983	10	16	59.81	10.64	0	18	112	13.2	0.41	0.9	1.9		470220.31	4484390.768
857	40.5118	-111.3662	1.64	0	4	11	1983	18	8	35.25	7.88	0	25	106	12.3	0.36	0.9	1.3		468975.866	4484628.936
858	40.7338	-112.1762	1.99	0	4	13	1983	5	51	52.55	5.88	0	27	84	7.1	0.2	0.5	0.8		400681.816	4509872.296
859	40.781	-111.9557	1.25	0	4	24	1983	18	33	14.2	2.21	0	15	103	20.2	0.32	0.9	30.2		419358.161	4514885.764
860	40.7843	-111.6618	1.11	0	5	6	1983	12	6	3.36	11.97	0	19	61	12.4	0.24	0.6	0.8		444160.369	4515023.425
861	40.6657	-111.5008	1.12	0	5	10	1983	8	8	52.97	6.9	0	21	84	8.2	0.36	0.7	1.7		457669.788	4501768.223
862	40.3125	-111.8552	1.38	0	5	16	1983	6	12	11.69	10.22	0	13	108	18.4	0.26	0.8	1.9		427333.801	4462793.465
863	40.6943	-111.873	1.29	0	5	17	1983	20	22	17.64	7.2	0	11	153	11.1	0.4	1.4	2.4		426240.755	4505188.767
864	40.7812	-111.8673	0.95	0	5	19	1983	4	8	55.72	3.55	0	14	78	5	0.29	0.9	4.7		426817.65	4514830.449
865	40.328	-111.8592	1.11	0	5	27	1983	21	16	44.03	2.95	0	12	102	24.4	0.27	0.8	18.4		427010.613	4464517.231
866	40.3323	-111.8558	0.94	0	5	28	1983	0	23	40.97	10.45	0	11	102	24.4	0.3	0.9	5.2		427304.062	4464991.727
867	39.9138	-111.9533	0.66	0	6	5	1983	8	50	6.36	2.61	0	5	192	11.3	0.05	1.1	9.1		418523.697	4418624.862
868	39.849	-111.9845	1.14	0	6	9	1983	13	50	20.75	0.32	0	14	77	14.1	0.33	0.9	2.6		415777.812	4411461.589
869	39.8625	-111.9753	0.83	0	6	9	1983	15	21	22.39	1.85	0	7	241	13.4	0.22	1.7	32.8		416581.216	4412951.333
870	39.8503	-111.9873	2.16	0	6	9	1983	15	58	12.83	1.2	0	27	61	13.8	0.35	0.6	1.5		415539.866	4411608.517
871	39.8907	-111.9545	0.95	0	6	9	1983	16	0	43.88	2.21	0	6	180	12.5	0.35	1.9	31.3		418393.733	4416062.063
872	39.8648	-111.9768	0.99	0	6	9	1983	16	9	2.51	5.69	0	12	78	13.1	0.14	0.4	1.1		416455.706	4413208.012
873	39.8533	-111.9913	1.04	0	6	9	1983	16	12	30.8	0	0	10	77	13.4	0.26	0.7	1.7		415201.365	4411945.275
874	39.8543	-111.9787	2.45	0	6	9	1983	16	57	15.01	5.6	0	23	49	13.9	0.36	0.7	1.9		416280.44	4412044.39
875	39.8562	-111.967	0.98	0	6	9	1983	17	1	49.47	2.36	0	6	243	14.3	0.15	1.2	16.8		417283.575	4412244.38
876	39.8503	-111.9643	2.39	0	6	9	1983	17	3	58.25	1.76	0	14	134	14.9	0.22	0.6	31.8		417507.471	4411587.043
877	39.886	-111.9757	1.31	0	6	9	1983	17	6	5.59	6.34	0	27	48	11.4	0.32	0.6	1.1		416575.481	4415559.987
878	39.8393	-111.9815	1.28	0	6	9	1983	17	8	0.35	2.66	0	18	87	15.1	0.11	0.4	0.8		416022.643	4410382.162
879	39.8265	-112.0008	0.68	0	6	9	1983	17	22	49.52	4.15	0	6	267	15.6	0.77	6.1	30.2		414355.404	4408979.792

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
880	39.8255	-112.0018	0.54	0	6	9	1983	18	36	15.76	4.28	0	6	268	15.7	0.73	5.8	27.6		414268.583	4408869.76
881	39.849	-111.9647	0.98	0	6	9	1983	19	30	25.63	2.19	0	7	247	15.1	0.28	2.1	23.3		417471.695	4411443.125
882	40.0595	-111.324	1.25	0	6	10	1983	23	36	27.22	6.99	0	5	254	43.4	0.38	4.6	46.1		472367.451	4434411.454
883	40.6288	-111.487	2.03	0	7	20	1983	0	15	33.77	1.63	0	5	135	4.3	0.26	1.4	28.9		458813.56	4497665.649
884	40.8227	-111.8968	0.84	0	7	30	1983	0	40	13.73	0.51	0	12	124	8.8	0.18	0.7	1.3		424375.546	4519462.299
885	40.6767	-111.6827	1.04	0	8	1	1983	16	4	33.46	1.89	0	11	106	13.2	0.25	0.6	25.6		442304.043	4503092.752
886	39.8488	-111.959	1.11	0	8	2	1983	0	50	33.83	1.85	0	7	247	15	0.13	1.2	22.3		417959.09	4411415.681
887	39.977	-111.8815	0.24	0	8	4	1983	16	58	9.78	3.35	0	5	122	11.9	0.05	0.4	7.9		424729.661	4425576.474
888	39.9908	-111.88	0.54	0	8	5	1983	6	17	10.16	2.94	0	6	126	10.4	0.19	0.6	14.4		424872.864	4427106.901
889	39.9992	-111.8417	1.08	0	8	6	1983	23	9	24.23	7.66	0	7	135	8.7	0.26	1.2	3.3		428151.448	4428007.661
890	39.9942	-111.8748	0.71	0	8	7	1983	1	48	5.48	3.37	0	6	128	9.9	0.1	0.4	6.7		425320.506	4427479.906
891	39.9913	-111.8823	0.64	0	8	11	1983	11	42	48.31	2.42	0	6	128	10.4	0.21	0.7	20.8		424677.055	4427164.338
892	39.987	-111.887	0.73	0	8	12	1983	1	51	8.62	2.48	0	6	127	11	0.23	0.7	22.4		424271.057	4426691.053
893	40.2525	-111.5698	0.79	0	8	12	1983	22	43	33.65	2.56	0	8	149	18.3	0.29	1.5	32.9		451541.532	4455938.56
894	41.0802	-111.3952	3.01	0	8	29	1983	12	53	11.21	9.98	0	14	154	51.7	0.27	1.4	1		466803.359	4547735.317
895	40.2458	-111.3632	0.65	0	9	22	1983	15	26	11.31	3.09	0	11	196	20.6	0.34	1.7	31.5		469108.771	4455102.452
896	40.2535	-111.38	1.96	0	9	22	1983	21	47	52.13	3.68	0	25	118	20.6	0.29	0.8	1.2		467683.541	4455963.104
897	39.816	-111.9883	0.93	0	9	23	1983	19	12	38.34	6.63	0	6	270	17.1	0.07	0.9	2.7		415412.251	4407802.505
898	40.5133	-110.8305	1.52	0	9	25	1983	12	8	33.41	1.7	0	19	185	37.7	0.44	1.7	2.9		514359.555	4484744.829
899	40.4713	-111.97	1.44	0	9	29	1983	20	39	3.12	6.41	0	22	65	10.6	0.3	0.6	1.2		417772.516	4480520.846
900	39.9888	-111.794	1.27	0	10	2	1983	13	33	29.43	1.18	0	12	142	10.4	0.31	1.2	3.4		432212.944	4426815.983
901	39.9765	-111.9185	1.1	0	10	5	1983	8	2	25.67	6.73	0	10	128	13.3	0.17	0.5	2		421569.652	4425552.865
902	39.98	-111.9175	1.31	0	10	5	1983	8	53	3.1	7.15	0	8	125	12.9	0.08	0.4	1.3		421659.04	4425940.459
903	39.9817	-111.9107	0.82	0	10	5	1983	14	13	13.39	5.8	0	6	134	12.4	0.19	0.7	5		422241.596	4426123.194
904	39.9833	-111.9162	0.49	0	10	5	1983	19	17	37.35	7.83	0	6	137	12.6	0.17	0.7	3.4		421773.806	4426305.593
905	39.9752	-111.918	0.84	0	10	5	1983	21	20	42.39	3.78	0	6	132	13.4	0.06	0.4	5		421610.862	4425408.136
906	39.9815	-111.9175	0.85	0	10	6	1983	0	8	31.16	8.93	0	8	124	12.8	0.14	0.5	1.7		421660.753	4426106.948
907	39.922	-111.9773	1.22	0	10	6	1983	8	4	37.17	8.79	0	11	190	9.1	0.19	0.7	1.6		416482.401	4419557.168
908	40.7482	-111.993	3.85	0	10	8	1983	11	57	53.83	5.41	0	30	66	15.9	0.33	0.7	1.2		416169.538	4511279.683
909	40.7447	-111.963	0.73	0	10	8	1983	12	15	46.55	12.05	0	11	169	13.6	0.34	1.2	3.1		418697.954	4510862.938
910	40.7255	-111.9793	0.74	0	10	8	1983	13	21	53.45	10.44	0	16	65	15.6	0.22	0.6	1.1		417298.019	4508746.833
911	40.7407	-111.9923	1.45	0	10	11	1983	10	23	1.57	1.39	0	34	66	16.1	0.35	0.5	1.1		416219.222	4510446.462
912	40.7318	-111.9905	2.66	0	10	11	1983	11	1	58.17	10.61	0	22	99	16.2	0.18	0.5	0.9		416360.053	4509456.784
913	40.7393	-111.9957	1.98	0	10	16	1983	2	15	12.13	1.32	0	30	49	16.4	0.27	0.5	1.5		415930.39	4510294.303
914	40.7347	-111.9972	0.61	0	10	16	1983	5	40	52.02	5.76	0	12	65	16.7	0.28	0.7	5		415797.939	4509785.108
915	40.7342	-111.9927	0.88	0	10	16	1983	6	30	43.69	3.95	0	13	64	16.4	0.23	0.6	7.4		416177.29	4509725.299
916	40.4987	-111.3498	1.61	0	10	21	1983	12	50	6.62	5.68	0	26	111	12.4	0.34	0.9	1.2		470359.496	4483169.193
917	40.731	-111.9873	1.56	0	10	22	1983	13	17	16.3	3.8	0	21	53	16.1	0.25	0.5	6.2		416629.274	4509364.935
918	40.7405	-111.973	1.05	0	11	4	1983	22	43	33.83	5.41	0	10	63	14.6	0.2	0.6	5.9		417848.516	4510406.019
919	40.7598	-111.9855	1.09	0	11	5	1983	8	17	51.55	2.95	0	14	85	15.1	0.46	1.2	22.8		416817.168	4512560.23

FID_1	lat	lon	mag	Iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
920	40.8792	-111.6497	1.6	0	11	7	1983	21	27	8.66	6.97	0	24	77	9.8	0.24	0.6	1		445259.426	4525550.383
921	40.7055	-111.4205	1.18	0	11	10	1983	12	23	29.89	10.31	0	16	151	11.8	0.26	1	0.8		464478.318	4506150.616
922	40.5362	-111.5423	0.87	0	11	17	1983	19	0	29.59	10.13	0	7	128	10.7	0.52	2	6.6		454073.431	4487414.2
923	40.729	-111.8445	1.34	0	11	17	1983	19	55	6.07	3.84	0	9	199	6.5	0.14	1.1	2.2		428685.763	4509017.133
924	40.5227	-112.1738	1.83	0	11	17	1983	21	40	50.45	0.38	0	27	92	10.4	0.42	1	3.6		400571.834	4486436.237
925	39.9753	-111.4607	1.25	0	11	18	1983	19	2	10.55	2.47	0	10	231	29.8	0.3	2.3	47.1		460660.546	4425117.378
926	40.7315	-111.9973	1.1	0	11	20	1983	9	57	36.86	1.11	0	16	64	16.8	0.34	0.8	2.3		415785.46	4509429.982
927	40.7027	-111.4157	1.75	0	11	29	1983	11	2	45.08	10.93	0	25	151	11.6	0.38	0.8	1		464882.328	4505837.875
928	40.33	-112.204	2	0	12	6	1983	0	18	10.66	1.17	0	15	111	15.6	0.37	1.2	10.5		397722.125	4465080.577
929	40.8132	-111.7943	1.78	0	12	13	1983	13	56	45.01	8.21	0	25	82	3.8	0.23	0.5	0.9		433009.594	4518324.333
930	40.2463	-112.2	1.87	0	12	30	1983	20	0	13.06	0.69	0	12	102	23.7	0.23	0.8	9.7		397936.084	4455785.279
931	40.731	-111.9927	1.38	0	1	7	1984	1	33	18.85	6.81	0	20	47	16.5	0.23	0.5	1.7		416173.274	4509370.077
932	40.7398	-111.9955	1.33	0	1	7	1984	1	37	42.71	4.21	0	21	49	16.4	0.29	0.6	2.5		415947.906	4510349.615
933	40.8143	-111.7955	1.39	0	2	18	1984	1	5	47.1	7.24	0	16	103	3.9	0.26	0.7	1.5		432909.494	4518447.359
934	40.7333	-111.989	1.58	0	2	27	1984	3	23	42.77	1.02	0	19	62	16.1	0.25	0.5	1.2		416488.594	4509621.867
935	40.6322	-111.297	0.89	0	3	15	1984	8	19	30.25	9.63	0	9	205	13.4	0.16	1.7	1.3		474883.495	4497971.47
936	40.5193	-111.5092	0.97	0	3	17	1984	9	32	6.72	6.37	0	18	90	10.4	0.28	0.7	1.3		456865.798	4485521.564
937	41.1783	-111.6437	1.81	0	3	23	1984	6	48	32.37	3.8	0	22	182	23.5	0.26	1.3	1.2		446009.841	4558750.047
938	40.4533	-111.5435	0.72	0	3	26	1984	10	36	54.9	3.66	0	6	144	4.6	0.07	0.7	3.1		453915.119	4478212.882
939	40.2492	-112.1977	1.53	0	4	1	1984	0	4	32.76	5.4	0	15	97	23.4	0.3	0.8	2		398136.06	4456104.531
940	40.4022	-111.702	0.94	0	4	11	1984	20	4	28.77	2.95	0	7	148	14.9	0.47	1.8	43.8		440430.297	4472635.575
941	41.0795	-111.5403	1.24	0	5	1	1984	19	50	44.01	3	0	11	158	22.9	0.35	1.5	31.7		454614.492	4547722.995
942	40.3227	-111.3132	2.38	0	5	5	1984	4	3	0.93	6.79	0	20	194	11.1	0.29	1.2	1		473391.595	4463621.824
943	41.0698	-111.575	1.26	0	5	10	1984	19	38	43.12	12.63	0	9	162	22.1	0.1	0.7	2.6		451692.559	4546664.824
944	40.0355	-111.3165	1.1	0	5	13	1984	20	26	42.94	7.45	0	9	241	42.2	0.31	3.1	17.3		472997.627	4431745.358
945	39.916	-111.4415	1.11	0	5	23	1984	23	58	57.49	8.02	0	11	248	30	0.48	3.6	2.8		462267.488	4418527.392
946	40.3223	-112.2033	1.11	0	6	1	1984	12	31	11.92	3.95	0	13	103	16.2	0.35	1	11		397769.972	4464225.064
947	39.9715	-111.8638	1.18	0	6	2	1984	9	10	44.91	0.12	0	22	100	11.2	0.44	1	2.1		426235.152	4424951.227
948	39.9692	-111.853	2.5	0	6	2	1984	13	52	34.32	0.78	0	34	62	10.4	0.29	0.6	1.8		427154.997	4424687.069
949	40.0037	-111.8208	1.29	0	6	7	1984	18	36	38.24	3.24	0	10	122	8.2	0.39	1.3	4.7		429940.119	4428490.488
950	40.0342	-111.8172	1.43	0	6	7	1984	20	47	25.12	0.92	0	17	84	5	0.38	1	3.2		430278.453	4431872.937
951	40.753	-112.0682	2.26	0	6	10	1984	14	10	31.02	1.96	0	27	67	14.1	0.35	0.7	2		409827.427	4511887.066
952	40.3435	-111.6718	1.06	0	6	14	1984	15	29	34.72	0.29	0	10	125	14.6	0.36	1.3	2.5		442943.513	4466100.041
953	40.5295	-112.1635	0.97	0	6	15	1984	20	47	59.89	1.22	0	13	114	16.1	0.25	0.7	14.9		401454.289	4487179.5
954	40.9167	-111.981	1.36	0	6	17	1984	0	27	56.61	3.57	0	16	95	21	0.1	0.4	6.3		417392.033	4529973.247
955	40.9175	-111.9682	1.24	0	6	17	1984	6	16	25.8	4.85	0	15	87	16.4	0.25	0.6	5.3		418470.892	4530050.046
956	40.914	-111.971	1.72	0	6	17	1984	9	1	13.43	3.13	0	31	55	16.8	0.26	0.4	1.3		418230.796	4529664.124
957	40.9185	-111.971	1.38	0	6	17	1984	9	14	41.84	1.33	0	22	55	16.4	0.27	0.6	1.5		418236.342	4530163.67
958	40.9175	-111.9777	0.94	0	6	17	1984	16	18	17.88	3.34	0	11	88	16.9	0.13	0.5	9.3		417670.915	4530058.944
959	40.9108	-111.969	1.1	0	6	17	1984	17	6	56.98	1.41	0	19	87	17	0.19	0.4	999.9		418395.286	4529307.024

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
960	40.6973	-111.7585	1.27	0	6	18	1984	11	55	42.06	3.03	0	17	68	10.2	0.3	0.8	7.5		435917.758	4505431.97
961	40.4413	-111.415	0.72	0	6	20	1984	5	8	36.19	11.05	0	10	123	9.9	0.2	0.7	1.6		464804.769	4476821.755
962	40.5415	-112.143	1.82	0	6	20	1984	15	59	29.12	1.32	0	19	143	15.2	0.36	1.1	11.6		403207.9	4488488.833
963	40.3303	-111.68	0.93	0	6	22	1984	16	50	31.24	2.94	0	9	140	15.9	0.33	1.4	22.5		442235.819	4464640.187
964	40.9208	-111.9812	1.2	0	6	24	1984	2	56	43.64	2.38	0	14	89	16.9	0.2	0.5	14.5		417380.297	4530428.578
965	40.8252	-111.8067	1.4	0	6	24	1984	9	34	40.31	0.88	0	17	61	5	0.32	1	2.6		431976.042	4519665.975
966	40.9065	-111.559	1.52	0	6	27	1984	0	40	18.58	8.94	0	25	128	4.2	0.28	0.7	1		452920.763	4528528.15
967	40.9053	-111.5617	1.4	0	6	27	1984	0	42	2.49	8.35	0	19	128	4.2	0.31	0.8	1.7		452692.512	4528396.397
968	40.9052	-111.5645	1.8	0	6	27	1984	1	42	57.59	9.51	0	24	127	4.3	0.33	0.8	1.2		452456.617	4528386.813
969	40.5378	-112.1857	1.93	0	7	2	1984	20	24	20.52	1.25	0	14	127	14.9	0.45	1.5	21.2		399586.352	4488125.888
970	40.5405	-112.1553	1.57	0	7	3	1984	20	47	17.47	1.23	0	18	110	15.1	0.22	0.7	8.1		402164.828	4488391.41
971	40.654	-111.6605	0.92	0	7	4	1984	2	2	59.79	2.75	0	8	128	12.3	0.14	0.6	11.3		444161.28	4500558.623
972	40.738	-111.9877	0.84	0	7	4	1984	18	25	2.87	2.29	0	11	113	15.8	0.24	0.8	17.9		416604.238	4510142.363
973	40.3242	-111.6547	1.31	0	7	5	1984	17	5	39.27	2.21	0	10	147	14.7	0.44	1.6	39.3		444379.995	4463946.899
974	40.7393	-111.9762	0.76	0	7	7	1984	18	29	5.21	1.85	0	15	113	14.9	0.3	0.7	33.8		417576.851	4510275.811
975	40.7335	-111.988	0.62	0	7	11	1984	23	55	0.91	2.49	0	9	116	16	0.1	0.4	10.2		416573.285	4509643.117
976	40.6638	-111.679	0.98	0	7	14	1984	8	47	9.97	1.81	0	13	82	12.2	0.33	0.8	33.9		442605.677	4501658.375
977	40.0295	-111.4967	1.6	0	7	20	1984	15	0	59.21	0.13	0	14	99	42.8	0.45	1.4	3.3		457619.995	4431149.591
978	40.8357	-111.5797	1.75	0	7	20	1984	17	6	24.44	9.14	0	23	78	5.8	0.28	0.7	0.9		451125.356	4520680.141
979	40.5423	-112.1598	2.13	0	7	20	1984	17	22	22.15	1.15	0	21	96	14.8	0.27	0.7	7.7		401786.372	4488596.223
980	40.3565	-111.4465	1.44	0	7	30	1984	7	10	46.53	1.71	0	6	115	9.3	0.28	1.2	60.1		462085.774	4467422.116
981	40.5442	-112.1613	1.61	0	8	1	1984	20	50	6.9	0.79	0	16	119	14.5	1.05	3.3	43.3		401662.126	4488808.804
982	40.3853	-111.431	0.83	0	8	7	1984	1	18	26.76	1.47	0	11	147	8.7	0.38	1.2	999.9		463417.526	4470612.328
983	41.0702	-111.6083	1.39	0	8	18	1984	23	49	39.79	7.04	0	24	140	19.8	0.28	0.8	1		448895.223	4546728.209
984	40.0045	-111.523	1.39	0	8	20	1984	22	59	6.36	4.77	0	16	94	26.2	0.35	0.9	2		455359.699	4428387.651
985	40.8117	-111.904	1.21	0	9	4	1984	20	56	24.68	2.09	0	13	106	8.8	0.39	1	4.1		423755.79	4518247.449
986	40.4928	-111.3635	0.84	0	9	4	1984	23	10	4.7	10.12	0	7	104	12.8	0.15	0.7	2.3		469195.918	4482518.985
987	40.7507	-112.1763	2.59	0	9	5	1984	12	25	29.42	0.99	0	35	82	8.9	0.4	0.8	3.9		400698.512	4511748.444
988	40.5097	-112.1705	1.76	0	9	18	1984	17	58	42.16	6.74	0	14	136	35.2	0.29	1	1.7		400832.216	4484989.472
989	40.5375	-112.1755	2.18	0	9	19	1984	17	44	55.04	0.31	0	28	105	35.1	0.37	0.9	7.7		400449.737	4488081.017
990	39.9157	-111.608	2.07	0	10	3	1984	21	31	35.36	1.54	0	18	80	15.9	0.33	0.9	1.9		448037.364	4418577.723
991	40.5053	-111.4055	0.31	0	10	11	1984	21	14	30.99	4.95	0	5	148	11.4	0.46	2	21.8		465643.08	4483921.999
992	40.7358	-112.1748	1.17	0	10	14	1984	17	33	43.37	1.73	0	15	130	7.3	0.34	0.9	36		400803.005	4510092.729
993	40.751	-111.76	1.29	0	10	15	1984	2	53	33.04	6.02	0	8	199	7.6	0.39	2.1	5.9		435842.618	4511394.067
994	40.9483	-111.5187	1.17	0	11	2	1984	18	16	25.1	6.26	0	9	301	41.1	0.19	4	2.6		456342.381	4533147.413
995	40.007	-111.2332	1.5	0	11	8	1984	6	51	56.37	0.76	0	10	203	45.2	0.29	1.9	1.9		480096.141	4428560.191
996	40.4343	-111.434	2.4	0	12	16	1984	13	34	39.83	0.24	0	30	88	8.2	0.43	1	1.7		463189.598	4476052.506
997	40.1058	-111.245	1.25	0	12	26	1984	21	7	17.3	12.39	0	11	245	34.2	0.43	2.7	10		479119.175	4439528.851
998	39.9182	-111.5613	1.41	0	12	28	1984	6	19	54.04	2.41	0	11	153	19.9	0.32	1.1	35.7		452030.341	4418829.063
999	40.4888	-111.3513	1.27	0	1	14	1985	8	13	8.12	8.19	0	20	108	11.7	0.3	0.7	0.9		470228.017	4482070.797

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FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1000	40.4855	-111.3685	1.1	0	1	14	1985	8	58	7.97	9.35	0	13	99	12.5	0.24	0.8	1		468768.818	4481710.443
1001	39.9818	-111.3215	2.01	0	1	15	1985	13	57	29.75	5.78	0	21	124	37.8	0.2	0.5	0.9		472549.547	4425786.686
1002	40.614	-111.5462	1.24	0	1	16	1985	22	13	52.92	13.96	0	8	121	8.2	0.22	1.2	1.3		453796.694	4496052.2
1003	40.0162	-111.2393	1.88	0	1	26	1985	3	26	5.13	2.11	0	14	146	35.8	0.27	1.4	1.9		479578.241	4429582.685
1004	39.8377	-112.0185	2.37	0	2	6	1985	3	7	34.08	3.15	0	30	51	13.9	0.29	0.6	1.1		412854.833	4410239.979
1005	39.8433	-112.0132	1.24	0	2	6	1985	3	55	59.32	5.34	0	11	78	13.5	0.23	0.6	1.7		413315.364	4410856.373
1006	40.8808	-111.5278	2.45	0	2	6	1985	18	49	51.29	1.68	0	24	144	26.1	0.29	0.9	1.7		455531.247	4525658.922
1007	40.4972	-111.3518	0.46	0	2	15	1985	0	24	27.57	12.43	0	8	174	12.4	0.23	1.1	2.3		470189.36	4483003.367
1008	40.7923	-111.5	1.22	0	2	19	1985	21	7	7.2	10.11	0	12	247	21.6	0.23	1.3	3.6		457817.429	4515821.057
1009	40.4432	-111.9948	0.73	0	3	4	1985	20	36	58.9	2.22	0	19	78	24.5	0.29	0.6	27		415635.027	4477425.098
1010	40.5742	-111.943	1.01	0	3	11	1985	7	32	55.31	2.04	0	18	70	15.2	0.26	0.7	17.3		420183.514	4491918.216
1011	40.902	-111.6763	1.24	0	3	23	1985	3	52	6.69	3.03	0	12	170	17.5	0.17	0.8	13.9		443037.781	4528098.351
1012	40.7547	-111.8482	1.63	0	4	21	1985	23	0	20.75	5.24	0	16	76	1.2	0.22	0.7	1.3		428400.877	4511873.007
1013	40.2005	-110.9845	1.45	0	5	6	1985	15	19	10.5	3	0	8	284	33	0.12	1.6	26.3		501319.198	4450011.259
1014	40.4803	-111.4638	0.96	0	5	10	1985	13	9	49.49	7.61	0	10	108	9.2	0.18	0.6	1.8		460688.875	4481171.331
1015	40.8793	-111.6837	1.86	0	6	5	1985	4	23	47.85	5.42	0	24	138	15.2	0.27	0.9	1.2		442394.818	4525583.301
1016	40.4	-111.383	0.88	0	6	10	1985	20	14	11.78	12.42	0	9	128	10.9	0.14	0.6	1.2		467498.755	4472225.249
1017	40.4038	-111.5907	1.24	0	6	17	1985	18	24	48.69	1.76	0	12	90	5.5	0.49	1.3	41		449876.141	4472744.114
1018	39.9593	-111.6428	1.19	0	6	24	1985	0	13	20.66	2.21	0	12	205	14.9	0.32	1.7	29.1		445098.019	4423437.73
1019	40.5233	-111.3518	0.81	0	6	27	1985	17	4	35.66	2.09	0	10	114	12.1	0.35	1	30.4		470200.915	4485900.476
1020	41.124	-111.6782	1.71	0	7	11	1985	3	0	21.62	8.65	0	26	134	17.2	0.2	0.5	1.2		443069.189	4552743.995
1021	40.4173	-111.4212	1.34	0	7	12	1985	18	48	47.18	3.36	0	14	116	8.9	0.25	0.7	4.9		464266.258	4474160.269
1022	41.189	-111.5818	1.62	0	7	25	1985	3	16	44.47	2.97	0	20	151	24.9	0.28	0.8	19.2		451209.654	4559901.335
1023	40.4612	-111.4523	1.77	0	7	27	1985	2	49	20.04	3.95	0	17	96	8.2	0.24	0.7	1.3		461652.742	4479046.175
1024	40.6925	-111.878	0.73	0	7	29	1985	14	37	43.69	1.72	0	12	126	11.4	0.27	0.8	39.9		425816.306	4504993.167
1025	39.9193	-111.9638	1.09	0	8	2	1985	17	25	10.87	3.84	0	7	190	10.2	0.57	3.4	19		417632.862	4419244.949
1026	40.7565	-111.4745	1.18	0	8	4	1985	19	0	1.47	9.58	0	13	198	17.3	0.14	0.8	2.3		459947.253	4511835.1
1027	40.3437	-111.7962	1.63	0	8	16	1985	22	57	38.68	3.68	0	21	100	25.9	0.23	0.5	1.6		432378.223	4466209.868
1028	40.3455	-111.7902	1.46	0	8	16	1985	23	5	26.78	2.26	0	16	106	25.6	0.24	0.6	22.3		432889.596	4466405.098
1029	40.8218	-111.9028	0.98	0	8	20	1985	20	5	29.15	6.01	0	10	125	9.2	0.23	0.8	3.8		423868.549	4519367.587
1030	40.554	-111.5147	0.54	0	8	26	1985	22	20	37.75	2.33	0	9	91	7.7	0.1	0.6	9.6		456422.381	4489376.012
1031	40.4057	-111.6368	1.27	0	9	1	1985	1	19	34.62	7.59	0	11	104	9.4	0.1	0.4	1.4		445965.819	4472982.174
1032	40.7165	-111.9752	1.01	0	9	7	1985	8	9	35.72	5.44	0	11	106	4.4	0.08	0.5	1.6		417633.175	4507743.92
1033	40.378	-111.4228	1.31	0	9	23	1985	11	7	5.14	9.92	0	11	135	9.7	0.35	1.2	2.9		464109.655	4469798.682
1034	40.0103	-111.8302	1.65	0	9	26	1985	16	30	57.82	0.76	0	15	85	7.5	0.43	1.2	3.6		429144.591	4429230.469
1035	40.4883	-111.3532	0.98	0	10	6	1985	2	59	13.21	10.02	0	10	169	11.8	0.31	1.2	2.7		470066.773	4482015.94
1036	40.4917	-111.3825	1.58	0	10	7	1985	7	22	15.41	8.09	0	18	125	13.6	0.38	1.1	1.7		467585.268	4482403.692
1037	40.4907	-111.354	0.64	0	10	8	1985	12	47	12.84	13.48	0	8	169	12	0.2	0.9	2.1		470000.043	4482282.612
1038	40.482	-111.3508	1	0	10	8	1985	16	29	33.66	10.59	0	9	166	11.1	0.3	1.3	3		470267.39	4481315.83
1039	40.0357	-111.7877	1.83	0	10	15	1985	21	12	9.4	0.28	0	12	126	6.1	0.48	1.3	3.9		432796.823	4432016.75

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1040	40.0977	-111.386	2.08	0	10	16	1985	22	2	30.67	0.18	0	22	121	36.7	0.44	1.2	4.4		467098.119	4438672.44
1041	41.0887	-111.5345	1.59	0	10	17	1985	20	29	45	4.73	0	12	208	31.4	0.33	2.2	3.1		455107.959	4548741.301
1042	40.7067	-112.0698	1.15	0	10	24	1985	2	10	5.72	10.67	0	22	55	2.3	0.22	0.5	1		409629.736	4506749.079
1043	40.4943	-111.3498	1.1	0	11	3	1985	20	54	21.54	9.47	0	13	110	12.1	0.32	0.8	2.8		470357.559	4482680.792
1044	40.2083	-111.8025	3	0	11	4	1985	8	13	35.34	4.19	0	34	103	14.9	0.31	0.8	1		431707.063	4451185.662
1045	39.9975	-111.8887	0.92	0	11	11	1985	6	36	59.59	6.15	0	6	135	10	0.16	0.5	3.2		424137.533	4427857.919
1046	40.184	-111.2418	2.4	0	11	12	1985	15	0	33.66	4.53	0	28	154	25.5	0.29	0.8	0.9		479415.52	4448207.771
1047	39.9228	-111.6282	1.37	0	11	26	1985	7	43	36.42	11.02	0	10	225	14.4	0.4	2.8	5.6		446316.506	4419377.702
1048	40.4898	-111.3432	1.15	0	12	14	1985	9	18	42.08	11.61	0	9	112	11.3	0.14	0.7	1.4		470914.909	4482179.096
1049	40.0118	-111.8075	1.58	0	12	18	1985	22	14	31.6	1.75	0	10	138	7.6	0.35	1.6	29.1		431083.508	4429379.155
1050	41.039	-111.6012	1	0	1	8	1986	9	14	24.8	10.45	0	13	193	19.2	0.2	1.2	2.6		449467.845	4543260.517
1051	39.9273	-111.6428	1.67	0	1	23	1986	5	24	17.47	6.68	0	14	78	13.4	0.24	0.6	1.6		445072.435	4419886.038
1052	40.0272	-111.3058	1.54	0	2	1	1986	23	19	50.77	5.11	0	12	244	43	0.25	1.9	16.9		473907.342	4430820.943
1053	40.6922	-111.6055	0.71	0	2	10	1986	6	5	15.61	2.44	0	9	187	16.4	0.14	0.8	13.8		448840.219	4504765.512
1054	40.6912	-111.6162	1.21	0	2	10	1986	6	5	29.38	8.03	0	17	77	15.4	0.2	0.5	2.1		447935.373	4504660.792
1055	40.8232	-111.9008	1.68	0	2	10	1986	22	41	39.31	6.42	0	18	97	9.1	0.33	0.8	3.4		424038.805	4519521.263
1056	40.889	-111.5977	1.58	0	2	11	1986	8	17	47.27	10.49	0	16	135	5.6	0.36	1	1.6		449648.146	4526607.048
1057	40.7143	-111.5828	1.12	0	3	12	1986	1	32	10.01	4.17	0	10	167	16.8	0.28	1.3	9.3		450774.466	4507205.747
1058	40.2762	-111.3907	1.53	0	3	16	1986	10	11	40.39	9.83	0	13	181	19	0.15	0.7	2.2		466784.68	4458486.662
1059	39.9452	-111.9468	1.49	0	3	17	1986	22	13	13.59	13.93	0	5	161	10.9	0.02	0.6	1.5		419116.214	4422104.086
1060	40.0283	-111.8823	1.74	0	3	17	1986	22	13	23.33	2.31	0	5	153	6.8	0.26	1.3	29		424717.717	4431271.069
1061	39.9563	-111.9293	1.38	0	3	20	1986	1	49	51.82	2.2	0	7	146	12.4	0.39	1.3	29.7		420624.07	4423320.379
1062	39.9662	-111.9607	1.09	0	3	21	1986	10	18	22.46	6.69	0	13	100	9.8	0.27	0.7	2.4		417953.837	4424447.613
1063	40.5072	-111.3593	1.26	0	4	2	1986	23	24	13.71	7.85	0	15	108	13.1	0.23	0.6	2.3		469558.349	4484115.93
1064	39.902	-111.3987	1.63	0	4	8	1986	14	59	11.73	6.98	0	6	152	33.5	0.14	0.8	17.5		465918.436	4416956.337
1065	40.6233	-111.1853	0.98	0	4	15	1986	0	24	6.01	3.94	0	5	280	22.5	0.49	31.3	39.4		484327.595	4496957.659
1066	40.5168	-111.533	1.47	0	4	17	1986	7	59	12.08	1.78	0	13	84	11.4	0.16	0.5	21		454848.02	4485255.975
1067	40.7425	-111.7397	0.85	0	4	28	1986	6	33	49.39	2.69	0	14	104	7.2	0.26	0.6	6.9		437548.359	4510435.875
1068	40.776	-111.5803	1.06	0	4	28	1986	8	35	9.29	7.66	0	10	130	11.6	0.24	0.9	4.8		451030.905	4514053.383
1069	39.9987	-111.8953	0.78	0	5	7	1986	20	42	0.78	11.92	0	10	113	10.2	0.21	0.6	1.7		423575.465	4427996.748
1070	39.995	-111.8857	0.9	0	5	7	1986	20	46	9.48	7.06	0	11	117	10.2	0.23	0.8	2		424390.87	4427577.888
1071	39.9615	-111.8995	0.9	0	5	7	1986	21	40	37.29	14.9	0	8	136	12.3	0.18	1.2	1.2		423175.287	4423871.446
1072	40.3153	-112.071	1.46	0	5	11	1986	7	17	57.57	4.86	0	24	73	14.8	0.32	0.8	1.3		409000.753	4463303.693
1073	40.3368	-112.122	1.65	0	5	14	1986	18	2	42.04	11.91	0	7	132	12.2	0.51	2.1	8		404697.614	4465743.855
1074	40.6667	-111.5885	0.83	0	5	15	1986	3	3	30.72	6.32	0	9	111	13.7	0.12	0.5	2.8		450257.635	4501925.147
1075	40.3742	-111.8692	1.43	0	5	26	1986	7	45	29.11	13.79	0	8	153	21.2	0.16	0.7	2.3		426211.473	4469653.681
1076	41.1127	-111.6092	1.84	0	6	11	1986	11	39	49.58	3.74	0	19	187	21.4	0.28	1.1	13.2		448852.584	4551446.752
1077	40.7357	-111.9947	1.35	0	6	16	1986	7	25	46.81	10.32	0	16	64	3.9	0.23	0.6	1.5		416010.296	4509893.721
1078	40.3232	-111.3827	2.8	0	6	28	1986	21	16	24.04	5.49	0	32	105	14.7	0.28	0.7	1		467487.338	4463700.525
1079	40.7727	-111.9023	1.28	0	7	31	1986	23	55	21.59	1.93	0	8	184	8	0.21	1.2	18.7		423854.626	4513916.679

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1080	40.5763	-112.1018	1.32	0	8	18	1986	23	34	8.03	1.72	0	8	124	13.3	0.47	1.4	76.1		406745.196	4492307.347
1081	39.9	-112.0008	1.03	0	8	19	1986	12	6	9.92	10.63	0	12	136	8.8	0.17	0.6	1		414446.746	4417137.604
1082	40.7077	-111.4908	1.21	0	8	24	1986	18	25	36.94	2.42	0	10	160	12.2	0.14	0.6	11.3		458541.079	4506425.627
1083	39.838	-112.0255	1.12	0	9	8	1986	7	32	31.16	11.77	0	9	107	13.7	0.23	1	2.6		412256.268	4410280.121
1084	40.8178	-111.8215	2.59	0	10	1	1986	11	51	46.68	5.31	0	23	79	4.2	0.27	0.5	2.4		430720.338	4518856.112
1085	40.2888	-111.865	1.7	0	10	29	1986	20	31	44.45	5.25	0	6	127	23.7	0.37	2	31.8		426475.396	4460170.898
1086	40.7082	-112.0833	2.71	0	11	13	1986	23	28	5.38	11.6	0	35	52	2.3	0.27	0.5	0.5		408491.371	4506929.566
1087	40.7042	-111.6867	1.11	0	11	26	1986	22	46	27.01	5.21	0	8	86	10.2	0.17	0.7	5.9		441989.849	4506148.015
1088	40.4907	-111.3473	1.05	0	12	8	1986	18	27	25.97	9.77	0	10	110	11.6	0.15	0.5	1.8		470567.84	4482280.355
1089	39.9133	-111.8438	1.58	0	12	13	1986	22	50	16.29	8.55	0	12	80	5.3	0.21	0.7	1.9		427882.008	4418475.185
1090	40.7295	-112.0435	1.15	0	12	18	1986	2	38	9.98	9.09	0	17	97	2.4	0.27	0.7	1.1		411881.512	4509253.31
1091	40.7998	-111.6485	2.22	0	12	25	1986	22	33	49.1	10.77	0	27	65	12.7	0.25	0.5	1		445295.292	4516735.644
1092	40.8013	-111.6595	1.18	0	12	25	1986	22	35	27.97	10.06	0	17	88	12.8	0.29	0.7	1.8		444368.625	4516909.075
1093	39.9585	-111.8422	1.77	0	12	26	1986	12	31	57.38	1.99	0	14	106	8.9	0.27	0.8	19.6		428066.1	4423490.693
1094	40.8068	-111.6257	1.49	0	12	27	1986	12	28	53.72	9.45	0	21	135	15.7	0.26	0.7	1.3		447224.16	4517498.716
1095	40.6655	-111.5982	0.83	0	1	6	1987	19	57	53.54	5.66	0	12	75	14.4	0.1	0.4	2.5		449436.842	4501797.476
1096	40.0455	-111.166	2.1	0	1	10	1987	11	2	26.42	0.04	0	20	187	41.5	0.43	1.7	2.6		485839.696	4432820.491
1097	40.4767	-111.3438	0.65	0	1	23	1987	18	12	47.28	8.2	0	11	109	10.3	0.37	1.1	4.1		470858.396	4480725.196
1098	40.4903	-111.3563	2.22	0	1	23	1987	18	12	54.48	9.57	0	19	106	12.1	0.28	0.7	2.4		469804.948	4482238.996
1099	40.2703	-111.8197	2.06	0	1	29	1987	19	57	21.9	3.95	0	30	68	21.5	0.32	0.7	1.2		430306.926	4458080.836
1100	40.2722	-111.7988	1.82	0	1	29	1987	19	57	47.43	5.73	0	8	123	21.9	0.52	2	27.1		432085.82	4458275.507
1101	40.4815	-111.3423	1.02	0	2	2	1987	0	57	36.39	10.48	0	10	110	10.6	0.24	0.8	2.3		470987.607	4481257.501
1102	40.4352	-111.4527	1.04	0	2	7	1987	19	59	24.04	9.98	0	9	150	6.8	0.17	0.8	1.9		461604.035	4476160.365
1103	40.4313	-111.4532	0.77	0	2	7	1987	20	5	51.9	11.28	0	7	156	6.6	0.22	1.1	2.7		461559.406	4475727.686
1104	40.4282	-111.4545	0.88	0	2	8	1987	4	4	44.01	11.41	0	9	129	6.3	0.16	0.6	1.6		461447.369	4475384.155
1105	40.2432	-111.5048	1.98	0	2	8	1987	18	26	1.02	6.57	0	7	189	19.1	0.36	2.2	10.5		457063.587	4454872.803
1106	40.4873	-111.3567	2.24	0	2	9	1987	7	57	26.23	12.73	0	18	105	11.9	0.3	0.7	1.1		469769.703	4481906.133
1107	39.9578	-111.9442	2.91	0	2	12	1987	21	1	47.66	5.42	0	23	72	11.1	0.3	0.7	1.5		419353.132	4423500.231
1108	39.9742	-111.9478	1.29	0	2	13	1987	8	5	0.09	7.38	0	6	133	11	0.15	0.7	3.9		419064.984	4425323.765
1109	39.9358	-111.9165	1.13	0	2	14	1987	10	11	50.99	6.55	0	10	84	11.9	0.1	0.4	1.6		421694.025	4421033.738
1110	40.4822	-111.3497	1.65	0	2	23	1987	15	11	13.68	8.93	0	16	107	11.1	0.4	1.1	4		470360.711	4481337.66
1111	40.49	-111.3385	0.63	0	2	23	1987	15	11	27.13	6.55	0	9	115	11.1	0.26	0.8	4.6		471313.305	4482199.757
1112	40.1973	-111.4735	1.45	0	2	25	1987	16	41	10.62	1.66	0	11	204	24.5	0.32	1.8	2.9		459698.671	4449763.445
1113	41.0297	-111.5443	1.21	0	3	10	1987	6	37	0.34	11.22	0	16	184	17.4	0.28	1.3	3.5		454243.995	4542196.725
1114	39.9345	-111.722	1.16	0	3	11	1987	2	1	31.95	0.39	0	8	192	7.8	0.39	2	5		438311.161	4420736.905
1115	40.2627	-111.8082	1.83	0	3	11	1987	5	16	11.72	4.35	0	12	108	20.8	0.16	0.5	10.3		431277.006	4457228.278
1116	40.0713	-111.7093	1.39	0	3	19	1987	20	38	33.59	7.28	0	9	154	10.6	0.11	0.6	1.9		439517.116	4435911.879
1117	41.102	-111.5488	1.3	0	3	26	1987	14	9	58.79	6.61	0	11	162	29.6	0.21	1.1	3		453916.209	4550225.223
1118	40.0182	-111.4875	1.65	0	4	2	1987	0	0	5.84	0.9	0	12	129	29.6	0.86	3.1	32.2		458398.108	4429891.052
1119	40.351	-110.981	2.47	0	4	7	1987	15	22	52.99	5.22	0	15	202	24.2	0.29	1.6	2.1		501613.5	4466716.143

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1120	40.3752	-110.9653	1.39	0	4	7	1987	15	26	34.68	3.95	0	8	226	25	0.29	3.4	25.2		502945.706	4469402.68
1121	40.3323	-111.0437	1.2	0	4	8	1987	1	30	47.54	1.35	0	7	210	20.1	0.33	5.3	3		496287.926	4464641.246
1122	40.3988	-110.9225	0.81	0	4	8	1987	6	8	5.71	5.25	0	10	232	28.3	0.37	3.5	24.4		506576.732	4472024.529
1123	40.4765	-112.5138	1.7	0	4	9	1987	20	41	31.3	5.08	0	10	142	34.5	0.23	0.8	13		371682.76	4481746.745
1124	39.9272	-111.907	1.67	0	4	16	1987	18	53	55.31	1.74	0	13	60	10.8	0.28	0.8	3.1		422496.02	4420070.92
1125	40.7902	-111.6938	1.4	0	4	18	1987	22	52	54.33	1.88	0	9	153	9.7	0.11	0.6	18		441465.518	4515699.229
1126	41.1168	-111.6662	0.77	0	4	23	1987	10	6	53.61	9.38	0	16	135	17.5	0.26	0.8	2.7		444070.411	4551936.929
1127	39.926	-111.3432	1.78	0	5	11	1987	20	57	27.02	11.12	0	12	97	38.5	0.18	0.6	1.4		470672.921	4419600.367
1128	40.5137	-111.373	2.32	0	5	13	1987	21	52	39.71	4.18	0	32	103	11.8	0.3	0.6	1		468400.667	4484842.251
1129	40.4948	-111.3588	2.22	0	5	17	1987	15	33	12.64	5.03	0	21	106	12.6	0.28	0.7	2.1		469595.113	4482739.355
1130	40.648	-111.0282	3.08	0	6	2	1987	2	3	31.26	6.19	0	22	212	16.5	0.33	1.3	1.5		497615.764	4499683.301
1131	40.5142	-111.3683	1.51	0	6	19	1987	5	29	28.07	3.68	0	23	105	11.9	0.27	0.7	1.3		468799.068	4484896.078
1132	40.2557	-111.8922	1.51	0	6	25	1987	15	58	34.04	11.83	0	10	115	20.5	0.17	0.7	4.2		424126.393	4456519.802
1133	40.7822	-111.7247	1.11	0	6	30	1987	21	45	29.8	5.7	0	11	74	7.1	0.27	0.8	3.9		438851.19	4514832.259
1134	40.789	-111.7038	1.83	0	7	10	1987	21	58	52.99	5.32	0	18	75	8.9	0.27	0.6	3.1		440620.763	4515572.744
1135	40.9923	-111.6098	1.38	0	7	26	1987	20	17	12.85	12.79	0	10	142	14.6	0.16	0.8	1.4		448708.781	4538081.334
1136	40.821	-111.6128	0.97	0	8	3	1987	11	13	41.06	8.38	0	12	98	8.9	0.2	0.6	1.2		448323.261	4519067.327
1137	40.4458	-111.4773	1.59	0	8	7	1987	20	2	36.57	7.41	0	5	129	5.5	0.11	0.6	2		459523.925	4477347.941
1138	40.0913	-111.6982	1.62	0	8	9	1987	21	19	39.82	0.51	0	21	69	11.7	0.35	1	3.7		440481.054	4438124.258
1139	40.8277	-111.9973	1.23	0	8	13	1987	13	6	14.06	1.42	0	15	77	16.7	0.21	0.5	999.9		415906.879	4520108.927
1140	40.824	-111.994	0.95	0	8	13	1987	16	13	46.81	4.08	0	16	77	15.7	0.25	0.6	7.1		416180.483	4519695.033
1141	40.8343	-111.9868	1.07	0	8	15	1987	1	35	53.4	7.42	0	16	81	16.1	0.25	0.7	3.6		416800.512	4520831.56
1142	40.4485	-111.4558	1.66	0	8	22	1987	16	18	34.7	3.87	0	6	134	7.2	0.13	0.6	3.5		461348.724	4477638.007
1143	40.3925	-111.5263	0.78	0	8	24	1987	18	14	40.48	8.55	0	9	193	2.4	0.13	0.8	0.8		455333.364	4471455.301
1144	40.7373	-111.5188	1.53	0	8	26	1987	0	7	19.62	10.02	0	22	95	15.2	0.25	0.6	1.2		456195.26	4509724.961
1145	40.6965	-112.0408	1.3	0	8	27	1987	17	42	21.37	6.22	0	17	67	13.4	0.19	0.5	2.8		412066.109	4505587.382
1146	40.3478	-111.3975	1.85	0	9	9	1987	8	22	21.16	1.44	0	26	81	13.2	0.29	0.6	1.2		466242.248	4466436.594
1147	40.6735	-111.7933	1.17	0	9	10	1987	23	45	11.6	2.13	0	7	195	11.2	0.42	2.9	47.4		432953.787	4502816.013
1148	40.4397	-111.4003	1.04	0	9	13	1987	2	42	33.21	7.37	0	10	151	11.1	0.21	0.8	2.4		466050.642	4476638.403
1149	40.4497	-111.4642	2.01	0	9	15	1987	20	47	47.86	0.35	0	7	130	6.7	0.17	0.7	2.2		460637.112	4477774.917
1150	41.1103	-111.1992	1.22	0	9	23	1987	23	25	32.22	6.98	0	8	186	60.4	0.19	1.5	21.2		483274.93	4551020.642
1151	40.9602	-111.6342	1.78	0	10	9	1987	12	7	54.55	11	0	15	177	12.8	0.29	1	2.5		446630.582	4534532.529
1152	40.5033	-111.3373	0.69	0	10	17	1987	1	37	45.76	9.35	0	10	119	12.2	0.19	0.7	2.4		471420.645	4483675.669
1153	39.8718	-111.8727	2.28	0	10	22	1987	2	20	18.77	0.06	0	15	108	7.2	0.36	1.2	2.9		425366.947	4413892.822
1154	40.3447	-111.735	1.11	0	11	1	1987	23	1	47.83	7.77	0	9	135	19.2	0.12	0.6	3.4		437576.949	4466275.901
1155	40.6882	-111.6032	2.18	0	11	17	1987	3	5	27.05	10.12	0	18	77	16.1	0.21	0.6	1.3		449031.503	4504320.158
1156	40.019	-111.2067	1.19	0	11	24	1987	18	32	9.13	6.96	0	9	129	40.4	0.18	0.7	16.2		482361.035	4429886.496
1157	40.0167	-111.2095	1.61	0	11	24	1987	19	1	54.34	6.97	0	11	129	40.5	0.24	0.8	18.6		482121.493	4429631.776
1158	40.0183	-111.208	1.42	0	11	24	1987	19	12	37.71	6.98	0	12	129	40.5	0.27	0.9	20.4		482249.916	4429809.061
1159	40.3565	-111.7272	1.62	0	11	29	1987	15	30	33.95	2.95	0	14	105	18.1	0.41	1.1	27.5		438250.167	4467580.21

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1160	40.0683	-111.3967	1.04	0	12	27	1987	10	43	58.27	4.4	0	12	103	37.2	0.31	1	28.5		466171.522	4435413.279
1161	40.3023	-111.8205	2.19	0	1	1	1988	16	16	51.34	2.2	0	12	113	25.1	0.22	0.7	2.1		430271.799	4461633.389
1162	40.0697	-111.5387	1.73	0	1	7	1988	23	43	14.69	0.13	0	14	112	25.1	0.23	0.7	1.9		454063.4	4435632.297
1163	41.0297	-111.0837	1.95	0	2	5	1988	10	8	15.72	0.18	0	14	199	41	0.3	1.6	3.3		492963.862	4542057.426
1164	41.044	-111.6743	1.6	0	2	6	1988	21	40	5.71	7.73	0	12	131	13.8	0.18	0.8	3.7		443327.884	4543860.479
1165	40.853	-111.6215	1.1	0	3	9	1988	23	58	56.33	8.21	0	11	185	7.7	0.12	0.6	1.5		447614.792	4522624.727
1166	41.0377	-111.086	1.51	0	3	12	1988	14	49	52.97	0.45	0	17	215	41.8	0.36	2.1	3.7		492771.391	4542945.695
1167	40.5072	-111.354	1.04	0	4	4	1988	21	23	7.41	9.56	0	14	111	13.3	0.19	0.5	1		470007.392	4484114.114
1168	40.7297	-112.0732	1.26	0	4	18	1988	18	6	54.41	11.72	0	13	111	4.3	0.22	1	1.7		409373.72	4509305.743
1169	40.2653	-111.8852	1.58	0	4	20	1988	0	53	23.63	3.94	0	9	113	21.4	0.36	1.3	26.8		424732.328	4457579.411
1170	40.706	-111.3447	1.77	0	5	19	1988	18	12	46.71	0.03	0	11	104	11	0.35	1	4		470881.744	4506178.232
1171	40.1482	-110.992	2.8	0	5	20	1988	20	55	13.74	7.43	0	25	171	37	0.38	1.4	1		500681.399	4444206.211
1172	40.3957	-111.936	2.33	0	5	25	1988	10	5	44.12	7.39	0	15	98	15.1	0.34	0.8	2.2		420565.839	4472098.056
1173	40.5028	-111.3478	0.84	0	5	28	1988	5	36	16.15	9.99	0	11	113	12.7	0.2	0.6	1.9		470530.761	4483623.624
1174	40.1668	-111.2313	1.17	0	6	6	1988	4	50	39.23	7.82	0	13	142	27.4	0.15	0.5	4.8		480304.416	4446296.297
1175	40.6925	-111.3375	1.54	0	6	7	1988	15	46	48.71	11.68	0	10	97	10.1	0.37	1.3	2.1		471484.203	4504677.317
1176	40.2298	-112.3722	2.56	1	6	11	1988	3	49	31.15	7.77	0	16	113	33.2	0.21	0.7	8.2		383261.134	4454166.222
1177	40.804	-111.5603	1.36	0	7	8	1988	16	48	45.96	11.98	0	15	101	8.1	0.18	0.6	1		452738.487	4517150.585
1178	41.1733	-111.5947	1.08	0	7	10	1988	3	40	20.42	8.36	0	19	142	24	0.28	0.8	4.9		450115.93	4558165.733
1179	40.7113	-111.424	1.23	0	7	26	1988	10	33	9.07	11.57	0	16	103	12.4	0.17	0.5	0.8		464185.763	4506795.862
1180	40.4862	-111.028	1.91	0	7	27	1988	7	59	35.18	8.89	0	17	181	21	0.32	1.1	1.5		497626.966	4481723.312
1181	40.7342	-111.8453	1.53	0	8	24	1988	5	13	47.85	6.72	0	14	83	6.1	0.21	0.6	1.5		428623.764	4509595.015
1182	40.4603	-111.4653	2.12	0	8	25	1988	22	26	51.57	1.88	0	6	118	7.3	0.21	0.8	23.1		460550.035	4478952.003
1183	41.0242	-111.1053	1.27	0	9	4	1988	2	1	49.37	1.45	0	12	213	40	0.31	1.8	3.1		491147.348	4541448.837
1184	40.7315	-111.9672	1.27	0	9	5	1988	13	40	33.73	7.82	0	11	135	4	0.2	0.7	1.5		418327.217	4509401.547
1185	39.9435	-111.96	2.79	0	9	8	1988	21	42	10.12	2.53	0	29	81	9.9	0.23	0.6	1		417986.508	4421927.448
1186	40.8443	-111.6885	1.32	0	9	10	1988	21	33	37.85	2.49	0	8	163	12.4	0.41	2.1	28.9		441959.844	4521701.191
1187	40.6422	-112.4273	2.11	0	9	12	1988	13	41	20.93	3.77	0	8	187	19.8	0.18	1	11.7		379313.186	4500018.31
1188	40.4228	-111.958	1.68	0	9	12	1988	21	16	58.29	1.42	0	16	91	12.4	0.39	0.9	1.6		418731.376	4475126.173
1189	40.0108	-111.3253	1.25	0	9	16	1988	16	37	32.19	9.8	0	12	109	42	0.26	0.9	3.7		472236.839	4429006.586
1190	40.7253	-112.0018	2.23	0	9	24	1988	1	40	56.94	8.93	0	12	86	2.4	0.15	0.6	1.1		415397.61	4508746.066
1191	40.729	-112.0003	1.89	0	9	24	1988	1	41	46.76	8.53	0	16	64	2	0.23	0.6	1.2		415528.967	4509155.347
1192	40.7427	-111.996	0.99	0	9	24	1988	1	55	43.53	9.96	0	8	106	1.3	0.17	0.6	1.6		415909.342	4510672.014
1193	40.7355	-111.9913	0.84	0	9	24	1988	2	13	15.66	8.62	0	9	103	2	0.18	0.7	1.6		416297.136	4509868.272
1194	40.02	-111.9628	1.92	0	10	2	1988	6	20	24.43	1.66	0	15	60	11.9	0.28	0.7	47.4		417838.986	4430420.962
1195	40.4607	-111.4515	2.09	0	10	11	1988	20	41	27.4	1.57	0	9	109	8.2	0.26	0.9	63.1		461720.284	4478990.328
1196	40.5003	-111.0427	1.4	0	10	15	1988	13	32	9.79	10.72	0	8	238	20.5	0.27	2.8	1.6		496381.88	4483288.907
1197	40.205	-111.6953	2.27	0	10	18	1988	3	17	47.95	1.35	0	23	72	18.5	0.42	1	4.3		440827.019	4450742.393
1198	40.2223	-111.7113	1.99	0	10	18	1988	3	18	56.03	2.95	0	12	129	19.2	0.32	1	25.3		439480.732	4452673.41
1199	40.7318	-111.9713	1.86	0	10	28	1988	22	10	59.44	7.35	0	18	100	3.7	0.17	0.5	1.2		417981.366	4509438.671

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	mln_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1200	40.723	-111.4183	2.96	0	11	6	1988	15	30	58.86	9.87	0	23	133	13.7	0.31	0.8	1.1		464673.414	4508092.306
1201	40.739	-111.9685	1.9	0	11	21	1988	23	55	57.61	6.86	0	21	50	3.7	0.26	0.5	1.6		418226.625	4510235.307
1202	41.03	-111.108	2.13	0	12	16	1988	14	46	45.71	1.53	0	15	199	39.8	0.37	2	2.8		490921.154	4542092.972
1203	40.4785	-110.9857	1.5	0	12	20	1988	22	5	29.59	7.06	0	19	185	24	0.36	1.2	2		501212.081	4480868.338
1204	41.0162	-111.4205	1.49	0	12	25	1988	19	15	14.33	13.85	0	13	169	18.5	0.3	1.1	1		464643.922	4540640.564
1205	39.9457	-111.737	2.31	0	12	31	1988	0	1	39.11	6.93	0	22	65	7.8	0.26	0.7	1.4		437039.79	4421990.476
1206	40.7087	-112.0057	1.7	0	1	8	1989	16	14	7.27	8.57	0	9	73	1.9	0.18	0.7	1.9		415047.147	4506907.122
1207	40.5183	-111.712	2.28	0	1	12	1989	23	10	18.17	13.48	0	10	122	19.5	0.39	2.4	2.3		439685.646	4485529.514
1208	40.5703	-112.0138	2.43	0	1	12	1989	23	10	19.35	7.9	0	6	230	21.1	0.28	16	56.1		414185.853	4491551.868
1209	40.9375	-111.6088	1.8	0	1	19	1989	14	37	17.67	12.23	0	10	127	9.4	0.13	0.6	0.8		448750.515	4531997.416
1210	40.2078	-111.1942	1.56	0	2	14	1989	17	20	30.37	0.64	0	12	146	23.4	0.37	1.3	4		483473.499	4450839.482
1211	40.4658	-111.9288	1.19	0	2	18	1989	2	48	23.62	6.86	0	15	69	14.8	0.15	0.4	2.2		421258.691	4479872.771
1212	39.8462	-111.5135	0.9	0	2	27	1989	12	15	38.05	4.06	0	7	99	24.1	0.12	0.9	15.8		456069.507	4410813.285
1213	39.8312	-111.53	1.91	0	2	27	1989	12	32	15.24	1.46	0	17	82	23.2	0.29	0.8	1.2		454648.041	4409156.701
1214	39.843	-111.5253	1.97	0	2	27	1989	12	34	37.41	2.5	0	12	88	23.2	0.3	1	41		455057.913	4410463.987
1215	39.8545	-111.5108	1.37	0	2	27	1989	13	10	12.88	3.29	0	11	88	24.2	0.33	0.8	8.6		456305.759	4411733.163
1216	39.8532	-111.5365	2.78	0	2	27	1989	13	25	14.52	19.59	0	13	86	22.1	0.35	1.2	2.1		454106.483	4411601.755
1217	39.85	-111.523	2.09	0	2	27	1989	15	21	56.42	2.05	0	14	80	23.2	0.31	0.8	4.9		455259.235	4411239.75
1218	40.3272	-111.3822	1.45	0	3	8	1989	2	58	32.58	8.65	0	16	92	14.3	0.18	0.5	1.1		467531.733	4464144.329
1219	40.3093	-111.3687	1.05	0	3	8	1989	5	11	4.97	9.48	0	13	197	14.9	0.26	1.1	2.7		468670.301	4462152.625
1220	39.8477	-111.529	1.38	0	3	9	1989	4	13	20.1	5.66	0	11	96	22.8	0.21	0.6	8.1		454744.443	4410987.497
1221	39.8462	-111.5223	1.45	0	3	10	1989	12	58	19.99	4.01	0	11	96	23.4	0.14	0.5	11.3		455316.654	4410817.645
1222	40.7323	-112.1962	1.82	0	3	30	1989	2	12	54.59	1.12	0	15	123	6.7	0.29	0.8	1.1		398990.713	4509728.603
1223	39.994	-111.0777	1.67	0	4	4	1989	6	54	44.36	5.2	0	9	150	30	0.13	0.5	11.4		493366.971	4427094.168
1224	40.7333	-112.0563	1.24	0	4	7	1989	20	24	50.76	8.82	0	7	115	4.1	0.14	0.6	1.4		410805.672	4509688.062
1225	41.1275	-111.5665	1.54	0	4	8	1989	10	24	7.96	2.95	0	10	163	27.4	0.2	1.2	18.4		452448.305	4553065.551
1226	40.4103	-110.9407	1.96	0	4	8	1989	10	36	47.43	7.49	0	11	210	26.7	0.19	1.1	2		505031.404	4473299.812
1227	40.4103	-110.9335	1.28	0	4	8	1989	14	11	17.23	3.07	0	9	210	27.3	0.25	3.4	24.8		505642.3	4473300.246
1228	40.4173	-110.9415	2.79	0	4	8	1989	14	11	53.69	5.11	0	23	188	26.6	0.3	1.3	1.2		504963.013	4474076.754
1229	40.4062	-110.9578	3.13	0	4	9	1989	11	24	19.6	6.82	0	23	176	25.2	0.27	0.9	1.2		503580.744	4472843.886
1230	40.4115	-110.9408	1.41	0	4	9	1989	12	50	45.27	1.65	0	13	188	26.7	0.17	1.2	2.2		505022.83	4473433.004
1231	41.1302	-111.5473	2.05	0	4	9	1989	16	13	56.72	6.53	0	17	147	26.9	0.19	0.7	1.3		454061.833	4553354.982
1232	40.412	-110.9253	2.09	0	4	10	1989	5	40	1.97	4.01	0	16	189	28	0.24	1.3	1.7		506337.883	4473489.499
1233	40.441	-110.9267	1.22	0	4	12	1989	13	41	4.02	7.4	0	10	190	28.1	0.36	1.7	1.8		506216.43	4476708.354
1234	40.4067	-110.9197	2.29	0	4	12	1989	16	28	23.94	1.87	0	22	181	28.5	0.33	1.5	1.6		506813.546	4472901.626
1235	40.2627	-111.9215	1.38	0	4	13	1989	21	34	16.9	0.1	0	9	157	22	0.15	1	0.9		421642.732	4457322.272
1236	39.8957	-111.6938	1.86	0	4	14	1989	22	33	1.63	8.38	0	12	135	8.4	0.33	0.9	2.4		440687.174	4416411.381
1237	40.2613	-111.785	1.57	0	4	15	1989	9	53	30.3	2.95	0	12	112	20.9	0.19	0.6	18.6		433248.397	4457055.155
1238	40.5158	-111.5145	1.48	0	4	20	1989	0	44	45.54	2.91	0	10	102	11	0.15	0.4	5.4		456414.568	4485135.667
1239	40.2598	-111.8493	1.63	0	4	20	1989	22	42	37.32	13.23	0	7	161	20.4	0.12	0.8	3.4		427779.058	4456939.06

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1240	40.3177	-111.376	1.77	0	4	21	1989	18	44	15.28	9.61	0	12	172	14.7	0.17	0.7	2.4		468053.952	4463087.604
1241	40.6105	-112.0988	2.2	0	5	3	1989	17	19	5.7	3.94	0	8	104	10.7	0.32	1.2	9.6		407046.496	4496100.54
1242	40.7242	-111.2735	1.89	0	5	9	1989	22	49	39.13	2.96	0	6	290	20.1	0.34	3.9	24.6		476902.605	4508177.346
1243	40.8165	-111.089	2.03	0	5	17	1989	11	56	26.12	5.74	0	17	214	19.2	0.23	1	2.3		492494.243	4518390.957
1244	40.8162	-111.6387	1.53	0	5	19	1989	0	29	39.95	10.8	0	8	198	14.9	0.15	1	2.2		446135.247	4518550.087
1245	40.4162	-110.9427	2.16	0	5	20	1989	19	31	0.82	5.96	0	10	188	26.6	0.18	1.4	2.3		504861.286	4473954.589
1246	40.3453	-111.3043	1.18	0	5	24	1989	4	9	49.46	12.01	0	9	250	8.6	0.11	1	1.7		474156.333	4466127.717
1247	40.3187	-111.301	2.38	0	5	24	1989	4	10	57.67	8.72	0	14	124	11.2	0.18	0.6	0.8		474426.557	4463174.242
1248	40.4618	-111.9162	1.83	0	5	27	1989	3	29	33.56	1.85	0	11	150	15.9	0.27	1	29.5		422322.294	4479417.602
1249	40.674	-111.5583	1.23	0	6	4	1989	21	56	0.05	4.31	0	9	144	12.2	0.15	0.7	5.3		452815.418	4502718.828
1250	40.2822	-111.4833	1.24	0	6	21	1989	20	43	13.93	2.43	0	7	181	15.1	0.16	1	30.6		458915.904	4459191.457
1251	40.2453	-111.9755	2.26	0	6	28	1989	19	22	3.04	2.12	0	21	74	22.2	0.29	0.6	27.9		417029.665	4455440.043
1252	40.4782	-111.9	1.9	0	6	29	1989	23	59	18.36	2.31	0	9	96	15.8	0.27	0.9	23.5		423714.349	4481223.898
1253	40.779	-112.0432	1.47	0	7	8	1989	6	27	4.52	4.87	0	9	118	4.6	0.1	0.4	1.1		411972.166	4514747.88
1254	40.437	-111.4705	2.37	0	7	17	1989	18	44	32.62	8.54	0	6	144	5.5	0.14	0.6	1.5		460095.378	4476368.052
1255	40.4812	-111.8887	2.13	0	7	21	1989	1	5	19.36	0.46	0	15	63	14.9	0.3	0.7	3.4		424675.524	4481547.196
1256	40.8807	-111.595	2.26	0	8	16	1989	9	17	48.56	8.5	0	29	112	21.1	0.2	0.4	0.9		449869.34	4525684.131
1257	40.6147	-111.2815	0.65	0	8	18	1989	1	48	15.17	10.63	0	8	138	8.5	0.15	0.7	2.1		476188.077	4496024.619
1258	40.6045	-111.2985	1.58	0	8	18	1989	7	9	35.02	7.48	0	11	130	10.2	0.22	0.7	2.9		474746.215	4494897.135
1259	40.4978	-111.9113	1.94	0	8	22	1989	11	33	39.24	2.09	0	13	66	15.2	0.12	0.4	12.6		422778.997	4483409.363
1260	40.6532	-111.3605	1.47	0	9	9	1989	20	31	29.73	3.88	0	11	122	9.4	0.18	0.7	3.6		469523.011	4500322.597
1261	40.8845	-111.513	1.57	0	9	23	1989	11	52	17.73	11.26	0	12	203	27.5	0.2	0.9	2.3		456780.604	4526062.239
1262	40.2595	-111.8882	1.38	0	9	24	1989	20	53	18.14	3.35	0	8	120	27.6	0.23	1.2	1.9		424470.787	4456938.177
1263	40.7912	-111.5657	2.11	0	9	28	1989	11	48	20.11	7.41	0	17	94	20.5	0.18	0.5	2.1		452273.826	4515732.629
1264	40.601	-112.1308	2.21	0	10	10	1989	18	51	25.21	2.62	0	12	93	9.7	0.36	1.3	3.7		404325.839	4495080.279
1265	40.515	-112.1778	2.12	0	11	1	1989	2	47	2.35	0.13	0	18	170	10	0.38	1.3	2.1		400221.585	4485586.026
1266	41.0477	-111.6175	2.64	0	11	2	1989	6	51	25.82	12.44	0	19	91	18.6	0.13	0.4	0.6		448104.622	4544235.882
1267	41.0525	-111.619	1.86	0	11	2	1989	7	15	49.91	11.09	0	8	96	18.5	0.24	0.9	3.2		447982.341	4544769.63
1268	39.8108	-111.5967	1.7	0	11	13	1989	8	40	43.7	3.93	0	6	167	18.7	0.13	1.1	11		448925.403	4406928.495
1269	39.863	-111.9325	2.34	0	11	17	1989	23	39	36.04	2.56	0	25	62	12.4	0.27	0.5	1.7		420242.599	4412967.76
1270	40.0578	-111.7662	1.99	0	12	6	1989	14	12	59.05	1.11	0	7	162	6.2	0.16	1	10.6		434652.237	4434453.691
1271	40.699	-112.0673	1.81	0	12	8	1989	19	57	1.61	9.41	0	11	87	11.3	0.17	0.5	1.9		409830.54	4505891.759
1272	40.356	-111.4185	2.75	0	12	13	1989	23	19	25.44	6.14	0	21	75	11.2	0.22	0.5	1.1		464463.119	4467354.995
1273	40.7382	-112.1775	1.9	0	12	19	1989	18	22	23.96	1.53	0	18	78	7.6	0.21	0.5	999.9		400578.593	4510362.202
1274	41.1055	-111.5713	2.08	0	1	1	1990	6	57	6.07	8.6	0	16	111	13.7	0.14	0.4	0.8		452029.38	4550625.908
1275	40.709	-112.0815	2.17	0	1	8	1990	23	17	37.1	8.1	0	23	61	7.2	0.21	0.4	1.5		408644.517	4507016.498
1276	40.7025	-112.0892	2.2	0	1	8	1990	23	51	41.82	11.03	0	24	62	8.1	0.21	0.4	0.8		407985.131	4506302.99
1277	40.4808	-111.3467	1.06	0	1	19	1990	22	55	25.68	1.59	0	6	168	10.8	0.12	0.8	999.9		470614.37	4481181.257
1278	40.7345	-111.9963	1.77	0	1	22	1990	4	54	5	8.16	0	17	64	1.8	0.19	0.4	1.4		415873.683	4509762.044
1279	40.3365	-111.451	1.68	0	1	26	1990	22	18	43.66	3.15	0	10	168	10.8	0.18	1.2	6.3		461692.346	4465204.105

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1280	40.1658	-111.7708	1.63	0	2	7	1990	20	29	18.24	2.16	0	10	92	11.2	0.33	1.2	3.1		434363.815	4446444.44
1281	40.697	-111.6145	1.38	0	2	19	1990	4	15	3.17	3.77	0	12	114	17.5	0.15	0.5	5		448083.514	4505303.613
1282	40.592	-112.1623	2.19	0	2	19	1990	22	27	15.44	1.39	0	7	168	9.4	0.09	999.9	207.3		401647.457	4494115.945
1283	40.747	-111.461	1.39	0	3	17	1990	3	38	26.9	1.63	0	10	174	16.1	0.15	0.7	999.9		461081.259	4510774.477
1284	40.7628	-112.0407	1.92	0	3	17	1990	15	30	18.07	5.55	0	28	57	15.4	0.22	0.4	1.1		412161.792	4512947.048
1285	40.7498	-112.0487	1.07	0	3	17	1990	19	42	5.74	2.15	0	11	105	15.2	0.17	0.5	15.4		411469.311	4511511.989
1286	40.453	-111.4588	1.8	0	4	20	1990	15	52	13.27	2.4	0	6	128	7.2	0.11	0.5	10.2		461096.922	4478138.822
1287	40.5947	-112.129	2.32	0	4	20	1990	17	22	33.39	3.93	0	10	94	10.3	0.34	1.2	1.9		404469.167	4494378.993
1288	39.7967	-111.9188	1.84	0	4	22	1990	17	54	27.02	3.87	0	8	139	14.9	0.38	3.2	28.9		421338.799	4405597.018
1289	40.601	-112.122	1.7	0	4	25	1990	20	49	27.12	2.21	0	8	82	10.1	0.34	1.2	26		405070.4	4495070.752
1290	40.7187	-112.0753	1.53	0	5	14	1990	9	4	57.28	6.91	0	12	67	11.4	0.18	0.5	3		409181.43	4508086.835
1291	40.3375	-112.1898	1.86	0	5	17	1990	22	11	54.91	2.12	0	6	125	14.2	0.28	1.4	41.7		398939.612	4465896.77
1292	40.324	-112.2008	1.9	0	5	25	1990	18	29	56.67	1.47	0	11	107	15.9	0.25	0.7	6.4		397984.932	4464410.881
1293	41.077	-111.5567	1.66	0	5	31	1990	19	22	51.98	3.37	0	8	105	13.2	0.27	1.2	18.5		453235.105	4547454.132
1294	40.4517	-111.4602	1.39	0	6	20	1990	17	53	52.85	2.45	0	6	129	7.1	0.1	0.8	10.9		460977.459	4477995.141
1295	40.3825	-111.5997	2.04	0	6	20	1990	20	5	53.67	18.1	0	7	196	7.1	0.37	3.1	2.1		449096.405	4470384.983
1296	40.8963	-111.667	2.16	0	7	5	1990	2	7	32.42	5.58	0	22	82	17.6	0.19	0.4	1.1		443816.268	4527459.589
1297	40.755	-112.0408	1.44	0	7	14	1990	8	19	46.14	1.36	0	16	59	16	0.18	0.4	0.8		412143.082	4512081.289
1298	40.7513	-112.0508	1.23	0	7	14	1990	18	52	2.86	6.67	0	13	58	15.1	0.19	0.5	2.8		411294.021	4511680.621
1299	40.468	-111.9655	1.44	0	8	9	1990	23	41	15.92	5.5	0	9	111	11.8	0.06	0.4	1.9		418149.983	4480150.358
1300	41.1098	-112.08	1.2	0	8	15	1990	19	3	33.98	5.07	0	9	156	14.9	0.12	0.6	3.6		409320.508	4551507.981
1301	40.767	-112.0628	1.98	0	8	19	1990	0	5	4.08	7.07	0	24	62	5	0.33	0.6	1.3		410302.102	4513435.64
1302	40.4112	-111.9465	1.52	0	9	11	1990	1	1	56.18	2.95	0	13	126	24	0.28	0.8	22.3		419693.162	4473828.05
1303	40.5582	-111.1358	1.35	0	9	13	1990	23	28	51.15	7.18	0	8	241	14.9	0.16	1.3	4.1		488503.091	4489723.814
1304	40.759	-112.122	1.84	0	10	3	1990	5	4	5.57	1.84	0	9	128	11.6	0.14	0.6	14.5		405294.308	4512609.787
1305	40.6785	-111.5875	2.4	0	10	11	1990	17	18	47.11	9.46	0	33	74	14.4	0.28	0.4	0.9		450350.913	4503234.43
1306	40.325	-112.2688	2	0	10	16	1990	22	12	0.36	3.76	0	10	114	19.5	0.49	1.7	28.8		392209.369	4464602.463
1307	40.9438	-111.5043	1.79	0	10	28	1990	3	13	20.39	12.43	0	14	118	21	0.12	0.4	1.2		457551.515	4532640.78
1308	40.7017	-111.581	1.73	0	11	3	1990	17	14	34.99	6	0	15	82	15.7	0.18	0.4	3.1		450917.252	4505806.08
1309	40.7772	-111.7793	1.2	0	11	7	1990	10	57	17.31	8.47	0	9	115	2.5	0.18	0.7	1		434239.174	4514316.724
1310	40.9698	-111.7143	1.56	0	11	14	1990	20	43	37.98	10.23	0	12	94	12.1	0.23	0.6	1.9		439898.643	4535650.227
1311	41.0332	-111.0902	2.22	0	11	30	1990	7	5	49.49	0.73	0	19	198	28.3	0.23	0.9	1.9		492417.849	4542446.506
1312	41.1483	-111.6238	1.32	0	12	18	1990	2	43	46.07	7.27	0	5	175	18.4	0.1	1.9	9.8		447655.09	4555407.485
1313	39.9352	-111.9663	1.43	0	12	22	1990	15	16	42.46	8.93	0	8	117	9.5	0.08	0.4	1		417438.31	4421012.025
1314	40.4988	-111.5	1.2	0	12	28	1990	12	7	7.86	1.9	0	9	174	9.8	0.09	0.5	13.8		457632.232	4483241.59
1315	40.1315	-111.3988	1.1	0	1	12	1991	11	55	54.99	5.2	0	8	108	33.2	0.4	1.7	35.7		466023.894	4442428.812
1316	39.8927	-111.983	1.12	0	1	26	1991	0	32	32.77	2.46	0	5	226	10.4	0.14	1.2	19.1		415959.487	4416310.47
1317	39.9898	-111.238	1.83	0	2	8	1991	23	44	9.38	14.5	0	11	120	41	0.11	0.5	1.6		479681.359	4426652.24
1318	40.9465	-111.5677	1.79	0	2	15	1991	5	9	19.35	10.69	0	19	121	23.2	0.25	0.6	2		452216.864	4532973.222
1319	40.0303	-111.8465	1.66	0	3	2	1991	10	15	7.35	9.92	0	11	113	5.3	0.26	0.9	3.3		427774.502	4431463.412

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1320	40.6687	-111.5858	1.41	0	3	15	1991	17	12	2.86	7.17	0	13	106	13.7	0.13	0.4	1.8		450487.33	4502145.631
1321	41.0752	-111.5553	1.76	0	3	15	1991	17	44	56.73	2.93	0	12	128	13.2	0.19	0.6	13.6		453351.438	4547253.561
1322	40.3427	-111.8472	1.77	0	3	18	1991	19	0	14.32	4.49	0	14	101	24.5	0.2	0.5	1.4		428045.647	4466139.087
1323	40.8188	-111.9135	1.93	0	3	27	1991	23	22	7.53	1.88	0	11	123	9.8	0.29	1.1	23.8		422962.755	4519043.913
1324	41.0617	-111.088	2.12	0	3	28	1991	2	23	43.39	1.45	0	14	215	27.6	0.16	0.9	999.9		492605.971	4545610.114
1325	41.1218	-111.6028	1.67	0	4	1	1991	5	17	37.91	11.34	0	15	113	16.2	0.14	0.4	1.2		449396.91	4552453.229
1326	40.852	-111.5462	2	0	4	12	1991	7	24	32.71	1.35	0	13	140	29	0.56	1.9	3.5		453961.043	4522471.412
1327	40.616	-112.101	1.87	0	4	12	1991	9	48	51.79	8.86	0	8	128	10.2	0.07	0.4	1.4		406868.02	4496713.394
1328	41.0978	-111.6398	0.99	0	4	14	1991	4	10	56.14	7.97	0	7	122	18.4	0.14	0.7	4.2		446271.301	4549811.08
1329	40.7598	-112.049	1.55	0	4	14	1991	20	56	50.5	6.29	0	9	149	15.4	0.17	0.6	3.4		411457.254	4512622.367
1330	40.5317	-111.4902	0.82	0	4	25	1991	20	3	59.61	1.58	0	8	89	8.5	0.09	0.4	30		458482.942	4486888.856
1331	40.8355	-111.5793	1.68	0	4	25	1991	22	5	44.68	10.59	0	16	125	20.2	0.24	0.6	1.7		451158.933	4520657.716
1332	41.0892	-111.6238	1.85	0	5	6	1991	14	49	44.27	6.34	0	20	78	18.3	0.32	0.7	2.4		447608.114	4548846.635
1333	40.7765	-111.6602	1.52	0	5	8	1991	8	33	24.73	10.34	0	26	78	12.5	0.23	0.4	1.3		444288.853	4514156.558
1334	40.9918	-111.6207	0.91	0	5	11	1991	16	41	23	5	0	12	143	18.6	0.23	0.8	8.2		447791.566	4538032.287
1335	40.9852	-111.615	1.82	0	5	11	1991	16	44	20.22	2.44	0	12	126	19.1	0.09	0.3	13.3		448265.85	4537296.229
1336	40.8832	-112.2602	0.79	0	5	14	1991	19	13	50.01	2.49	0	8	154	7.3	0.16	0.6	6.6		393827.133	4526555.58
1337	40.3408	-111.9043	1.48	0	5	17	1991	22	2	8.04	15.41	0	7	137	20.4	0.2	1	1.4		423193.814	4465976.178
1338	40.9698	-111.6805	1.34	0	6	4	1991	18	1	14.28	8.3	0	12	135	14.6	0.13	0.7	1.8		442742.602	4535627.529
1339	40.721	-112.1808	1.43	0	6	17	1991	18	59	20.7	1.35	0	6	135	14.9	0.14	0.7	2		400274.275	4508456.61
1340	39.938	-111.9302	2.13	0	6	17	1991	22	40	13.97	2.49	0	6	166	58.4	0.14	1.7	2.6		420526.021	4421290.03
1341	40.9548	-111.5588	1.69	0	6	19	1991	12	0	21.11	10.54	0	12	132	22.1	0.3	0.9	4.6		452971.867	4533889.773
1342	41.0433	-111.1147	1.86	0	6	20	1991	10	13	48.14	0.11	0	14	173	26	0.25	1.4	2.3		490359.869	4543570.127
1343	41.0395	-111.0878	1.62	0	6	23	1991	2	54	24.7	8.01	0	11	198	28.2	0.13	1	5.8		492620.295	4543145.664
1344	40.7553	-111.948	1.24	0	6	26	1991	17	47	52.67	3.04	0	8	137	12.1	0.13	1	11.7		419977.068	4512025.826
1345	40.8222	-111.6358	1.28	0	7	1	1991	0	49	53.21	11.64	0	9	117	15.2	0.21	0.8	2.7		446384.651	4519214.351
1346	40.5998	-112.1123	2.2	0	7	3	1991	16	25	56.6	2.2	0	10	125	10.7	0.36	1.7	28.6		405889.426	4494927.131
1347	40.6023	-112.1598	1.85	0	7	17	1991	14	3	22.64	2.19	0	6	153	8.4	0.26	1.7	20.2		401874.072	4495256.51
1348	40.3412	-112.1945	2.61	0	7	22	1991	12	34	27.16	2.27	0	12	107	14.1	0.16	0.6	14.4		398545.933	4466312.85
1349	40.7582	-111.6378	1.79	0	7	25	1991	12	58	12.25	10.18	0	20	79	22.9	0.15	0.4	1		446164.328	4512111.163
1350	40.6075	-112.1158	2.33	0	7	26	1991	14	9	9.21	0.45	0	15	81	9.9	0.24	0.8	6.9		405604.123	4495785.618
1351	40.7065	-112.0567	1.28	0	7	29	1991	7	18	2.87	8.59	0	12	67	12.4	0.16	0.5	2.5		410736.097	4506713.483
1352	40.254	-111.9147	2.02	0	8	1	1991	0	53	31.69	22.99	0	8	121	20.9	0.49	3.2	6.1		422210.996	4456350.605
1353	40.3398	-112.2065	2.26	0	8	5	1991	12	20	25.48	1.15	0	18	90	14.8	0.31	0.9	8.5		397524.577	4466171.275
1354	40.7255	-112.1055	1.94	0	8	18	1991	15	18	55.48	8.62	0	23	66	9.7	0.2	0.4	1.4		406640.229	4508873.354
1355	40.9038	-111.67	1.3	0	8	25	1991	1	51	35.63	8.33	0	12	108	18	0.26	0.8	4.4		443569.94	4528294.085
1356	40.4583	-111.5162	1.68	0	8	26	1991	17	16	47.59	15.39	0	5	189	5.1	0	0.8	1.1		456233.217	4478753.991
1357	40.7688	-111.9525	1.83	0	9	3	1991	11	48	41.93	5.05	0	12	65	12.2	0.11	0.4	3.7		419613.475	4513528.536
1358	40.6152	-112.1222	1.83	0	9	4	1991	16	12	41.11	1.73	0	9	82	8.9	0.45	1.7	65.1		405073.576	4496647.242
1359	40.03	-111.91	1.36	0	9	5	1991	19	30	18.98	6.99	0	6	188	8.4	0.16	1.2	2.7		422356.107	4431483.535

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1360	40.4608	-111.461	1.85	0	9	9	1991	20	26	46.6	4.19	0	7	120	7.7	0.2	0.6	4.7		460914.897	4479005.591
1361	40.4588	-111.4957	1.75	0	9	12	1991	20	14	27.01	10.12	0	5	166	5.7	0.09	1.1	1.8		457971.659	4478799.531
1362	40.477	-112.5313	1.58	0	9	14	1991	0	56	57.95	3.88	0	12	141	35.7	0.23	0.9	1.6		370200.28	4481827.843
1363	40.2952	-111.377	1.99	0	9	20	1991	3	13	58.21	5.63	0	10	199	16.6	0.35	1.7	7.5		467958.359	4460590.544
1364	40.7588	-112.1727	1.5	0	9	20	1991	23	5	33.8	1.8	0	10	104	9.9	0.3	0.9	29.5		401014.441	4512643.544
1365	40.447	-111.4478	1.11	0	9	26	1991	23	27	54.42	1.71	0	6	138	7.7	0.29	1.5	53.6		462026.272	4477468.038
1366	40.3162	-112.215	2.14	0	10	3	1991	21	41	35.12	2.32	0	16	84	41.9	0.34	0.9	1.8		396766.647	4463561.537
1367	40.0578	-111.1578	1.79	0	10	12	1991	23	6	41.78	6.96	0	6	145	39.9	0.25	1.5	28.6		486541.6	4434184.413
1368	40.7307	-111.9812	1.51	0	10	22	1991	12	13	55.41	2.01	0	7	184	19.2	0.07	0.6	16.5		417144.012	4509325.859
1369	40.3727	-111.0365	1.39	0	11	5	1991	8	49	51.7	2.64	0	11	188	19.1	0.24	1.2	19.1		496901.376	4469125.248
1370	40.3545	-112.0933	2.09	0	11	5	1991	19	39	24.44	6.12	0	10	76	10.2	0.49	1.6	5.8		407159.707	4467678.049
1371	40.3593	-112.1927	1.91	0	11	15	1991	19	13	31.46	3.14	0	7	115	12.3	0.31	1.5	15.6		398725.9	4468319.904
1372	40.698	-112.2415	1.45	0	11	23	1991	5	40	6.65	3.11	0	6	156	4.8	0.02	0.6	1.6		395111.585	4505974.139
1373	40.2702	-111.8803	2.17	0	11	25	1991	22	39	24.82	2.59	0	16	111	21.9	0.43	1.4	2.7		425154.377	4458119.149
1374	40.6038	-112.1378	2.04	0	11	26	1991	20	26	24.8	2.21	0	7	145	9.1	0.34	1.8	29.3		403737.592	4495398.726
1375	40.8938	-111.728	1.34	0	11	28	1991	18	22	34.63	6.48	0	15	97	14.3	0.24	0.7	3.7		438675.678	4527223.021
1376	40.6462	-112.1428	1.98	0	12	10	1991	17	33	39.74	4.72	0	8	122	5.3	0.42	1.5	3.1		403375.696	4500110.845
1377	40.3198	-111.3285	1.09	0	12	11	1991	10	22	6.51	8.66	0	12	111	12	0.21	0.7	2		472090.562	4463304.643
1378	40.6962	-112.2478	1.43	0	12	12	1991	23	51	34.53	0.53	0	7	158	5.1	0.07	0.6	0.9		394576.477	4505781.866
1379	40.3475	-110.882	1.84	0	12	15	1991	14	45	13	5.25	0	9	226	32.5	0.37	3.5	30.9		510021.202	4466334.161
1380	40.557	-111.1362	1.35	0	12	22	1991	20	58	45.56	2.4	0	8	240	14.9	0.22	1.4	19.7		488469.021	4489590.665
1381	40.475	-110.9548	1.43	0	1	9	1992	9	55	56.32	1.48	0	13	199	26.4	0.25	2.7	2.2		503831.392	4480480.723
1382	40.7477	-112.0802	1.68	0	1	11	1992	22	22	8.8	3.43	0	16	64	5.8	0.18	0.4	4		408807.183	4511311.126
1383	40.7465	-112.089	1.5	0	1	11	1992	22	27	22.2	6.62	0	13	66	6.6	0.23	0.6	2.7		408062.601	4511187.097
1384	40.3692	-112.1485	2.08	0	1	27	1992	19	18	22.48	5.96	0	10	95	9.4	0.4	1.6	2.8		402493.346	4469369.149
1385	40.807	-111.9077	1.63	0	1	29	1992	22	32	14.11	1.95	0	10	83	8.9	0.24	0.8	24		423438.322	4517728.937
1386	40.7367	-112.0372	1.38	0	2	14	1992	1	16	39.79	8.05	0	11	100	15.2	0.3	0.8	4.1		412422.968	4510046.257
1387	40.7647	-111.9563	1.47	0	3	11	1992	17	47	49.4	4.37	0	11	81	12.6	0.16	0.5	6.1		419287.808	4513076.895
1388	40.7248	-111.3022	2.3	0	3	13	1992	22	54	19.05	6.89	0	11	135	8.9	0.35	1.1	5.7		474479.083	4508251.893
1389	40.5058	-111.1095	1.1	0	3	15	1992	19	40	50.79	9.75	0	8	256	16.1	0.3	2	5.7		490722.441	4483904.289
1390	40.4682	-112.0513	4.12	1	3	16	1992	14	42	49.74	10.01	0	29	80	5	0.32	0.7	0.6		410876.449	4480255.654
1391	40.4713	-112.0208	1.34	0	3	16	1992	15	23	50.21	9.06	0	12	88	7.4	0.12	0.5	1.2		413466.098	4480569.412
1392	40.7017	-111.566	1.71	0	3	17	1992	0	9	8.21	2.03	0	17	80	14.8	0.32	0.8	25.9		452184.455	4505797.808
1393	40.1723	-111.172	1.72	0	3	21	1992	22	31	4.35	6.95	0	6	158	27.6	0.25	3.5	19.9		485355.096	4446895.299
1394	40.1698	-111.1812	1.71	0	3	21	1992	22	35	44.07	7.01	0	7	155	27.8	0.23	1.3	17		484571.197	4446619.372
1395	40.4247	-111.7372	1.66	0	3	22	1992	18	12	43.84	2.57	0	11	98	16.9	0.28	1	19		437464.134	4475157.384
1396	40.5338	-111.124	1.62	0	3	22	1992	19	29	20.71	0.24	0	14	234	17.5	0.51	2.9	2.9		489498.276	4487013.923
1397	40.7413	-112.0788	1.34	0	3	24	1992	5	35	52.47	1.83	0	10	113	12.6	0.18	0.6	20.6		408916.644	4510599.224
1398	40.1825	-112.2498	1.47	0	3	30	1992	22	7	2.04	14.15	0	7	164	11	0.28	1.3	1.9		393600.569	4448762.07
1399	40.096	-111.3107	1.94	0	4	5	1992	19	50	46.91	5.25	0	13	120	35.5	0.26	0.8	18.2		473515.896	4438458.618

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1400	40.0792	-111.3282	2.56	0	4	5	1992	19	51	16.09	3.94	0	16	115	37.6	0.25	0.7	18.5		472017.313	4436599.305
1401	40.6877	-111.5732	1.22	0	4	6	1992	17	16	36.36	2.21	0	9	78	14.1	0.32	1.2	30.4		451566.06	4504247.69
1402	40.5673	-112.414	1.49	0	4	8	1992	20	15	48.31	7.52	0	6	275	21.8	0.48	15	50		380304.243	4491685.713
1403	40.8352	-111.6993	1.06	0	4	9	1992	0	22	25.07	10.83	0	13	125	11	0.26	0.9	2.1		441041.341	4520698.234
1404	40.9653	-111.704	1.47	0	4	10	1992	2	16	45.21	6.67	0	14	131	13.1	0.26	0.6	3.2		440761.269	4535143.648
1405	40.3207	-111.8985	2.08	0	4	11	1992	0	44	29.2	11.55	0	10	96	22.1	0.35	1.1	4.9		423663.794	4463740.085
1406	40.7065	-111.5922	0.59	0	4	12	1992	5	47	15.38	4.59	0	5	200	16.7	0.22	1.3	15		449974.665	4506345.22
1407	40.3238	-111.9005	2.15	0	4	29	1992	21	32	18.03	3.34	0	11	96	21.8	0.44	1.4	31.2		423497.373	4464085.907
1408	40.6943	-112.079	1.88	0	4	30	1992	22	38	43.87	8.5	0	17	68	10.2	0.2	0.4	1.6		408835.656	4505382.102
1409	40.6815	-111.599	1.54	0	5	1	1992	7	21	46.28	6.95	0	14	76	15.4	0.18	0.5	2.3		449381.323	4503574.002
1410	40.2745	-112.3065	2.43	0	5	5	1992	22	46	40.57	3.39	0	9	117	10.8	0.23	0.8	2		388923.796	4459043.513
1411	40.2785	-112.3122	1.71	0	5	5	1992	22	48	4.8	2.52	0	10	112	11.2	0.15	0.6	11.7		388445.754	4459494.675
1412	40.7168	-111.477	1.36	0	5	15	1992	22	58	48.25	4.84	0	7	178	12.9	0.31	1.6	8.9		459712.284	4507429.347
1413	40.862	-111.1617	1.36	0	5	18	1992	19	51	23.78	11.55	0	6	288	21.4	0.29	3.4	7		486372.455	4523450.518
1414	40.5173	-112.1982	2.53	0	5	21	1992	19	57	24.41	1.13	0	12	216	11.4	0.31	2.5	10.1		398496.809	4485864.618
1415	40.6503	-112.2385	1.5	0	5	22	1992	21	54	13.12	1.49	0	9	166	4.3	0.19	0.8	44.9		395290.437	4500675.52
1416	41.0407	-111.1707	1.46	0	5	28	1992	20	30	10.71	3.39	0	12	245	21.7	0.41	2.6	27.2		485652.7	4543289.197
1417	40.769	-111.9582	2.17	0	5	30	1992	21	35	13.92	3.59	0	20	56	5.2	0.19	0.4	3		419132.658	4513555.976
1418	40.7673	-111.9675	2.45	0	6	3	1992	3	43	14.33	4.12	0	26	45	4.4	0.16	0.3	1.1		418345.692	4513375.877
1419	40.7682	-111.9635	2.91	0	6	3	1992	4	20	13.57	1.49	0	44	45	4.8	0.22	0.4	0.8		418684.382	4513472.069
1420	40.7645	-111.9547	0.86	0	6	3	1992	12	3	32.6	2.01	0	16	69	12.4	0.23	0.5	17.2		419422.609	4513053.223
1421	40.7617	-111.9583	1.15	0	6	3	1992	15	10	38.92	1.66	0	15	102	12.8	0.23	0.6	52.5		419115.367	4512745.715
1422	40.5132	-112.1672	2.92	0	6	6	1992	17	18	24.79	1.66	0	15	88	9.3	0.21	0.6	43.9		401116.949	4485374.279
1423	40.7025	-111.5612	0.81	0	6	9	1992	20	14	34.72	3.94	0	7	207	14.6	0.44	2.5	15.1		452590.527	4505884.011
1424	40.4682	-111.3373	0.85	0	6	11	1992	3	9	52.46	17.64	0	13	109	9.2	0.56	1.7	3.9		471405.753	4479779.574
1425	40.5212	-112.1745	2.78	0	6	14	1992	20	16	6.87	1.08	0	20	89	10.4	0.41	0.9	5		400510.32	4486270.521
1426	39.9837	-111.9138	1.5	0	6	15	1992	12	4	26.94	6.98	0	8	102	12.4	0.26	0.8	3		421979.179	4426347.887
1427	40.52	-112.1632	3.1	0	6	15	1992	17	19	4.11	2.29	0	9	208	9.7	0.21	1.5	15.5		401465.786	4486124.627
1428	40.518	-112.2042	2.2	0	6	15	1992	21	19	51.11	5.97	0	10	216	11.8	0.24	1.8	3.8		397989.58	4485949.245
1429	40.0138	-111.7123	2.23	0	6	18	1992	19	23	57.99	12.52	0	7	260	15.5	0.18	3.3	0.9		439210.253	4429531.851
1430	40.5293	-112.1743	2.57	0	6	20	1992	20	7	33.28	1.21	0	8	130	11.1	0.25	1.3	20.5		400539.238	4487169.428
1431	39.9867	-110.9718	1.93	0	6	23	1992	5	37	47.32	6.19	0	9	172	23.4	0.16	1	6.4		502407.61	4426281.431
1432	39.9915	-111.9358	1.99	0	6	23	1992	18	9	2.07	7.01	0	10	82	12.5	0.29	0.9	3.9		420109.864	4427233.113
1433	40.8228	-111.7015	1.05	0	7	3	1992	3	35	34.7	7.8	0	11	154	10.2	0.17	0.7	1.8		440844.836	4519323.224
1434	40.6503	-111.582	0.6	0	7	5	1992	11	15	0.33	8.83	0	13	138	12.4	0.2	0.6	2		450794.995	4500101.028
1435	40.7498	-112.0773	2.01	0	7	5	1992	15	2	26.82	10.89	0	23	67	5.6	0.22	0.5	1		409054.873	4511541.232
1436	40.7602	-111.9527	1.59	0	7	9	1992	5	24	55.12	2.22	0	10	140	12.4	0.21	0.7	22.9		419586.23	4512574.057
1437	40.7538	-111.9348	1.86	0	7	9	1992	6	15	44.59	7.76	0	11	114	11.1	0.23	0.7	2.7		421089.553	4511847.362
1438	40.7513	-111.9517	1.61	0	7	9	1992	6	53	21.79	3.08	0	6	134	12.4	0.18	0.8	19.7		419659.923	4511585.178
1439	40.4648	-111.3425	0.87	0	7	20	1992	6	58	11.71	13.57	0	9	122	9.4	0.14	0.6	1.6		470963.463	4479403.873

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1440	40.456	-111.4577	1.33	0	7	21	1992	18	11	36.25	1.69	0	9	111	7.6	0.14	0.5	21.3		461191.921	4478471.337
1441	40.7477	-111.9497	0.98	0	7	27	1992	9	0	6.05	2.47	0	12	76	12.4	0.13	0.4	13.1		419824.436	4511183.724
1442	41.077	-111.8952	0.6	0	7	27	1992	19	10	16.22	2.38	0	9	133	7.5	0.26	2.4	25.2		424799.571	4547690.879
1443	40.4525	-111.4662	1.56	0	7	31	1992	16	54	51.72	3.68	0	9	113	6.7	0.16	0.5	3.4		460469.158	4478086.609
1444	40.6928	-111.5837	0.94	0	8	3	1992	17	34	38.04	2.17	0	8	115	15.2	0.32	1	29.1		450682.592	4504819.652
1445	40.6918	-111.562	1.36	0	8	8	1992	19	8	8.33	2.19	0	12	122	13.8	0.29	0.9	27.7		452515.346	4504696.695
1446	40.7287	-111.3198	2.05	0	8	13	1992	17	15	20.51	1.87	0	10	135	10.2	0.38	1.2	38.1		472994.33	4508690.074
1447	39.922	-111.642	1.39	0	8	14	1992	14	55	2.27	9.66	0	13	69	13.2	0.24	0.6	1.8		445136.566	4419297.299
1448	40.6763	-111.5852	0.89	0	8	14	1992	18	5	31.3	2.33	0	17	73	14.1	0.44	1.1	29.3		450543.659	4502988.924
1449	40.474	-111.9418	0.98	0	8	19	1992	13	41	6.53	5.43	0	14	67	2.4	0.28	0.7	2		420166.28	4480794.662
1450	41.0723	-111.5507	1.4	0	8	19	1992	15	38	46.24	2.15	0	19	94	12.9	0.27	0.7	21.3		453735.835	4546929.177
1451	41.1	-111.3837	1.16	0	8	20	1992	10	57	12.89	8.76	0	12	190	2.9	0.18	0.8	0.9		467779.031	4549929.031
1452	40.5757	-111.6217	1.39	0	8	27	1992	23	14	25.43	1.88	0	9	114	11.9	0.28	1	26.7		447380.06	4491843.171
1453	39.8763	-111.6142	1.05	0	9	24	1992	4	13	4.27	5.51	0	13	84	15.2	0.26	0.6	6.4		447477.41	4414208.368
1454	41.0315	-111.6117	0.98	0	9	26	1992	2	0	53.52	5.22	0	10	150	18.9	0.18	0.6	6.9		448579.457	4542434.068
1455	40.7785	-112.0778	1.49	0	10	3	1992	15	47	31.9	4.73	0	14	94	12.2	0.28	0.6	4.3		409051.798	4514727.676
1456	40.3415	-112.2218	2.07	0	10	3	1992	16	36	43.59	7.95	0	10	122	15.4	0.27	0.9	3.2		396227.628	4466377.806
1457	40.4365	-112.0107	1.37	0	10	5	1992	5	41	48.94	8.06	0	10	154	7.8	0.15	0.6	1.5		414278.08	4476696.699
1458	39.9372	-111.2475	1.42	0	10	19	1992	2	45	2.93	6.67	0	15	111	39.4	0.28	0.6	11.3		478854.122	4420816.39
1459	40.7603	-111.9473	1.24	0	10	20	1992	8	13	16.26	3.34	0	17	62	11.9	0.1	0.3	4.5		420042.15	4512580.223
1460	41.0778	-111.5703	1.04	0	10	28	1992	18	34	49.6	2.38	0	12	139	14.2	0.16	0.5	17		452093.23	4547550.325
1461	40.821	-111.9097	1.56	0	11	7	1992	0	32	26.68	1.86	0	15	84	9.6	0.26	0.7	21.5		423285.756	4519284.797
1462	40.2597	-111.8167	1.42	0	11	8	1992	14	39	53.95	2.93	0	15	127	20.4	0.29	0.8	26.2		430551.157	4456901.911
1463	40.73	-112.0707	0.52	0	11	12	1992	5	27	27.86	9.47	0	11	110	9.5	0.22	0.6	1.8		409585.242	4509336.468
1464	40.6957	-112.0557	0.61	0	11	13	1992	11	47	8.48	10.61	0	9	97	7.2	0.14	0.6	1.6		410806.166	4505513.596
1465	39.9198	-111.3385	2.35	0	11	16	1992	6	58	54.15	0.92	0	19	98	38.8	0.37	0.7	1.7		471071.937	4418910.701
1466	40.7635	-111.5547	1.06	0	11	18	1992	23	12	34.83	14.29	0	11	260	15.2	0.32	3	4		453182.42	4512651.835
1467	40.8065	-111.3307	1.16	0	11	24	1992	19	8	9.16	4.4	0	9	298	17.3	0.16	2	14.7		472106.422	4517329.694
1468	40.71	-111.5428	1.04	0	11	25	1992	20	34	56.86	1.55	0	5	336	10.4	0.19	5.2	999.9		454150.087	4506706.779
1469	40.5373	-111.523	0.56	0	11	29	1992	3	11	8.56	1.94	0	19	77	9.4	0.15	0.4	12.4		455708.65	4487526.425
1470	40.863	-111.63	2.87	0	11	29	1992	6	1	10.06	9.22	0	31	88	17.6	0.22	0.5	0.9		446906.323	4523739.922
1471	40.2437	-111.8653	1.46	0	12	3	1992	0	31	38.42	3.94	0	13	115	18.7	0.55	1.6	28.6		426401.028	4455165.163
1472	39.9188	-111.2392	1.9	0	12	14	1992	9	38	56.31	1.28	0	16	109	38	0.27	0.9	3.2		479557.785	4418772.259
1473	40.7068	-111.5678	1.22	0	12	16	1992	23	25	47.91	2.33	0	11	184	12.1	0.22	1.6	17.8		452036.049	4506364.913
1474	40.7037	-111.562	1.3	0	12	17	1992	23	29	45.54	2.2	0	12	184	11.5	0.3	1.6	22.3		452523.795	4506017.648
1475	40.6953	-111.5543	1.23	0	12	22	1992	23	32	46.99	2.85	0	8	179	10.6	0.12	1	14.1		453168.391	4505081.078
1476	40.6208	-111.4925	-0.4	0	12	24	1992	22	10	25.32	8.43	0	9	149	4.2	0.06	0.8	1		458343.444	4496780.215
1477	40.5852	-111.3718	-0.5	0	12	27	1992	1	34	56.21	8.04	0	6	226	3.2	0.02	1.2	3.1		468535.809	4492778.404
1478	40.6367	-111.4093	-0.71	0	1	1	1993	9	30	43.36	3.13	0	5	161	0.8	0.03	0.8	1.2		465388.883	4498509.102
1479	41.1877	-111.6308	1.1	0	1	4	1993	18	36	45.57	12.89	0	7	106	20.1	0.1	0.6	1.9		447099.396	4559785.654

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1480	40.5652	-111.0763	0.75	0	1	5	1993	17	32	46.22	6.49	0	7	293	22.8	0.07	7.1	14.9		493541.07	4490494.759
1481	40.565	-111.0725	0.55	0	1	5	1993	17	55	52.73	11.86	0	8	268	17.5	0.11	4.9	10		493862.728	4490472.287
1482	40.4845	-111.5223	0.43	0	1	15	1993	10	2	21.41	12.02	0	9	113	7.9	0.09	0.6	2.4		455733.225	4481665.233
1483	41.105	-111.6882	1.13	0	1	17	1993	15	34	33.58	13.34	0	9	148	15.2	0.23	0.9	1.3		442213.084	4550641.335
1484	40.266	-111.8875	1.7	0	1	20	1993	0	20	25	0.7	0	20	73	21.5	0.35	0.9	3.3		424537.537	4457659.064
1485	40.7543	-111.9457	0.89	0	1	25	1993	5	2	19.52	2.18	0	9	78	11.9	0.15	0.6	16.3		420170.023	4511912.724
1486	40.6698	-111.5953	0.84	0	1	29	1993	0	33	59.95	7.86	0	11	145	13.2	0.1	0.7	2.3		449685.199	4502273.129
1487	40.3433	-111.3873	0.57	0	1	31	1993	2	10	31.71	3.17	0	8	249	13.6	0.08	1.7	11.6		467106.301	4465933.265
1488	40.3393	-112.1992	1.89	0	1	31	1993	16	25	56.77	0.38	0	18	115	14.4	0.22	0.7	2.6		398143.874	4466107.347
1489	40.505	-111.3467	0.36	0	2	4	1993	20	35	22.89	11.96	0	9	142	10	0.16	1.3	3.3		470624.925	4483867.457
1490	40.8097	-111.918	1.25	0	2	5	1993	0	48	34.52	1.77	0	15	127	9.8	0.24	0.7	34.1		422572.677	4518037.705
1491	40.3922	-112.1548	1.33	0	2	6	1993	19	43	5.23	1.54	0	16	243	7.5	0.25	2.7	78.4		401991.811	4471929.141
1492	40.491	-111.358	-0.63	0	2	7	1993	0	21	34.06	6.97	0	5	193	12.2	0.05	1.5	15.5		469661.195	4482317.279
1493	40.5313	-111.3878	0.17	0	2	7	1993	0	21	55.64	13.84	0	6	304	5.8	0.08	2.5	2.3		467155.448	4486801.271
1494	40.4962	-111.3452	0.25	0	2	9	1993	5	5	41.55	13.32	0	11	141	10.9	0.09	0.6	1.6		470748.194	4482890.157
1495	40.7355	-111.5297	0.22	0	2	13	1993	9	19	39.94	7.6	0	9	263	11.4	0.07	1.5	2.2		455273.712	4509530.647
1496	40.2583	-111.9017	1.29	0	2	15	1993	22	38	21.88	3.24	0	8	117	21	0.14	0.7	13.7		423321.427	4456816.569
1497	40.705	-111.5562	0.81	0	2	20	1993	0	15	28.95	2.22	0	9	186	11.2	0.09	0.8	21.6		453014.679	4506158.836
1498	40.7958	-111.5868	1.61	0	2	20	1993	4	6	21.66	6.95	0	16	196	18.8	0.15	0.9	2.1		450497.099	4516254.955
1499	40.6488	-111.595	0.55	0	2	24	1993	21	55	30.2	3.46	0	11	136	13.2	0.05	0.5	4.7		449694.782	4499941.877
1500	40.0812	-111.7635	1.76	0	2	26	1993	10	36	40.25	0.3	0	20	86	6	0.36	0.9	4		434904.798	4437048.955
1501	40.6957	-111.5572	0.7	0	3	2	1993	22	42	47.18	3.03	0	8	241	10.8	0.16	1.8	12.6		452923.656	4505127.029
1502	40.6888	-111.558	1.36	0	3	4	1993	23	34	45.03	2.52	0	7	173	10.6	0.1	1	12.9		452851.203	4504361.528
1503	40.6862	-111.5517	0.32	0	3	5	1993	22	51	58.07	5.82	0	5	233	9.9	0.05	3.3	8.3		453381.718	4504069.556
1504	40.7902	-112.1187	1.11	0	3	7	1993	7	36	32.43	2.46	0	6	112	8.9	0.11	0.7	10.3		405617.029	4516069.689
1505	40.6558	-111.5488	0.64	0	3	8	1993	23	39	21.9	4.09	0	5	204	9.2	0.16	2.7	14.8		453605.702	4500693.503
1506	39.9232	-111.2648	1.86	0	3	9	1993	20	43	32.76	6.99	0	12	107	40.2	0.26	0.9	19.4		477371.435	4419266.785
1507	40.6803	-111.5267	0.52	0	3	9	1993	22	17	2.34	13.05	0	8	173	7.8	0.11	0.9	2.1		455490.286	4503401.672
1508	40.6703	-111.561	0.83	0	3	10	1993	23	3	9.36	2.71	0	11	109	10.4	0.19	0.7	14.8		452584.606	4502309.566
1509	40.6982	-111.5557	1.03	0	3	13	1993	20	52	48.13	2.35	0	8	181	10.8	0.1	1	25.7		453052.143	4505403.738
1510	40.008	-111.905	1.32	0	3	14	1993	19	9	2.13	2.02	0	10	106	9.8	0.14	0.6	1.9		422757.924	4429037.343
1511	40.0103	-111.9098	1.66	0	3	14	1993	19	57	48.66	2.17	0	15	79	9.9	0.23	0.7	2.4		422350.842	4429296.798
1512	40.0082	-111.907	1.49	0	3	14	1993	20	36	15.6	1.56	0	12	93	9.9	0.11	0.4	999.9		422587.446	4429061.277
1513	40.5692	-112.1898	2.17	0	3	19	1993	1	20	20.54	2.21	0	7	171	11.1	0.37	2	30.6		399286.192	4491616.112
1514	40.0153	-111.9162	1	0	3	23	1993	8	54	33.36	2.11	0	11	91	9.8	0.24	0.8	2.6		421810.316	4429857.359
1515	40.6853	-111.5563	1.03	0	3	25	1993	16	41	58.24	2.45	0	9	170	10.3	0.13	1.1	17		452992.387	4503972.103
1516	40.4513	-111.4723	0.82	0	3	25	1993	16	56	34.92	4.4	0	9	138	6.2	0.11	1.3	6.7		459951.202	4477956.158
1517	40.4465	-111.4752	0.59	0	4	2	1993	0	15	12.29	4	0	9	137	5.7	0.26	2.6	13.1		459702.428	4477424.68
1518	41.0402	-111.0675	1.69	0	4	6	1993	19	50	7.21	2.32	0	10	236	29.9	0.16	1.8	30.7		494326.597	4543221.853
1519	40.6907	-111.557	0.92	0	4	6	1993	20	13	20.03	8.27	0	10	175	10.6	0.23	1.2	4.4		452937.036	4504571.9

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1520	40.67	-111.5473	0.27	0	4	6	1993	22	43	37.34	4.21	0	7	159	9.2	0.19	1.4	8.4		453742.32	4502268.966
1521	40.67	-111.5465	0.64	0	4	7	1993	21	21	46.2	9.11	0	7	171	11.1	0.08	0.8	2.4		453809.937	4502268.546
1522	40.674	-111.5585	0.31	0	4	7	1993	22	59	49.59	6.52	0	5	233	12.2	0.21	14.3	23.1		452798.515	4502718.935
1523	40.6995	-111.5473	0.59	0	4	8	1993	18	0	43.46	7.2	0	5	250	13.6	0.09	6	13.1		453762.712	4505543.589
1524	40.651	-111.5778	0.45	0	4	9	1993	16	43	0.98	2.3	0	7	152	12.1	0.27	3.3	34.7		451150.595	4500176.389
1525	40.6832	-111.5625	0.85	0	4	9	1993	20	43	9.11	2.93	0	8	175	13.1	0.23	1.3	21.9		452466.99	4503742.329
1526	40.658	-111.5658	0.59	0	4	12	1993	22	11	20.22	5.47	0	9	159	11.6	0.42	2.1	10.9		452170.125	4500946.819
1527	40.69	-111.5515	0.6	0	4	13	1993	19	47	40.99	7.3	0	5	243	13	0.06	4.5	9.4		453401.265	4504491.266
1528	41.01	-111.219	1.37	0	4	13	1993	23	4	8.47	16.11	0	9	206	19.9	0.26	2.7	4.2		481584.542	4539890.252
1529	41.0182	-111.2333	1.7	0	4	13	1993	23	4	31.18	18.88	0	7	217	18.4	0.09	1.8	1.2		480384.503	4540803.647
1530	41.045	-111.1027	1.68	0	4	14	1993	3	35	3	1.31	0	18	213	26.9	0.4	2.4	23.3		491368.649	4543757.588
1531	40.5878	-111.545	0.91	0	4	14	1993	19	22	53.27	12.33	0	7	162	8.2	0.26	1.8	3.5		453880.2	4493143.304
1532	40.6803	-111.5555	0.5	0	4	15	1993	20	33	50.46	4.38	0	7	237	12.4	0.1	3.3	11.5		453056.48	4503416.654
1533	40.4363	-111.5453	0.59	0	4	16	1993	8	22	48.35	6.98	0	9	162	3	0.13	0.6	1.6		453750.841	4476326.83
1534	40.4447	-111.5477	0.73	0	4	16	1993	8	23	16.03	4.66	0	9	156	3.9	0.17	0.8	2.9		453553.067	4477260.485
1535	40.4343	-111.537	1.88	0	4	16	1993	8	26	32.89	7.53	0	19	64	2.5	0.18	0.5	0.9		454453.452	4476100.519
1536	40.4335	-111.5417	0.63	0	4	16	1993	8	29	27.94	7.73	0	9	159	2.5	0.18	0.8	2.1		454054.267	4476014.153
1537	40.6848	-111.5633	1.16	0	4	16	1993	21	54	50.37	3.91	0	10	100	13.3	0.17	1	14.2		452400.525	4503920.368
1538	40.6807	-111.5525	0.96	0	4	16	1993	22	6	56.75	2.48	0	10	136	12.3	0.21	0.9	20.3		453310.281	4503459.458
1539	40.4827	-111.5618	0.96	0	4	18	1993	1	35	12.85	3.89	0	10	142	8.2	0.12	0.5	4.4		452384.172	4481485.995
1540	40.6823	-111.5427	0.69	0	4	21	1993	16	57	44.88	9.13	0	7	180	11.9	0.05	0.6	2.4		454139.543	4503631.905
1541	40.8105	-111.892	1.58	0	4	21	1993	20	47	52.76	1.73	0	11	73	7.8	0.28	0.8	38.2		424766.538	4518103.872
1542	39.8268	-112.0245	1.4	0	4	21	1993	22	48	21.93	2.38	0	12	103	14.9	0.21	0.8	2.1		412327.592	4409036.049
1543	40.4863	-111.004	1.37	0	4	22	1993	8	16	32.14	4.72	0	9	290	22.9	0.16	2.6	12.9		499660.996	4481734.043
1544	40.3417	-111.0838	0.56	0	4	25	1993	7	40	15.61	7.22	0	7	334	16.6	0.04	1.6	3.3		492882.639	4465687.068
1545	40.0067	-111.8183	2.63	0	4	30	1993	17	52	55.73	1.02	0	22	75	7.9	0.4	0.9	15.8		430156.568	4428821.502
1546	40.3078	-111.3245	0.54	0	5	1	1993	1	59	54.12	2.84	0	8	278	13	0.12	1.6	13.7		472425.523	4461971.432
1547	40.3143	-111.3827	1.33	0	5	1	1993	8	0	2.94	6.73	0	17	172	15.3	0.19	0.8	3.3		467483.069	4462712.654
1548	40.512	-111.4492	0.09	0	5	2	1993	21	40	21.75	2.52	0	7	322	8.4	0.02	1.3	8.5		461944.273	4484683.64
1549	40.9653	-111.621	1.2	0	5	3	1993	22	26	19.81	5.23	0	8	103	24.6	0.25	1	20.2		447745.422	4535090.702
1550	40.4505	-111.4637	1.39	0	5	4	1993	23	37	15.86	4.01	0	11	131	6.8	0.17	0.9	6.5		460679.977	4477863.494
1551	41.0307	-111.0998	1.38	0	5	7	1993	18	42	39.36	7.01	0	10	213	50.3	0.43	3.8	48.8		491610.562	4542169.859
1552	40.5133	-111.3645	-0.18	0	5	11	1993	1	41	14.36	1.74	0	6	315	8.4	0.07	10.6	38.6		469120.577	4484794.84
1553	41.1717	-111.5525	0.93	0	5	17	1993	4	1	53.89	6.94	0	7	106	13.4	0.12	0.6	3.9		453654.598	4557964.781
1554	40.4083	-111.1262	1.14	0	5	17	1993	17	22	44.73	3	0	7	310	11	0.07	2.1	8.1		489292.039	4473083.772
1555	40.4418	-111.4875	1.13	0	5	19	1993	23	16	47.08	6.97	0	10	143	4.6	0.29	2.2	5.9		458656.488	4476908.668
1556	41.0325	-111.1392	1.38	0	5	25	1993	10	32	14.44	16.95	0	12	221	24.5	0.17	1.6	2.7		488298.818	4542374.212
1557	41.1195	-111.6165	1.28	0	5	27	1993	12	27	3.49	11.92	0	16	76	17.4	0.22	0.6	1.8		448245.027	4552205.949
1558	40.727	-111.9723	0.87	0	5	31	1993	15	55	47.1	2.52	0	9	118	14.9	0.19	0.7	19.2		417891.022	4508906.773
1559	40.5018	-111.3175	0.43	0	6	2	1993	1	7	22.6	10.74	0	11	129	11.2	0.17	1.3	2.4		473097.698	4483502.942

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1560	40.778	-111.524	0.33	0	6	3	1993	11	47	33.23	6.95	0	12	126	15.1	0.18	0.7	4.3		455783.174	4514245.492
1561	40.3995	-111.0153	0.77	0	6	10	1993	4	23	47.76	1.53	0	11	303	20.4	0.1	1.5	999.9		498701.639	4472099.458
1562	40.6042	-111.5688	0.42	0	6	14	1993	5	22	38.04	2.63	0	9	320	10.1	0.11	1.6	12.6		451877.911	4494976.482
1563	40.2515	-112.3295	1.66	0	6	17	1993	0	32	28.37	3.55	0	14	114	29	0.47	1.5	2.7		386930.027	4456519.591
1564	40.2622	-112.3117	1.29	0	6	17	1993	1	26	29.6	2.78	0	14	109	27.1	0.37	1.4	2.5		388461.482	4457684.741
1565	41.1735	-111.5868	1.29	0	6	24	1993	8	9	16.95	9.78	0	19	99	16.1	0.2	0.6	3.8		450778.743	4558183.438
1566	40.5087	-111.034	1	0	6	29	1993	8	2	6.02	2.32	0	15	206	21.6	0.13	1	24.5		497119.421	4484220.986
1567	40.8803	-111.6162	0.83	0	7	7	1993	7	30	53.07	3.36	0	19	109	19.6	0.22	0.6	15.8		448082.849	4525652.085
1568	40.618	-111.5792	0.43	0	7	7	1993	17	21	40.87	6.63	0	12	147	11.1	0.09	0.7	2		451008.117	4496514.059
1569	40.6365	-111.5885	0.4	0	7	9	1993	8	17	23.81	7.47	0	13	194	12.3	0.06	1	1.3		450235.203	4498572.837
1570	41.0433	-111.0988	1.67	0	7	10	1993	9	46	12.7	3.11	0	17	197	27.2	0.16	1.1	1.7		491696.208	4543568.492
1571	40.6983	-111.5312	0.43	0	7	12	1993	15	33	21.82	3.26	0	5	333	8.9	0.18	6.1	15.1		455122.082	4505402.036
1572	40.6913	-111.533	0.58	0	7	12	1993	17	13	19.85	2.45	0	8	330	8.7	0.15	2	15.9		454965.297	4504625.927
1573	41.0412	-111.1177	1.61	0	7	12	1993	23	5	14.92	1.14	0	17	207	25.9	0.41	2.2	2.6		490107.415	4543337.341
1574	40.3592	-111.0287	1.51	0	7	14	1993	15	52	44.08	1.64	0	24	184	20.1	0.28	1.3	1.9		497563.061	4467626.541
1575	40.6303	-111.4892	-0.38	0	7	15	1993	2	31	43.49	8.56	0	9	158	4.6	0.18	1.3	1.6		458628.428	4497833.185
1576	40.3762	-111.0692	0.61	0	7	15	1993	3	31	42.14	14.48	0	15	297	16.4	0.23	1.6	1		494125.652	4469515.397
1577	40.6395	-111.586	0.92	0	7	15	1993	4	21	18.44	7.15	0	17	130	12.2	0.12	0.6	1.6		450448.828	4498904.436
1578	40.4442	-111.4515	0.79	0	7	15	1993	23	5	36.63	1.75	0	11	140	7.2	0.26	0.9	34.8		461710.92	4477158.837
1579	40.5992	-112.17	1.93	0	7	17	1993	2	21	52.34	1.52	0	21	88	7.3	0.35	0.8	3.4		401006.499	4494923.814
1580	40.7437	-112.0658	0.78	0	7	18	1993	5	16	28.56	7.62	0	9	89	11.1	0.14	0.6	2.7		410017.491	4510852.233
1581	40.762	-111.9638	0.63	0	7	18	1993	19	12	11.32	9.86	0	13	61	13.2	0.19	0.6	2.8		418651.503	4512784.101
1582	40.7045	-111.5513	1.1	0	7	19	1993	16	40	2.13	3.61	0	6	336	10.8	0.14	92.5	42.4		453428.263	4506100.724
1583	40.4417	-111.4858	0.04	0	7	20	1993	18	1	49.29	7.89	0	9	141	4.7	0.19	1.1	3		458800.6	4476896.773
1584	40.4865	-111.3388	0.31	0	7	21	1993	22	23	58.63	6	0	7	184	10.8	0.04	1.1	3.2		471286.389	4481811.355
1585	40.6997	-111.5457	0.45	0	7	27	1993	18	1	46.52	3.67	0	6	334	10.1	0.43	6.4	31.3		453898.023	4505564.949
1586	40.4877	-111.3368	0.33	0	7	31	1993	13	34	25.39	9.55	0	12	116	10.8	0.09	1.2	1.9		471456.399	4481943.906
1587	40.4467	-111.4632	1.37	0	8	2	1993	23	58	18.51	4.8	0	12	134	6.6	0.16	0.6	3.5		460720.163	4477441.473
1588	40.5817	-111.1107	0.3	0	8	8	1993	2	45	36.72	9.97	0	8	312	13.9	0.05	2.3	3.2		490631.35	4492329.37
1589	40.7327	-112.0125	1.49	0	8	9	1993	23	10	46.38	1.46	0	14	66	12.6	0.25	0.7	1.9		414503.449	4509577.882
1590	40.7057	-111.5157	0.86	0	8	10	1993	23	35	56.37	2.79	0	6	335	8.3	0.16	3.3	12.6		456436.411	4506215.667
1591	40.7187	-111.5433	1.4	0	8	11	1993	0	20	41.22	2.62	0	8	336	11.1	0.17	2.7	18.1		454113.826	4507672.781
1592	40.7522	-111.5593	1.39	0	8	11	1993	23	31	16.73	5.03	0	7	339	14.6	0.16	4.4	11.8		452786.176	4511399.937
1593	40.3255	-111.9968	1.14	0	8	14	1993	8	44	35.62	1.28	0	21	84	16.1	0.28	0.8	7.7		415318.132	4464362.27
1594	40.6877	-111.554	0.41	0	8	17	1993	16	36	40.63	2.04	0	11	234	10.2	0.15	1.6	21.5		453188.419	4504237.285
1595	40.5683	-111.6498	0.96	0	8	18	1993	20	46	6.15	2.65	0	11	126	9.6	0.24	1	18.1		444995.635	4491038.92
1596	40.407	-110.7752	0.53	0	8	21	1993	10	11	25.44	7.22	0	5	355	53.4	0.17	14.5	136.5		519074.458	4472956.086
1597	40.654	-111.5563	0.65	0	8	21	1993	21	24	55.87	2.39	0	8	324	9.9	0.13	1.7	18		452970.402	4500497.68
1598	40.6605	-111.5647	0.43	0	8	22	1993	17	50	14.13	3.19	0	8	327	10.6	0.45	5.4	28.7		452264.896	4501223.73
1599	40.4948	-111.339	0.57	0	8	24	1993	1	0	59.24	14.38	0	13	144	11.3	0.16	0.8	1.7		471272.978	4482732.72

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1600	40.4907	-111.328	0.05	0	8	24	1993	4	46	0.18	10.32	0	10	175	10.6	0.09	1.4	2		472203.433	4482274.097
1601	40.4928	-111.3375	0.22	0	8	24	1993	5	31	46.24	12.54	0	13	145	11.2	0.12	0.6	1.5		471399.24	4482510.233
1602	40.5775	-111.6493	1.37	0	8	24	1993	20	58	29.27	1.58	0	13	99	9.7	0.33	1.2	86.1		445045.487	4492059.83
1603	40.5158	-111.314	0.43	0	8	24	1993	21	46	41.31	5.45	0	9	170	10.9	0.06	1.1	3		473399.791	4485055.885
1604	40.4485	-111.5075	1.07	0	8	30	1993	15	20	30.39	12.3	0	6	173	4.2	0.14	1.1	1.7		456964.611	4477661.918
1605	40.6423	-111.5863	0.36	0	9	1	1993	7	24	52.9	3.3	0	7	331	12.4	0.16	2.5	17.2		450425.532	4499215.414
1606	39.7665	-111.6347	2.01	0	9	2	1993	5	50	17.55	1.41	0	31	62	19	0.45	0.9	1.1		445637.909	4402034.133
1607	40.2545	-112.4188	2.51	0	9	2	1993	21	2	6.01	0.96	0	15	238	34.3	0.43	2.6	4.2		379340.409	4456970.313
1608	40.0812	-110.9967	1.23	0	9	5	1993	7	15	15.42	7.03	0	7	352	65.7	0.64	60	705.4		500281.353	4436769.693
1609	40.5875	-111.6628	0.27	0	9	7	1993	18	14	39.31	6.91	0	7	169	8.6	0.16	3.5	16.2		443911.239	4493178.366
1610	40.5448	-111.4728	1.02	0	9	10	1993	1	49	59.36	1.46	0	13	81	6.7	0.12	0.4	999.9		459964.424	4488334.922
1611	40.4608	-111.471	1.29	0	9	12	1993	23	20	25.18	5.66	0	8	144	7.1	0.44	5.5	26.4		460067.061	4479010.065
1612	40.5262	-112.1703	1.72	0	9	14	1993	2	47	45.77	3.23	0	14	95	10.6	0.25	0.9	1.8		400873.469	4486820.81
1613	40.5022	-111.4103	1.06	0	9	23	1993	0	33	13.58	3.02	0	9	216	8.8	0.14	1.8	10.8		465234.787	4483579.778
1614	40.732	-111.7918	0.9	0	9	25	1993	23	46	4.19	0.96	0	10	113	5.6	0.16	0.7	1.2		433139.089	4509308.684
1615	40.7698	-111.4617	0.35	0	9	26	1993	0	45	45.96	3.24	0	7	333	12.6	0.11	2.6	15.5		461035.478	4513305.71
1616	40.4038	-111.0023	0.89	0	9	29	1993	10	57	39.62	2.17	0	9	322	21.5	0.26	33.1	58.6		499804.834	4472576.639
1617	40.271	-112.3265	1.67	0	10	4	1993	22	56	30.45	4.17	0	13	109	27.2	0.43	1.4	3		387217.568	4458680.273
1618	40.58	-111.5867	0.95	0	10	4	1993	23	41	4.92	1.25	0	9	179	11.8	0.12	0.9	0.7		450345.614	4492300.16
1619	40.329	-111.7875	0.96	0	10	7	1993	2	49	31.49	10.23	0	13	132	24	0.38	1.7	7.9		433102.61	4464571.58
1620	40.633	-111.4965	0.22	0	10	7	1993	17	55	30.88	1.53	0	7	289	5.2	0.1	1.7	18.2		458012.757	4498136.352
1621	40.4452	-111.466	1.69	0	10	9	1993	22	11	1.84	4.33	0	11	134	6.2	0.13	0.6	3.4		460481.841	4477276.223
1622	40.6267	-111.5102	0.35	0	10	12	1993	21	49	43.14	2.03	0	6	301	5.8	0.13	2.5	13.7		456850.137	4497443.661
1623	40.5763	-111.5698	0.25	0	10	13	1993	15	46	12.39	7.44	0	11	164	10.5	0.13	1.2	2.2		451773.268	4491880.062
1624	40.6397	-111.5747	0.73	0	10	14	1993	19	37	31.31	3.45	0	5	325	11.4	0.06	13.8	23.1		451404.487	4498920.333
1625	39.8615	-111.9505	0.93	0	10	18	1993	4	57	30.2	2.18	0	9	150	13.9	0.37	2	35.5		418701.25	4412817.491
1626	40.6537	-111.5298	0.42	0	10	18	1993	21	11	50.69	2.72	0	6	318	7.7	0.07	3.3	16.8		455210.521	4500450.545
1627	40.5388	-111.4883	-0.16	0	10	19	1993	19	43	1.36	7.44	0	5	339	8.2	0.02	2.3	1.9		458648.226	4487676.071
1628	39.8393	-111.5052	1.79	0	10	19	1993	19	45	44.99	1.11	0	10	230	25	0.49	3.5	5.4		456775.259	4410043.423
1629	41.1665	-111.4835	1.17	0	10	24	1993	10	11	9.43	8.95	0	15	126	8.3	0.28	0.9	3.7		459439.344	4557353.063
1630	40.3385	-111.9328	2.74	0	10	27	1993	0	41	55.39	1.58	0	41	52	18.6	0.36	0.7	1.3		420770.458	4465746.004
1631	40.6293	-111.5093	0.54	0	10	27	1993	23	5	27.74	2.2	0	6	300	5.8	0.06	1.5	8.5		456927.924	4497731.828
1632	40.4558	-111.4613	2.02	0	10	28	1993	23	20	26.14	1.89	0	15	125	7.2	0.22	0.7	18.6		460886.562	4478450.725
1633	41.1298	-111.723	0.73	0	11	3	1993	11	20	34.25	9.76	0	9	120	15.2	0.25	0.9	4.6		439313.816	4553418.116
1634	40.754	-112.0462	0.78	0	11	4	1993	5	53	16.2	6.15	0	6	110	12.9	0.08	0.5	3.3		411685.921	4511975.701
1635	40.9725	-111.1515	1.09	0	11	4	1993	8	46	34.41	5.6	0	16	217	42.5	0.2	1.4	1.8		487253.322	4535715.358
1636	40.5068	-111.34	0.08	0	11	5	1993	8	2	23.95	8.36	0	10	173	10.2	0.11	1.6	2.4		471193.371	4484065.048
1637	40.6058	-111.5317	0.59	0	11	11	1993	0	48	47.92	2.18	0	6	319	6.9	0.17	2.5	20.5		455017.763	4495134.467
1638	40.6372	-111.529	0.8	0	11	16	1993	19	33	1.06	2.13	0	8	311	7.8	0.23	2.7	18.6		455267.139	4498618.583
1639	40.6455	-111.532	0.96	0	11	21	1993	18	11	37.82	2.13	0	8	315	8	0.08	1	11.9		455019.026	4499541.44

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1640	40.4863	-111.5685	0.5	0	11	22	1993	0	22	25.22	18.59	0	6	345	16.3	0.37	11.4	9.5		451818.879	4481889.233
1641	40.8338	-111.9755	1.46	0	11	24	1993	22	42	12.6	3.27	0	18	102	15.2	0.63	1.6	8.8		417752.638	4520765.387
1642	40.4972	-111.3373	0.41	0	11	25	1993	16	47	32.27	10.73	0	10	117	11.7	0.17	0.8	2.2		471418.056	4482998.568
1643	39.9148	-111.9748	1.43	0	11	26	1993	3	36	5.9	5.4	0	8	117	9.6	0.27	1	1.9		416687.323	4418755.694
1644	41.099	-111.593	0.94	0	11	26	1993	16	27	27.67	10.06	0	6	85	15.6	0.23	0.9	5.4		450202.367	4549916.5
1645	40.4812	-111.3683	-0.16	0	11	27	1993	21	2	51.9	2.59	0	8	204	11.7	0.15	1.9	17.7		468783.776	4481233.073
1646	40.494	-111.3413	0.46	0	11	29	1993	20	57	6.04	8.18	0	10	182	11.2	0.16	1.2	3.2		471077.731	4482644.671
1647	40.487	-111.3575	0.61	0	11	29	1993	20	57	53.17	2.03	0	9	130	11.4	0.1	0.6	26.7		469701.768	4481873.108
1648	40.2202	-111.7342	1.38	0	11	30	1993	1	22	13.53	2.06	0	14	123	18	0.27	1	42.8		437530.393	4452456.19
1649	40.9955	-111.0938	1.11	0	11	30	1993	2	38	34.52	6.77	0	15	219	37.2	0.19	1.9	26.9		492110.739	4538261.756
1650	40.2087	-111.747	1.33	0	12	1	1993	3	49	58.29	4.01	0	10	168	16.4	0.16	0.9	13.5		436430.546	4451188.828
1651	40.4905	-111.3657	1	0	12	4	1993	1	53	31.89	11.93	0	14	105	10.8	0.17	0.6	1.9		469008.425	4482264.455
1652	40.3615	-111.0963	1.03	0	12	4	1993	6	4	28.2	10.6	0	8	310	14.7	0.09	10.3	7.2		491823.372	4467885.889
1653	40.9293	-111.658	1.03	0	12	4	1993	10	1	31.1	3.19	0	10	146	20.9	0.23	0.7	24.7		444601.927	4531117.142
1654	39.8547	-111.1887	1.77	0	12	4	1993	18	48	17.67	0.3	0	12	107	32.2	0.4	1.1	4.2		483858.531	4411647.576
1655	40.2025	-111.7412	1.42	0	12	4	1993	19	28	59.17	5.72	0	9	151	16	0.14	0.8	8.7		436918.382	4450496.516
1656	40.4875	-111.3323	0.2	0	12	4	1993	23	22	59.82	4.63	0	10	180	10.6	0.14	1.1	5.9		471837.689	4481920.26
1657	40.4953	-111.3555	0.66	0	12	12	1993	12	58	58.7	4.78	0	8	189	10.6	0.06	1.2	4.2		469874.981	4482793.723
1658	40.7325	-111.5738	0.24	0	12	13	1993	18	56	26.87	2.25	0	11	199	14	0.09	0.8	16.9		451547.845	4509221.032
1659	40.2532	-111.8607	1.41	0	12	13	1993	21	36	46.08	1.17	0	8	102	19.7	0.37	2.1	19.2		426802.526	4456215.827
1660	40.4998	-111.3423	-0.12	0	12	17	1993	5	39	31.33	7.16	0	8	178	10.7	0.06	1.3	2.8		470995.487	4483288.8
1661	40.5013	-111.356	0.37	0	12	17	1993	8	33	42.96	6.97	0	14	135	9.9	0.17	0.7	2.5		469835.299	4483459.895
1662	40.5013	-111.3412	0.11	0	12	17	1993	14	25	29.5	8.67	0	9	177	10.6	0.06	1.4	2.1		471089.339	4483454.939
1663	40.5015	-111.3467	0.39	0	12	17	1993	15	11	27.33	8.38	0	11	141	10.3	0.11	0.7	2.4		470623.398	4483478.956
1664	40.4505	-111.456	1.74	0	12	18	1993	22	37	10.67	1.81	0	12	132	7.2	0.19	0.7	22		461332.911	4477860.094
1665	40.3285	-111.4318	0.29	0	12	22	1993	5	35	4.91	2.89	0	9	262	12.4	0.18	1.4	14.5		463318.855	4464307.996
1666	40.6592	-111.5155	0.2	0	12	24	1993	8	45	57.29	3.02	0	5	312	6.4	0.29	28.5	12.2		456423.032	4501053.88
1667	40.7593	-112.4982	1.07	0	1	3	1994	6	43	57.59	11.74	0	8	220	13.9	0.2	1.7	2.3		373539.668	4513117.231
1668	40.4127	-111.9405	1.26	0	1	6	1994	18	49	3.66	10.56	0	14	119	4.8	0.16	0.9	1.7		420204.018	4473989.116
1669	40.7222	-111.4927	0.08	0	1	8	1994	0	16	39.31	1.57	0	8	329	8.4	0.26	3.4	61		458389.61	4508036.092
1670	40.749	-111.4517	0.42	0	1	8	1994	23	37	31.46	3.05	0	5	335	10.2	0.13	53.7	42.4		461867.533	4510992.406
1671	41.098	-111.5912	1.59	0	1	9	1994	21	41	15.81	5.55	0	20	112	15.4	0.33	0.8	2.9		450352.771	4549804.461
1672	39.9803	-111.8158	1.53	0	1	12	1994	7	8	37.19	5.58	0	10	117	10.4	0.16	0.6	2.7		430343.134	4425889.355
1673	40.6157	-111.4485	0.28	0	1	18	1994	16	57	45.15	6.18	0	5	184	1.5	0.38	5.4	13.4		462062.172	4496194.204
1674	40.3958	-111.2415	0.54	0	1	19	1994	20	38	28.31	5.46	0	7	295	2.2	0.08	8.2	5.3		479505.137	4471716.645
1675	40.4932	-111.3295	0.32	0	1	22	1994	11	51	10.8	9.37	0	9	175	10.9	0.08	1.6	2.2		472077.351	4482552.07
1676	40.7262	-112.0333	0.51	0	1	25	1994	12	32	22.98	9.57	0	11	95	10.9	0.17	0.6	2.4		412738.556	4508876.8
1677	40.7318	-112.0475	1.41	0	1	26	1994	5	18	56.94	8.08	0	7	102	10.7	0.04	0.4	2		411546.772	4509512.648
1678	40.9975	-111.7612	0.88	0	1	29	1994	6	39	39.24	14.55	0	9	130	7.1	0.14	0.6	1.1		435979.229	4538758.537
1679	40.4897	-111.3342	0.8	0	2	2	1994	1	10	34.6	13.22	0	10	146	10.9	0.1	0.8	2.2		471677.589	4482165.068

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1680	40.4512	-111.613	0.23	0	2	2	1994	1	58	29.89	4.51	0	13	197	8.4	0.21	0.9	5.1		448020.368	4478018.373
1681	40.295	-111.4657	1.08	0	2	2	1994	7	23	15.52	2.91	0	9	284	14.2	0.2	2	17.6		460419.508	4460604.199
1682	40.6313	-111.5483	0.15	0	2	2	1994	16	22	1.12	3.56	0	7	317	8.9	0.36	10.7	24.2		453631.019	4497973.657
1683	40.6363	-111.5842	0.25	0	2	2	1994	16	34	57.32	6.21	0	6	340	11.9	0.71	24.9	40.3		450598.675	4498548.213
1684	40.3733	-111.4122	0.52	0	2	2	1994	19	44	4.9	2.5	0	11	223	10.7	0.16	0.9	16.8		465007.031	4469272.744
1685	40.3773	-111.4057	0.43	0	2	2	1994	20	40	35.62	3.3	0	9	218	11.1	0.24	1.7	15.7		465560.875	4469714.185
1686	40.3125	-111.4578	0.56	0	2	4	1994	6	45	39.4	2.11	0	10	276	12.7	0.26	2.4	32.4		461100.982	4462543.141
1687	40.7312	-112.0348	1.33	0	2	4	1994	16	34	39.56	7.22	0	9	74	11.2	0.17	0.6	1.4		412618.421	4509433.326
1688	40.767	-111.4403	0.86	0	2	5	1994	1	3	15.43	3.52	0	7	346	12.1	0.16	3.8	14.2		462839.947	4512985.611
1689	40.3777	-111.4382	0.74	0	2	5	1994	17	6	40.01	7.85	0	9	341	22.8	0.47	9	35.7		462802.222	4469771.746
1690	40.3543	-111.4213	0.82	0	2	7	1994	14	0	25.02	8.82	0	12	241	11.1	0.15	1.1	2.7		464224.458	4467167.428
1691	40.3693	-111.4142	0.97	0	2	8	1994	21	50	55.75	5.52	0	11	227	10.8	0.13	0.8	4		464835.166	4468829.546
1692	40.365	-111.405	0.52	0	2	10	1994	6	19	2.62	3.94	0	6	231	11.7	0.25	1.6	14.9		465614.046	4468348.639
1693	40.9188	-111.5918	1.23	0	2	16	1994	11	3	41.82	4.93	0	11	113	23.8	0.13	0.5	1.4		450167.555	4529911.724
1694	40.1827	-111.807	2.07	0	2	18	1994	9	16	38.42	6.16	0	26	71	11.9	0.24	0.6	1.7		431298.276	4448347.641
1695	40.441	-111.5853	0.52	0	2	25	1994	18	36	9.66	2.67	0	10	265	5.8	0.12	2.2	9.6		450361.713	4476870.239
1696	40.4477	-111.293	0.31	0	2	27	1994	2	13	27.29	13.25	0	8	335	17.8	0.14	4.2	5.6		475153.693	4477490.682
1697	40.3998	-111.9415	0.94	0	3	5	1994	4	1	49.65	1.4	0	13	106	6.2	0.33	0.9	10		420103.919	4472558.114
1698	40.3597	-111.8138	1.56	0	3	10	1994	6	50	2.7	1.46	0	12	159	15.9	0.26	1.2	4.1		430899.761	4467999.446
1699	40.665	-112.1422	1.65	0	3	12	1994	10	27	20.2	1.41	0	7	179	2.4	0.25	1.2	999.9		403453.535	4502197.103
1700	41.0525	-111.094	1.6	0	3	15	1994	4	7	46.76	14.02	0	11	226	27.4	0.12	1.7	1		492100.732	4544589.342
1701	40.4528	-111.2647	0.73	0	3	22	1994	15	53	40.8	12.07	0	8	192	4.5	0.29	4.7	5		477555.224	4478049.2
1702	40.6067	-111.986	1.83	0	3	23	1994	23	13	31.21	3.12	0	6	140	12.3	0.38	1.5	22.5		416584.294	4495565.705
1703	40.5827	-111.351	-0.42	0	3	28	1994	8	41	52.67	7.76	0	7	259	3.5	0.02	1.1	1.3		470294.941	4492493.677
1704	40.4398	-111.475	1.06	0	4	1	1994	19	30	28.12	8.82	0	11	138	5.2	0.15	0.9	2.7		459715.389	4476680.893
1705	40.322	-111.2885	2.35	0	4	6	1994	21	47	22.88	9.74	0	16	270	10.4	0.15	1.2	2.3		475489.772	4463536.996
1706	40.3915	-111.2078	0.29	0	4	6	1994	22	36	18.17	2.24	0	8	332	4.7	0.19	5.9	14.4		482363.963	4471232.087
1707	40.3218	-111.2793	1.28	0	4	7	1994	8	37	3.06	9.23	0	14	229	10.3	0.15	1.1	2.3		476271.312	4463512.29
1708	40.4853	-111.384	0.37	0	4	10	1994	3	16	21.17	8.93	0	10	210	10.9	0.14	2.1	2.8		467455.059	4481693.844
1709	40.0817	-111.1758	1.98	0	4	10	1994	12	52	11.51	3.2	0	23	137	37.4	0.21	0.8	1.9		485011.66	4436839.989
1710	40.3738	-111.5718	1.27	0	4	14	1994	3	14	18.47	9.67	0	16	199	5.8	0.18	0.9	1.8		451458.376	4469403.61
1711	40.315	-112.3688	1.6	0	4	14	1994	21	47	8.66	2.85	0	6	164	87.4	0.17	1.2	1.9		383696.472	4463619.014
1712	41.1998	-111.6612	1.83	0	4	18	1994	21	18	13.38	13.24	0	15	89	18.2	0.15	0.5	0.9		444560.164	4561147.856
1713	39.9973	-111.8153	1.52	0	4	22	1994	20	41	18.33	1.37	0	13	133	9	0.38	1.2	47.8		430403.083	4427775.828
1714	40.3345	-111.756	2.97	0	4	23	1994	15	17	56.29	4.79	0	9	215	21.3	0.26	2.8	19.3		435783.745	4465158.742
1715	40.48	-111.1682	0.84	0	4	24	1994	18	44	55.56	5.9	0	6	270	10.6	0.06	2.4	8.2		485743.53	4481048.324
1716	40.471	-111.1792	0.84	0	4	24	1994	18	57	58.53	10.15	0	10	266	9.2	0.08	1.9	2.9		484809.152	4480051.163
1717	40.4742	-111.1675	0.54	0	4	24	1994	20	4	43.07	10.18	0	7	272	10.2	0.1	2.6	4.3		485801.64	4480404.414
1718	40.4458	-111.4658	1.37	0	4	25	1994	23	2	52.67	4.35	0	11	133	6.3	0.31	1.2	6.7		460499.153	4477342.734
1719	40.477	-111.1425	0.5	0	4	28	1994	10	30	49.67	8.84	0	8	281	12	0.03	1.9	4		487921.301	4480711.491

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1720	40.7088	-111.9443	1.71	0	4	29	1994	12	26	52.27	5.51	0	10	70	10.7	0.12	0.4	2.8		420233.882	4506860.652
1721	40.4935	-111.3327	0.47	0	4	29	1994	20	44	13.88	8.31	0	8	177	11.1	0.07	1.5	2.7		471806.3	4482586.388
1722	40.6808	-112.3022	1.51	0	5	1	1994	16	30	47.87	8.65	0	8	207	15.8	0.16	1.2	3.8		389954.904	4504139.047
1723	40.2633	-112.4453	2.15	0	5	3	1994	20	18	16.91	1.66	0	10	224	35.5	0.37	2.8	2.6		377102.607	4457983.53
1724	40.3988	-111.8695	1.38	0	5	4	1994	21	11	17.88	3.61	0	9	110	9.5	0.11	0.5	5.1		426212.856	4472384.525
1725	40.399	-111.8747	1.35	0	5	5	1994	4	26	23.4	1.77	0	10	111	9.2	0.16	0.6	27.4		425771.79	4472411.078
1726	40.3997	-111.8717	1.52	0	5	5	1994	5	6	53.07	1.71	0	12	110	9.2	0.22	0.7	40.1		426027.144	4472486.263
1727	40.5973	-111.5148	0.52	0	5	5	1994	23	1	59.83	1.6	0	6	318	5.5	0.1	1.3	27.1		456442.005	4494182.448
1728	39.811	-111.4092	1.27	0	5	6	1994	14	2	14.86	6.98	0	6	141	33.7	0.17	0.9	27.4		464974.648	4406860.49
1729	40.0662	-111.3967	2.76	1	5	6	1994	22	42	45.56	0.8	0	28	103	37.2	0.28	0.7	11.8		466170.483	4435180.196
1730	40.325	-111.7522	1.98	0	5	6	1994	23	6	20.18	10.59	0	13	137	21.5	0.31	1.1	7.2		436097.569	4464101.51
1731	40.0687	-111.3885	1.71	0	5	7	1994	1	59	38.5	0.81	0	18	104	37.9	0.33	0.9	17.9		466870.97	4435454.592
1732	40.5388	-111.0618	0.47	0	5	7	1994	5	37	28.33	5.23	0	10	270	20.2	0.24	2.1	17.2		494766.466	4487563.374
1733	39.7835	-111.4153	1.86	0	5	7	1994	8	47	36.21	2.11	0	13	82	34.2	0.19	0.6	2.1		464438.358	4403810.757
1734	39.7942	-111.39	2.09	0	5	8	1994	4	18	58.48	1.08	0	13	78	35.8	0.21	0.6	2.6		466609.946	4404988.572
1735	40.707	-111.3988	0.2	0	5	9	1994	12	0	43.76	13.75	0	8	233	6.4	0.06	1.7	0.8		466312.183	4506308.575
1736	40.2978	-111.344	0.93	0	5	12	1994	21	11	36.72	2.99	0	11	280	14.8	0.46	2.3	31.9		470764.192	4460867.721
1737	40.4138	-111.549	1.34	0	5	14	1994	15	40	5.04	14.71	0	10	224	1.9	0.46	2.9	5.8		453421.508	4473831.291
1738	41.109	-111.6042	0.47	0	5	19	1994	7	36	1.24	10.89	0	6	118	16.4	0.1	0.7	2.9		449269.53	4551033.083
1739	40.2492	-112.2035	1.76	0	5	21	1994	23	33	49.81	1.92	0	8	141	23.5	0.27	1.2	85.8		397642.76	4456111.211
1740	40.3998	-111.4823	0.69	0	5	24	1994	5	20	48.07	6.16	0	15	190	4.1	0.15	0.6	1.5		459072.042	4472244.291
1741	40.5192	-111.3433	0.33	0	5	24	1994	14	4	16.72	9.13	0	8	168	8.9	0.06	1.2	2.2		470919.134	4485442.536
1742	40.7967	-111.3162	1.56	0	5	24	1994	20	13	55.33	4.03	0	8	295	15.8	0.23	4.9	20.2		473325.533	4516237.324
1743	40.3178	-111.4235	0.81	0	5	26	1994	0	44	41.57	2.83	0	9	268	13.8	0.12	1.6	14.9		464018.257	4463116.923
1744	40.3325	-111.4325	1.62	0	5	26	1994	0	46	5.11	5.54	0	18	153	12.1	0.15	0.6	3.7		463261.56	4464752.274
1745	40.3177	-111.4223	1.01	0	5	26	1994	0	46	37.57	3.1	0	7	267	13.9	0.19	2.1	18.5		464120.159	4463105.336
1746	40.3338	-111.4508	1.57	0	5	26	1994	0	47	13.92	5.74	0	14	253	10.9	0.28	1.6	5.2		461707.807	4464904.326
1747	40.7802	-111.3288	1.76	0	5	26	1994	21	1	53.24	0.74	0	10	288	14.8	0.32	9	5		472255.736	4514409.64
1748	40.6867	-111.3708	1.17	0	5	27	1994	1	16	3.43	1.78	0	23	99	6.6	0.14	0.4	9.4		468667.922	4504044.834
1749	40.6813	-111.371	0.81	0	5	27	1994	1	16	56.32	2.58	0	14	166	6.3	0.07	0.4	2.9		468648.492	4503445.485
1750	39.7872	-111.4123	1.73	0	5	28	1994	2	27	17.85	5.25	0	11	105	34.2	0.42	1.2	34		464697.136	4404220.22
1751	39.9703	-111.9968	1.3	0	5	31	1994	4	32	46.28	1.66	0	7	104	6.8	0.12	1.1	41.6		414875.84	4424936.516
1752	40.638	-111.326	-0.21	0	6	5	1994	3	59	44.32	10.72	0	9	287	3.2	0.06	0.9	1		472433.424	4498623.969
1753	40.6485	-111.3178	-0.09	0	6	5	1994	5	51	43.28	10.59	0	10	154	4.5	0.08	1.2	1.5		473131.028	4499786.962
1754	40.6357	-111.3268	-0.33	0	6	5	1994	7	0	44.26	11.16	0	8	286	2.9	0.09	1.4	1.2		472364.827	4498368.914
1755	39.966	-112.006	1.6	0	6	5	1994	23	4	26.9	6.26	0	8	95	6	0.22	0.8	1.2		414084.786	4424468.069
1756	40.6487	-111.271	0.15	0	6	9	1994	0	18	29.42	3.69	0	7	323	7.3	0.03	1.3	4.4		477087.891	4499795.918
1757	40.642	-111.2838	0.3	0	6	9	1994	22	13	23.95	3.87	0	6	320	6.1	0.04	1.4	4.3		476003.295	4499055.612
1758	40.6632	-111.2958	-0.09	0	6	10	1994	21	18	49.04	2.47	0	7	310	6.9	0.18	2.3	15.8		474996.549	4501412.219
1759	40.873	-111.6028	1.18	0	6	11	1994	7	49	6.1	15.77	0	12	117	20.1	0.24	0.8	2.7		449206.276	4524833.866

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1760	40.675	-111.2668	0.07	0	6	11	1994	17	56	3.7	2.92	0	7	321	9.5	0.16	2.3	16.1		477451.845	4502714.215
1761	39.9765	-111.3057	1.4	0	6	13	1994	18	22	15.22	10.39	0	10	108	42.5	0.21	0.7	2.5		473896.575	4425193.694
1762	40.4477	-111.4777	1.3	0	6	14	1994	18	23	5.37	4.75	0	7	140	5.7	0.15	3	12.2		459491.144	4477559.023
1763	40.7112	-111.4225	0.04	0	6	17	1994	13	30	35.45	10.36	0	8	315	6.1	0.04	1.7	1.4		464312.411	4506784.151
1764	40.2193	-111.2052	1.68	0	6	19	1994	20	26	11.62	0.53	0	12	155	22	0.29	1.8	3.5		482540.345	4452118.024
1765	40.2193	-111.2138	1.36	0	6	19	1994	20	29	12.95	4.42	0	10	152	21.8	0.08	0.8	10.1		481808.605	4452119.752
1766	40.2172	-111.2175	1.14	0	6	19	1994	20	33	7.53	3.96	0	9	167	22	0.14	1.9	16.3		481493.215	4451887.428
1767	40.5037	-111.3492	0.39	0	6	20	1994	0	30	23	10.14	0	9	180	10	0.07	1.4	1.9		470412.534	4483723.992
1768	40.4985	-111.364	-0.11	0	6	20	1994	0	47	36.7	7.44	0	9	192	9.9	0.09	1.5	2.5		469156.156	4483151.86
1769	39.9858	-111.4577	1.38	0	6	21	1994	10	22	43.52	4.69	0	14	89	30.4	0.13	0.4	12.3		460922.701	4426281.459
1770	40.8667	-111.5887	1.5	0	6	29	1994	12	8	20.17	8.52	0	13	123	20.9	0.2	0.6	3.6		450389.688	4524126.432
1771	40.8762	-111.5932	1.76	1	6	29	1994	12	45	20.46	10.35	0	31	95	21	0.16	0.4	1.1		450017.611	4525183.566
1772	40.5213	-111.3838	1.13	0	6	29	1994	17	47	17.78	2.09	0	7	190	7	0.1	1.4	14.5		467489.395	4485689.781
1773	40.0132	-111.7812	2.01	0	6	29	1994	19	2	4.59	0.06	0	17	120	8.4	0.41	1.2	4.5		433329.482	4429514.535
1774	40.5022	-111.3498	0.58	0	7	1	1994	10	3	25.75	8.63	0	12	111	10.1	0.13	0.7	2.4		470361.036	4483557.693
1775	40.7758	-112.0638	1.27	0	7	1	1994	12	18	41.67	7.62	0	9	109	13.2	0.27	1.2	2.9		410229.548	4514413.532
1776	40.4882	-111.3817	0.29	0	7	2	1994	12	26	24.07	7.4	0	10	207	10.6	0.14	1.8	3.6		467651.383	4482014.898
1777	40.3868	-111.0368	1.65	0	7	7	1994	17	12	43.78	2.04	0	25	182	18.8	0.26	1	1.4		496876.559	4470690.323
1778	40.5943	-111.5673	0.7	0	7	7	1994	21	7	15.01	5.57	0	8	321	9.9	0.55	6.9	17		451997.735	4493876.738
1779	40.6087	-111.5767	0.25	0	7	8	1994	22	59	34.78	3.77	0	6	323	10.7	0.21	27	15		451212.818	4495480.343
1780	40.611	-111.4885	0.56	0	7	9	1994	19	26	0.94	1.49	0	7	282	3.4	0.18	2.9	31.5		458675.735	4495690.503
1781	40.6072	-111.5718	0.97	0	7	12	1994	22	4	0.1	3.67	0	6	321	10.3	0.18	20.8	12.2		451626.264	4495311.135
1782	39.9967	-112.0392	2.99	0	7	13	1994	14	58	46.47	5.99	0	36	49	5.6	0.37	0.8	1.2		411289.074	4427908.066
1783	40.595	-111.5725	0.36	0	7	13	1994	22	35	37.85	3.54	0	6	322	10.4	0.23	45.7	16.6		451558.238	4493957.287
1784	40.3198	-111.4203	0.61	0	7	16	1994	7	55	43.27	3.72	0	11	266	13.8	0.41	2.5	18.9		464291.192	4463337.621
1785	40.3358	-111.41	0.67	0	7	16	1994	15	6	21.24	1.53	0	7	254	13.2	0.06	1	999.9		465174.51	4465109.47
1786	40.3302	-111.4162	0.11	0	7	16	1994	15	6	31.71	2.93	0	6	259	13.2	0.16	1.3	16.3		464644.957	4464490.344
1787	40.3297	-111.4275	0.66	0	7	16	1994	15	6	55.87	5.42	0	10	260	12.6	0.11	0.9	3.9		463684.782	4464439.419
1788	40.5758	-111.102	0.94	0	7	18	1994	20	10	55.2	3.19	0	11	258	14.9	0.13	1.1	14.3		491366.881	4491673.573
1789	39.9913	-112.0365	1.89	0	7	23	1994	13	13	49.48	7.35	0	13	65	5.2	0.2	0.6	1		411512.594	4427306.019
1790	40.9147	-111.7067	0.93	0	7	24	1994	6	40	28.74	7.63	0	13	90	16.6	0.11	0.4	3.3		440488.673	4529528.399
1791	40.271	-112.3207	1.68	0	7	25	1994	22	53	48.09	1.41	0	11	106	26.9	0.39	1.3	3.8		387710.713	4458672.908
1792	40.8788	-111.5887	1.71	1	7	27	1994	5	48	41.75	6.37	0	28	115	21.5	0.19	0.4	1.3		450398.719	4525469.627
1793	40.8472	-111.4275	1.48	0	7	27	1994	11	30	54.29	4.27	0	10	178	21	0.12	1.1	16.3		463963.644	4521882.968
1794	40.492	-111.3615	0.2	0	7	28	1994	1	24	57.62	7.06	0	9	194	10.7	0.15	2.2	3.5		469365.04	4482429.489
1795	40.678	-111.5252	-0.1	0	8	5	1994	8	34	33.61	8.55	0	8	324	7.6	0.07	1.8	1.4		455615.521	4503145.604
1796	41.0812	-111.5693	1.21	0	8	5	1994	14	50	57.37	2.21	0	12	87	14.1	0.23	0.7	22.4		452179.697	4547927.216
1797	40.5007	-111.3008	1.32	0	8	6	1994	22	43	47.44	5.45	0	6	175	10.5	0.43	5.3	18.4		474512.302	4483375.883
1798	40.7685	-111.743	0.77	0	8	7	1994	6	15	9.81	4.53	0	14	191	5.7	0.15	0.9	2.3		437294.178	4513324.389
1799	40.07	-111.2958	1.2	0	8	9	1994	11	42	14.83	6.99	0	12	146	38.2	0.25	1	20		474776.383	4435568.495

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FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1800	40.469	-111.3823	0.12	0	8	14	1994	20	6	22.62	4.98	0	11	170	12.4	0.15	1	5.8		467591.302	4479883.922
1801	40.4898	-111.3567	1.92	0	8	16	1994	0	11	22.18	12.76	0	18	106	11.1	0.15	0.5	1.1		469770.825	4482183.633
1802	40.4855	-111.3625	0.71	0	8	16	1994	0	15	35.24	7.73	0	13	126	11.4	0.2	0.7	3.6		469277.332	4481708.337
1803	40.4788	-111.3712	0.14	0	8	16	1994	0	18	43.63	10.59	0	8	118	12.2	0.15	0.9	3.7		468536.858	4480967.703
1804	40.4852	-111.3517	0.37	0	8	16	1994	0	22	26.28	7.55	0	9	133	11.4	0.05	0.7	2.1		470192.525	4481671.333
1805	40.4805	-111.3623	0.43	0	8	16	1994	0	32	9.7	9.42	0	9	124	11.8	0.08	0.9	1.9		469292.004	4481153.268
1806	40.4787	-111.36	0.47	0	8	16	1994	0	35	12.36	7.08	0	8	201	11.4	0.16	2.1	3.9		469486.134	4480952.67
1807	40.4868	-111.3593	0.55	0	8	16	1994	0	59	19.63	12.24	0	13	153	11.3	0.2	0.9	2.2		469549.127	4481851.527
1808	40.4805	-111.3588	0.18	0	8	16	1994	1	34	26.05	7	0	9	126	11.5	0.06	0.7	2.7		469588.659	4481152.056
1809	40.4873	-111.3558	1.01	0	8	16	1994	1	52	41.69	11.02	0	15	107	11.4	0.19	0.7	2.1		469845.978	4481905.825
1810	40.4762	-111.3813	0.26	0	8	16	1994	3	50	54.87	10.2	0	12	117	11.9	0.14	0.8	2.4		467679.527	4480682.753
1811	40.4777	-111.3648	0.65	0	8	17	1994	1	3	6.98	12.11	0	13	115	11.7	0.15	0.8	2		469078.823	4480843.341
1812	40.4917	-111.339	0.64	0	8	17	1994	4	16	30.06	10.95	0	12	115	11.2	0.1	0.6	1.8		471271.656	4482388.62
1813	40.4895	-111.3405	1.23	0	8	18	1994	14	54	53.37	10.43	0	10	114	11.2	0.08	0.5	1.9		471143.597	4482144.91
1814	40.489	-111.3603	1.2	0	8	18	1994	18	14	11.42	13.59	0	13	105	11.1	0.17	0.7	1.7		469465.374	4482096.073
1815	40.4947	-111.2928	0.23	0	8	19	1994	0	40	43.11	4.08	0	6	343	13.9	0.22	4.9	24.5		475187.957	4482707.603
1816	40.734	-111.1788	0.38	0	8	19	1994	0	43	20.61	6.44	0	5	337	19.4	0.43	36.1	115.3		484902.351	4509244.594
1817	40.4917	-111.3702	1.58	0	8	25	1994	18	40	12.42	9.52	0	15	123	10.5	0.23	0.7	1.2		468627.626	4482399.246
1818	40.4865	-111.348	0.44	0	8	25	1994	18	59	38.14	7.23	0	6	136	11.3	0.06	1.1	3.8		470506.679	4481814.389
1819	40.4937	-111.3413	0.51	0	8	26	1994	3	45	2.28	9.58	0	12	114	11.3	0.1	0.6	2		471077.602	4482611.371
1820	40.4592	-111.3408	0.31	0	9	1	1994	2	39	36.64	10.49	0	8	204	8.9	0.07	1.8	2.5		471105.187	4478781.718
1821	40.6732	-112.0503	1.72	0	9	3	1994	5	16	2.78	6.78	0	17	75	6.2	0.19	0.5	1.2		411232.559	4503010.488
1822	39.9883	-112.0253	0.96	0	9	11	1994	0	55	23.64	6.98	0	7	97	5.6	0.05	0.5	0.4		412464.941	4426961.981
1823	40.6835	-111.5292	-0.15	0	9	21	1994	10	53	41.05	2.13	0	8	231	8.1	0.35	2.6	22.8		455281.157	4503758.154
1824	40.8812	-111.608	0.76	0	9	22	1994	4	45	54.83	3.8	0	14	111	20.2	0.16	0.5	12.3		448774.428	4525747.161
1825	40.4922	-111.3583	0.68	0	9	28	1994	2	27	0.06	13.01	0	14	106	10.8	0.19	0.7	2		469636.312	4482450.583
1826	40.731	-111.6032	0.42	0	9	30	1994	9	19	11.02	6.33	0	10	262	16	0.1	1.5	5		449064.127	4509071.164
1827	40.3292	-111.263	0.63	0	9	30	1994	14	35	27.88	10.05	0	8	289	9.3	0.44	3.7	6		477658.564	4464329.425
1828	40.321	-111.3145	1.13	0	9	30	1994	14	36	1.41	2.87	0	10	274	11.4	0.11	1	9.4		473280.481	4463433.521
1829	40.3112	-111.3168	0.38	0	9	30	1994	14	38	20	4.37	0	8	316	12.4	0.28	7.6	24.8		473081.184	4462346.451
1830	40.3188	-111.318	2.84	1	9	30	1994	18	8	39.61	7.95	0	26	116	11.7	0.16	0.5	1.6		472982.248	4463190.39
1831	40.3455	-111.2832	0.56	0	9	30	1994	19	9	58.42	8.37	0	8	317	7.8	0.17	4.5	3.4		475948.392	4466143.968
1832	40.3122	-111.2948	0.99	0	9	30	1994	21	28	16.06	8.13	0	7	322	11.7	0.14	4.9	6.8		474950.918	4462450.993
1833	40.54	-111.4755	0.81	0	10	5	1994	15	50	14.21	1.91	0	8	319	7.2	0.17	2.7	20.5		459732.919	4487803.346
1834	40.4922	-111.3585	1.59	0	10	10	1994	18	11	32.89	12.48	0	14	106	10.8	0.17	0.7	1.9		469619.363	4482450.652
1835	40.4952	-111.3608	1.83	0	10	10	1994	18	57	15.69	13.06	0	17	105	10.4	0.18	0.6	0.9		469425.814	4482784.446
1836	40.4622	-111.3927	0.28	0	10	12	1994	1	40	9.54	3.18	0	8	177	12.8	0.06	0.6	8.7		466706.304	4479132.994
1837	40.606	-111.0527	1.24	0	10	13	1994	4	26	16.68	7.54	0	11	280	16.1	0.08	1	3.9		495541.562	4495022.157
1838	40.5463	-111.4538	0.31	0	10	17	1994	16	35	18.32	1.62	0	6	319	5.5	0.06	1.6	23.2		461574.161	4488492.967
1839	40.8783	-111.5738	0.56	0	10	19	1994	5	22	12.86	6.13	0	8	346	27	0.13	5.3	18.9		451653.77	4525405.788

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1840	40.7847	-111.4477	0.87	0	10	20	1994	20	48	9.09	4.39	0	7	335	14.1	0.11	2.5	12.3		462225.433	4514953.572
1841	40.7635	-111.4082	0.72	0	10	23	1994	16	40	4.54	4.39	0	8	329	12	0.37	4.1	20.9		465547.294	4512583.993
1842	40.476	-111.3552	0.4	0	11	1	1994	6	13	34.03	11.25	0	10	127	10.9	0.16	1	3.5		469891.78	4480651.323
1843	40.5347	-111.2447	-0.16	0	11	6	1994	5	59	43.67	6.06	0	9	228	12.2	0.08	1.5	4.5		479276.303	4487135.199
1844	39.9493	-111.7193	2.7	0	11	7	1994	17	37	36.69	6.73	0	5	309	186.7	0.28	41.1	50.8		438555.096	4422377.704
1845	40.6035	-111.1778	0.55	0	11	21	1994	15	16	44.79	3.68	0	6	221	8.8	0.26	2.2	18.8		484957.495	4494758.508
1846	40.3222	-111.3362	1.47	0	11	22	1994	15	14	28.87	3.94	0	11	268	12.2	0.17	1.3	7.9		471437.379	4463573.491
1847	40.705	-111.3992	0.36	0	11	23	1994	0	40	41.48	11.35	0	9	303	6.2	0.07	1.6	1.4		466277.385	4506086.72
1848	40.504	-111.0493	0.66	0	11	26	1994	3	59	15.36	7.04	0	9	348	27.8	0.05	2.6	12.2		495822.869	4483699.898
1849	39.9663	-111.9212	1.52	0	11	29	1994	6	58	46.96	2.25	0	8	102	13.2	0.09	0.4	9		421327.403	4424423.123
1850	40.4358	-111.6338	0.72	0	11	29	1994	9	6	7.05	4.71	0	13	169	9.4	0.21	0.9	4.7		446244.344	4476321.426
1851	40.9928	-111.4935	0.8	0	12	1	1994	11	44	4.03	5.18	0	8	159	15.6	0.1	0.9	10.9		458491.306	4538075.057
1852	40.8905	-111.5433	0.48	0	12	6	1994	12	42	55.17	3.93	0	9	143	25.5	0.23	0.9	21.9		454232.003	4526743.689
1853	40.599	-111.4588	0.24	0	12	19	1994	19	28	6.36	5.75	0	10	149	0.9	0.05	0.5	0.7		461181.249	4494344.954
1854	40.2903	-111.193	1.32	0	12	24	1994	6	34	26.13	10.57	0	13	286	14.6	0.37	3.5	5.8		483595.549	4459996.356
1855	40.3917	-111.1295	0.88	0	12	24	1994	6	35	11.9	3.93	0	9	310	10.9	0.25	3	15.7		489009.338	4471241.611
1856	40.3032	-111.231	1.03	0	12	24	1994	6	50	27.14	7	0	15	292	12.4	0.14	1.4	0.7		480369.388	4461435.933
1857	40.3217	-111.2178	1.3	0	12	24	1994	14	34	5.55	12.71	0	13	298	10.6	0.17	1.4	1.3		481496.189	4463486.524
1858	40.3995	-111.2138	0.5	0	12	24	1994	14	46	38.36	1.66	0	11	178	3.9	0.39	6.4	48.6		481856.888	4472121.284
1859	40.574	-111.5122	-0.1	0	12	24	1994	23	59	26.75	2.17	0	8	308	6.1	0.11	1.5	9.7		456646.954	4491594.814
1860	40.5078	-111.3648	-0.08	0	12	25	1994	8	47	6.75	10.87	0	10	186	9	0.1	1.4	2.1		469092.636	4484184.443
1861	40.7018	-111.5475	0.93	0	12	30	1994	22	10	7.54	2.87	0	9	334	10.3	0.15	1.7	11.4		453747.407	4505799.005
1862	40.3227	-111.2997	1.03	0	1	2	1995	8	19	1.13	2.18	0	12	278	10.7	0.25	1.8	28.4		474538.51	4463617.854
1863	40.2662	-111.355	0.73	0	1	8	1995	1	47	32.8	3.86	0	7	288	18.3	0.22	2.7	17		469815.273	4457363.936
1864	40.6948	-111.6767	0.23	0	1	12	1995	22	32	35.37	6.74	0	7	342	20.4	0.11	3.8	16		442826.585	4505098.015
1865	40.1022	-110.9438	1	0	1	15	1995	2	31	14.94	15	0	9	325	43.5	0.11	20.4	1.1		504790.056	4439102.033
1866	40.5685	-111.557	-0.13	0	1	24	1995	17	59	26.43	3.44	0	5	339	9.8	0.4	194.3	40.2		452851.165	4491007.316
1867	40.613	-111.47	-0.13	0	2	5	1995	16	15	47.74	4.72	0	5	304	2.1	0.15	3.3	1.3		460241.918	4495903.987
1868	40.4687	-110.9257	1.24	0	2	8	1995	20	45	17.35	3.84	0	10	275	28.6	0.13	1.6	3.4		506298.651	4479783.097
1869	40.4702	-110.9597	1.07	0	2	8	1995	20	46	34.01	5.27	0	9	300	25.9	0.23	3.1	22.3		503416.285	4479947.725
1870	40.4717	-111.4222	-0.09	0	2	10	1995	3	31	13.52	3.49	0	10	236	12.2	0.08	1.5	7.3		464210.285	4480199.034
1871	40.7447	-111.4858	0.38	0	2	10	1995	20	34	8.25	4.33	0	6	332	10.4	0.38	86.4	20.4		458986.162	4510530.457
1872	40.004	-111.9197	0.89	0	2	11	1995	17	23	42.69	5.25	0	5	154	10.9	0.33	2.1	12.7		421498.673	4428606.217
1873	40.5077	-111.5802	0.29	0	2	12	1995	7	20	23.78	3.14	0	8	335	15.2	0.05	2	16.1		450842.905	4484271.102
1874	40.0003	-111.9207	1.31	0	2	12	1995	18	20	13.81	2.04	0	11	97	11.3	0.28	0.9	21.6		421409.074	4428196.425
1875	40.4908	-111.3567	0.06	0	2	13	1995	6	57	5.59	15.03	0	7	192	11	0.01	1.8	3.8		469771.274	4482294.633
1876	40.763	-111.442	0.55	0	2	16	1995	22	8	16.7	4.3	0	6	332	11.7	0.47	88.8	31.7		462694.235	4512542.311
1877	40.4702	-111.3843	-0.01	0	2	18	1995	15	37	40.06	9.09	0	8	170	12.6	0.1	0.8	3.1		467422.335	4480017.857
1878	40.4882	-111.3442	0.12	0	2	18	1995	16	25	53.46	11.04	0	11	111	11.2	0.13	0.8	2.2		470829.469	4482001.826
1879	40.4943	-111.3412	0.58	0	2	20	1995	13	45	29.27	10.82	0	12	115	11.2	0.09	0.6	1.7		471086.334	4482677.939

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1880	40.6867	-111.6207	0.03	0	2	24	1995	22	59	26.09	5.81	0	8	159	15.5	0.17	1.7	8.9		447551.624	4504163.948
1881	40.3095	-111.4505	0.6	0	2	27	1995	2	13	5.01	3.24	0	8	263	13.2	0.24	2.4	15.4		461719.567	4462206.97
1882	40.0057	-111.928	2.23	0	2	27	1995	8	24	45.24	6.01	0	21	84	11.3	0.27	0.8	2.4		420792.177	4428802.249
1883	40.681	-111.5093	0.81	0	2	27	1995	23	20	25.97	2.78	0	8	232	6.4	0.17	2.6	7.1		456961.16	4503470.709
1884	40.0058	-111.9248	1.66	0	3	1	1995	21	57	40.78	2.94	0	16	87	11.1	0.34	0.9	3		421065.427	4428810.508
1885	39.995	-111.9168	1.55	0	3	1	1995	22	20	41.55	3.46	0	12	88	11.6	0.15	0.5	1.4		421735.932	4427604.732
1886	40.0023	-111.923	1.32	0	3	3	1995	2	1	22.08	1.85	0	7	147	11.2	0.18	0.9	2		421215.042	4428420.441
1887	40.0462	-111.8043	1.7	0	3	5	1995	8	4	59.62	3.06	0	18	127	4.2	0.19	0.6	3		431391.092	4433194.833
1888	40.4963	-111.3575	1.61	0	3	8	1995	4	55	49.13	12.82	0	19	107	10.4	0.19	0.6	1.5		469705.951	4482905.408
1889	40.717	-111.5653	0.25	0	3	13	1995	20	17	15.62	3.58	0	8	339	12.4	0.2	2.8	15.8		452254.52	4507495.799
1890	40.3138	-111.2732	1.06	0	3	14	1995	20	14	33.2	8.34	0	9	289	11.1	0.27	2.5	5.2		476786.815	4462622.701
1891	40.3373	-111.117	0.59	0	3	16	1995	3	39	59.63	3.07	0	6	337	14.4	0.32	9	56		490062.227	4465201.881
1892	40.9342	-111.6065	1.11	0	3	19	1995	1	36	12.92	5.21	0	9	115	26.3	0.26	1	22.2		448941.592	4531629.74
1893	40.749	-111.6345	0.33	0	3	22	1995	6	2	2.84	11.57	0	11	247	17.1	0.1	1.6	2.8		446435.494	4511087.891
1894	39.932	-111.1707	1.77	0	3	22	1995	21	19	16.58	7.55	0	12	121	33	0.17	0.5	2.6		485414.652	4420223.874
1895	39.9182	-111.174	2.77	0	3	22	1995	21	22	24.42	0.58	0	7	164	32.8	0.08	0.8	1.2		485129.701	4418692.772
1896	39.9273	-111.1693	1.84	0	3	22	1995	22	22	8.07	7.02	0	11	121	32.8	0.17	0.6	3.7		485533.285	4419701.998
1897	39.9337	-111.1717	1.87	0	3	22	1995	22	55	16.31	4.02	0	16	122	33.2	0.23	0.6	1.7		485329.571	4420412.719
1898	40.662	-111.2807	-0.39	0	3	30	1995	19	16	52.64	7.37	0	6	317	7.7	0.1	2.5	4		476272.501	4501274.831
1899	40.8248	-111.9015	1.4	0	4	1	1995	13	43	21.4	0.04	0	7	139	3.7	0.19	0.9	1.1		423981.602	4519699.483
1900	40.7655	-111.425	0.21	0	4	1	1995	18	34	12.41	3.55	0	7	331	11.9	0.15	3.3	15.8		464130.42	4512812.736
1901	40.9593	-111.5403	2	0	4	14	1995	17	6	54.79	1.62	0	28	108	20.8	0.29	0.6	5.2		454531.906	4534379.526
1902	40.962	-111.5375	1.52	0	4	14	1995	17	21	12.01	13.3	0	22	108	20.4	0.11	0.4	0.8		454769.38	4534677.799
1903	40.7607	-111.4462	0.19	0	4	17	1995	20	32	51.64	5.83	0	5	331	11.4	0.05	3.8	10.9		462338.446	4512288.792
1904	40.4912	-111.3397	0.54	0	4	23	1995	11	44	15.05	10.38	0	12	115	11.2	0.11	0.6	2		471212.121	4482333.348
1905	40.6815	-111.5413	0.19	0	4	24	1995	10	25	22.77	2.32	0	11	229	9	0.08	1	8		454257.302	4503542.372
1906	40.4895	-111.3447	0.42	0	4	26	1995	1	6	30.99	11.07	0	12	112	11.4	0.09	0.7	1.9		470787.658	4482146.291
1907	40.4977	-111.037	0.29	0	4	26	1995	23	55	34.58	7.03	0	7	305	20.8	0.12	3.8	15.7		496864.74	4483000.09
1908	40.2548	-111.236	0.62	0	4	27	1995	8	20	57.65	2.99	0	10	304	17.6	0.18	3.1	18.4		479930.177	4456064.86
1909	40.4993	-111.0148	1.54	0	5	1	1995	9	15	43.8	2.96	0	21	193	22.6	0.28	1.1	2.1		498745.926	4483177.137
1910	40.9923	-111.7538	1.36	0	5	2	1995	4	12	22.43	8.68	0	24	77	7.9	0.17	0.5	1.1		436596.63	4538175.882
1911	40.4928	-111.4752	0.48	0	5	4	1995	11	29	16.39	6.04	0	15	90	9.9	0.13	0.5	2.2		459730.094	4482563.974
1912	40.4985	-111.5187	1.09	0	5	4	1995	22	10	47.74	1.74	0	15	108	9.4	0.2	0.6	21.8		456047.474	4483217.439
1913	40.4983	-111.5163	0.05	0	5	4	1995	23	7	49.86	2.46	0	12	107	9.4	0.15	0.5	10.4		456250.712	4483194.046
1914	40.6253	-111.1047	0.78	0	5	5	1995	1	49	56.16	2.98	0	11	268	11.2	0.06	0.8	8.4		491144.892	4497168.431
1915	40.7063	-111.1562	0.42	0	5	6	1995	13	8	4.51	10.71	0	7	349	6.4	0.09	4.6	2.3		486805.199	4506166.139
1916	40.5048	-111.021	1.19	0	5	9	1995	17	9	5.5	5.27	0	10	285	22.4	0.12	1.4	10.3		498220.716	4483787.743
1917	40.5035	-111.0228	0.86	0	5	10	1995	6	21	46.73	5.26	0	10	284	22.1	0.14	1.6	11.8		498068.168	4483643.481
1918	40.4878	-111.0593	0.25	0	5	11	1995	1	44	34.91	7.06	0	9	302	18.6	0.03	2.2	8.4		494974.372	4481902.224
1919	40.4983	-111.0053	0.86	0	5	11	1995	17	9	13.63	5.29	0	8	211	23.2	0.14	1.3	12.5		499550.899	4483066.045

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1920	39.9468	-111.9008	1.18	0	5	12	1995	11	39	10.48	2.21	0	6	108	11.4	0.19	0.7	17.6		423047.781	4422240.987
1921	40.5975	-111.5923	0.01	0	5	13	1995	8	42	53.27	9.26	0	10	163	12.1	0.06	1.1	1.5		449884.73	4494245.876
1922	40.4513	-111.3415	0.48	0	5	14	1995	11	35	34	10.69	0	10	136	8.4	0.11	0.8	2.2		471042.446	4477905.053
1923	40.4502	-111.3383	0.58	0	5	14	1995	17	18	55.63	11.86	0	11	170	8.1	0.12	0.8	1.8		471313.323	4477781.909
1924	40.6223	-111.443	-0.14	0	5	16	1995	16	31	21.12	1.58	0	6	169	2.4	0.11	0.9	14.9		462531.097	4496924.465
1925	40.614	-111.4298	-0.1	0	5	16	1995	16	47	7.5	0.91	0	7	119	2.2	0.09	0.4	0.3		463643.056	4495997.607
1926	40.4943	-111.3348	0.67	0	5	17	1995	16	12	39.09	8.98	0	11	118	11.2	0.12	0.6	2.6		471628.678	4482675.861
1927	40.2968	-112.3468	1.76	0	5	18	1995	21	29	30.53	2.69	0	8	168	26.6	0.44	2.6	47.7		385535.091	4461570.126
1928	40.4622	-111.3368	0.53	0	5	19	1995	19	48	44.66	2.14	0	8	199	8.8	0.04	1.3	14.7		471445.599	4479113.415
1929	40.2788	-112.3045	1.68	0	5	20	1995	21	29	25.91	2.11	0	6	120	25.3	0.09	0.7	32.6		389100.864	4459518.309
1930	40.2588	-112.3285	2.39	0	5	24	1995	0	44	23.75	5.2	0	12	97	28.3	0.51	1.7	4.4		387027.22	4457328.617
1931	40.2688	-112.3953	1.44	0	5	24	1995	0	50	22.42	1.24	0	8	214	31.7	0.45	3.5	55.7		381363.983	4458525.902
1932	40.4392	-111.1767	0.47	0	5	29	1995	5	24	13.04	16.87	0	9	254	7.3	0.18	2.4	4.4		485014.015	4476520.966
1933	40.8418	-111.553	1.1	0	5	30	1995	22	49	51.3	10.28	0	11	123	22.6	0.18	0.5	3.2		453380.723	4521342.734
1934	40.6983	-111.5667	0.79	0	5	31	1995	0	36	8.9	2.92	0	7	241	11.6	0.31	3.5	27.3		452122.884	4505420.774
1935	40.5088	-111.0187	0.81	0	5	31	1995	18	43	39.03	4.26	0	7	210	22.8	0.28	2.2	27.6		498415.684	4484231.699
1936	40.4928	-111.5118	0.01	0	5	31	1995	22	1	41.39	3.74	0	8	266	13.2	0.11	1.8	9.6		456628.485	4482581.321
1937	40.7735	-111.4357	0.57	0	5	31	1995	22	49	8.48	3.95	0	7	333	12.8	0.13	3.4	14.2		463231.758	4513705.209
1938	40.4993	-111.5383	0.12	0	5	31	1995	23	6	30.94	2.41	0	9	122	9.6	0.12	0.7	13		454387.185	4483316.188
1939	40.517	-111.2862	0.58	0	6	2	1995	2	41	22.62	6.82	0	5	329	11.8	0.34	11.4	29.6		475755.277	4485181.071
1940	40.521	-111.5352	0.02	0	6	2	1995	18	43	22.06	3.55	0	7	341	11.6	0.03	1.7	7.6		454664.48	4485723.308
1941	40.4832	-111.3357	0.68	0	6	4	1995	0	41	13.64	8.04	0	7	185	10.4	0.07	1.6	3.3		471547.724	4481444.052
1942	40.5867	-111.3857	-0.38	0	6	4	1995	1	29	59.41	3.62	0	7	204	2	0.03	0.6	1.4		467360.225	4492949.966
1943	40.448	-110.723	1.55	0	6	7	1995	23	14	56.74	7	0	8	324	45.3	0.11	40.3	72.1		523489.406	4477519.603
1944	40.0693	-111.3815	2.24	0	6	8	1995	2	22	46.19	11.27	0	15	323	59.5	0.27	14	3.7		467468.177	4435518.605
1945	40.4765	-111.3647	-0.04	0	6	9	1995	4	47	59.91	6.38	0	7	327	12.2	0.1	3.4	9.7		469086.749	4480710.106
1946	40.4883	-111.3485	1.43	0	6	12	1995	22	24	0.93	9.52	0	11	109	11.5	0.07	0.5	1.8		470465.093	4482014.356
1947	40.4888	-111.3678	1.88	0	6	12	1995	22	24	27.11	11.95	0	13	106	10.9	0.16	0.6	2.1		468829.671	4482076.495
1948	40.4475	-111.4447	0.77	0	6	16	1995	23	26	30.83	6.4	0	7	255	15.2	0.33	9	25.3		462289.435	4477522.209
1949	40.8262	-111.8943	2.28	0	6	21	1995	22	14	36.05	1.33	0	11	95	8.8	0.17	0.5	1.2		424590.331	4519848.673
1950	40.3725	-111.8183	1.12	0	6	23	1995	6	41	52.1	1.94	0	18	104	14.7	0.26	0.6	30		430530.802	4469423.759
1951	40.4697	-111.3155	-0.05	0	7	3	1995	6	6	51.94	8.95	0	10	181	8.1	0.23	3.2	4		473254.423	4479939.24
1952	39.9087	-111.6553	2.32	0	7	6	1995	0	22	7.07	9.22	0	20	140	11.8	0.29	0.9	2.3		443989.144	4417829.392
1953	39.9125	-111.6413	3.11	1	7	6	1995	0	22	23.54	7.77	0	12	142	13.1	0.27	0.9	2.9		445188.813	4418242.465
1954	39.916	-111.6437	2.34	0	7	6	1995	0	23	12.51	8.08	0	7	222	12.9	0.11	1	2.4		444986.486	4418632.406
1955	40.518	-111.081	0.2	0	7	11	1995	13	29	43.55	4.18	0	8	266	18.9	0.08	1	10.2		493138.392	4485255.883
1956	40.2725	-112.3038	1.91	0	7	17	1995	23	11	52.4	4.35	0	12	87	25.8	0.27	0.7	1.7		389150.085	4458818.131
1957	40.6447	-111.577	0.47	0	7	19	1995	1	7	33.62	7.25	0	15	135	11.7	0.09	0.6	1.6		451213.643	4499476.623
1958	40.6715	-111.5673	0.72	0	7	19	1995	1	9	26.85	4.42	0	7	202	12.6	0.07	2.6	7.6		452052.991	4502446.188
1959	40.6635	-111.5797	0.4	0	7	19	1995	1	17	23.78	5.06	0	6	226	12.9	0.1	4.6	10.1		450999.108	4501564.993

Post-1962

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
1960	40.281	-111.6023	1.85	0	7	19	1995	4	9	0.18	0.33	0	14	72	16.1	0.35	0.9	2.8		448799.057	4459120.225
1961	40.3307	-112.2238	2.03	0	7	20	1995	18	22	35.53	0.01	0	10	181	16.5	0.19	1	1.4		396041.179	4465181.344
1962	40.2577	-112.3225	1.75	0	8	8	1995	22	2	44.22	2.23	0	6	163	39.7	0.28	2.8	68.8		387535.64	4457198.887
1963	40.2918	-112.3407	2.83	0	8	8	1995	22	4	43.06	1.01	0	8	168	37.5	0.29	1.6	10.8		386045.147	4461007.256
1964	40.6353	-111.267	-0.01	0	8	14	1995	12	11	0.79	3.76	0	7	323	7	0.05	2.2	9.1		477421.563	4498307.447
1965	40.0788	-111.2995	1.1	0	8	18	1995	8	37	52.26	7.03	0	11	199	37.3	0.09	1.3	12		474464.161	4436546.278
1966	41.1855	-111.6468	0.51	0	8	19	1995	15	21	12.12	2.47	0	5	111	19.5	0.15	0.8	52.3		445755.769	4559551.275
1967	40.5357	-111.1315	0.72	0	8	22	1995	5	37	7.38	2.95	0	11	244	17.2	0.15	1.1	18.1		488863.405	4487225.744
1968	40.4927	-111.3647	-0.28	0	8	25	1995	8	9	13.68	11.36	0	10	195	10.6	0.2	2.8	3.1		469094.18	4482508.305
1969	40.495	-111.3093	0.84	0	8	26	1995	2	1	49.29	4.02	0	9	133	10.2	0.28	1.3	13.9		473789.852	4482745.674
1970	40.6373	-111.5347	-0.19	0	8	29	1995	10	8	8.31	9.54	0	10	184	8.2	0.15	1.5	1.8		454785.205	4498632.597
1971	40.652	-111.5805	1.07	0	8	29	1995	10	23	51.58	5.81	0	18	71	11.9	0.18	0.7	2.9		450923.058	4500288.896
1972	40.6335	-111.5825	0.1	0	8	29	1995	10	28	10.39	6.69	0	11	190	11.7	0.06	1	1.7		450740.374	4498236.45
1973	40.6252	-111.5855	0.36	0	8	30	1995	0	49	47.63	4.46	0	11	183	11.7	0.14	1.5	4.1		450480.544	4497316.807
1974	40.456	-111.4728	0.6	0	8	30	1995	23	15	20.31	2.28	0	8	262	14.9	0.2	3.1	55.1		459911.597	4478478.083
1975	40.735	-111.4268	0.24	0	9	2	1995	0	56	3.36	3.79	0	5	325	8.6	0.09	15.6	7.9		463962.038	4509427.817
1976	40.5132	-111.3677	-0.14	0	9	6	1995	10	37	53.33	11.02	0	10	185	8.4	0.09	1.4	1.7		468849.435	4484784.865
1977	40.464	-111.4907	0.69	0	9	6	1995	19	58	51.24	3.99	0	6	334	14.8	0.16	4.1	17.1		458398.798	4479374.361
1978	40.4693	-111.4078	0.66	0	9	7	1995	19	39	21.17	4.39	0	6	328	12.4	0.1	2.6	13.3		465429.74	4479926.895
1979	40.4435	-111.0355	1.27	0	9	7	1995	22	13	47.34	10.47	0	8	314	19	0.08	3.8	7.9		496989.426	4476983.877
1980	40.7355	-111.47	-0.09	0	9	9	1995	0	8	58.77	1.41	0	5	328	8.9	0.04	24.4	999.9		460314.62	4509501.948
1981	40.7358	-111.431	0.4	0	9	12	1995	0	34	32.72	2.82	0	8	326	8.7	0.16	2	12.5		463607.836	4509518.353
1982	40.7297	-111.4203	0.24	0	9	12	1995	22	39	17.26	2.14	0	8	323	8.1	0.15	1.8	20.3		464508.068	4508836.844
1983	41.0723	-111.534	0.98	0	9	13	1995	7	34	33.52	9.06	0	12	99	11.7	0.15	0.6	2.5		455138.803	4546920.451
1984	40.2308	-111.389	0.53	0	9	15	1995	7	18	59.24	6.94	0	10	166	23.1	0.33	3	22.4		466907.098	4453446.83
1985	40.319	-111.3737	1.03	0	9	17	1995	7	49	50.37	6.4	0	11	265	14.4	0.06	1	3.1		468249.976	4463231.073
1986	40.3288	-111.3122	1.14	0	9	19	1995	6	50	17.52	4.75	0	10	270	10.4	0.08	1.3	4.8		473478.939	4464298.604
1987	40.814	-111.4133	0.32	0	9	20	1995	20	25	43.38	5.31	0	7	338	17.5	0.18	3.9	19.7		465143.262	4518191.803
1988	40.7023	-111.5743	0.4	0	9	20	1995	20	34	37.41	5.82	0	7	336	12.4	0.54	10.4	22		451483.704	4505868.961
1989	40.8712	-111.3842	0.88	0	9	23	1995	18	51	44.15	6.98	0	7	317	24.1	0.17	16.7	33.2		467625.338	4524530.228
1990	40.8763	-111.4152	0.05	0	9	24	1995	18	16	56.57	5.25	0	7	319	24.3	0.2	24.6	49.9		465015.797	4525108.291
1991	40.7162	-111.439	-0.02	0	9	26	1995	0	27	30.4	2.47	0	6	265	6.5	0.09	2.6	11.9		462921.464	4507346.008
1992	40.807	-111.4507	0.29	0	9	27	1995	0	17	11.89	4.95	0	8	307	16.6	0.12	2.7	12.1		461985.031	4517430.303
1993	41.0747	-111.8955	1.58	0	9	28	1995	14	27	9.63	1.75	0	8	126	7.3	0.17	0.9	22.5		424771.747	4547435.808
1994	40.8258	-111.4725	0	0	9	30	1995	22	22	48.01	3.56	0	6	312	18.9	0.09	10.4	30.9		460157.521	4519526.906
1995	40.4177	-111.1668	0.54	0	9	30	1995	23	0	4.77	2.66	0	9	275	7.6	0.24	2.2	19.2		485849.132	4474132.865
1996	40.7357	-111.4205	0.49	0	10	2	1995	23	10	20.2	2.68	0	6	325	8.8	0.11	2.1	14.9		464494.369	4509502.953
1997	40.8143	-111.6435	1.89	0	10	6	1995	5	57	33.53	5.39	0	32	83	14.4	0.22	0.4	0.9		445728.888	4518342.135
1998	40.9187	-111.6612	3.1	1	10	8	1995	6	25	2.99	5.51	0	23	114	19	0.23	0.6	1.3		444323.617	4529942.478
1999	40.904	-111.6833	1.17	0	10	8	1995	6	30	52.62	10.68	0	9	100	17.3	0.15	0.6	2.7		442449.927	4528324.949

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2000	40.9098	-111.6828	1.44	0	10	8	1995	6	33	29.51	13.47	0	16	98	17.9	0.17	0.5	1.5		442497.064	4528968.471
2001	40.9102	-111.6708	1.87	1	10	8	1995	6	49	59.26	7.46	0	20	101	18.5	0.16	0.5	0.9		443508.008	4529005.057
2002	40.916	-111.6688	1.95	0	10	8	1995	7	10	45.18	6.95	0	24	97	18.6	0.19	0.5	1.3		443681.363	4529647.619
2003	40.8838	-111.6888	0.82	0	10	9	1995	8	4	26.47	11.86	0	10	174	15.2	0.14	1	2.2		441969.045	4526086.207
2004	40.7702	-111.4775	0.63	0	10	11	1995	0	9	46.43	12.07	0	7	334	12.9	0.11	2.7	4.2		459702.297	4513357.249
2005	40.908	-111.6698	1.16	0	10	12	1995	9	25	5.73	10.6	0	19	97	18.4	0.22	0.6	3.5		443590.354	4528760.192
2006	40.7475	-111.4415	-0.04	0	10	12	1995	23	36	51.89	1.24	0	6	234	9.9	0.16	999.9	0.7		462727.781	4510821.517
2007	40.7737	-111.4093	0.35	0	10	13	1995	17	32	5.77	3.74	0	6	332	13.1	0.19	45	33.3		465459.734	4513716.681
2008	40.8425	-111.3662	0.15	0	10	14	1995	19	8	19.22	4.38	0	7	310	21.4	0.14	10.5	34.1		469128.793	4521337.826
2009	40.8278	-111.3655	0.17	0	10	14	1995	19	13	30.56	3.16	0	6	306	19.9	0.16	16.1	59.3		469180.997	4519705.782
2010	40.9073	-111.6938	0.63	0	10	14	1995	20	44	44.74	11.68	0	7	120	17.1	0.17	1	4.7		441568.477	4528698.237
2011	40.6843	-111.577	0.85	0	10	31	1995	21	18	3.2	2.65	0	9	334	11.9	0.29	3.9	33.2		451242.49	4503872.376
2012	40.2783	-112.3598	1.46	0	10	31	1995	22	25	6.7	5.9	0	12	102	39.5	0.59	1.9	5.4		384398.663	4459533.49
2013	40.7378	-111.4078	0.82	0	11	3	1995	23	30	35.1	3.24	0	6	322	9.2	0.09	12.5	10.1		465567.8	4509731.005
2014	40.6183	-111.5108	0.12	0	11	4	1995	19	2	45.85	1.59	0	6	305	5.5	0.13	2.8	31.6		456793.979	4496511.531
2015	40.681	-111.619	1.4	0	11	22	1995	5	6	37.05	4.38	0	14	146	15.4	0.08	0.5	3.8		447690.816	4503530.21
2016	40.5052	-111.3398	0.48	0	12	4	1995	16	41	47.73	11.47	0	10	174	10.3	0.09	1.5	1.8		471209.632	4483887.382
2017	40.7378	-111.5408	3.1	1	12	6	1995	4	25	28.29	9.91	0	40	89	12.3	0.23	0.4	0.7		454338.03	4509791.673
2018	40.7035	-111.5597	0.34	0	12	6	1995	4	43	28.39	4.6	0	10	246	11.3	0.07	1.4	3.5		452717.953	4505994.207
2019	40.7078	-111.5537	0.58	0	12	6	1995	5	11	14.27	2.55	0	11	189	11.1	0.07	0.8	12.1		453227.828	4506468.315
2020	39.8622	-111.6177	1.71	0	12	19	1995	18	1	14.35	9.08	0	14	67	15.1	0.17	0.5	3.5		447167.294	4412645.488
2021	41.0532	-111.396	1.83	0	12	20	1995	15	25	45.82	12.23	0	26	153	7.2	0.25	0.8	0.9		466722.55	4544738.321
2022	40.4435	-111.5608	-0.08	0	12	26	1995	19	56	40.56	1.99	0	8	249	4.4	0.19	3.7	24.4		452441.289	4477134.257
2023	40.4203	-111.5062	0.22	0	12	27	1995	23	49	28.94	6.45	0	12	155	1.9	0.17	1	1.8		457056.913	4474531.106
2024	39.9278	-111.8943	1.51	0	12	29	1995	20	21	23.92	0.91	0	13	96	9.9	0.23	0.8	25.7		423581.929	4420126.565
2025	40.1837	-112.0412	1.31	0	12	29	1995	21	59	45.35	3.01	0	13	74	21.2	0.24	0.8	4.4		411361.274	4448666.146
2026	40.5502	-111.244	0.09	0	1	8	1996	0	33	12.13	11.14	0	9	176	11	0.07	0.7	2.4		479340.348	4488855.547
2027	40.4672	-111.3733	-0.1	0	1	8	1996	3	49	49.17	11.8	0	8	216	11.7	0.13	2.7	3		468353.415	4479680.857
2028	40.48	-111.3132	0.01	0	1	15	1996	2	40	12.68	15.21	0	8	127	8.9	0.04	0.6	2.9		473453.455	4481081.842
2029	40.4838	-111.3503	-0.28	0	1	15	1996	12	24	29.75	7.07	0	8	192	11.2	0.05	1.3	2.8		470310.562	4481515.461
2030	40.4863	-111.3548	0.23	0	1	15	1996	18	18	15.91	8.78	0	9	194	11.5	0.09	1.8	2.8		469930.282	4481794.484
2031	40.4857	-111.3702	0.89	0	1	19	1996	6	53	5.47	11.11	0	13	109	11.2	0.16	0.6	2.2		468624.832	4481733.246
2032	40.4878	-111.3563	0.29	0	1	19	1996	11	11	28.71	8.15	0	12	106	11.3	0.11	0.6	2.3		469803.828	4481961.496
2033	40.4835	-111.3573	0.08	0	1	20	1996	0	40	37.79	9.51	0	9	129	11.7	0.06	0.6	2.6		469717.146	4481484.539
2034	40.4783	-111.3663	0.15	0	1	21	1996	14	21	18.83	10.56	0	10	160	11.9	0.16	1	2.9		468951.956	4480910.468
2035	39.9698	-111.8857	1.63	0	1	24	1996	11	44	12.55	1.74	0	11	91	12.2	0.18	0.6	2.1		424363.086	4424780.884
2036	39.9708	-111.8885	1.47	0	1	24	1996	11	58	19.19	1.73	0	8	105	12.4	0.19	0.7	36.3		424125.074	4424894.255
2037	39.9787	-111.8965	1.2	0	1	25	1996	5	12	2.28	1.68	0	10	104	12.2	0.14	0.5	36.2		423450.706	4425777.93
2038	40.6203	-111.96	2	0	1	31	1996	20	31	59.3	3.22	0	5	248	13.9	0.45	7.6	29.7		418800.396	4497051.05
2039	40.9087	-111.5903	1.5	0	2	12	1996	3	9	39.09	5.23	0	9	141	24.5	0.11	0.7	10		450286.297	4528789.683

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2040	40.557	-111.4497	0.15	0	2	13	1996	15	40	12.2	5.89	0	5	308	4.3	0.16	22.8	23.5		461927.393	4489678.903
2041	40.734	-111.6162	0.22	0	2	13	1996	22	11	8.21	5.34	0	8	343	17.1	0.04	3	9.1		447968.702	4509411.803
2042	40.2528	-111.8907	1.6	0	2	13	1996	23	59	13.21	2.95	0	12	115	20.1	0.4	1.4	30.3		424250.722	4456196.627
2043	40.4922	-111.3398	-0.1	0	2	14	1996	7	58	2	10.25	0	11	143	11.4	0.09	0.7	2.1		471204.074	4482444.381
2044	41.1815	-111.5113	0.98	0	2	16	1996	15	23	57.67	6.92	0	6	129	11.2	0.09	1.9	9.9		457116.986	4559031.592
2045	40.0775	-111.7135	1.7	0	2	17	1996	20	40	55.74	1.75	0	16	77	10.2	0.27	0.8	2.1		439164.491	4436602.899
2046	41.154	-111.4705	1.95	0	2	18	1996	19	35	47.91	12.65	0	22	116	6.6	0.22	0.6	1		460522.413	4555959.423
2047	40.6973	-111.5795	1.42	0	2	19	1996	4	42	20.71	2.11	0	15	167	12.6	0.11	0.7	15.2		451040.751	4505316.823
2048	40.621	-111.245	0.4	0	2	25	1996	16	12	15.01	6.07	0	7	328	13.2	0.64	10.2	46.3		479277.541	4496714.698
2049	40.7447	-111.4333	0.4	0	3	9	1996	1	46	48.52	3.29	0	6	328	9.6	0.1	18.7	10.4		463418.507	4510507.253
2050	40.7223	-111.5762	0.88	0	3	13	1996	3	57	10.07	4.76	0	11	232	13.6	0.06	1	4		451337.757	4508090.108
2051	40.7422	-111.2985	0.78	0	3	18	1996	14	34	41.13	6.76	0	5	336	15.1	0.5	145	53.4		474798.116	4510182.304
2052	40.319	-111.8265	1.47	0	3	31	1996	22	40	27.24	2.74	0	22	93	18.6	0.35	0.7	2.1		429779.197	4463491.798
2053	40.3358	-111.3948	0.42	0	4	1	1996	13	24	50.48	2.38	0	10	254	14.2	0.12	0.9	16.3		466465.605	4465103.601
2054	40.3848	-111.465	0.43	0	4	12	1996	15	21	24.42	4.41	0	8	221	6.2	0.05	1.2	3.9		460531.368	4470571.45
2055	41.1137	-111.6563	1.57	0	4	20	1996	6	34	50.97	9.44	0	15	71	18	0.13	0.4	1.1		444898.96	4551586.482
2056	40.326	-111.4488	1.9	0	4	20	1996	23	17	12.08	2.2	0	12	225	11.8	0.19	1.4	19.7		461873.304	4464037.685
2057	40.3198	-111.455	0.8	0	4	21	1996	18	46	33.57	3.76	0	11	258	12.1	0.2	1.6	8.9		461343.06	4463352.192
2058	40.4405	-111.585	0.36	0	4	28	1996	12	3	24.66	2.86	0	8	266	5.8	0.27	5.8	21.7		450386.788	4476814.571
2059	40.5683	-111.3752	0.87	0	5	4	1996	8	5	47.16	3.92	0	13	106	3.2	0.09	0.4	1.2		468240.087	4490903.696
2060	40.689	-111.5643	0.49	0	5	4	1996	17	25	8.93	3.83	0	6	333	11.1	0.17	3.1	15.1		452319.017	4504387.128
2061	40.6825	-111.5415	0.42	0	5	6	1996	17	18	30.9	3.79	0	6	328	9	0.15	4.1	11.1		454241.085	4503653.48
2062	40.7452	-111.278	-0.08	0	5	15	1996	2	56	2.74	6.29	0	6	326	15.7	0.48	78.7	58.8		476529.955	4510509.635
2063	40.6342	-111.4075	-1.07	0	5	16	1996	1	46	49.29	5.65	0	7	159	0.5	0.09	0.9	2.2		465539.81	4498230.888
2064	40.7387	-111.426	0.36	0	5	22	1996	3	6	28.86	4.06	0	8	326	9	0.33	3.9	14.9		464031.582	4509838.207
2065	40.75	-111.4168	0.58	0	5	24	1996	2	54	22.21	3.45	0	7	327	10.4	0.17	3.8	13.4		464814.322	4511088.835
2066	40.716	-111.3768	0.61	0	5	26	1996	4	21	9.8	2	0	9	246	8.3	0.21	2	28.3		468174.878	4507299.41
2067	40.9207	-110.9063	0.75	0	5	27	1996	12	9	34.1	3.22	0	11	237	50.3	0.24	2.9	1.8		507889.751	4529958.296
2068	40.7918	-111.4503	0.72	0	6	1	1996	22	31	52.82	3.5	0	8	336	14.9	0.14	2.9	19.7		462010.105	4515742.836
2069	40.6782	-111.5813	0.46	0	6	6	1996	19	49	40.27	2.95	0	9	333	12.2	0.21	2.9	20.5		450874.652	4503197.645
2070	40.2358	-111.8833	1.71	0	6	11	1996	21	40	17.5	2.21	0	12	120	18.1	0.28	1	31.7		424861.266	4454303.38
2071	40.6878	-111.5603	0.31	0	6	12	1996	18	25	56.31	5.11	0	6	332	10.7	0.56	8.1	20.2		452656.153	4504251.761
2072	40.8187	-111.9078	2.27	0	6	22	1996	0	3	57.07	0.03	0	20	62	3.3	0.35	0.7	1.1		423443.338	4519027.817
2073	40.3307	-111.8192	1.48	0	6	22	1996	21	50	11.28	2.95	0	12	113	17.9	0.21	0.6	16.1		430411.441	4464784.715
2074	40.3168	-111.8063	1.04	0	6	22	1996	23	15	19.68	2.69	0	17	108	19.8	0.2	0.6	17.2		431493.218	4463231.778
2075	40.3208	-111.8002	1.4	0	6	22	1996	23	54	45.26	2.66	0	14	120	19.8	0.25	0.7	25.7		432015.519	4463671.069
2076	40.329	-111.8143	1.82	0	6	23	1996	0	4	48.03	1.54	0	35	45	18.3	0.36	0.6	3.6		430825.95	4464592.177
2077	40.7515	-111.4197	0.42	0	6	23	1996	2	8	14.34	3.29	0	6	329	10.5	0.15	24.9	13.9		464570.304	4511256.509
2078	40.4675	-111.4377	0.47	0	6	23	1996	7	0	42.84	8.17	0	10	120	9.7	0.1	0.5	2.1		462894.041	4479739.234
2079	40.4657	-111.4383	0.14	0	6	23	1996	7	8	34.39	10.55	0	10	121	9.4	0.2	0.9	3.2		462842.184	4479539.687

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2080	40.3233	-111.8148	1.07	0	6	23	1996	7	50	46.19	3.45	0	14	130	18.8	0.33	1	5		430777.652	4463959.877
2081	41.1302	-111.6548	2.3	1	6	23	1996	21	36	10.6	11.45	0	23	76	19.1	0.24	0.6	1.3		445038.664	4553417.246
2082	40.7052	-111.8198	0.87	0	6	24	1996	15	39	50.48	1.56	0	12	88	5.2	0.25	0.7	30.1		430746.929	4506355.428
2083	39.9132	-111.9848	1.46	0	6	25	1996	4	58	18.92	6.5	0	11	98	8.9	0.23	0.6	1.9		415830.685	4418587.486
2084	40.801	-111.582	1.34	0	6	29	1996	5	17	52.01	12.05	0	23	93	19.2	0.15	0.4	1		450905.864	4516829.49
2085	40.5772	-111.2673	-0.29	0	7	2	1996	15	47	58.04	2.6	0	5	330	7.7	0.14	33.9	12.1		477376.611	4491858.304
2086	40.7242	-111.6112	0.92	0	7	2	1996	17	3	21.66	4.04	0	6	352	16.2	0.11	5.4	16.3		448383.327	4508321
2087	40.6185	-111.3128	-0.06	0	7	2	1996	21	9	41.99	3.7	0	6	325	2.8	0.06	1.4	1.7		473541.923	4496455.366
2088	40.626	-111.3378	-0.36	0	7	2	1996	22	41	37.81	1.71	0	5	269	1.5	0.05	2.7	7		471430.499	4497295.701
2089	40.5065	-111.3205	0.42	0	7	5	1996	23	14	49.13	10.65	0	11	128	11.2	0.19	1	2.9		472845.398	4484025.562
2090	40.5065	-111.3135	-0.04	0	7	6	1996	9	30	34.26	7.89	0	11	158	11.5	0.09	0.8	2.5		473438.479	4484023.431
2091	40.4982	-111.3295	-0.28	0	7	6	1996	11	52	26.73	2.9	0	10	153	11.4	0.12	0.9	10.7		472079.424	4483107.07
2092	40.7605	-111.5278	1.28	0	7	7	1996	8	52	51.51	11.26	0	22	96	13.6	0.19	0.5	1.5		455450.83	4512304.814
2093	40.5227	-112.1857	1.89	0	7	12	1996	7	48	47.42	1.58	0	14	186	11.1	0.18	0.9	2		399563.807	4486449.725
2094	40.7033	-111.399	0.2	0	7	12	1996	10	41	11.25	3.38	0	6	261	8.1	0.04	1.9	6.7		466293.423	4505897.936
2095	40.502	-111.317	0.62	0	7	12	1996	23	6	25.34	7.44	0	5	180	11.2	0.06	2.2	4.6		473140.143	4483524.99
2096	40.7335	-112.1188	1.26	0	7	14	1996	13	52	25.37	1.75	0	10	117	9	0.48	1.5	59.7		405528.335	4509775.64
2097	40.7407	-111.4283	0.58	0	7	15	1996	23	21	14.13	3.46	0	6	327	9.2	0.14	2.9	10.9		463838.468	4510061.161
2098	40.1822	-111.588	1.86	0	7	17	1996	19	42	9.05	0.55	0	32	74	24	0.31	0.5	1.5		449942.002	4448145.691
2099	40.5962	-111.5687	0.63	0	7	22	1996	16	22	51.03	3.77	0	6	321	10.1	0.25	26.6	16.7		451880.635	4494088.407
2100	40.702	-111.409	0.36	0	7	23	1996	7	54	35.58	11.42	0	10	176	5.5	0.08	0.8	1.1		465447.973	4505757.515
2101	40.3835	-111.468	1.2	0	7	24	1996	23	49	30.98	1.41	0	17	142	6	0.28	0.9	999.9		460275.967	4470428.495
2102	40.5598	-111.3713	-0.35	0	8	4	1996	11	59	59.83	9.69	0	8	198	4	0.16	1.5	2.4		468566.238	4489958.785
2103	40.3383	-111.5867	0.53	0	8	7	1996	17	30	49.02	1.58	0	9	256	9.8	0.34	6.1	999.9		450167.339	4465471.464
2104	40.6387	-111.5533	0.73	0	8	7	1996	20	1	10.33	2.83	0	7	322	9.6	0.13	1.7	11.8		453213.34	4498797.728
2105	40.4555	-111.743	0.81	0	8	11	1996	11	53	44.37	9.59	0	18	103	13.4	0.2	0.6	2.3		437000.881	4478580.311
2106	40.4445	-111.355	0.1	0	8	11	1996	23	8	37.6	2.35	0	7	144	9.1	0.1	0.6	18.8		469894.675	4477154.773
2107	40.5047	-111.3247	0.55	0	8	14	1996	0	24	50.5	5.82	0	14	125	11.1	0.22	0.9	3.7		472488.814	4483827.063
2108	40.293	-111.352	1.04	0	8	22	1996	17	46	27.57	2.95	0	13	254	15.6	0.14	1.1	12.3		470082.171	4460337.61
2109	40.4443	-111.496	0.52	0	8	24	1996	11	25	21.93	9.52	0	13	118	4.3	0.17	0.6	1.9		457937.183	4477190.18
2110	40.8927	-111.3887	0.79	0	8	24	1996	11	26	12.26	7.25	0	10	311	26.4	0.48	9	43		467256.742	4526918.565
2111	40.7415	-111.4542	0.6	0	8	26	1996	20	13	58.13	9.79	0	12	192	9.4	0.11	0.9	2		461652.174	4510160.956
2112	40.4442	-111.3433	-0.02	0	9	2	1996	0	0	44.44	1.83	0	10	143	8.2	0.09	0.8	21.1		470886.751	4477117.551
2113	40.3315	-111.3552	0.48	0	9	3	1996	19	37	34.24	3.77	0	5	302	12.3	0.08	3	16.8		469827.329	4464612.064
2114	40.7605	-111.4132	1.11	0	9	3	1996	21	14	43.38	3.27	0	6	330	11.6	0.18	30.5	17.4		465123.718	4512252.952
2115	40.4892	-111.3477	0.42	0	9	7	1996	6	20	6.71	7.28	0	11	137	11.5	0.11	0.7	3		470533.285	4482113.989
2116	39.8758	-111.8457	1.58	0	9	8	1996	1	28	15.78	0.64	0	9	118	4.8	0.28	0.9	3.2		427680.211	4414314.583
2117	40.3827	-111.4295	0.27	0	9	9	1996	4	17	11.89	2.49	0	11	216	8.9	0.12	0.7	12.9		463543.442	4470323.113
2118	40.4582	-111.346	1.17	0	9	9	1996	8	57	2.41	9.97	0	16	128	9.2	0.2	0.6	2.3		470663.868	4478672.433
2119	40.4585	-111.3332	0.62	0	9	10	1996	6	16	58.36	10.96	0	13	125	8.3	0.12	0.6	1.7		471749.263	4478701.559

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2120	40.6965	-112.035	2.19	1	9	10	1996	15	59	29.63	9.45	0	20	63	8.6	0.16	0.4	0.9		412556.14	4505581.593
2121	40.7085	-111.5397	1.17	0	9	10	1996	19	25	39.5	3.52	0	6	336	10.2	0.18	62.1	16.1		454410.92	4506538.658
2122	40.6917	-111.3898	-0.3	0	9	10	1996	22	33	29.69	5.6	0	6	229	5.6	0.04	1.1	3.5		467064.907	4504606.8
2123	40.4137	-111.0602	0.81	0	9	11	1996	10	40	5.7	3.66	0	13	295	16.6	0.19	1.4	14.3		494892.491	4473677.257
2124	41.0153	-111.0575	1.47	0	9	11	1996	23	20	50.12	11.49	0	15	228	31.6	0.25	1.8	1.4		495165.28	4540457.101
2125	40.3435	-111.393	0.05	0	9	19	1996	9	44	53.33	3.03	0	9	248	13.8	0.11	1	10.2		466622.292	4465957.599
2126	40.3168	-111.3973	0.21	0	9	19	1996	9	56	55.04	5.75	0	11	266	15.4	0.08	0.8	3.5		466243.79	4462995.609
2127	40.3222	-111.393	0.6	0	9	19	1996	10	39	21.37	3.04	0	9	263	15.2	0.08	0.9	9.6		466611.796	4463593.361
2128	40.6622	-111.5575	0.14	0	9	19	1996	15	10	7.25	6.11	0	11	211	10	0.12	1.2	2.2		452874.724	4501408.553
2129	40.351	-111.7515	1.16	0	9	23	1996	7	2	20.76	3.11	0	16	112	20.2	0.24	0.8	20.9		436181.54	4466986.961
2130	40.2472	-111.8795	1.63	0	9	27	1996	19	12	23.19	8.25	0	15	128	24	0.28	0.9	5.3		425197.07	4455565.534
2131	40.6807	-111.5738	-0.19	0	9	29	1996	4	4	32.8	3.25	0	8	332	11.6	0.13	1.9	10.9		451510.288	4503470.991
2132	40.528	-111.9533	0.8	0	9	30	1996	16	59	48.89	5.7	0	17	100	8.1	0.33	0.8	3.9		419256.221	4486799.251
2133	40.6775	-111.547	0.59	0	10	8	1996	15	44	16.86	3.21	0	9	327	9.4	0.38	3.6	20.3		453772.857	4503101.338
2134	40.6893	-111.5692	0.47	0	10	10	1996	15	57	18.61	3.5	0	5	334	11.5	0.22	102.4	41.5		451905.202	4504423.1
2135	40.6702	-111.505	0.51	0	10	10	1996	18	31	1.9	2.2	0	7	314	5.7	0.07	1.5	7.8		457317.65	4502269.77
2136	40.689	-111.2437	0.79	0	10	14	1996	8	23	56.74	5.26	0	9	230	2.5	0.06	1.1	1.6		479408.414	4504262.596
2137	40.6793	-111.2393	0.78	0	10	14	1996	8	42	49.53	6.03	0	10	204	1.6	0.1	1	1.6		479777.263	4503184.84
2138	40.4678	-111.0903	1	0	10	16	1996	19	47	48.11	15.44	0	11	299	15.3	0.1	1.3	2.2		492344.875	4479684.462
2139	40.4832	-111.0653	0.42	0	10	21	1996	0	10	15.88	9.4	0	8	302	18	0.05	2.8	6.7		494465.499	4481391.985
2140	40.5043	-111.3743	0.94	0	10	22	1996	3	24	47.63	7.51	0	13	102	9.1	0.19	0.9	3		468286.107	4483799.314
2141	40.7102	-111.7092	0.77	0	10	26	1996	10	50	44	3.1	0	17	151	9.5	0.14	0.5	5.8		440094.486	4506829.147
2142	40.495	-111.3723	0.01	0	10	27	1996	10	3	3.33	10.01	0	10	123	10.1	0.05	0.8	1.7		468451.208	4482766.295
2143	40.4712	-111.0705	1.21	0	10	28	1996	17	19	29.5	15.69	0	11	276	17	0.11	1.6	2.5		494023.709	4480060.331
2144	40.7138	-111.7133	0.56	0	10	29	1996	3	21	24.88	4.97	0	18	143	9.4	0.17	0.5	2.4		439751.405	4507231.57
2145	40.5017	-111.3753	1.21	0	10	30	1996	0	14	20.14	8.04	0	19	100	9.3	0.26	0.7	1.4		468200.15	4483511.073
2146	40.4983	-111.3235	0.3	0	10	31	1996	7	19	39.12	7.99	0	7	168	11.1	0.05	1.3	3.7		472587.882	4483116.289
2147	40.4897	-111.1232	0.74	0	11	1	1996	16	2	49.31	4.46	0	6	287	14.2	0.08	16.2	44.6		489559.191	4482118.723
2148	40.5002	-111.3242	0.07	0	11	2	1996	5	1	54.72	4.49	0	9	157	11.3	0.07	0.6	4.8		472529.342	4483327.407
2149	39.9053	-111.8523	1.65	0	11	3	1996	19	27	58.76	1.02	0	17	70	5.6	0.28	0.7	3		427147.045	4417594.159
2150	40.4993	-111.3358	1.01	0	11	3	1996	22	21	9.38	10.4	0	14	118	11	0.17	0.7	1.9		471546.049	4483231.183
2151	40.244	-111.8858	2.12	0	11	5	1996	0	24	39.76	7.41	0	11	114	19.1	0.2	0.9	1.5		424657.689	4455215.677
2152	40.6992	-111.5832	0.65	0	11	6	1996	6	8	16.74	2.3	0	14	175	12.9	0.12	0.7	13.7		450729.553	4505529.8
2153	40.1662	-111.7837	1.16	0	11	9	1996	8	50	23.99	2.6	0	10	143	10.8	0.19	0.9	24.9		433265.717	4446498.45
2154	40.5613	-111.5378	0.03	0	11	12	1996	23	30	26.15	2.29	0	7	238	8.7	0.08	1.7	11.2		454471.532	4490198.004
2155	40.5537	-111.0633	0.98	0	11	13	1996	23	36	27.03	3.83	0	9	270	19	0.11	1.6	15.1		494640.626	4489217.376
2156	40.3657	-111.1968	0.29	0	11	19	1996	12	31	11.53	1.4	0	8	340	7.2	0.26	4.1	999.9		483291.164	4468366.212
2157	40.312	-111.8393	2.27	0	11	19	1996	17	37	10.76	5.67	0	29	53	18.6	0.36	0.6	1.5		428684.311	4462725.04
2158	40.31	-111.8308	1.54	0	11	19	1996	17	38	43.39	2.57	0	11	122	19.2	0.23	0.7	19.3		429404.486	4462496.234
2159	40.3082	-111.8232	1.46	0	11	19	1996	17	39	55.85	3.14	0	13	121	19.7	0.24	0.7	17.3		430048.43	4462290.406

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2160	40.3123	-111.8218	1.27	0	11	19	1996	17	40	56	3.87	0	8	120	19.4	0.18	0.8	13.5		430171.62	4462744.394
2161	40.3787	-111.517	0.12	0	11	23	1996	8	28	11.63	6.74	0	9	268	4	0.08	1.3	1.7		456113.695	4469918.867
2162	40.4155	-111.5363	0.23	0	11	26	1996	11	44	3.28	9.29	0	11	208	0.8	0.16	0.8	1.9		454500.158	4474013.373
2163	40.0883	-111.2515	1.13	0	11	26	1996	13	56	45.29	7	0	8	130	36	0.3	1.4	21.5		478559.701	4437588.033
2164	40.3017	-111.3527	0.85	0	11	28	1996	20	18	38.95	3.34	0	10	276	14.8	0.29	2.5	20.3		470026.52	4461303.515
2165	40.5183	-111.3755	0.25	0	12	11	1996	10	41	1.24	14.09	0	9	267	7.6	0.1	2.5	1.8		468191.048	4485353.752
2166	40.732	-111.5993	2.85	1	12	14	1996	22	23	54.99	10.58	0	26	81	15.8	0.19	0.5	1.7		449394.213	4509179.914
2167	40.7218	-111.5977	1.64	0	12	14	1996	22	47	39.96	10.46	0	22	141	15.1	0.18	0.6	1.2		449521.614	4508046.741
2168	39.9075	-111.826	1.07	0	12	16	1996	23	40	43.52	4.93	0	5	127	3.7	0.01	1.1	1.5		429397.405	4417817.215
2169	40.71	-111.6032	0.59	0	12	19	1996	8	16	4.98	12.19	0	15	155	14.9	0.18	0.7	0.9		449048.117	4506740.059
2170	40.7048	-111.604	0.45	0	12	19	1996	8	33	45.06	1.79	0	14	174	14.8	0.1	0.5	16.2		448976.572	4506163.298
2171	40.7077	-111.6053	0.45	0	12	19	1996	8	35	51.74	2.74	0	12	176	15.1	0.08	0.6	8.8		448868.971	4506485.968
2172	40.7057	-111.6042	0.03	0	12	19	1996	9	57	17.05	4.11	0	12	175	14.9	0.1	0.6	4.8		448960.364	4506263.319
2173	40.5405	-111.0445	1.37	0	12	20	1996	0	5	28.79	3.93	0	10	277	21.1	0.19	2	20.3		496231.612	4487751.192
2174	40.7728	-111.9373	1.94	1	12	20	1996	23	15	42.62	1.65	0	10	123	5	0.32	1.4	33.2		420901.045	4513958.749
2175	40.5353	-111.0933	1.19	0	12	23	1996	21	11	58.57	7.22	0	10	290	19.4	0.13	2.6	10.4		492098.476	4487177.219
2176	40.5103	-110.9238	1.25	0	12	25	1996	18	59	44.55	6.25	0	13	301	30.1	0.33	3.6	3		506455.733	4484400.82
2177	40.742	-112.0478	1.31	0	12	28	1996	6	46	29.45	9.21	0	20	90	11.6	0.17	0.5	1.4		411534.954	4510645.224
2178	40.4893	-111.5297	1.27	0	1	6	1997	3	54	50.4	1.55	0	22	86	8.4	0.2	0.4	67.9		455109.244	4482201.773
2179	40.2665	-111.483	0.99	0	1	7	1997	14	24	14.15	9.07	0	12	241	16.8	0.15	1.3	3.9		458931.909	4457448.679
2180	40.2772	-111.4855	1.51	0	1	7	1997	14	51	32.67	4.61	0	17	146	15.6	0.13	0.6	5.8		458725.846	4458637.498
2181	40.288	-111.4583	0.7	0	1	7	1997	14	54	55.16	2.79	0	8	286	15.2	0.15	1.9	17.9		461044.427	4459823.945
2182	40.4515	-111.6237	0.13	0	1	10	1997	2	22	7.11	3.44	0	10	277	9.2	0.09	2.1	9.4		447113.286	4478058.026
2183	40.4923	-110.9988	0.33	0	1	13	1997	4	23	19.3	1.84	0	7	312	23.5	0.22	10.8	999.9		500101.692	4482400.034
2184	40.9432	-111.652	1.98	0	1	19	1997	11	59	25.38	7.17	0	35	128	22.4	0.26	0.6	0.9		445118.586	4532656.388
2185	40.9472	-111.6525	1.52	0	1	19	1997	14	18	6.04	5.42	0	21	164	22.7	0.1	0.4	5.1		445079.812	4533100.74
2186	40.769	-111.472	-0.09	0	1	22	1997	19	31	42.06	4.02	0	5	341	12.6	0.06	8.1	18		460165.744	4513221.531
2187	41.0903	-111.3453	1.05	0	1	23	1997	0	36	8.19	15.64	0	14	175	43.4	0.12	0.7	1.4		470999.387	4548838.733
2188	40.5087	-112.2472	1.72	0	1	28	1997	12	19	16.38	2.93	0	9	242	14.1	0.18	1.8	14.4		394332.266	4484967.541
2189	40.244	-111.8892	1.91	0	1	30	1997	23	39	56.95	10.56	0	14	119	19.1	0.2	0.7	1.7		424368.496	4455218.571
2190	40.8367	-111.5755	0.69	0	2	7	1997	10	50	23.67	12.98	0	8	250	20.6	0.19	2.9	4.6		451480.19	4520788.814
2191	41.1023	-111.5505	1.12	0	2	7	1997	21	6	31.27	3.95	0	11	153	25.5	0.18	0.6	18.7		453773.667	4550259.427
2192	40.3612	-111.5157	0.2	0	2	15	1997	9	23	21.65	5.99	0	11	244	5.9	0.14	1.1	2.1		456212.723	4467975.757
2193	40.717	-111.399	1.98	0	2	17	1997	20	13	57.41	8.32	0	33	108	7.3	0.24	0.6	1		466300.331	4507418.695
2194	40.6812	-111.3752	-0.29	0	2	28	1997	12	34	56.42	3.06	0	8	276	6	0.14	1.8	5.1		468293.521	4503435.891
2195	40.7143	-111.6083	0.31	0	2	28	1997	23	15	38.77	5.47	0	11	180	15.6	0.15	0.9	4.2		448620.626	4507220.35
2196	40.4508	-110.8227	0.04	0	3	11	1997	2	54	30.81	4.34	0	6	316	36.9	0.08	13.2	40.6		515034.286	4477808.655
2197	40.5548	-111.4662	1.54	0	3	16	1997	3	32	27.88	2.71	0	25	75	5.4	0.2	0.4	1.5		460529.17	4489441.959
2198	40.5593	-111.4757	-0.02	0	3	16	1997	3	58	38.69	3.68	0	6	226	5.2	0.04	1.2	1.9		459727.546	4489945.765
2199	40.5318	-111.4645	-0.62	0	3	16	1997	5	47	42.71	2.06	0	6	321	7.2	0.11	12.6	16.1		460659.647	4486888.17

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2200	40.5425	-111.482	-0.11	0	3	16	1997	22	46	2.86	4.12	0	7	320	7.2	0.04	2.7	2.8		459183.991	4488083.839
2201	40.496	-111.0112	1.01	0	3	20	1997	22	15	19.53	5.15	0	5	288	22.7	0.12	36.4	136.7		499050.924	4482810.793
2202	40.5427	-111.4825	0.2	0	3	23	1997	22	52	59.76	5.53	0	8	320	7.2	0.03	1.1	1.5		459141.772	4488106.271
2203	41.1172	-112.0562	1.16	0	3	25	1997	14	26	9.05	3.6	0	9	81	17.4	0.07	0.4	8.6		411328.806	4552304.99
2204	40.6053	-112.3027	2.24	0	3	31	1997	18	59	32.64	2.52	0	6	295	16.4	0.09	8.2	35.6		389788.511	4495758.645
2205	40.761	-112.0658	1.21	0	3	31	1997	21	30	40	7.34	0	8	119	12.9	0.07	0.4	2.3		410040.814	4512772.665
2206	40.9165	-111.5795	1.33	0	4	9	1997	23	42	54.35	12.72	0	7	161	24.5	0.11	0.8	4.4		451201.588	4529649.469
2207	40.3202	-111.845	0.55	0	4	15	1997	13	44	58.9	5.23	0	7	225	25.9	0.13	1.5	10.8		428208.66	4463639.832
2208	40.3113	-111.8263	1.12	0	4	22	1997	1	9	17.65	4.16	0	9	104	19.2	0.11	0.4	11.2		429788.215	4462636.954
2209	40.3148	-111.3507	1.7	0	4	23	1997	18	49	25.77	2.81	0	11	270	13.5	0.09	1	9.6		470202.243	4462756.894
2210	40.5005	-111.3235	0.01	0	4	25	1997	4	54	43.94	7.01	0	10	167	11.3	0.08	1.3	2.6		472588.778	4483360.489
2211	40.4933	-111.331	0.1	0	4	25	1997	16	32	20.89	7.54	0	8	175	11	0.07	1.7	2.6		471950.279	4482563.646
2212	40.4972	-111.3287	-0.05	0	4	26	1997	1	16	13.2	8.56	0	10	172	11.2	0.09	1.5	2.4		472146.799	4482995.818
2213	40.5007	-111.324	0.01	0	4	26	1997	2	14	52.84	8.42	0	10	167	11.4	0.09	1.6	2.2		472546.493	4483382.845
2214	39.9472	-111.6572	1.52	0	5	13	1997	1	6	10.15	9.93	0	9	93	13.2	0.1	0.5	2		443858.203	4422103.705
2215	40.1947	-111.204	1.47	0	5	26	1997	22	46	28.96	6.99	0	9	152	24.6	0.15	0.8	1.7		482636.173	4449387.329
2216	41.0077	-111.6298	1.16	0	5	29	1997	21	1	8.49	6.98	0	9	138	29.4	0.09	0.5	8.8		447038.87	4539802.833
2217	40.4728	-111.3733	0.11	0	6	24	1997	18	57	51.4	9.26	0	6	212	11.9	0.11	2.6	2.7		468356.044	4480302.455
2218	40.7777	-111.6502	1.31	0	6	26	1997	20	54	44.11	13.45	0	9	117	13.4	0.1	0.6	2.1		445133.699	4514283.463
2219	40.2427	-111.8297	1.82	0	6	27	1997	18	12	54.36	16.97	0	5	128	18.4	0.01	0.7	1.8		429428.02	4455025.228
2220	40.9592	-110.9477	0.95	0	7	1	1997	15	33	4.26	12.36	0	7	323	39	0.09	2.5	2.1		504401.221	4534229.208
2221	40.8082	-111.6068	1.38	0	7	5	1997	5	8	21.99	7.78	0	10	120	17.2	0.12	0.7	4.1		448819.401	4517642.919
2222	40.5788	-111.5922	0.87	0	7	7	1997	23	4	19.37	2.41	0	6	336	12.3	0.03	2.5	18.8		449879.232	4492170.073
2223	40.732	-111.4743	0.43	0	7	8	1997	20	0	41.67	9.63	0	6	328	8.7	0.34	5	8.2		459949.441	4509115.384
2224	40.6798	-111.603	0.21	0	7	8	1997	21	8	38.36	7.23	0	8	197	14	0.02	1.1	1.9		449042.005	4503387.606
2225	40.6977	-111.6098	0.4	0	7	8	1997	21	43	57.51	5.57	0	10	168	15.1	0.07	0.6	3.7		448481.139	4505378.55
2226	41.0297	-111.5432	1.86	0	7	10	1997	19	6	56.33	1.79	0	7	131	14.9	0.11	0.6	47.5		454336.465	4542196.149
2227	40.7487	-111.4322	0.52	0	7	11	1997	23	41	25.28	2.23	0	8	329	10.1	0.09	1.9	15.9		463513.561	4510950.815
2228	40.6805	-111.5232	0.14	0	7	16	1997	15	42	2.61	10.01	0	10	211	7.5	0.06	1.2	0.8		455786.193	4503422.106
2229	40.6543	-111.5068	1.12	0	7	24	1997	18	3	20.16	1.76	0	7	306	5.7	0.19	3.1	33		457155.341	4500505.688
2230	40.6642	-111.5697	1.19	0	8	2	1997	18	9	26.53	3.47	0	6	329	11	0.08	3.4	14		451844.896	4501637.171
2231	40.5548	-111.5877	0.49	0	8	3	1997	12	5	26.86	5.49	0	10	175	12.8	0.04	1	3.2		450242.32	4489503.473
2232	40.5548	-111.584	0.26	0	8	3	1997	12	18	27.83	7.15	0	8	328	12.5	0.03	1.3	3.7		450555.582	4489501.39
2233	40.5375	-111.5748	0.26	0	8	3	1997	12	25	32.59	4.3	0	10	121	12.8	0.08	0.7	5.5		451321.981	4487575.941
2234	40.531	-111.567	1.85	0	8	3	1997	12	26	4.19	10.48	0	18	60	12.7	0.11	0.4	1.5		451977.902	4486850.154
2235	40.5707	-111.0305	0.8	0	8	6	1997	2	37	6.17	5.3	0	9	281	19.8	0.11	1.4	10		497418.332	4491102.915
2236	40.8402	-112.1082	1.21	0	8	9	1997	16	52	8.22	10.12	0	5	143	6.3	0.02	0.8	1.2		406573.092	4521608.89
2237	40.49	-111.3037	0.45	0	8	13	1997	1	18	24.41	4.11	0	7	160	9.5	0.04	0.9	9.1		474262.488	4482189.025
2238	40.641	-111.5108	0.9	0	8	14	1997	17	49	59.59	1.83	0	7	302	6.3	0.1	1.7	20		456808.608	4499031.3
2239	40.7523	-111.464	0.42	0	8	15	1997	2	30	6.74	2.76	0	9	297	10.7	0.08	1.7	8.4		460831.101	4511364.139

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2240	40.5948	-111.6033	0.4	0	8	15	1997	16	40	1	7.96	0	10	328	13	0.07	1.4	2.4		448951.947	4493952.488
2241	40.7582	-111.4955	0.24	0	8	16	1997	2	22	6.15	2.61	0	8	304	12.1	0.15	3.4	24.7		458175.693	4512033.606
2242	40.6377	-111.5382	0.73	0	8	18	1997	19	48	37.69	1.96	0	8	315	8.4	0.06	1	15.4		454489.512	4498678.803
2243	40.3452	-111.8785	1.05	0	8	19	1997	2	46	52.97	7.73	0	9	100	13.8	0.14	0.7	2.9		425389.998	4466442.503
2244	40.629	-111.5243	0.08	0	8	19	1997	19	31	40.9	2.43	0	5	310	7	0.06	3.1	10.1		455659.154	4497705.978
2245	40.6998	-111.5185	0.74	0	8	20	1997	18	15	33.72	5.56	0	6	331	12.3	0.09	2.7	9.4		456196.016	4505562.133
2246	40.634	-111.572	0.36	0	8	21	1997	20	52	31.82	2.95	0	7	323	10.9	0.09	2.5	12.2		451628.681	4498286.126
2247	40.449	-111.205	0.22	0	8	22	1997	11	10	1.19	3.07	0	7	230	5.9	0.05	1.5	10.1		482616.406	4477613.941
2248	40.4915	-111.4717	0.7	0	8	26	1997	15	57	36.72	3.31	0	6	264	11.3	0.12	2.4	14.3		460025.924	4482418.082
2249	40.471	-111.4775	0.72	0	8	26	1997	16	31	52.76	2.95	0	6	270	13.6	0.12	2.5	23		459522.091	4480145.224
2250	40.4425	-111.4825	1.58	0	8	29	1997	17	3	54.02	3.07	0	8	269	16.6	0.11	3.7	20.9		459080.951	4476984.039
2251	40.6257	-111.3392	0.65	0	9	2	1997	16	48	38.64	1.21	0	9	138	1.5	0.3	1.8	0.9		471311.965	4497262.856
2252	40.7558	-111.4422	0.52	0	9	4	1997	2	21	8.76	1.88	0	8	331	10.9	0.15	3.4	37.1		462673.327	4511743.157
2253	40.446	-111.3237	0.67	0	9	4	1997	5	19	47.35	8.8	0	12	135	6.8	0.08	0.6	1.7		472549.647	4477311.073
2254	40.6367	-111.485	0.29	0	9	4	1997	17	57	36.02	1.55	0	6	275	4.6	0.2	3.2	38.4		458987.539	4498541.638
2255	40.6385	-111.573	0.59	0	9	5	1997	20	51	41.54	3.36	0	6	324	11.2	0.33	58.4	41.5		451547.369	4498786.191
2256	40.642	-111.5825	0.49	0	9	8	1997	18	59	38.24	3.31	0	5	329	12.1	0.2	67	52.3		450746.621	4499179.979
2257	40.4543	-111.98	1.33	0	9	10	1997	12	48	40.79	7.05	0	7	177	2.2	0.12	2.1	1		416903.849	4478643.181
2258	40.5187	-110.9582	0.28	0	9	10	1997	15	38	40.88	7.03	0	7	297	27.8	0.09	1.3	10.2		503540.892	4485331.271
2259	40.6395	-111.5892	-0.09	0	9	11	1997	14	22	54.34	3.31	0	5	328	12.4	0.15	37.5	29.9		450178.24	4498906.243
2260	40.529	-112.1923	2.73	1	9	17	1997	0	39	0.02	5.1	0	22	97	12	0.22	0.8	1.1		399014.191	4487156.591
2261	40.6885	-111.607	1.85	1	9	17	1997	14	6	34.3	4.98	0	15	152	14.6	0.08	0.5	2.7		448710.643	4504355.67
2262	40.6483	-111.5565	0.37	0	9	18	1997	22	35	18.94	3.39	0	7	323	9.9	0.12	3.8	17.4		452949.49	4499865.067
2263	40.6358	-111.4323	-0.18	0	9	19	1997	7	45	45.44	7.76	0	5	262	2.4	0.12	5.8	9.1		463443.467	4498418.502
2264	40.5087	-112.172	1.54	0	9	22	1997	5	27	58.21	0.04	0	12	183	9.2	0.18	0.9	1.7		400703.654	4484880.156
2265	40.5682	-111.5437	0.51	0	9	23	1997	17	19	15.33	2.95	0	5	332	8.8	0.13	3.1	14.5		453976.781	4490966.982
2266	40.624	-111.5488	0.39	0	9	23	1997	20	0	52.55	2.56	0	5	322	8.7	0.02	2	12.7		453583.68	4497163.598
2267	40.6198	-111.513	0.25	0	9	25	1997	13	53	51.95	2.14	0	5	305	5.7	0.15	2.6	15.7		456608.862	4496679.118
2268	40.1287	-111.7083	0.93	0	9	29	1997	1	2	27.33	12.44	0	11	161	12.1	0.2	1.1	4.2		439653.122	4442282.232
2269	40.7338	-111.3997	0.45	0	10	7	1997	0	22	33.47	3.94	0	8	277	11.5	0.49	7.2	39.2		466249.696	4509283.841
2270	40.6313	-111.6175	0.73	0	10	10	1997	23	8	8.16	5.2	0	8	334	14.5	0.04	2.4	6.5		447778.837	4498012.428
2271	40.6095	-111.606	0.87	0	10	10	1997	23	10	0.44	9.97	0	8	328	13.2	0.05	1.6	1.9		448734.718	4495585.798
2272	40.6097	-111.5878	0.11	0	10	11	1997	0	29	21.61	8.78	0	8	325	11.7	0.04	1.6	1.2		450274.526	4495597.558
2273	40.6645	-111.5215	0.56	0	10	13	1997	23	41	10.19	2.48	0	7	317	7	0.13	1.7	13.2		455919.319	4501645.19
2274	40.7002	-111.6947	0.3	0	10	15	1997	5	30	48.57	4.28	0	8	141	13.1	0.07	0.9	9.5		441310.519	4505709.309
2275	40.7472	-111.4458	0.52	0	10	15	1997	14	39	36.91	9.37	0	8	292	9.9	0.07	1.2	2.8		462364.597	4510790.05
2276	40.6263	-111.5692	0.77	0	10	15	1997	22	18	32.78	3.08	0	6	322	10.4	0.08	1.6	13.5		451859.935	4497429.865
2277	40.7568	-111.4422	0.31	0	10	17	1997	2	1	20.82	3.77	0	8	331	10.9	0.09	2.3	8.3		462673.886	4511854.162
2278	40.1492	-111.7357	1.06	0	10	18	1997	13	29	15.45	10.21	0	8	189	11.6	0.09	4.2	2.3		437337.467	4444576.58
2279	40.4693	-111.3095	0.23	0	10	22	1997	21	46	40.39	5.81	0	6	190	7.8	0.01	1.1	3.2		473762.9	4479893.039

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	fpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2280	40.7093	-112.1897	1.56	0	10	24	1997	2	31	11.62	3.25	0	6	140	16.2	0.09	0.9	9.9		399505.006	4507167.967
2281	41.0875	-111.5497	1.56	0	11	4	1997	21	13	48.74	2.28	0	8	77	12.3	0.16	0.7	16.7		453830.483	4548616.025
2282	40.6425	-111.4433	-0.29	0	11	7	1997	14	0	0.69	1.46	0	10	184	1.8	0.14	1.2	27.4		462517.02	4499166.852
2283	40.4995	-111.322	-0.04	0	11	13	1997	1	27	27.47	7.05	0	7	166	11.2	0.05	1.3	4.2		472715.473	4483249.024
2284	40.5018	-111.3157	1.04	0	11	13	1997	19	18	54.61	9.25	0	10	130	11.2	0.05	0.5	2.2		473250.215	4483502.395
2285	40.496	-111.3238	0.79	0	11	13	1997	21	44	49.32	11.06	0	9	124	10.9	0.08	0.7	2.6		472561.525	4482861.082
2286	40.4977	-111.3248	0.73	0	11	14	1997	23	12	11.82	8.76	0	9	170	11.1	0.05	0.9	2.8		472477.48	4483050.094
2287	40.881	-111.7358	1.38	1	11	16	1997	9	4	31.79	9.01	0	15	72	12.8	0.1	0.3	1.3		438006.682	4525807.606
2288	40.8805	-111.7402	1.18	0	11	16	1997	9	5	25.66	9.84	0	12	85	12.5	0.13	0.5	1.7		437635.497	4525755.227
2289	40.1602	-111.2205	2.65	1	11	18	1997	19	25	52.53	2.47	0	15	155	28.2	0.2	0.9	1.4		481222.237	4445561.401
2290	40.3397	-110.9727	1.83	0	11	19	1997	13	36	7.77	1.56	0	10	309	25.4	0.15	1.8	2.8		502318.731	4465462.063
2291	40.5192	-111.3407	0.12	0	11	21	1997	13	20	10.17	12.77	0	8	119	9	0.04	0.6	2.4		471139.38	4485441.682
2292	40.52	-111.3418	1.46	0	11	21	1997	17	58	23.23	14.05	0	9	118	8.9	0.02	0.6	2.4		471046.543	4485530.843
2293	40.8452	-111.5687	2.33	1	11	24	1997	7	34	16.75	12.96	0	24	99	21.5	0.33	0.8	1.7		452059.618	4521728.632
2294	40.489	-111.3187	0.3	0	11	25	1997	0	38	32.35	10.67	0	8	171	10	0.05	0.9	2.7		472990.887	4482082.509
2295	40.4897	-111.3195	0.25	0	11	25	1997	6	52	10.03	10.95	0	9	171	10.1	0.06	0.6	1.8		472923.371	4482160.454
2296	40.6532	-111.006	0.28	0	11	26	1997	15	6	16.02	6.17	0	7	351	28.9	0.1	8.2	20.7		499492.755	4500260.15
2297	40.656	-111.5802	1.18	0	12	1	1997	18	18	29.83	4	0	6	330	11.9	0.14	3.1	11.8		450951.351	4500732.744
2298	40.4302	-111.4503	0.08	0	12	1	1997	19	24	18.73	4.67	0	6	157	6.8	0.01	0.7	3.7		461804.764	4475604.329
2299	40.6733	-111.5708	-0.1	0	12	6	1997	10	19	15.34	8.4	0	8	214	11.2	0.09	1.5	2.4		451758.474	4502647.91
2300	40.673	-111.5708	0.51	0	12	6	1997	10	20	23.95	8.83	0	9	184	11.2	0.09	1.4	1.2		451758.258	4502614.609
2301	40.4957	-111.3173	0.13	0	12	12	1997	1	33	19.31	6.98	0	7	166	10.6	0.06	1.3	7.8		473112.209	4482825.781
2302	40.8078	-111.6725	1.01	0	12	12	1997	21	4	3.96	12.39	0	12	116	11.9	0.15	0.6	1.7		443277.552	4517638.949
2303	40.4952	-111.3	0.11	0	12	13	1997	16	44	4.63	7.01	0	6	158	9.9	0.06	1.9	9.5		474578.013	4482765.152
2304	40.4853	-111.3293	1.7	0	12	13	1997	16	49	0.13	13.2	0	11	119	10.2	0.09	0.6	2		472091.027	4481675.108
2305	40.4848	-111.3292	0.77	0	12	13	1997	17	25	4.64	11.63	0	9	119	10.2	0.07	0.7	2.2		472099.295	4481619.576
2306	40.489	-111.3275	0.52	0	12	13	1997	18	32	7.18	10.49	0	9	120	10.4	0.07	0.5	2		472245.106	4482085.239
2307	40.5355	-111.2252	0.27	0	12	13	1997	20	38	43.16	6.99	0	5	189	13.9	0.12	1.8	22.6		480927.99	4487219.598
2308	40.4895	-111.3213	0.17	0	12	14	1997	3	54	21.89	10.47	0	10	172	10.2	0.08	0.7	2		472770.745	4482138.808
2309	40.4933	-111.3133	1.01	0	12	14	1997	6	32	49.1	9.46	0	7	168	10.2	0.04	0.7	2.5		473450.221	4482558.17
2310	40.4865	-111.3185	0.93	0	12	14	1997	9	33	57.68	13.34	0	8	125	9.8	0.03	0.6	2.5		473006.835	4481804.948
2311	40.489	-111.3228	0.69	0	12	15	1997	23	37	27.15	11.31	0	8	173	10.2	0.04	0.8	2.8		472643.421	4482083.772
2312	40.4898	-111.319	0.34	0	12	16	1997	8	52	2.76	10.43	0	8	170	10.1	0.05	0.7	1.9		472965.784	4482171.401
2313	40.4862	-111.3263	1.2	0	12	16	1997	10	35	55.19	12.43	0	11	121	10.1	0.07	0.7	1.9		472345.654	4481774.063
2314	40.4912	-111.3182	0.1	0	12	18	1997	1	50	30.65	10.3	0	9	169	10.2	0.06	0.7	1.9		473034.142	4482326.556
2315	40.4862	-111.3302	1.55	0	12	18	1997	23	52	56.16	13.56	0	11	118	10.3	0.1	0.7	1.9		472015.124	4481775.292
2316	40.4895	-111.3215	0.42	0	12	19	1997	0	8	6.08	10.23	0	6	172	10.2	0.08	1.4	4		472753.796	4482138.869
2317	40.4773	-111.3282	0.35	0	12	19	1997	2	0	4.97	16.42	0	8	183	9.4	0.01	1.4	3.6		472180.953	4480786.762
2318	40.4898	-111.3182	0.38	0	12	19	1997	2	41	9.75	11.1	0	8	169	10.1	0.04	0.6	1.8		473033.582	4482171.156
2319	40.7187	-111.4107	0.92	0	12	20	1997	23	26	43.72	3.49	0	6	267	7.2	0.07	2.3	8.9		465313.025	4507611.957

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2320	40.5028	-111.3278	0.46	0	12	21	1997	7	36	19.23	10.72	0	10	124	11.1	0.06	0.4	1.4		472225.373	4483617.134
2321	40.7002	-111.8845	1.36	0	12	26	1997	20	35	49.3	1.47	0	12	146	8.3	0.15	0.9	999.9		425275.708	4505853.418
2322	40.8137	-111.5772	1.15	0	1	2	1998	20	36	14.43	11.97	0	11	218	19.9	0.13	0.9	1.9		451320.048	4518236.597
2323	40.3598	-111.491	0.09	0	1	4	1998	18	29	10.08	8.72	0	8	259	6.7	0.06	0.9	1.7		458309.107	4467808.428
2324	40.1515	-111.2542	2.91	1	1	5	1998	2	20	46.57	4.46	0	17	159	29.1	0.18	0.9	1.4		478349.582	4444603.426
2325	40.4857	-111.3273	0.95	0	1	9	1998	18	2	43.65	11.85	0	9	120	10.1	0.07	0.7	2.4		472260.697	4481718.877
2326	40.2498	-111.8952	1.18	0	1	13	1998	23	26	44.03	7.01	0	5	156	23.4	0.06	1.1	10.3		423864.654	4455867.49
2327	40.9617	-111.4428	1.47	0	1	17	1998	1	41	49.58	12.21	0	10	141	17.6	0.11	0.5	1.1		462738.241	4534599.804
2328	39.927	-111.9722	1.57	0	1	20	1998	9	4	56.62	6.82	0	10	126	9.3	0.13	0.6	1.7		416924.286	4420107.368
2329	40.2465	-111.8925	1.77	0	1	21	1998	0	9	28.99	4.42	0	7	115	19.5	0.14	1.1	11.1		424090.601	4455498.884
2330	40.432	-111.3907	0.06	0	1	22	1998	1	9	25.3	14.11	0	6	317	19.6	0.03	4.8	6.8		466861.037	4475780.065
2331	40.4035	-111.3813	0.78	0	1	22	1998	2	37	0.13	9.51	0	10	190	10.7	0.05	0.7	2.3		467644.692	4472613.12
2332	40.3982	-111.3837	2.38	1	1	22	1998	3	25	44.18	10.93	0	13	195	10.9	0.08	0.7	1.1		467438.486	4472025.71
2333	40.4005	-111.3933	2.17	0	1	22	1998	3	33	0.93	9.85	0	17	192	11.4	0.17	0.8	1.5		466624.945	4472284.586
2334	40.3787	-111.3803	0.75	0	1	22	1998	3	36	37.21	15.14	0	10	217	11.2	0.04	1.2	2.4		467717.708	4469860.001
2335	40.4062	-111.374	0.41	0	1	22	1998	3	54	29.35	7.42	0	6	188	10	0.05	0.5	2.4		468265.405	4472910.169
2336	40.0102	-111.4157	1.13	0	1	24	1998	9	16	32.61	4.63	0	9	98	34.8	0.16	0.6	20		464521.199	4428972.068
2337	39.9605	-111.8183	1.69	0	1	25	1998	1	13	43.74	1.74	0	9	88	8.4	0.18	0.6	20.8		430109.506	4423693.677
2338	40.494	-111.3168	0.43	0	1	29	1998	3	5	40.31	10.48	0	7	167	10.4	0.07	1	3.6		473153.901	4482636.929
2339	41.0102	-111.7772	2.26	1	2	15	1998	14	43	15.24	13.91	0	14	59	5.3	0.12	0.4	0.8		434646.085	4540180.229
2340	40.3492	-111.3203	0.72	0	2	16	1998	20	30	41.81	2.98	0	8	301	8.9	0.06	2.2	11.4		472799.045	4466565.401
2341	40.6423	-111.5378	0.33	0	2	17	1998	16	48	45.43	6.07	0	6	317	8.5	0.02	1.9	1.6		454526.458	4499189.211
2342	40.3877	-111.9558	2.3	0	2	19	1998	21	33	46.38	3.94	0	7	107	7.5	0.06	0.5	2.2		418875.876	4471228.033
2343	40.3402	-111.9922	1.33	0	2	20	1998	14	21	43.2	9.85	0	12	133	13.2	0.16	0.6	2.5		415727.215	4465989.571
2344	39.954	-111.8107	2.02	0	3	5	1998	17	0	4.35	6.16	0	13	119	7.5	0.16	0.6	1.6		430752.069	4422966.306
2345	40.7132	-111.6075	0.58	0	3	6	1998	7	24	49.7	6.5	0	10	163	15.4	0.09	0.8	2.9		448687.353	4507097.777
2346	41.199	-111.5908	1.18	0	3	9	1998	16	57	47.18	8.7	0	7	108	17.8	0.06	0.6	3.7		450462.441	4561016.562
2347	40.8038	-111.4537	1.21	0	3	10	1998	21	27	0.88	1.21	0	7	307	16.2	0.16	999.9	999.9		461730.153	4517076.388
2348	40.0008	-111.8053	2.13	0	3	10	1998	22	20	43.1	1.66	0	8	128	8.8	0.23	0.9	34		431260.238	4428156.541
2349	40.3903	-111.9667	2.15	1	3	11	1998	1	5	28.33	2.82	0	11	107	7.3	0.17	0.6	5.1		417953.873	4471526.692
2350	40.7593	-112.1277	1.69	1	3	12	1998	0	22	49.87	4.63	0	12	118	11.6	0.09	0.4	1.3		404813.601	4512649.257
2351	40.826	-111.4653	1.31	0	3	12	1998	20	34	21.54	4.78	0	10	312	18.8	0.18	2.6	14.6		460764.764	4519545.859
2352	41.017	-111.0453	0.84	0	3	13	1998	17	47	43.62	7.06	0	10	204	40.8	0.15	2	15.1		496191.18	4540645.214
2353	40.8152	-111.4745	1.03	0	3	13	1998	21	16	15.84	6.16	0	7	311	17.7	0.1	3.3	9.5		459982.505	4518351.148
2354	40.815	-111.4588	1.12	0	3	16	1998	19	50	4.15	2.01	0	7	310	17.5	0.15	13.9	107		461306.47	4518321.898
2355	40.2612	-111.4605	1.01	0	3	21	1998	23	49	25.33	8.96	0	5	278	17.9	0.01	4.1	3.6		460841.97	4456850.219
2356	40.7103	-111.39	-0.28	0	3	31	1998	10	34	1.76	11.02	0	7	249	7.1	0.05	1.1	1.8		467057.173	4506671.551
2357	40.7238	-112.0638	1.64	0	4	2	1998	8	31	29.08	8.27	0	15	173	17	0.12	0.7	1.2		410159.581	4508641.141
2358	40.5753	-111.5877	0.28	0	4	8	1998	10	28	18.48	7.06	0	12	182	12	0.08	1.1	1.6		450257.499	4491779.014
2359	40.4938	-111.3307	0.41	0	4	11	1998	23	51	13.46	9.31	0	11	175	11	0.16	1.2	3		471975.909	4482619.051

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2360	40.7833	-112.1067	1.15	0	4	12	1998	22	4	29.55	2.5	0	5	112	10.2	0.22	1.4	17.6		406619.803	4515290.885
2361	40.8552	-111.4837	1.59	0	4	14	1998	10	58	27.78	2.05	0	24	120	22.2	0.18	0.4	27.2		459231.122	4522795.664
2362	40.762	-111.4525	0.05	0	4	18	1998	14	43	40.93	3.94	0	5	301	11.6	0.07	10.3	22.3		461807.437	4512435.822
2363	41.018	-111.7043	1.73	1	4	21	1998	20	42	47.28	6.8	0	23	67	11.2	0.27	0.6	1.2		440783.199	4540994.106
2364	40.7172	-112.0668	1.97	1	4	24	1998	4	29	22.11	10.79	0	28	70	5.7	0.21	0.5	0.9		409897.32	4507911.569
2365	40.4947	-111.3412	-0.37	0	4	30	1998	8	55	0.85	10.65	0	10	180	11.2	0.11	1.9	2		471086.506	4482722.339
2366	41.1978	-111.576	1.54	0	5	22	1998	19	34	24.31	4.59	0	12	108	16.6	0.24	0.7	11.8		451702.519	4560875.022
2367	40.5007	-111.3393	0.2	0	5	25	1998	15	24	55.87	6.8	0	9	176	10.7	0.05	1	2.5		471250.075	4483387.718
2368	40.3347	-111.2082	0.81	0	5	27	1998	12	51	55.18	1.85	0	11	302	9.6	0.22	2.2	22.6		482315.178	4464927.519
2369	40.9823	-111.0748	1.22	0	5	31	1998	10	39	52.92	17.64	0	11	201	31.8	0.05	1.6	2.4		493707.523	4536794.891
2370	40.9153	-111.5893	1.49	0	6	2	1998	6	0	49.03	6.06	0	22	97	24.1	0.11	0.3	1.1		450375.451	4529521.772
2371	40.6258	-111.5467	0.89	0	6	3	1998	23	21	1.36	2.51	0	6	320	8.6	0.25	4.2	19.2		453762.536	4497362.297
2372	40.8878	-111.7255	1.2	1	6	4	1998	6	5	57.59	5.72	0	12	136	17	0.16	0.6	5.7		438880.751	4526555.221
2373	40.8993	-111.7378	1.42	1	6	4	1998	6	7	19.94	6.89	0	16	71	16.4	0.17	0.5	4.4		437855.3	4527840.483
2374	40.7363	-111.4417	0.04	0	6	6	1998	1	51	23.08	2.92	0	5	326	8.7	0.11	21	12.4		462704.641	4509578.346
2375	40.7397	-111.4655	0.24	0	6	7	1998	0	14	31.1	3.11	0	5	329	9.3	0.09	25.2	12.3		460697.06	4509966.145
2376	40.7612	-111.9935	1.54	0	6	7	1998	7	26	27.2	1.03	0	25	60	2.3	0.26	0.5	0.8		416143.664	4512723.255
2377	41.1432	-111.6172	2.09	0	6	7	1998	23	37	8.85	3.18	0	23	80	17.7	0.17	0.4	1.5		448204.905	4554837.371
2378	40.7063	-111.5477	0.06	0	6	9	1998	22	37	50.46	3.35	0	5	335	10.6	0.16	61.6	21.1		453733.625	4506298.631
2379	40.6555	-111.5755	0.3	0	6	12	1998	19	48	33.9	3.92	0	6	328	11.5	0.27	61.9	42.5		451348.316	4500674.631
2380	40.32	-111.257	0.75	0	6	13	1998	8	49	57.34	6.99	0	5	332	31.8	0.4	249.7	119.2		478165.291	4463306.759
2381	40.645	-111.6023	0.93	0	6	19	1998	17	31	28.47	2.48	0	7	331	13.7	0.18	30.3	29.8		449074.7	4499524.264
2382	40.6432	-111.5555	1.49	0	6	23	1998	17	37	43.62	3.36	0	7	321	9.9	0.31	4.7	19.6		453030.463	4499298.415
2383	40.6348	-111.5875	1.52	0	6	27	1998	16	56	55.31	3.37	0	8	326	12.2	0.2	2.9	15.4		450318.505	4498383.566
2384	40.6357	-111.5435	1.17	0	6	30	1998	18	27	7.01	2.14	0	9	316	8.8	0.16	2.1	18.8		454039.967	4498459.552
2385	40.6598	-111.5873	1.51	0	7	3	1998	21	33	51.42	3.27	0	7	327	12.5	0.19	31.6	21.9		450353.949	4501158.542
2386	40.6403	-111.596	0.68	0	7	5	1998	17	43	27.82	2.52	0	7	328	13.1	0.2	39.4	49		449603.842	4498998.919
2387	40.6255	-111.6045	1.26	0	7	5	1998	19	53	23.84	2.47	0	7	328	13.3	0.18	39.2	34.7		448873.813	4497360.974
2388	40.7503	-111.448	-0.16	0	7	10	1998	18	44	57.22	3.08	0	7	329	10.2	0.1	2.4	9.2		462180.624	4511135.111
2389	40.6322	-111.5338	0.89	0	7	11	1998	19	0	52.25	3.94	0	7	312	7.8	0.33	6.4	11.1		454857.876	4498066.019
2390	40.635	-111.5758	1.32	0	7	12	1998	21	4	38.95	2.49	0	8	324	11.2	0.17	2.8	19.8		451308.058	4498399.225
2391	40.7563	-111.4295	0.51	0	7	15	1998	1	2	46.45	2.33	0	7	291	10.9	0.17	8	35.9		463745.625	4511793.336
2392	40.3762	-110.7582	1.66	0	7	15	1998	16	44	46.21	7	0	9	324	42.4	0.08	12.4	19.2		520526.272	4469541.157
2393	40.5033	-111.328	0.85	0	7	15	1998	20	45	30.23	11.33	0	10	124	11.1	0.07	0.5	1.7		472208.633	4483672.698
2394	40.3648	-111.445	0.99	0	7	17	1998	7	9	14.26	3.36	0	12	236	8.8	0.09	0.9	5.1		462217.78	4468342.755
2395	40.5057	-111.315	0.16	0	7	17	1998	7	42	54.05	12.63	0	7	163	11.5	0.05	0.9	3.7		473311.073	4483935.084
2396	40.445	-111.3882	0.3	0	7	18	1998	14	41	42.29	12.3	0	8	145	11.8	0.13	0.8	3		467079.428	4477222.118
2397	40.371	-110.8272	1.24	0	7	22	1998	16	37	8.73	1.6	0	7	321	36.6	0.1	8.4	999.9		514670.023	4468950.242
2398	40.4122	-110.961	1.16	0	7	22	1998	18	35	10.9	7.05	0	6	307	25	0.11	2	12.5		503308.925	4473509.75
2399	40.2777	-111.3845	1.01	0	7	23	1998	10	41	1.91	4.83	0	10	280	18.6	0.13	1.8	11.3		467312.496	4458650.851

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2400	40.8923	-111.6083	0.71	0	7	24	1998	0	36	26.44	8.99	0	6	346	29.6	0.17	6.3	19.4		448757.715	4526979.528
2401	41.0817	-111.573	1.66	1	7	29	1998	20	7	53.05	2.95	0	15	73	14.4	0.19	0.6	16.3		451869.266	4547984.758
2402	40.4437	-111.3443	1.1	0	7	31	1998	19	0	11.42	3.82	0	6	143	8.2	0.23	1.9	18.3		470801.73	4477062.381
2403	40.3897	-111.3898	2.4	0	8	1	1998	19	45	10.27	2.38	0	6	279	11.6	0.2	4	32.8		466916.667	4471084.49
2404	40.5083	-111.324	0.03	0	8	2	1998	6	16	44.87	11.81	0	11	162	10.9	0.12	0.9	2.1		472549.591	4484226.446
2405	40.506	-111.34	1.18	0	8	2	1998	9	35	18.35	14.18	0	14	118	10.2	0.11	0.5	0.8		471193.029	4483976.248
2406	40.635	-111.5803	1.16	0	8	2	1998	21	15	12.15	2.89	0	7	326	11.6	0.26	35.9	19.6		450927.518	4498401.725
2407	40.4977	-111.3263	-0.14	0	8	3	1998	1	57	15.4	16.64	0	6	170	11.2	0.04	1.2	5		472350.375	4483050.563
2408	40.631	-111.3352	0.51	0	8	3	1998	20	12	57.38	0.6	0	5	139	2.2	0.15	2.1	1.7		471652.509	4497849.873
2409	40.503	-111.3352	0.35	0	8	4	1998	3	34	52.59	12.28	0	8	173	12.1	0.08	0.8	1.8		471598.451	4483641.691
2410	41.0365	-111.5945	1.79	0	8	4	1998	6	28	44.06	10.25	0	8	101	18	0.09	0.5	3		450029.106	4542979.131
2411	40.5293	-111.2975	1.01	0	8	4	1998	17	1	19.54	4.01	0	5	294	10.2	0.17	5.7	17.2		474802.63	4486549.546
2412	41.0623	-111.754	1.26	0	8	5	1998	23	29	22.68	10.01	0	13	125	8.1	0.21	0.8	1.1		436646.938	4545946.823
2413	40.4887	-111.4553	0.35	0	8	8	1998	1	33	24.1	13.5	0	6	328	11	0.1	3.3	1.8		461414.138	4482099.98
2414	40.44	-111.351	1.56	0	8	8	1998	19	15	41	2.89	0	9	148	8.6	0.13	1	15.3		470231.906	4476653.921
2415	40.635	-111.454	1.3	0	8	9	1998	23	32	13.4	1.88	0	6	130	2.9	0.42	1.8	16		461607.989	4498338.943
2416	40.7017	-111.5538	-0.05	0	8	12	1998	0	37	8.2	3.23	0	5	335	10.8	0.3	292.4	164.1		453215.113	4505791.24
2417	40.6768	-111.5668	0.79	0	8	13	1998	1	14	49.48	3.33	0	6	331	10.9	0.16	51.1	31.7		452099.043	4503034.237
2418	40.8757	-111.265	0.39	0	8	13	1998	12	43	49.99	5.86	0	7	319	22.6	0.11	3	19.4		477671.266	4524992.524
2419	40.5953	-111.5602	1.31	0	8	13	1998	18	22	24.04	12.37	0	8	166	9.4	0.17	1.6	2.8		452599.213	4493983.894
2420	40.7627	-112.0587	1	0	8	13	1998	22	40	46.3	6.65	0	10	104	14.6	0.23	0.8	4.9		410642.379	4512954.123
2421	40.4228	-111.3563	1.45	0	8	15	1998	20	7	5.77	6.91	0	8	168	8.6	0.22	4	18		469774.715	4474746.541
2422	40.739	-111.5522	1.01	0	8	16	1998	18	34	32.86	5.62	0	5	265	13.1	0.23	5.6	15.9		453376.314	4509930.871
2423	40.5813	-111.54	-0.49	0	8	18	1998	11	15	44.98	2.02	0	10	178	8	0.09	0.9	17.7		454298.895	4492419.183
2424	40.6948	-111.5207	-0.53	0	8	19	1998	2	54	49.87	1.95	0	5	331	8	0.18	46	30		456006.865	4505008.211
2425	40.7717	-111.4273	0.12	0	8	20	1998	0	22	40.88	3.98	0	7	332	12.7	0.16	3.5	15.2		463939.654	4513501.912
2426	40.4188	-111.4928	1.3	0	8	20	1998	21	5	44.76	8.83	0	19	111	3	0.14	0.5	1.2		458192.768	4474358.181
2427	40.421	-111.5013	0.81	0	8	20	1998	21	59	39.58	8.47	0	15	157	2.3	0.23	0.9	1.9		457473.043	4474606.435
2428	40.4283	-111.3335	1.48	0	8	22	1998	19	27	42.25	2.33	0	13	159	6.8	0.29	1	19		471711.17	4475349.484
2429	40.6757	-111.5197	1.05	0	8	23	1998	20	33	51.79	2.07	0	7	322	7.1	0.2	3	26.6		456078.817	4502887.532
2430	40.5122	-111.31	0.3	0	8	25	1998	12	39	58.15	7.68	0	10	152	11.4	0.14	0.9	4.7		473737.243	4484655.085
2431	40.675	-111.5918	0.52	0	8	25	1998	18	28	2.44	3.84	0	5	334	13	0.24	146	86.7		449984.907	4502848.353
2432	40.6598	-111.6058	1.09	0	8	27	1998	16	26	19.57	3.09	0	7	329	14.1	0.17	4.2	19.8		448790.085	4501169.152
2433	40.4335	-111.3255	0.95	0	8	27	1998	18	45	45.73	2.46	0	9	151	6.3	0.19	1.1	15.3		472391.89	4475924.147
2434	40.7212	-111.4155	0.78	0	8	29	1998	19	13	14.16	2.63	0	6	271	7.2	0.05	2.3	11.3		464908.937	4507891.375
2435	40.4197	-111.463	-0.12	0	9	1	1998	16	50	26.21	5.41	0	7	170	5.5	0.11	1.1	3.9		460721.416	4474444.408
2436	40.6728	-111.5652	1.14	0	9	1	1998	18	41	51.97	6.79	0	7	212	12.5	0.1	3.9	9.1		452231.407	4502589.35
2437	40.6435	-111.5663	1.27	0	9	2	1998	21	8	14.3	2.65	0	8	323	10.9	0.22	3.8	17.5		452117.493	4499337.539
2438	40.6028	-111.585	1.16	0	9	3	1998	19	1	48.87	2.64	0	6	333	11.4	0.35	106.6	46.2		450506.305	4494830.06
2439	40.6545	-111.593	0.55	0	9	4	1998	16	58	42.41	4.69	0	5	332	12.9	0.28	132.4	77.5		449868.142	4500573.456

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2440	40.6407	-111.5703	0.19	0	9	6	1998	1	5	33.39	2.2	0	5	327	11.1	0.18	61.4	95.7		451777.264	4499028.915
2441	40.0183	-111.8365	1.12	0	9	8	1998	2	21	3.34	7.82	0	12	111	6.5	0.21	0.8	2.1		428615.232	4430123.438
2442	41.1052	-111.2287	2.34	1	9	8	1998	12	25	3.05	1.76	0	16	201	15.2	0.37	1.8	82.6		480796.587	4550460.564
2443	40.006	-111.823	0.74	0	9	9	1998	15	6	10.89	8.69	0	6	140	8	0.08	0.5	1.4		429754.692	4428747.502
2444	41.107	-111.209	2.09	1	9	10	1998	7	38	10.12	1.25	0	20	198	16.8	0.32	1.8	3.6		482451.231	4550656.231
2445	40.6682	-111.5513	1.74	0	9	11	1998	0	50	49.1	3.1	0	6	326	9.5	0.14	38.2	26.7		453402.987	4502071.272
2446	40.6948	-111.591	0.86	0	9	15	1998	18	2	43.3	2.94	0	11	157	13.4	0.22	1.3	15.2		450067.298	4505045.783
2447	39.9343	-111.9947	1.92	1	9	18	1998	2	20	48.98	2.95	0	16	65	7.2	0.22	0.6	6		415010.628	4420938.791
2448	40.4997	-111.3205	-0.16	0	9	18	1998	6	12	0.16	10.09	0	9	165	11.1	0.05	0.7	2.5		472842.656	4483270.761
2449	40.6353	-111.6122	1.48	0	9	18	1998	16	11	9.97	2.29	0	5	189	13.3	0.12	2.7	16.2		448230.143	4498453.309
2450	40.5105	-111.3027	0.25	0	9	19	1998	12	40	38.79	2.48	0	12	139	11.6	0.21	1	18		474355.042	4484464.236
2451	40.4973	-111.3238	-0.15	0	9	19	1998	19	50	35.29	7.62	0	9	169	11	0.12	1.2	3.7		472562.054	4483005.382
2452	40.5002	-111.3123	0.54	0	9	20	1998	3	44	23.27	5.1	0	12	132	10.9	0.22	1	5.6		473537.674	4483323.769
2453	40.5073	-111.3043	0.7	0	9	20	1998	3	45	3.61	1.85	0	13	138	11.3	0.28	1.2	35.9		474218.263	4484109.502
2454	40.5073	-111.328	1.63	1	9	20	1998	7	20	16.06	6.99	0	20	124	10.7	0.17	0.6	1		472210.284	4484116.698
2455	40.533	-111.5225	-0.18	0	9	20	1998	10	11	29.64	8.24	0	13	101	9.8	0.19	0.7	2.3		455748.165	4487048.869
2456	40.5043	-111.3243	1.41	0	9	20	1998	10	24	9.32	8.69	0	20	125	11.2	0.15	0.5	1.2		472522.542	4483782.539
2457	40.5087	-111.3023	0.13	0	9	21	1998	5	38	36.47	1.84	0	9	140	11.4	0.12	0.7	27.1		474388.246	4484264.319
2458	40.5048	-111.3028	1.07	0	9	21	1998	15	5	12.03	2.47	0	12	139	11	0.23	1	17.8		474344.398	4483831.564
2459	40.493	-111.3338	0.08	0	9	21	1998	15	6	19.96	7.46	0	8	177	11.1	0.05	0.8	3.7		471712.874	4482531.24
2460	40.5092	-111.3245	1.77	1	9	21	1998	15	10	20.92	9.34	0	18	127	10.8	0.21	0.8	2.3		472507.597	4484326.502
2461	40.5155	-111.2912	0.2	0	9	22	1998	21	33	0.71	2.75	0	8	188	11.8	0.12	1	17.4		475331.164	4485015.957
2462	40.5408	-111.2482	0.57	0	9	24	1998	14	40	28.17	3.18	0	6	242	14.2	0.21	2.7	14.8		478981.793	4487813.132
2463	40.586	-111.4163	-0.68	0	9	25	1998	0	14	40.09	3.35	0	6	173	0.8	0.04	0.6	1.1		464770.332	4492884.056
2464	40.6888	-111.5525	0.87	0	9	25	1998	22	12	5.2	4.03	0	6	332	10.1	0.17	4.9	14		453315.933	4504358.592
2465	41.037	-111.6585	0.99	0	9	25	1998	23	44	34.4	13.6	0	13	137	22.8	0.14	0.8	0.7		444649.953	4543073.258
2466	40.7338	-111.4193	0.71	0	9	26	1998	20	46	40.52	2.41	0	9	280	8.6	0.18	2.9	14.3		464594.686	4509291.56
2467	40.7108	-111.6477	0.55	0	9	28	1998	4	47	38.34	11.26	0	17	87	8.9	0.21	0.7	1.4		445289.864	4506855.627
2468	40.6693	-111.589	0.77	0	10	9	1998	23	54	33.65	3.28	0	5	333	12.7	0.17	104.7	77.6		450217.306	4502214.041
2469	40.4948	-111.3262	0.36	0	10	10	1998	17	1	56.98	9.08	0	11	123	10.9	0.1	0.7	2.7		472357.658	4482728.631
2470	40.4998	-111.319	0.1	0	10	10	1998	17	45	48.84	2.79	0	9	165	11.1	0.13	1.1	17.2		472969.797	4483281.401
2471	40.499	-111.3213	0.22	0	10	10	1998	17	51	16.37	4.12	0	9	166	11.1	0.14	1.1	9.4		472774.585	4483193.308
2472	40.499	-111.3185	-0.11	0	10	11	1998	0	0	53.62	10.07	0	9	165	10.9	0.1	0.9	3.2		473011.844	4483192.447
2473	40.7277	-111.5105	0.51	0	10	12	1998	16	35	4.14	18.04	0	5	219	9.8	0.2	1.6	5.2		456889.875	4508655.205
2474	40.6935	-111.6235	0.95	0	10	12	1998	16	51	4.95	3.32	0	10	151	10.7	0.32	2	23.2		447320.381	4504920.454
2475	40.9105	-111.5817	1.01	0	10	15	1998	1	12	46.83	8.19	0	13	99	24	0.21	0.6	5.2		451011.902	4528984.647
2476	40.641	-111.3148	0.3	0	10	16	1998	4	53	41.07	11.47	0	12	155	4	0.11	0.9	0.8		473381.689	4498953.528
2477	40.6567	-111.5612	0.88	0	10	16	1998	18	5	14.6	2.92	0	7	162	10.3	0.22	2.2	16.3		452558.067	4500800.022
2478	40.7282	-111.5625	0.92	0	10	16	1998	19	0	25.66	9.35	0	8	229	12.9	0.33	3.8	5.1		452498.974	4508737.536
2479	40.8532	-111.8945	1.58	0	10	20	1998	19	27	20.86	2.95	0	5	210	6.6	0.49	9.4	27.3		424604.069	4522846.072

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2480	40.7015	-111.5677	1.05	0	10	21	1998	17	10	32.69	3.16	0	9	163	11.9	0.23	1.4	16		452040.695	4505776.534
2481	40.8142	-111.6325	0.99	0	10	23	1998	17	38	8.66	12.39	0	12	110	15.3	0.24	0.9	2.1		446656.525	4518324.282
2482	40.6417	-111.597	1.17	0	10	28	1998	21	9	18.28	2.49	0	7	329	13.2	0.18	27.2	29.9		449520.339	4499154.898
2483	40.4997	-111.3867	0.22	0	11	2	1998	1	37	10.07	2.43	0	8	204	9.3	0.12	1.5	16.8		467233.232	4483293.244
2484	41.1165	-111.5598	1.53	0	11	6	1998	19	4	12.08	6.67	0	11	120	12.7	0.12	0.6	3.9		453002.855	4551840.777
2485	40.5162	-111.3248	0.09	0	11	7	1998	13	27	26.96	11.05	0	9	285	10.2	0.04	1.4	2		472485.042	4485103.598
2486	40.5002	-111.321	0.15	0	11	7	1998	14	48	1.35	8.66	0	11	165	11.2	0.05	0.6	1.9		472800.49	4483326.415
2487	40.5002	-111.3182	-0.08	0	11	7	1998	16	21	14.05	7.09	0	11	163	11.1	0.06	0.9	2.8		473037.745	4483325.556
2488	40.7788	-111.6852	0.8	0	11	12	1998	8	46	27.67	8.35	0	18	91	10.4	0.22	0.6	2.2		442181.201	4514428.05
2489	40.6653	-111.5738	0.59	0	11	17	1998	0	23	6.02	3.28	0	6	330	11.4	0.22	56.6	41.8		451499.13	4501761.529
2490	40.6268	-111.462	1.39	0	11	23	1998	21	12	46.24	1.26	0	7	132	3	0.24	999.9	999.9		460926.696	4497432.241
2491	40.4368	-111.408	0.09	0	11	28	1998	20	38	15.25	8.9	0	10	154	10.4	0.13	0.6	2.4		465396.118	4476319.494
2492	40.6373	-111.5643	-0.02	0	11	30	1998	7	6	11.44	6.68	0	14	136	10.4	0.19	0.9	2.1		452282.186	4498648.231
2493	40.6497	-111.5892	0.56	0	12	2	1998	17	45	42.29	3.71	0	7	332	12.7	0.27	4.8	24		450185.824	4500038.479
2494	40.4275	-111.3505	1.94	0	12	3	1998	21	57	50.13	7.49	0	16	162	8.2	0.15	0.5	2.6		470268.805	4475266.267
2495	40.7452	-111.7928	1.07	0	12	7	1998	22	5	35.24	6.38	0	14	127	4.2	0.13	0.5	1		433067.879	4510774.725
2496	40.6517	-111.5598	0.73	0	12	9	1998	16	13	55.23	2.99	0	5	324	10.2	0.14	38	32.6		452672.886	4500244.25
2497	40.4457	-111.3388	1.42	0	12	9	1998	18	13	6.81	3.8	0	6	139	7.9	0.16	1.5	13.6		471269.009	4477282.576
2498	40.4417	-111.3538	1.76	0	12	12	1998	21	36	3.5	0.2	0	16	147	8.9	0.15	0.5	0.9		469995.195	4476843.567
2499	39.9718	-111.83	2.66	1	12	13	1998	2	4	55.49	2.82	0	23	75	9.9	0.21	0.6	1.7		429121.875	4424957.114
2500	39.9605	-111.8273	1.65	0	12	15	1998	8	54	10.79	1.6	0	13	126	8.6	0.22	0.8	58.5		429340.812	4423700.767
2501	40.7475	-111.3002	0.22	0	12	19	1998	11	22	25.5	4.03	0	9	270	10.4	0.06	1.4	5		474656.599	4510771.119
2502	40.6507	-111.48	-0.32	0	12	19	1998	17	25	7.06	3.84	0	5	281	3.5	0.07	1.9	2.4		459418.829	4500093.364
2503	40.708	-111.415	0.25	0	12	22	1998	17	17	23.73	2.46	0	5	311	5.9	0.06	3.2	14.4		464944.242	4506425.917
2504	40.5505	-111.281	1.24	0	12	25	1998	21	8	40.05	1.89	0	13	152	8.8	0.16	0.7	16.6		476207.635	4488898.178
2505	40.4078	-111.3412	1.7	0	12	28	1998	20	41	57.72	14.74	0	10	186	7.2	0.18	1	2.5		471049.237	4473076.507
2506	40.6573	-111.2933	0.07	0	12	29	1998	19	6	19	2.13	0	7	161	6.5	0.09	0.9	13		475205.685	4500756.592
2507	40.6018	-111.0262	0.83	0	12	29	1998	23	51	52.55	8.3	0	10	286	18.3	0.07	1.2	4		497783.332	4494554.945
2508	39.8347	-111.947	2.38	1	1	3	1999	9	59	35.98	0.79	0	25	63	14.6	0.21	0.5	1.5		418969.114	4409839.78
2509	40.4308	-111.3493	1.99	0	1	4	1999	20	16	24.85	8.34	0	9	159	8.2	0.17	0.8	3.4		470372.044	4475632.16
2510	40.757	-111.4367	0.79	0	1	6	1999	22	18	34.23	3.24	0	8	292	10.9	0.15	3.2	14.4		463138.253	4511874.039
2511	40.7122	-111.4045	1.23	0	1	7	1999	23	29	5.28	3.94	0	12	105	6.7	0.37	1.8	6.7		465833.344	4506887.998
2512	40.4892	-111.353	0.61	0	1	8	1999	8	1	53.96	11.5	0	16	108	11.3	0.16	0.7	1.7		470084.122	4482115.772
2513	40.487	-111.3412	-0.09	0	1	9	1999	6	39	5.84	8.02	0	10	185	10.9	0.16	1.8	3.1		471083.201	4481867.639
2514	40.6838	-111.5113	0.4	0	1	9	1999	20	31	59.94	2.49	0	13	159	6.7	0.27	1.3	9		456793.956	4503782.501
2515	40.6313	-111.5832	0.86	0	1	10	1999	17	48	47.15	3.41	0	7	325	11.7	0.44	55	26.1		450679.558	4497992.635
2516	40.451	-111.3087	1.07	0	1	14	1999	19	41	53.48	1.48	0	8	123	6.2	0.09	0.4	999.9		473823.616	4477861.514
2517	40.9043	-111.5325	1.54	0	1	16	1999	16	42	12.18	8.84	0	15	110	25.9	0.16	0.5	4.2		455151.128	4528270.011
2518	40.863	-111.6562	1.12	0	1	19	1999	9	4	15.68	11.19	0	18	84	15.8	0.15	0.4	1.8		444698.286	4523756.138
2519	40.675	-111.5767	0.01	0	1	20	1999	12	17	30.01	8.25	0	10	149	11.8	0.08	0.7	1.6		451261.067	4502839.871

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2520	40.403	-111.4045	1.9	0	1	20	1999	21	33	41.17	5.47	0	7	274	12.6	0.12	2.3	5.6		465675.792	4472566.371
2521	40.6903	-111.5188	-0.27	0	1	23	1999	14	45	5.36	9.66	0	10	216	7.6	0.14	1.6	1.6		456164.445	4504507.742
2522	39.9637	-111.8742	2.52	1	1	25	1999	3	57	36.31	1.84	0	19	66	11	0.27	0.7	26.1		425338.539	4424094.144
2523	39.9537	-111.8715	2.14	1	1	25	1999	8	58	24.51	1.81	0	10	87	10	0.23	0.8	27.2		425558.293	4422981.971
2524	39.9587	-111.8593	1.8	0	1	25	1999	9	18	12.88	2.2	0	8	126	9.8	0.18	0.7	13.6		426605.751	4423526.82
2525	39.9548	-111.8513	1.96	1	1	25	1999	10	0	39.09	1.83	0	8	100	9	0.1	0.6	14.9		427284.923	4423087.402
2526	40.4453	-111.4797	0.3	0	1	25	1999	14	22	18.13	11.23	0	12	188	5.3	0.12	0.7	1.4		459320.097	4477293.544
2527	40.7072	-111.6283	-0.24	0	1	26	1999	13	46	35.49	6.41	0	9	238	16.9	0.14	2.1	7.9		446925.701	4506444.107
2528	41.0165	-111.1017	1.82	1	1	28	1999	19	59	40.81	3.26	0	22	201	39.2	0.2	0.9	1.1		491449.007	4540593.701
2529	40.8702	-111.5705	1.56	1	2	1	1999	17	43	18.1	11.95	0	20	100	22.4	0.17	0.5	1.4		451925.958	4524504.807
2530	40.8732	-111.5722	1.11	0	2	1	1999	17	45	13.58	12.46	0	15	116	22.4	0.24	0.8	2		451784.881	4524838.765
2531	40.5327	-111.4833	-0.06	0	2	2	1999	20	46	22.71	6.19	0	9	321	8.2	0.06	1.3	1.6		459067.942	4486996.63
2532	40.4283	-111.3542	1.51	0	2	3	1999	21	23	2.66	9.64	0	10	162	8.5	0.17	0.8	2.7		469955.308	4475356.317
2533	40.971	-111.4982	0.24	0	2	5	1999	5	48	53.78	9.4	0	7	143	18	0.1	0.7	3.6		458082.183	4535657.289
2534	40.5722	-111.05	0.69	0	2	8	1999	0	47	42.54	3.93	0	11	275	18.4	0.09	1	10.2		495767.853	4491270.171
2535	40.3695	-111.4493	1.22	0	2	8	1999	19	3	59.51	5	0	6	293	17.1	0.1	13.7	29.6		461855.342	4468866.291
2536	40.367	-111.3213	1.75	1	2	9	1999	6	1	7.58	1.72	0	17	167	7.5	0.23	0.7	31.9		472721.296	4468541.462
2537	40.496	-111.3502	2.33	1	2	13	1999	1	8	22.45	13.68	0	22	110	10.7	0.13	0.4	0.6		470324.412	4482869.627
2538	40.495	-111.341	1.04	0	2	14	1999	10	18	56.49	12.36	0	12	115	11.2	0.12	0.6	1.7		471103.583	4482755.573
2539	40.4175	-111.5	-0.01	0	2	20	1999	19	33	24.91	9.45	0	10	168	2.4	0.09	0.8	1.5		457581.129	4474217.314
2540	40.4432	-111.34	1.39	0	2	20	1999	20	30	34.96	6.75	0	6	142	7.8	0.15	3.5	19.1		471166.178	4477005.469
2541	40.4947	-111.3593	2.75	1	2	21	1999	4	47	8.66	13.22	0	20	106	10.5	0.16	0.5	1.2		469552.698	4482728.427
2542	40.4933	-111.3548	2.51	1	2	21	1999	5	6	49.22	13.73	0	25	108	10.8	0.15	0.5	0.4		469933.407	4482571.484
2543	40.4887	-111.3607	0.91	0	2	21	1999	6	28	19.34	14.32	0	14	105	11.1	0.21	0.7	2.6		469431.338	4482062.911
2544	40.7057	-111.438	-0.25	0	2	21	1999	8	40	50.13	9.57	0	5	275	11	0.05	8.2	11.2		463000.114	4506180.04
2545	40.514	-111.3722	-0.09	0	2	21	1999	12	4	15.82	11.78	0	5	339	8.1	0.01	2.7	2.9		468468.581	4484875.265
2546	40.9045	-110.9285	1.55	0	2	22	1999	2	30	13.07	7	0	5	284	35.4	0.08	20.8	33.5		506021.931	4528158.204
2547	40.4952	-111.3758	1.49	0	2	22	1999	10	15	20.16	8.73	0	21	175	10	0.19	0.7	1.1		468154.711	4482789.752
2548	40.801	-111.5853	0.6	0	2	25	1999	11	22	42.11	9.75	0	12	118	18.5	0.14	0.5	2.9		450627.494	4516831.343
2549	40.6472	-111.4698	0.19	0	2	25	1999	19	50	13.47	1.56	0	6	262	2.9	0.13	2.2	19.1		460279.107	4499700.196
2550	40.6658	-111.5083	0.04	0	2	25	1999	22	20	55.84	5.25	0	5	313	5.9	0.13	23.1	19.6		457035.91	4501782.961
2551	40.9955	-111.4567	1.15	0	2	27	1999	22	26	25.87	14.03	0	10	134	14.2	0.08	0.6	1		461588.161	4538357.947
2552	40.4935	-111.371	2.28	1	3	1	1999	10	6	14.22	10.15	0	19	193	10.2	0.22	1	1		468560.67	4482599.331
2553	39.9718	-111.9213	1.51	0	3	11	1999	23	57	25.72	3.68	0	10	88	13.2	0.16	0.6	1.3		421325.168	4425033.668
2554	40.4352	-111.4585	1.85	0	3	17	1999	0	30	43.84	6.98	0	8	177	20.1	0.19	2.6	17		461112.103	4476162.902
2555	40.7255	-111.416	0.58	0	3	20	1999	0	37	23.39	2.38	0	6	274	7.8	0.08	3	16.7		464868.971	4508368.895
2556	40.6908	-111.6077	0.05	0	3	25	1999	13	3	44.47	6.99	0	13	152	12.1	0.11	0.8	2.2		448653.261	4504611.389
2557	40.8263	-111.8882	1.52	0	3	25	1999	19	17	22.23	1.53	0	13	113	3.5	0.15	0.5	17.3		425104.817	4519854.543
2558	40.7033	-111.613	2.19	1	3	26	1999	1	37	59.49	11.88	0	25	89	11.7	0.15	0.4	0.6		448215.123	4506002.057
2559	40.7067	-111.567	-0.19	0	3	27	1999	21	22	36.84	3.38	0	7	165	12	0.03	1	6.8		452103.556	4506353.376

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2560	39.8755	-111.8757	0.74	0	4	4	1999	23	44	33.19	8.26	0	5	219	7.3	0.03	1.5	2.7		425114.409	4414305.996
2561	39.8887	-111.8783	1.44	0	4	5	1999	0	18	48	3.99	0	9	121	7.5	0.15	0.7	3.6		424906.468	4415773.25
2562	39.8895	-111.8768	1.57	0	4	5	1999	0	19	18.22	4.06	0	5	202	7.3	0.07	1.6	7		425035.589	4415860.782
2563	40.4933	-111.3388	0.41	0	4	5	1999	13	46	53.49	9.63	0	5	116	11.4	0.05	0.5	2.1		471289.287	4482566.155
2564	40.5005	-111.3202	0.85	0	4	5	1999	16	6	34.82	11.18	0	11	128	11.2	0.08	0.6	1.5		472868.398	4483359.469
2565	40.5008	-111.3127	0.39	0	4	5	1999	18	58	30.59	9.34	0	7	166	10.9	0.05	0.9	3.3		473504.017	4483390.49
2566	40.5243	-111.332	-0.02	0	4	6	1999	23	55	11.57	10.77	0	7	282	9.1	0.04	1.6	2.8		471878.488	4486004.974
2567	41.0575	-111.7088	0.7	0	4	11	1999	3	12	13.84	8.44	0	14	73	11.3	0.11	0.4	1.6		440440.458	4545382.118
2568	40.7425	-111.853	0.91	0	4	11	1999	6	19	20.41	2.47	0	13	122	5.7	0.28	0.9	9.4		427982.529	4510522.655
2569	40.9528	-112.05	2.19	1	4	14	1999	4	3	11.6	10.08	0	17	100	15.6	0.09	0.3	0.8		411629.72	4534048.198
2570	40.9515	-112.0475	0.83	0	4	14	1999	4	18	33.21	8.52	0	7	106	15.6	0.05	0.5	2.8		411838.399	4533901.359
2571	40.337	-111.7555	0.43	0	4	15	1999	2	33	51.9	3.94	0	9	128	21.1	0.16	0.7	13.5		435828.585	4465435.875
2572	40.5867	-111.2102	0.16	0	4	17	1999	4	32	56.81	15.5	0	8	196	9.9	0.03	1	3.9		482211.887	4492899.719
2573	40.342	-111.4172	1.74	1	4	22	1999	5	31	55.66	1.81	0	16	79	12.2	0.15	0.6	18.8		464566.182	4465800.51
2574	40.2462	-111.4157	0.38	0	4	22	1999	5	35	44.29	11.15	0	8	285	20.9	0.08	3.8	2.7		464643.687	4455166.46
2575	40.2545	-111.4148	0.31	0	4	22	1999	6	2	11.34	12.45	0	8	283	20.1	0.07	3.4	3.1		464724.544	4456087.364
2576	39.8917	-111.8815	0.92	0	4	24	1999	4	12	30.75	2.43	0	5	121	7.8	0.04	0.7	8.8		424636.154	4416108.916
2577	40.517	-111.5778	0.51	0	4	28	1999	21	10	5.15	5.54	0	16	101	12.3	0.09	0.5	2.4		451053.007	4485302.076
2578	40.886	-111.607	1.32	1	4	29	1999	11	13	1.14	13.91	0	13	118	20.6	0.13	0.6	1.4		448862.376	4526279.415
2579	40.3542	-111.4487	0.31	0	5	5	1999	2	2	11.26	9.25	0	11	245	9.4	0.2	1.6	2.9		461897.668	4467167.767
2580	40.3732	-111.4617	1.39	1	5	5	1999	22	40	1.7	5.18	0	10	233	7.2	0.06	0.9	2.7		460804.747	4469282.404
2581	40.7453	-111.4307	0.38	0	5	7	1999	0	6	54.38	5.06	0	5	290	9.7	0.04	8.4	15.3		463638.34	4510572.776
2582	40.814	-111.559	1.92	1	5	13	1999	9	54	30.5	7.66	0	32	97	20.1	0.17	0.3	1.2		452855.221	4518259.951
2583	40.7805	-111.5705	0.5	0	5	13	1999	9	56	22.03	6.96	0	9	230	17.5	0.08	1	4.8		451861.139	4514547.486
2584	40.4968	-111.3142	-0.09	0	5	15	1999	6	52	30.91	6.22	0	6	164	10.6	0.13	2.2	11.1		473375.336	4482946.941
2585	40.4855	-111.342	0.56	0	5	15	1999	19	30	6.06	13.43	0	11	148	10.9	0.07	0.7	1.6		471014.755	4481701.401
2586	40.8725	-111.7122	1.22	0	5	15	1999	23	27	4.32	6.25	0	12	136	13.1	0.13	0.5	3.3		439987.39	4524847.59
2587	40.4825	-111.354	-0.35	0	5	16	1999	3	35	4.52	6.33	0	6	196	11.4	0.02	1.3	3.6		469996.391	4481372.412
2588	40.4852	-111.3508	-0.24	0	5	16	1999	3	45	0.31	9.42	0	7	192	11.4	0.04	1.5	2		470268.802	4481671.029
2589	40.4905	-111.3463	0.62	0	5	16	1999	6	59	50.25	12.78	0	16	112	11.4	0.12	0.5	1.2		470652.498	4482257.822
2590	40.4147	-111.4552	0.11	0	5	20	1999	20	6	20.28	13.37	0	9	178	6.1	0.07	0.7	1.8		461380.272	4473885.976
2591	39.9228	-111.6617	2.37	1	5	22	1999	13	22	31.83	9.4	0	26	68	10.6	0.17	0.4	0.7		443453.706	4419398.383
2592	39.9173	-111.6603	1.14	0	5	22	1999	14	15	31.82	1.83	0	12	131	11.2	0.27	0.8	23.7		443568.831	4418787.052
2593	41.0837	-111.7313	1.41	0	5	24	1999	3	1	16.61	10.55	0	12	109	10.9	0.1	0.5	1.2		438574.189	4548306.243
2594	40.3635	-111.4672	0.36	0	6	3	1999	10	5	1.7	10.38	0	5	298	7.6	0.01	3.7	4.8		460332.145	4468208.176
2595	40.015	-111.2413	0.58	0	6	3	1999	11	17	5.26	7	0	5	330	44.2	0.27	89	34		479407.201	4429449.956
2596	40.3343	-111.3688	1.68	1	6	6	1999	0	40	40.55	7.66	0	16	93	12.9	0.11	0.4	1.5		468673.362	4464927.58
2597	40.6317	-111.5883	0.42	0	6	9	1999	20	46	30.02	3.25	0	7	327	12.2	0.3	45.8	19.7		450248.553	4498039.908
2598	40.6958	-111.3975	0.95	0	6	10	1999	0	44	12.1	1.62	0	7	174	5.5	0.2	1.3	31.5		466416.374	4505064.831
2599	40.5155	-110.7928	1.3	0	6	15	1999	17	48	12.71	3.94	0	14	245	40.2	0.11	1.3	1		517552.82	4484995.85

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2600	40.6485	-111.5457	0.06	0	6	18	1999	2	12	40.7	1.94	0	9	320	9.1	0.28	2.8	42.5		453862.742	4499881.546
2601	40.6645	-111.5617	1.1	0	6	22	1999	1	30	2.49	3.33	0	8	328	10.4	0.45	5	27.5		452521.329	4501666.121
2602	40.7075	-111.6192	1.62	1	6	22	1999	12	22	42.2	7.13	0	32	75	11.2	0.2	0.4	1.3		447694.644	4506471.95
2603	40.7677	-111.5015	0.65	0	6	24	1999	19	58	5.58	2.42	0	10	306	13.2	0.17	2.1	28.8		457675.269	4513091.035
2604	40.6672	-111.576	0.26	0	6	25	1999	1	17	33.9	3.32	0	5	331	11.6	0.21	102.1	79.2		451314.554	4501973.652
2605	40.7152	-111.7407	0.14	0	6	26	1999	4	38	51.64	7.43	0	9	142	2.7	0.09	0.6	1		437438.366	4507406.133
2606	40.7205	-111.7358	0.94	0	6	26	1999	7	24	3.35	6.24	0	10	140	3.4	0.08	0.4	0.9		437857.166	4507990.983
2607	40.7197	-111.7303	0.63	0	6	26	1999	12	2	14.44	6.24	0	11	141	3.5	0.09	0.4	0.9		438320.941	4507898.301
2608	40.7108	-111.7543	0.33	0	6	26	1999	14	42	15.44	7.39	0	8	133	2.1	0.13	0.7	1.3		436285.467	4506927.485
2609	40.7558	-111.5732	0.32	0	6	28	1999	12	51	10.53	3.06	0	12	211	15.7	0.07	0.7	9		451615.399	4511807.127
2610	40.2663	-111.1415	1.78	1	6	30	1999	8	55	28.94	3.94	0	14	159	19	0.19	0.9	13.8		487968.651	4457324.198
2611	40.6483	-111.578	3.57	1	6	30	1999	15	27	32.47	12.45	0	44	69	11.8	0.25	0.4	0.5		451131.717	4499876.791
2612	40.636	-111.5817	1.97	0	6	30	1999	15	29	5.69	7.82	0	6	192	11.8	0.01	1.2	2.4		450809.861	4498513.511
2613	40.6397	-111.582	1.11	0	6	30	1999	15	36	49.06	9.04	0	15	131	11.9	0.07	0.5	1.1		450787.21	4498924.391
2614	40.6548	-111.584	0.29	0	6	30	1999	15	38	7.46	8.37	0	12	140	12.2	0.06	0.7	1.5		450629.222	4500601.666
2615	40.6402	-111.5842	0.26	0	6	30	1999	15	39	10.84	7.69	0	14	149	12.1	0.09	0.6	1.7		450601.55	4498981.126
2616	40.6702	-111.582	-0.02	0	6	30	1999	15	43	40.23	4.65	0	7	232	13.4	0.07	3.1	9.3		450809.616	4502310.004
2617	40.6473	-111.61	0.15	0	6	30	1999	15	47	9.06	11.09	0	7	207	14.4	0.14	3.7	2.2		448425.421	4499784.059
2618	40.632	-111.5848	-0.32	0	6	30	1999	15	47	38.98	7.08	0	7	155	11.9	0.07	0.9	2.4		450544.764	4498071.235
2619	40.6538	-111.5863	-0.02	0	6	30	1999	15	52	15.95	8.76	0	11	206	12.4	0.06	1	1.7		450434.041	4500491.956
2620	40.6398	-111.5818	0.99	0	6	30	1999	16	6	47.73	9.33	0	17	131	11.9	0.07	0.6	1.2		450804.195	4498935.379
2621	40.6538	-111.588	-0.34	0	6	30	1999	16	11	24.14	7.16	0	5	237	13	0.09	6.6	6.7		450290.322	4500492.915
2622	40.6705	-111.5885	-0.01	0	6	30	1999	16	23	30.44	4.22	0	6	215	13.9	0.07	3.1	11		450260.459	4502346.962
2623	40.6523	-111.5828	1.92	1	6	30	1999	17	11	39.86	10.82	0	25	69	12.1	0.13	0.4	1		450728.83	4500323.483
2624	40.7188	-111.414	1.05	0	6	30	1999	21	46	58.19	3.94	0	7	269	7.1	0.25	4.5	11.4		465034.364	4507624.366
2625	40.6382	-111.582	0.44	0	7	1	1999	1	24	59.53	10.08	0	15	132	11.9	0.09	0.6	1.4		450786.108	4498757.886
2626	40.6648	-111.592	-0.07	0	7	1	1999	7	42	35.64	9.94	0	10	213	12.9	0.15	2.2	3.5		449960.38	4501716.226
2627	40.7055	-111.4048	0.3	0	7	1	1999	22	33	47.54	11.02	0	11	178	6	0.07	0.8	1.4		465804.577	4506144.387
2628	40.6448	-111.5762	0.22	0	7	2	1999	1	0	40.38	9.16	0	11	173	11.7	0.07	1	1.7		451281.357	4499487.28
2629	40.6865	-111.7125	0.56	0	7	3	1999	2	27	22.6	10.48	0	5	305	23.2	0.08	8.6	17.7		439794.401	4504200.585
2630	40.6367	-111.5805	-0.53	0	7	3	1999	10	49	23.09	8.56	0	8	149	11.7	0.05	0.6	1.6		450911.85	4498590.543
2631	40.3313	-111.3765	1.52	1	7	7	1999	9	31	59.97	2.14	0	16	164	13.7	0.19	0.9	17		468017.89	4464597.342
2632	40.6385	-111.5717	0.05	0	7	11	1999	19	8	6.53	2.2	0	5	327	11.1	0.12	50.7	80.9		451657.297	4498785.476
2633	40.6568	-111.5865	0.4	0	7	14	1999	15	58	22.41	7.58	0	10	204	12.4	0.07	1.3	2.1		450419.354	4500825.08
2634	40.328	-111.3017	2.89	1	7	19	1999	10	26	38.39	2.68	0	42	122	10.2	0.27	0.6	1.1		474370.602	4464206.714
2635	40.3248	-111.2648	0.88	0	7	19	1999	10	53	28.92	11.39	0	11	216	9.8	0.16	1.1	2		477504.196	4463841.495
2636	40.3837	-111.2533	0.4	0	7	19	1999	10	53	55.72	6.95	0	7	321	3.2	0.06	2.5	1.6		478499.883	4470376.373
2637	40.3958	-111.2258	0.55	0	7	19	1999	11	12	4.54	5.58	0	5	305	3.2	0.14	23.4	18.5		480837.516	4471713.124
2638	40.3288	-111.2848	1.41	1	7	19	1999	13	0	1.59	9.33	0	10	205	9.7	0.16	1	2.5		475806.543	4464290.756
2639	40.3415	-111.3113	1.54	1	7	19	1999	13	27	41.19	3.5	0	10	186	9.2	0.2	2.1	12.4		473560.35	4465707.996

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2640	40.4248	-111.2603	0.68	0	7	19	1999	14	8	25.66	1.61	0	5	158	1.4	0.04	2.5	12.4		477919.156	4474940.123
2641	40.3043	-111.217	0.8	0	7	20	1999	7	28	4.46	11.01	0	7	228	12.5	0.07	2.5	1.1		481559.423	4461555.02
2642	40.3888	-111.2455	0.69	0	7	20	1999	7	32	7.5	5.41	0	5	320	2.8	0.15	22	14.5		479163.519	4470940.594
2643	40.4892	-111.3362	0.56	0	7	23	1999	17	11	21.47	12.63	0	8	116	10.9	0.05	0.5	2.3		471507.884	4482110.212
2644	40.6452	-111.3322	1.16	0	7	27	1999	0	14	55.54	1.6	0	6	151	3.7	0.11	1.2	31.2		471912.169	4499425.151
2645	39.9213	-111.9595	1.35	0	7	27	1999	3	0	5.26	2.41	0	5	187	10.5	0.09	1.7	9.4		418002.735	4419462.973
2646	40.6543	-111.5865	-0.01	0	7	27	1999	7	1	36.1	10.37	0	9	206	12.4	0.04	1.5	1.7		450417.503	4500547.57
2647	40.6515	-111.3343	1.42	0	7	27	1999	22	31	0.47	2.76	0	7	160	4.3	0.18	1.2	8		471737.269	4500125.142
2648	40.5857	-111.3307	0.64	0	7	28	1999	23	45	50.58	9.65	0	7	252	3.3	0.15	1.6	2.1		472014.179	4492820.033
2649	40.8087	-111.5622	1.23	0	7	29	1999	10	6	14.53	8.28	0	20	96	19.6	0.15	0.4	3		452581.566	4517673.342
2650	40.6288	-111.5677	0.09	0	8	1	1999	18	34	58.96	2.97	0	5	326	10.4	0.12	44.3	51		451988.589	4497706.554
2651	40.6995	-111.558	1.36	0	8	4	1999	19	53	40.4	3.26	0	5	335	11	0.18	75.8	27.5		452858.745	4505549.275
2652	40.6355	-111.5835	-0.07	0	8	14	1999	18	28	15.04	9.03	0	7	148	11.9	0.06	0.7	1.6		450657.28	4498459.017
2653	40.6417	-111.5827	0.3	0	8	14	1999	18	28	42.11	9.38	0	14	149	12.1	0.1	0.8	1.3		450729.489	4499146.79
2654	40.7243	-111.415	0.94	0	8	18	1999	18	58	5.81	2.77	0	6	272	7.6	0.07	2.8	12.6		464952.791	4508235.29
2655	40.7475	-111.4213	0.45	0	8	21	1999	20	45	48.54	3.87	0	6	328	10.1	0.16	25.9	11.5		464433.105	4510813.135
2656	40.6493	-111.572	1	0	8	25	1999	16	12	16.54	1.9	0	5	326	11.2	0.11	34	133.2		451639.724	4499984.478
2657	40.6452	-111.6037	0.92	0	8	27	1999	16	41	46.62	3.3	0	5	334	13.9	0.54	245.2	177		448956.48	4499547.277
2658	40.5188	-111.4862	0.72	0	8	29	1999	23	0	12.55	4.75	0	14	144	9.6	0.12	0.5	2.4		458813.824	4485455.067
2659	40.5315	-111.4532	-0.29	0	8	29	1999	23	2	6.85	5.55	0	10	157	6.7	0.1	0.9	2		461616.521	4486849.889
2660	40.637	-111.5918	1.33	0	8	30	1999	16	54	58.35	3.27	0	6	332	12.6	0.22	65	35.9		449956.52	4498630.21
2661	40.1587	-111.1767	2.43	1	9	1	1999	5	48	25.4	3.93	0	16	145	29.1	0.19	0.7	18.6		484951.913	4445386.573
2662	40.7402	-111.4233	0.06	0	9	2	1999	0	20	29.79	3.79	0	5	327	9.2	0.08	15.3	11.6		464260.354	4510003.611
2663	40.8308	-112.2922	0.75	0	9	2	1999	22	21	2.45	7.45	0	5	144	9.7	0.01	0.8	3.1		391045.205	4520777.923
2664	40.1517	-111.176	1.64	1	9	5	1999	3	35	33.04	3.93	0	13	145	29.8	0.24	1	23.3		485009.987	4444609.501
2665	40.6567	-111.5683	0.98	0	9	5	1999	21	27	21.4	2.4	0	6	327	10.9	0.16	32.7	46.7		451957.854	4500803.877
2666	40.9333	-111.5787	1.45	1	9	11	1999	6	16	57.41	3.33	0	18	99	24	0.17	0.4	1.6		451281.295	4531513.972
2667	40.7427	-111.422	0.28	0	9	13	1999	18	20	38.29	2.39	0	5	327	9.5	0.07	14.2	23		464371.449	4510280.595
2668	40.4882	-111.3378	1.49	0	9	15	1999	17	31	26.98	12.31	0	15	116	10.9	0.1	0.5	1.3		471371.862	4481999.73
2669	40.4895	-111.3343	0.76	0	9	15	1999	18	18	11.75	10.02	0	12	146	10.8	0.07	0.5	1.8		471669.03	4482142.9
2670	40.4857	-111.3558	1.19	0	9	16	1999	14	3	47.26	10.6	0	15	130	11.6	0.16	0.6	2.2		469845.262	4481728.226
2671	40.3628	-111.5017	0.22	0	9	16	1999	14	35	7.35	8.46	0	8	305	6.1	0.11	2.4	2.7		457402.453	4468146.518
2672	41.198	-111.558	1.61	1	9	18	1999	7	33	35.44	10.18	0	16	114	15.4	0.11	0.3	2		453211.964	4560887.387
2673	39.8887	-111.6725	2.05	1	9	21	1999	0	29	54.94	5.44	0	17	65	10.1	0.14	0.4	1.4		442502.273	4415620.528
2674	39.8907	-111.6715	1.03	0	9	21	1999	0	39	14.72	1.87	0	8	99	10.2	0.24	1.1	23		442589.441	4415841.864
2675	39.8823	-111.6753	2.38	1	9	21	1999	0	49	12.51	4.46	0	17	73	9.9	0.27	0.6	4.9		442257.507	4414912.002
2676	39.8895	-111.6715	2.44	1	9	21	1999	0	52	40.94	6.14	0	20	66	10.2	0.17	0.4	1.1		442588.44	4415708.677
2677	39.8857	-111.6688	1.98	1	9	21	1999	1	2	26.98	4.74	0	14	84	10.4	0.16	0.4	1.7		442816.128	4415285.185
2678	39.8842	-111.6685	2.06	1	9	21	1999	1	8	54.68	1.03	0	16	73	10.4	0.2	0.5	1.8		442840.533	4415118.509
2679	39.888	-111.6672	1.31	0	9	21	1999	1	14	15.75	1.04	0	13	65	10.6	0.28	0.7	2.3		442954.839	4415539.438

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2680	39.8925	-111.6677	1.5	0	9	21	1999	2	28	52.19	3.26	0	10	85	10.6	0.11	0.4	2.8		442915.822	4416039.21
2681	39.8887	-111.672	1.84	1	9	21	1999	8	33	24.26	4.78	0	16	65	10.2	0.16	0.4	2.3		442545.023	4415620.207
2682	39.9013	-111.6703	1.07	0	9	21	1999	8	34	55.62	0.09	0	9	130	10.4	0.1	0.5	1.2		442700.865	4417017.583
2683	40.1953	-111.3052	0.93	0	9	22	1999	10	17	36.1	6.92	0	10	139	30.7	0.09	0.6	11.4		474022.57	4449478.628
2684	40.1962	-111.3023	1.38	0	9	22	1999	20	17	28.4	5.23	0	10	127	24.4	0.12	0.6	12.8		474269.747	4449577.679
2685	40.7707	-111.6517	1.91	1	9	24	1999	8	7	43.33	9.81	0	26	78	12.1	0.15	0.3	1		445001.35	4513507.359
2686	40.754	-111.6587	0.98	0	9	24	1999	12	52	46.23	11.94	0	15	162	10.4	0.14	0.5	1.2		444396.682	4511657.97
2687	40.3517	-111.6193	1.17	0	9	25	1999	19	24	3.34	2.45	0	11	126	10.4	0.25	1.6	15.7		447408.777	4466977.7
2688	41.0108	-111.9987	1.7	1	9	27	1999	10	52	57.69	1.89	0	25	51	13.7	0.16	0.4	17.2		416020.913	4540436.267
2689	40.7667	-111.6557	1.63	0	9	27	1999	23	57	49.88	10.33	0	24	95	11.5	0.17	0.4	1		444660.459	4513065.85
2690	40.765	-111.658	0.81	0	9	28	1999	4	17	21.59	10.17	0	11	132	11.2	0.18	0.7	2.7		444464.928	4512878.592
2691	40.437	-111.3422	1.81	0	10	4	1999	16	28	4.35	6.74	0	5	151	7.8	0.19	4.7	23		470976.94	4476317.996
2692	40.6457	-111.5808	1.03	0	10	4	1999	23	52	44.49	9.81	0	21	135	12	0.1	0.5	1.1		450893.077	4499589.741
2693	40.7293	-111.5087	0.8	0	10	6	1999	11	3	6.75	8.87	0	14	181	9.8	0.11	0.8	2.1		457042.909	4508831.93
2694	40.6285	-111.3407	0.58	0	10	10	1999	20	8	51.62	1.44	0	9	131	1.7	0.19	1	31		471186.305	4497574.153
2695	40.4712	-111.2333	0.2	0	10	12	1999	2	45	49.88	4.32	0	10	193	6.8	0.06	0.8	4.6		480223.131	4480084.079
2696	40.3905	-111.4137	1.82	0	10	13	1999	19	44	0.42	4.48	0	7	273	13.6	0.12	11.2	32.3		464888.622	4471182.505
2697	40.362	-111.8868	2.14	1	10	15	1999	3	57	34.03	9.76	0	28	72	11.8	0.16	0.4	0.7		424703.769	4468314.32
2698	40.7448	-111.4355	1.41	0	10	18	1999	17	2	37.35	2.21	0	7	289	9.7	0.14	6.5	26.8		463232.826	4510519.273
2699	40.4388	-111.3557	1.74	0	10	21	1999	17	41	20.38	2.55	0	12	150	8.9	0.17	0.7	18.5		469832.764	4476522.317
2700	40.4268	-111.5597	1.3	0	10	30	1999	21	31	40.02	6.47	0	14	155	3.2	0.1	0.6	1.3		452522.83	4475279.975
2701	40.6745	-111.4975	0.51	0	10	31	1999	18	18	31.44	5.66	0	5	326	5.2	0.16	27	22.5		457954.25	4502743.472
2702	40.8827	-111.4708	0.35	0	11	3	1999	1	11	38.15	4.47	0	10	149	25.1	0.08	0.9	11.3		460334.821	4525842.446
2703	40.7047	-111.3942	1.19	0	11	4	1999	23	43	36.86	2.91	0	7	179	6.4	0.34	2.4	18.5		466699.614	4506051.511
2704	40.7317	-111.996	0.98	1	11	6	1999	11	13	48.25	8.3	0	15	64	11.6	0.1	0.4	1.6		415895.489	4509450.938
2705	40.6807	-111.622	0.19	0	11	10	1999	2	48	49.98	2.15	0	10	146	15.2	0.05	0.4	23.2		447437.061	4503498.699
2706	40.5717	-111.1172	1.02	0	11	16	1999	11	31	46.01	9.21	0	14	251	14.4	0.17	1.4	3		490079.772	4491220.069
2707	40.5617	-111.1105	0.33	0	11	16	1999	12	18	36.38	4.87	0	10	253	15.7	0.08	1.2	8.1		490645.492	4490109.324
2708	40.3868	-110.9903	1.35	0	11	19	1999	15	31	15.24	2.55	0	13	198	22.7	0.15	1.4	19.6		500823.298	4470689.719
2709	40.6515	-111.5773	0.41	0	11	21	1999	18	6	4.95	3.35	0	5	329	11.7	0.2	88	69.2		451193.232	4500231.614
2710	40.5653	-111.3218	-0.06	0	11	27	1999	21	39	27.94	10.52	0	7	304	5.7	0.02	1.4	2		472759.079	4490552.811
2711	40.677	-111.5772	0.5	0	11	27	1999	23	4	41.99	3.37	0	5	332	11.8	0.35	209.9	169.7		451220.268	4503062.157
2712	40.8948	-111.0443	0.99	0	11	29	1999	22	37	52.17	7	0	6	249	39.4	0.18	3.2	30.2		496268.385	4527079.915
2713	41.118	-111.62	0.88	0	12	2	1999	23	45	54.99	7.21	0	12	113	17.7	0.18	0.6	4		447950.016	4552041.515
2714	40.3065	-111.0962	1.23	0	12	4	1999	18	42	54.15	3.84	0	7	249	18	0.18	2.6	13.7		491825.228	4461781.063
2715	40.3403	-111.0028	0.69	0	12	6	1999	19	17	31.49	6.53	0	6	317	22.9	0.13	1.9	13.2		499762.184	4465528.307
2716	40.3345	-110.9853	1.04	0	12	6	1999	20	57	35.97	6.83	0	7	319	24.6	0.13	3.3	11.8		501248.643	4464884.626
2717	40.4182	-111.4932	0.48	0	12	7	1999	4	12	0.72	8.85	0	15	168	2.9	0.12	0.5	1.2		458158.461	4474291.771
2718	40.9483	-112.0523	0.99	0	12	9	1999	19	53	59.75	7.24	0	7	127	15.1	0.04	0.4	3		411430.13	4533550.975
2719	40.6398	-111.581	0.66	0	12	10	1999	17	0	49.82	8.65	0	14	148	11.9	0.06	0.6	0.9		450871.842	4498934.932

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2720	40.6802	-111.5542	1.71	0	12	11	1999	22	7	39.9	2.94	0	10	176	12.4	0.23	1.6	24		453166.269	4503404.86
2721	40.3988	-111.4705	0.37	0	12	15	1999	5	42	44.2	5.84	0	11	223	18.2	0.11	0.9	5.8		460072.802	4472127.896
2722	40.6405	-111.5823	0.13	0	12	19	1999	19	30	43.82	8.96	0	14	149	11.9	0.09	0.7	1.4		450762.43	4499013.362
2723	39.9433	-111.9323	1.4	0	12	20	1999	7	28	53.45	3.93	0	9	91	12.2	0.18	0.7	1.5		420352.745	4421880.158
2724	40.4913	-111.3385	0.61	0	12	21	1999	18	29	22.29	12.28	0	11	182	11.2	0.12	0.9	2.5		471313.858	4482344.057
2725	39.9495	-111.337	1.49	1	12	22	1999	7	12	27.91	2.85	0	11	111	26.3	0.14	0.6	16.3		471212.572	4422206.599
2726	40.0065	-111.9427	1.72	0	12	28	1999	7	27	29.22	6.97	0	13	59	12.2	0.2	0.5	2.5		419538.404	4428904.212
2727	40.4903	-111.3358	0.51	0	1	3	2000	21	43	27.16	12.21	0	7	180	10.9	0.06	1	3.6		471542.247	4482232.183
2728	40.6985	-111.5628	0.53	0	1	5	2000	20	57	15.42	2.14	0	13	161	11.4	0.06	0.6	12.8		452452.516	4505440.857
2729	39.9422	-111.9783	1.06	0	1	7	2000	23	23	48.13	3.77	0	5	154	8.4	0.34	2.2	3.3		416421.517	4421800.139
2730	39.9033	-112.0933	0.68	0	1	7	2000	23	24	6.81	25.15	0	5	166	6	0.23	2.8	1.1		406543.715	4417596.581
2731	40.4865	-111.3497	0.32	0	1	11	2000	6	9	32.16	14.1	0	12	150	11.4	0.08	0.6	1.5		470362.602	4481814.959
2732	40.9977	-111.744	0.4	0	1	12	2000	14	51	12.45	4.45	0	6	117	24.8	0.05	0.5	9.4		437426.037	4538768.272
2733	40.5445	-111.5305	0.9	0	1	18	2000	12	50	47.51	2.41	0	15	111	9.4	0.14	0.7	11.2		455078.304	4488329.431
2734	40.2425	-111.8925	1.2	0	2	8	2000	0	7	49.12	6.87	0	5	151	19.1	0.13	1.7	13.5		424086.133	4455054.895
2735	40.6412	-111.5778	1.27	0	2	10	2000	6	35	35.51	11.74	0	21	66	11.7	0.11	0.5	0.8		451143.449	4499088.555
2736	40.7555	-111.4812	0.11	0	2	16	2000	0	18	32.18	9.22	0	8	262	11.4	0.08	2.1	2.5		459381.093	4511727.174
2737	40.7778	-111.4717	0.52	0	2	16	2000	0	20	24.96	6.44	0	10	230	13.6	0.1	1.2	5.6		460196.314	4514198.245
2738	40.75	-111.482	0.42	0	2	16	2000	0	48	25.83	8	0	8	226	10.8	0.06	1.4	2.8		459310.21	4511117.016
2739	40.3623	-111.4485	0.04	0	2	16	2000	2	14	8.88	10.65	0	9	283	26.6	0.11	3.7	9.5		461919.209	4468066.762
2740	40.762	-111.4687	0.66	0	2	16	2000	5	57	1.92	8.83	0	12	108	11.8	0.09	0.6	3.1		460440.096	4512442.999
2741	40.619	-111.5877	-0.25	0	2	21	2000	0	0	38.81	7.19	0	7	193	11.8	0.09	2.5	2.8		450289.878	4496629.828
2742	39.9648	-111.9788	1.3	0	2	23	2000	18	47	57.52	4.12	0	5	144	8.2	0.07	0.9	7.2		416406.321	4424309.031
2743	40.418	-111.4548	1.65	1	2	24	2000	0	45	30.15	0.73	0	19	58	6.1	0.25	0.7	3.6		461416.094	4474252.097
2744	40.3547	-111.3657	1.03	0	2	26	2000	17	17	26.76	2.92	0	9	156	11.3	0.19	0.9	13.8		468946.039	4467190.83
2745	41.0663	-111.661	1.13	0	3	11	2000	23	15	46.73	3.91	0	6	134	21.9	0.13	0.8	20.6		444464.459	4546327.484
2746	40.3633	-111.0468	1.99	1	3	12	2000	20	45	58.39	2.23	0	17	185	18.6	0.17	1.2	16.7		496026.417	4468082.285
2747	40.3723	-111.061	1.73	1	3	12	2000	20	49	46.21	2.97	0	12	183	17.1	0.15	1.1	12.7		494821.447	4469081.995
2748	40.3307	-110.9408	0.68	0	3	12	2000	23	26	21.86	1.54	0	8	321	28.2	0.06	6.9	999.9		505028.833	4464464.417
2749	40.3078	-110.9307	0.77	0	3	12	2000	23	29	5.46	1.32	0	7	324	29.9	0.06	999.9	999.9		505888.782	4461923.222
2750	40.348	-110.9733	0.5	0	3	13	2000	0	25	52.89	4.48	0	7	317	25	0.08	23	51.8		502267.492	4466383.321
2751	40.6928	-111.5375	0.63	0	3	14	2000	0	56	47.22	2.7	0	6	331	9.2	0.18	69.8	36.7		454586.095	4504794.749
2752	40.7523	-111.625	0.92	0	3	17	2000	23	31	58.02	10.13	0	19	100	12.5	0.12	0.4	0.8		447240.098	4511448.456
2753	40.5342	-111.5568	0.43	0	3	21	2000	4	4	20.79	10.75	0	11	218	11.8	0.04	1	1.2		452844.039	4487199.852
2754	39.9088	-111.6403	1.66	0	3	22	2000	20	8	52.82	7.37	0	13	99	11.9	0.13	0.4	1.4		445271.338	4417831.19
2755	40.6327	-111.5822	-0.47	0	3	27	2000	8	54	52.61	8.13	0	7	151	14.9	0.04	0.8	2.7		450765.156	4498147.479
2756	40.9867	-111.6267	1.2	0	3	27	2000	21	30	12.5	5.81	0	8	143	18.2	0.07	0.5	5.3		447282.828	4537469.739
2757	40.729	-111.4143	1.28	0	3	28	2000	22	56	47.74	3.94	0	8	190	8.2	0.29	1.9	10.1		465014.369	4508756.733
2758	40.4122	-111.8095	0.97	0	3	31	2000	20	13	14.37	3.12	0	10	189	13.1	0.17	1.1	13.7		431318.23	4473823.567
2759	40.4203	-111.8133	0.7	0	4	2	2000	18	19	9.87	2.03	0	11	185	12.5	0.16	0.7	17.1		431004.092	4474725.627

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2760	40.7928	-111.5512	0.56	0	4	3	2000	8	57	0.59	8.47	0	5	242	17.7	0.05	0.9	5.1		453498.264	4515902.449
2761	40.8185	-111.5402	1.41	1	4	3	2000	8	59	56.95	9.62	0	21	108	19.8	0.13	0.4	2.8		454443.856	4518749.54
2762	40.8172	-111.5407	1.2	0	4	3	2000	12	59	29.26	9.71	0	16	102	19.6	0.12	0.5	0.8		454400.799	4518605.491
2763	40.7118	-112.071	1.14	1	4	5	2000	6	41	2.62	12.36	0	9	91	7.7	0.09	0.5	1.8		409535.269	4507316.449
2764	40.3957	-111.4458	1.02	0	4	6	2000	14	27	11.32	11.89	0	12	144	7.2	0.08	0.5	1.1		462167.146	4471772.938
2765	40.673	-111.5712	0.6	0	4	7	2000	23	24	3.53	3.63	0	5	330	11.2	0.2	80.6	47.3		451724.451	4502614.828
2766	39.8743	-111.6948	1.86	1	4	9	2000	22	37	29.34	5.55	0	8	170	8.4	0.2	1.2	3.5		440583.213	4414036.871
2767	40.6388	-111.5703	0.21	0	4	11	2000	23	46	30.84	2.66	0	5	327	10.9	0.11	46.9	56.3		451775.896	4498818.008
2768	39.9625	-111.8168	1.88	0	4	13	2000	0	45	31.53	1.33	0	9	96	8.6	0.34	1.1	25.2		430239.654	4423914.485
2769	40.485	-111.9092	1.17	1	4	14	2000	21	36	18.3	1.22	0	9	156	5.1	0.16	999.9	999.9		422942.307	4481986.703
2770	40.4368	-111.5528	0.96	0	4	15	2000	8	53	16.85	11.62	0	17	131	3.4	0.13	0.6	1.3		453115.079	4476386.283
2771	40.4768	-111.8995	1.74	0	4	21	2000	1	25	52.55	1.74	0	11	104	5.2	0.24	1.3	18		423755.147	4481068.064
2772	40.9062	-111.6065	0.7	0	4	22	2000	22	18	40.71	8.67	0	7	255	22	0.14	2.5	4.5		448920.04	4528521.493
2773	40.7058	-111.942	1.12	0	4	24	2000	20	36	52.44	5.16	0	10	114	10.9	0.15	0.7	4		420424.597	4506525.548
2774	40.4618	-111.8878	1.73	1	4	25	2000	22	37	31.9	1.65	0	10	107	5.6	0.13	0.7	16.1		424730.147	4479393.001
2775	40.7598	-111.4577	0.16	0	4	28	2000	1	21	17.43	3.76	0	5	338	11.4	0.17	74.9	22.4		461367.264	4512193.886
2776	40.7513	-111.9583	1.2	0	4	29	2000	9	31	48.59	5.47	0	9	77	7.8	0.06	0.4	2.1		419102.76	4511591.241
2777	40.7483	-111.9568	0.55	0	4	29	2000	14	42	14.48	6.61	0	8	92	7.9	0.03	0.4	2		419225.758	4511256.838
2778	40.403	-111.8308	1.16	0	5	2	2000	17	18	15.03	11.42	0	6	221	11.9	0.08	1.5	2.3		429501.419	4472819.139
2779	40.414	-111.403	0.69	0	5	3	2000	19	54	55.47	6.53	0	7	179	10.5	0.05	0.8	4.2		465808.643	4473786.773
2780	40.7513	-111.4388	0.44	0	5	4	2000	2	5	43.05	3.89	0	5	330	10.4	0.15	32.6	11.2		462957.829	4511242.193
2781	40.211	-110.9792	1.98	1	5	16	2000	19	26	36.65	3.2	0	14	175	32.5	0.2	1.3	2.1		501770.005	4451176.79
2782	41.0748	-111.5595	1.6	0	5	22	2000	20	31	37.9	2.95	0	8	78	13.5	0.28	1	18.6		452998.326	4547211.412
2783	40.6577	-111.5873	-0.25	0	5	28	2000	6	45	46.51	8.08	0	12	140	12.5	0.04	0.7	1.3		450352.392	4500925.434
2784	40.393	-111.9585	1	0	6	1	2000	22	45	2.49	3.25	0	6	152	6.9	0.09	0.8	3.3		418653.086	4471818.816
2785	40.2188	-110.9578	1.16	0	6	2	2000	17	27	13.27	6.88	0	10	187	46.7	0.18	1.4	14.2		503590.656	4452043.192
2786	40.4962	-111.3323	-0.06	0	6	7	2000	9	7	30.91	8.87	0	8	175	11.3	0.09	0.8	2.2		471841.326	4482885.96
2787	40.5927	-112.1508	1.63	0	6	15	2000	15	15	49.95	0.7	0	9	90	7.2	0.31	0.9	2.9		402621.611	4494180.866
2788	39.9403	-111.9642	1.51	0	6	22	2000	1	16	17.75	3.23	0	9	94	15.9	0.24	0.8	3.3		417623.855	4421576.143
2789	40.3833	-111.4372	1.8	1	6	22	2000	21	43	15.73	0.63	0	15	216	8.3	0.3	1.5	4.9		462890.183	4470392.915
2790	40.7423	-111.4292	1.04	0	6	22	2000	22	27	29.58	2.53	0	7	287	9.4	0.14	5.7	20		463763.349	4510239.14
2791	40.6808	-111.5887	-0.17	0	7	2	2000	9	45	36.88	5.86	0	14	176	12.9	0.16	1	3.2		450251.212	4503490.418
2792	40.8203	-112.1505	1.77	1	7	15	2000	3	38	55.62	9.86	0	17	109	4.6	0.09	0.4	0.6		402977.911	4519445.775
2793	40.3753	-111.4718	0.21	0	7	16	2000	23	58	4.04	9.78	0	10	235	6.3	0.21	1.6	2.3		459948.565	4469520.024
2794	40.3573	-111.4325	0.49	0	7	20	2000	14	26	2.02	2.32	0	5	240	10.2	0.04	0.8	17.6		463275.012	4467505.009
2795	39.9625	-111.8457	2.51	0	7	21	2000	0	15	44.24	3.75	0	5	214	9.5	0.09	1.8	10.8		427771.364	4423937.487
2796	40.6325	-111.5845	-0.23	0	7	21	2000	23	47	8.7	8.42	0	11	142	11.9	0.11	0.8	2.1		450570.503	4498126.568
2797	39.9342	-111.8038	1.32	0	7	28	2000	5	15	25.96	0.76	0	11	162	5.2	0.26	1.2	69.7		431321.66	4420763.349
2798	40.4897	-111.3412	0.19	0	7	30	2000	11	24	38.85	13.84	0	13	114	11.2	0.08	0.5	1.5		471084.36	4482167.339
2799	40.4882	-111.3385	-0.05	0	7	30	2000	12	11	12.92	12.33	0	8	183	10.9	0.06	0.9	3.6		471312.538	4481999.957

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2800	40.668	-111.5892	-0.24	0	8	3	2000	11	28	42.89	7.18	0	12	145	12.7	0.09	0.9	2		450199.435	4502069.849
2801	40.7565	-111.4117	0.59	0	8	9	2000	0	46	51.53	4.25	0	6	328	11.2	0.13	22.5	15.2		465248.243	4511808.336
2802	40.3862	-111.4647	0.46	0	8	14	2000	12	23	41.83	11.76	0	11	219	6.1	0.07	0.8	1.4		460557.648	4470726.713
2803	40.7372	-111.4228	0.6	0	8	17	2000	22	29	25.31	2.57	0	7	283	8.9	0.14	4.6	21.1		464300.966	4509670.393
2804	40.651	-111.5713	-0.04	0	8	18	2000	7	12	13.03	9.54	0	10	187	11.2	0.06	1.2	1.5		451700.133	4500172.799
2805	40.5132	-112.1882	1.07	1	8	19	2000	6	4	7.68	4.78	0	9	191	10.4	0.22	1.4	2.4		399337.827	4485398.039
2806	40.1428	-111.2632	1.52	1	8	21	2000	7	24	58.05	3.94	0	16	130	30	0.4	1.3	34		477580.183	4443640.016
2807	40.2727	-111.2112	1.55	1	8	23	2000	12	36	28.99	3.94	0	16	148	16.1	0.25	1.4	11.2		482043.944	4458046.359
2808	40.7347	-111.435	0.6	0	8	30	2000	1	38	46.21	2.21	0	7	285	8.5	0.14	5.7	23.1		463269.483	4509397.913
2809	40.9593	-111.0873	0.82	0	8	31	2000	12	9	12.53	14.92	0	9	232	32.2	0.06	2	1		492653.421	4534242.661
2810	40.541	-111.5058	0.26	0	9	3	2000	17	30	24.2	2.27	0	8	196	8.2	0.07	1.3	9.2		457167.631	4487928.63
2811	40.4923	-111.0072	0.82	0	9	7	2000	18	54	19.51	5.26	0	10	289	22.9	0.09	1.7	11.4		499389.846	4482400.058
2812	40.3352	-111.4958	0.46	0	9	16	2000	12	41	25.03	9.29	0	8	265	9.1	0.1	2.1	1.8		457886.239	4465080.16
2813	40.483	-111.3728	1.25	0	9	21	2000	5	3	9.99	8.59	0	21	111	11.4	0.22	0.8	1.1		468403.21	4481434.474
2814	40.4873	-111.3427	0.21	0	9	25	2000	10	0	59.14	13.21	0	11	164	11.1	0.08	0.8	1.6		470956.205	4481901.431
2815	41.1227	-111.7288	0.62	0	10	1	2000	2	0	2.68	10.18	0	9	129	14.1	0.1	0.7	1.7		438820.386	4552633.98
2816	40.7212	-111.6093	0.22	0	10	7	2000	23	56	39.92	9.53	0	7	167	18.1	0.04	0.6	4.5		448541.475	4507986.87
2817	40.7205	-111.6047	0.26	0	10	8	2000	0	1	53.56	9.35	0	7	168	12.7	0.05	0.6	2.4		448929.436	4507906.482
2818	40.6858	-111.552	0.37	0	10	11	2000	3	45	54.8	3.38	0	13	156	10	0.07	0.6	5		453356.09	4504025.314
2819	40.3837	-111.487	1.24	0	10	11	2000	19	40	12.27	6.4	0	13	116	4.8	0.19	0.7	1.7		458663.355	4470459.403
2820	40.7155	-111.5507	0.84	0	10	20	2000	15	46	13.05	6.73	0	13	171	11.4	0.07	0.6	2.9		453486.604	4507321.458
2821	40.4087	-110.9615	0.2	0	10	21	2000	3	58	27.34	7	0	8	307	25	0.1	2.1	12.1		503266.672	4473121.238
2822	41.0812	-111.1763	1.04	0	10	25	2000	6	4	40.42	15.7	0	14	218	19.9	0.29	1.8	1.7		485191.108	4547786.068
2823	40.491	-111.3345	-0.1	0	10	25	2000	10	47	45.51	12.08	0	9	179	10.9	0.06	0.8	2.4		471652.712	4482309.465
2824	40.4525	-111.966	1.51	1	10	25	2000	23	31	48.79	5.08	0	22	59	1.1	0.14	0.3	0.8		418088.769	4478430.297
2825	40.6177	-111.3537	0	0	10	27	2000	22	30	30.12	6.69	0	5	132	0.9	0.02	1.1	1.2		470082.048	4496379.664
2826	40.744	-111.4865	0.98	0	11	1	2000	23	44	39.02	4.13	0	5	332	10.3	0.42	115.1	22.6		458926.634	4510453.08
2827	40.6375	-111.2403	0.57	0	11	4	2000	1	9	26.14	9.44	0	8	224	4.5	0.37	7.3	7.8		479680.076	4498545.143
2828	40.4692	-111.8965	1.95	1	11	8	2000	22	11	28.79	1.75	0	16	103	5.1	0.28	0.9	14.5		424000.872	4480221.865
2829	39.9297	-111.9152	1.46	0	11	12	2000	12	11	41.32	4.82	0	10	133	11.6	0.12	0.5	1.1		421798.156	4420355.55
2830	40.3267	-111.391	0.85	0	11	15	2000	13	40	48.51	3.95	0	13	161	14.9	0.13	0.9	11.6		466783.917	4464092.095
2831	41.1243	-111.7837	1.91	1	11	17	2000	11	0	21.73	5.28	0	8	199	11.8	0.31	2.2	6.9		434213.328	4552851.61
2832	40.4942	-111.3265	0.48	0	11	17	2000	12	17	47.03	10.21	0	9	172	10.9	0.09	0.8	3.2		472331.99	4482662.125
2833	40.7262	-112.06	1.34	1	11	18	2000	1	38	30.24	9.84	0	20	68	9.6	0.16	0.4	1.5		410483.722	4508903.677
2834	40.709	-111.2313	2.35	1	11	20	2000	1	56	20.95	11.41	0	33	175	3.9	0.2	0.5	0.6		480462.005	4506479.84
2835	41.1018	-111.6957	0.93	0	11	20	2000	4	14	57.53	10.82	0	8	109	14.6	0.12	0.8	2.2		441580.482	4550291.095
2836	40.696	-111.2482	0.28	0	11	20	2000	6	9	13.87	4.67	0	7	240	3.3	0.04	1.9	4.5		479030.378	4505040.686
2837	40.7007	-111.2365	-0.44	0	11	20	2000	10	52	19.96	6.62	0	8	259	3.1	0.06	1.6	2.3		480020.278	4505559.677
2838	40.4738	-111.9	1.63	1	11	22	2000	20	34	18.21	1.12	0	24	59	5	0.3	0.6	19.7		423709.369	4480735.491
2839	40.6972	-111.251	-0.18	0	11	24	2000	8	24	11.06	4.64	0	7	238	3.5	0.05	1.8	4.6		478794.195	4505174.562

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2840	40.346	-110.9967	1.75	1	11	26	2000	13	7	50.76	8.98	0	18	192	23.2	0.2	1.4	3.1		500280.26	4466160.99
2841	40.3778	-110.9163	0.67	0	11	26	2000	14	36	53.99	1.63	0	8	316	29	0.02	4.8	999.9		507105.077	4469694.057
2842	40.6997	-111.2368	0.36	0	11	26	2000	18	14	26.2	6.61	0	6	232	3	0.05	3.6	6.3		479994.635	4505448.742
2843	40.7107	-111.2417	-0.02	0	11	27	2000	1	20	23.27	6.45	0	6	264	4.3	0.05	6.6	11.5		479584.031	4506670.912
2844	40.5602	-111.1287	-9.99	0	11	28	2000	17	58	50.17	17.25	0	7	307	14.9	0.04	3.8	3.5		489104.505	4489944.914
2845	40.5888	-111.1905	0.74	0	11	28	2000	17	58	58.7	11.23	0	6	282	9.9	0.07	5.5	5.3		483879.499	4493129.03
2846	40.7115	-111.2568	0.36	0	11	28	2000	18	4	25.9	3.58	0	7	269	5.1	0.02	2.3	6.8		478308.819	4506763.335
2847	40.399	-111.3855	1.72	0	11	28	2000	19	41	28.75	5.2	0	6	272	11.1	0.11	14.9	33.7		467286.121	4472115.173
2848	40.2802	-111.3372	0.71	0	11	28	2000	21	47	18.68	2.46	0	8	288	16.2	0.08	1	12.4		471334.675	4458911.968
2849	40.52	-111.1198	0.27	0	11	29	2000	13	1	3.17	6.39	0	7	312	19.2	0.07	7.7	14.4		489851.898	4485481.625
2850	40.3747	-111.481	1.39	0	11	29	2000	16	47	5.34	6.88	0	19	120	5.8	0.17	0.7	1.6		459167.205	4469457.632
2851	40.3783	-111.4843	1.81	1	11	29	2000	21	29	59.69	6.92	0	26	118	5.3	0.18	0.6	1.4		458889.25	4469858.754
2852	40.5427	-111.1267	0.09	0	12	1	2000	1	27	8.59	13.77	0	8	308	16.8	0.05	3	4.2		489271.029	4488002.153
2853	41.1378	-111.6175	1.16	0	12	6	2000	18	21	17.17	4	0	12	83	17.6	0.14	0.5	7.9		448175.478	4554238.078
2854	40.7118	-111.4217	0.09	0	12	6	2000	22	56	9.05	4.97	0	5	315	6.2	0.16	24.3	15.5		464380.305	4506850.429
2855	40.6545	-111.4607	-0.09	0	12	7	2000	0	34	56.36	1.45	0	7	265	1.9	0.1	1.8	18.8		461052.746	4500506.451
2856	40.3548	-110.8348	1.07	0	12	8	2000	3	40	58.38	6.95	0	8	322	36.2	0.1	20.4	22.5		514028.171	4467150.853
2857	40.4335	-111.3548	1.86	0	12	8	2000	16	52	8.14	2.91	0	9	156	8.7	0.17	1.1	15.8		469906.731	4475933.716
2858	40.7075	-111.3995	1.02	0	12	8	2000	23	15	24.34	1.81	0	8	180	6.4	0.17	1.3	27		466253.304	4506364.346
2859	40.3722	-110.8415	1.14	0	12	10	2000	4	9	40.31	6.99	0	8	321	35.4	0.13	18.6	22.4		513455.772	4469081.165
2860	40.5023	-111.3482	2.91	1	12	10	2000	19	39	1.57	13.06	0	32	113	10.2	0.18	0.4	0.5		470496.65	4483568.257
2861	40.4983	-111.3422	1.44	0	12	10	2000	19	41	32.04	13.1	0	17	115	10.9	0.1	0.4	0.9		471003.315	4483122.267
2862	40.5012	-111.3293	0.68	0	12	10	2000	19	42	53.4	8.03	0	12	123	11.2	0.1	0.6	2.5		472097.614	4483440.008
2863	40.4992	-111.34	0.72	0	12	10	2000	19	46	58.72	12.28	0	13	117	10.9	0.08	0.5	1.5		471190.12	4483221.447
2864	40.4937	-111.3453	0.07	0	12	10	2000	19	48	5.71	9.14	0	8	184	11.2	0.06	1.3	3		470738.634	4482612.69
2865	40.498	-111.3342	1.18	0	12	10	2000	19	50	20.13	8.79	0	11	119	11.2	0.09	0.5	2.4		471681.079	4483086.368
2866	40.4937	-111.3417	0.32	0	12	10	2000	19	53	0.31	11.17	0	8	182	11.3	0.04	0.9	3.4		471043.706	4482611.503
2867	40.494	-111.3452	0.2	0	12	10	2000	19	58	34.43	11.75	0	8	184	11.1	0.04	1.5	3.1		470747.239	4482645.957
2868	40.5057	-111.3435	1.31	0	12	10	2000	21	54	14.18	12.72	0	22	115	10.1	0.21	0.6	0.8		470896.356	4483944.097
2869	40.4942	-111.3453	0.28	0	12	10	2000	23	29	44.93	8.59	0	7	184	11.1	0.05	1.7	3.3		470738.852	4482668.19
2870	40.5043	-111.337	0.04	0	12	11	2000	1	9	30.25	7.82	0	6	292	10.5	0.11	2.9	5.8		471446.488	4483786.572
2871	40.4977	-111.335	0.44	0	12	11	2000	1	51	44.47	8.6	0	9	175	11.2	0.06	0.8	2.8		471613.163	4483053.326
2872	40.4938	-111.3438	0.72	0	12	11	2000	2	25	11.49	12.43	0	13	114	11.2	0.08	0.6	1.5		470865.791	4482623.294
2873	40.503	-111.3493	1.65	0	12	11	2000	2	27	3.06	11.65	0	26	112	10.1	0.17	0.5	0.8		470403.753	4483646.326
2874	40.4943	-111.34	0.69	0	12	11	2000	3	52	41.33	12.77	0	10	115	11.3	0.04	0.7	2.4		471188.024	4482677.546
2875	40.4965	-111.3425	0.72	0	12	11	2000	7	2	49.88	11.04	0	12	115	11	0.07	0.6	1.6		470977.119	4482922.566
2876	40.4955	-111.3383	0.44	0	12	11	2000	7	5	11.63	8.44	0	10	116	11.2	0.06	0.6	2.3		471332.595	4482810.192
2877	40.5012	-111.3428	0.12	0	12	11	2000	7	58	21.43	11.26	0	8	178	10.6	0.04	1.4	2.7		470953.724	4483444.365
2878	40.5145	-111.3393	-0.19	0	12	11	2000	11	18	19.36	11.3	0	7	287	9.4	0.04	2.2	2.3		471255.967	4484919.522
2879	40.4945	-111.341	0.44	0	12	11	2000	11	38	6.55	10.17	0	9	180	11.2	0.05	0.8	2.5		471103.368	4482700.073

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2880	40.5173	-111.3492	0.2	0	12	12	2000	2	12	3.03	10.82	0	7	286	10.7	0.02	3	2.3		470418.511	4485233.597
2881	40.4975	-111.3375	0.1	0	12	12	2000	6	4	21.72	8.92	0	10	177	11.1	0.04	0.7	2.5		471401.236	4483031.933
2882	40.5033	-111.3282	0.1	0	12	12	2000	7	16	59.52	8.15	0	8	168	11.1	0.06	0.8	3.5		472191.687	4483672.761
2883	40.496	-111.3423	0.52	0	12	12	2000	22	12	21.92	10.18	0	10	167	11.1	0.06	0.9	2.1		470993.851	4482867
2884	40.5165	-111.1308	1.24	0	12	18	2000	7	12	54.87	13.45	0	16	180	15.7	0.21	1.2	1.6		488919.526	4485094.448
2885	40.6517	-111.5357	-0.27	0	12	20	2000	7	12	42.9	1.78	0	9	160	8.2	0.09	1	18.1		454710.379	4500231.56
2886	40.5002	-111.111	1.42	0	12	20	2000	21	32	58.4	15.61	0	14	252	15.7	0.13	1.9	1.6		490594.569	4483282.849
2887	41.0187	-111.061	1.68	0	12	24	2000	12	14	23.29	6.09	0	33	202	31.1	0.3	1.2	0.9		494871.257	4540834.734
2888	40.3392	-111.3237	0.44	0	12	26	2000	4	53	52.17	2.69	0	7	305	10	0.04	1.8	8.5		472506.246	4465456.48
2889	40.7348	-111.5285	0.78	0	12	28	2000	0	19	45.18	1.58	0	5	342	11.4	0.16	88.1	999.9		455374.569	4509452.333
2890	40.3892	-111.5377	0.08	0	1	1	2001	17	54	9.64	6.03	0	7	284	2.9	0.26	15.7	9.3		454363.623	4471094.828
2891	41.0275	-111.4493	1.84	1	1	6	2001	9	10	30.27	10	0	23	135	10.6	0.2	0.6	1.4		462228.838	4541907.045
2892	40.7517	-111.3972	1.45	0	1	7	2001	16	40	26.25	6.6	0	5	325	11	0.39	73.8	46.3		466469.785	4511269.871
2893	40.475	-111.7085	1.31	0	1	11	2001	0	50	5.27	7.42	0	6	279	28	0.24	10.6	45.8		439943.539	4480720.777
2894	41.015	-111.046	2.36	1	1	13	2001	0	5	2.56	12.2	0	22	181	32.5	0.29	1.4	1.3		496132.207	4540423.225
2895	40.3238	-111.542	0.55	0	1	15	2001	19	59	52.31	6.75	0	8	258	10.1	0.05	1.4	1.9		453954.198	4463837.794
2896	40.4608	-111.5017	1.06	0	1	17	2001	10	25	32.18	1.88	0	14	89	5.7	0.16	0.6	11.5		457464.203	4479024.403
2897	40.9068	-110.9347	1.7	0	1	18	2001	22	22	25.67	6.67	0	24	182	35.2	0.29	1.3	1.8		505499.559	4528413.114
2898	40.4902	-111.3418	0.75	0	1	22	2001	14	34	30.35	13.36	0	10	114	11.2	0.1	0.6	2.1		471033.727	4482223.035
2899	40.7157	-111.4177	0.44	0	1	22	2001	22	12	24.49	4.7	0	5	320	9.5	0.13	27.5	10.2		464720.232	4507281.732
2900	40.7122	-111.7588	0.49	0	1	23	2001	22	4	43.14	5.36	0	7	124	2.3	0.18	0.8	1.8		435906.698	4507086.167
2901	40.7278	-112.0318	0.96	0	1	29	2001	21	3	3.57	6.65	0	14	72	11.1	0.1	0.4	1.9		412867.319	4509052.921
2902	40.4312	-111.447	0.28	0	2	1	2001	4	15	7.91	7.17	0	9	157	7.1	0.11	0.7	2.3		462085.238	4475713.907
2903	40.4908	-111.3895	0.04	0	2	7	2001	6	32	2.79	10.42	0	10	210	10.2	0.08	1.3	2.3		466991.614	4482306.387
2904	40.5022	-111.3587	0.43	0	2	7	2001	15	31	11.74	9.62	0	8	186	9.8	0.06	0.9	2.9		469606.927	4483560.722
2905	40.5053	-111.359	0.14	0	2	7	2001	17	45	4.7	9.79	0	8	184	9.4	0.05	1.7	2.6		469582.908	4483904.926
2906	40.5217	-111.3663	0.08	0	2	7	2001	18	44	31.2	11.42	0	7	286	7.6	0.03	1.8	2		468971.958	4485727.876
2907	40.7098	-111.3993	0.96	0	2	12	2001	19	44	30.43	1.8	0	8	220	6.7	0.14	1.5	23.7		466271.359	4506619.579
2908	39.9148	-111.5622	1.14	0	2	14	2001	14	34	51.59	3.26	0	5	180	12.8	0.06	1.1	9.5		451951.049	4418452.183
2909	40.7232	-111.4168	0.38	0	2	17	2001	20	51	21.14	2.81	0	7	273	7.5	0.07	2.3	10.9		464800.199	4508113.905
2910	40.0705	-111.759	2.48	1	2	23	2001	4	56	23.71	2.72	0	22	62	6.4	0.26	0.5	3.4		435278.338	4435858.043
2911	40.2815	-111.3372	1.29	0	3	1	2001	23	21	44.05	2.94	0	13	195	16.1	0.17	1.2	17.3		471335.224	4459056.263
2912	40.71	-111.728	0.72	0	3	10	2001	20	44	23.9	6.31	0	13	74	2.8	0.14	0.5	1.2		438506.269	4506819.937
2913	40.2788	-111.4302	0.82	0	3	11	2001	21	40	58.43	4.37	0	7	286	17.1	0.08	16.5	37.1		463427.982	4458790.804
2914	40.8198	-111.8937	1.64	0	3	13	2001	0	25	0.94	1.56	0	9	109	2.9	0.13	0.7	12.4		424633.68	4519137.706
2915	40.8145	-111.8957	1.72	0	3	14	2001	21	25	17.36	1.49	0	6	122	2.4	0.13	1	16.4		424459.004	4518551.085
2916	40.8982	-110.9945	2.48	1	3	15	2001	15	57	55.11	11.84	0	31	143	31.2	0.24	1.1	0.7		500463.269	4527456.411
2917	40.7285	-111.4283	1.07	0	3	15	2001	19	5	37.82	2.87	0	7	282	7.8	0.14	4.5	13.6		463831.862	4508706.902
2918	40.5632	-111.6427	0.22	0	3	21	2001	5	18	30.19	7.67	0	14	99	10.3	0.09	0.4	1.4		445592.511	4490468.4
2919	40.7248	-111.4313	1.51	0	3	22	2001	18	9	10.26	2.32	0	7	280	7.4	0.15	4.9	17.1		463576.507	4508297.425

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2920	40.5985	-111.152	0.46	0	3	24	2001	19	39	42.86	9.77	0	8	237	10.3	0.06	2.3	5.7		487139.308	4494199.411
2921	40.5533	-111.1205	1.77	1	3	25	2001	3	15	32.44	13.81	0	25	234	16	0.17	1.2	0.5		489797.654	4489178.026
2922	40.5598	-111.0682	0.33	0	3	25	2001	13	55	28.95	12.95	0	8	269	18.1	0.05	5.1	7.9		494226.285	4489894.791
2923	40.8803	-111.5858	0.95	0	3	25	2001	15	9	16.39	10.01	0	19	98	21.8	0.11	0.4	2.3		450644.176	4525634.5
2924	40.7207	-111.4242	0.88	0	3	26	2001	17	27	27.21	2.11	0	7	276	7.1	0.12	3.6	15.2		464173.909	4507839.386
2925	40.5482	-111.088	0.68	0	4	4	2001	5	9	40.09	8.69	0	9	261	18	0.07	1.5	5.3		492548.76	4488608.666
2926	40.5793	-111.5715	-0.15	0	4	9	2001	1	22	18.29	8.92	0	14	179	10.6	0.07	0.8	1.4		451631.543	4492214
2927	40.7497	-111.4178	0.3	0	4	11	2001	0	22	27.73	3.78	0	6	328	10.3	0.12	3.3	12		464729.745	4511055.934
2928	40.2933	-111.3457	0.64	0	4	14	2001	7	49	22.27	7.44	0	14	188	15.3	0.17	1.2	4.8		470617.763	4460368.801
2929	40.5503	-111.4168	0.11	0	4	17	2001	5	21	30.06	7.01	0	8	284	3.5	0.02	1.6	1		464709.271	4488921.499
2930	40.706	-111.3913	-0.28	0	4	19	2001	8	56	52.1	12.83	0	7	218	6.7	0.05	1.5	1		466945.238	4506194.722
2931	40.6677	-111.5752	0.24	0	4	21	2001	0	5	14.65	7.8	0	9	145	11.5	0.08	1.3	2.5		451382.536	4502028.711
2932	40.6557	-111.5662	-0.06	0	4	21	2001	0	39	55.36	7.33	0	7	204	10.7	0.11	2.4	2.8		452134.667	4500691.728
2933	40.8025	-111.5672	0.9	0	4	21	2001	4	16	40.6	12.51	0	19	95	19.3	0.1	0.4	2.2		452155.389	4516987.818
2934	40.6733	-111.5647	0.1	0	4	21	2001	12	10	52.03	6.89	0	10	213	10.7	0.09	1.3	2.6		452274.022	4502644.58
2935	40.6678	-111.5688	0.32	0	4	21	2001	12	20	27.7	7.06	0	14	146	11	0.1	0.7	2.3		451923.556	4502036.292
2936	40.287	-111.3257	1.98	1	4	30	2001	21	33	55.03	5.74	0	30	117	15.2	0.17	0.5	1.1		472315.065	4459663.084
2937	40.1527	-111.1795	2.21	1	5	2	2001	11	35	57.97	4.24	0	21	144	29.6	0.17	0.6	16.2		484712.114	4444721.091
2938	40.5053	-111.0687	1.19	0	5	7	2001	9	16	24.9	2.47	0	14	255	18.9	0.14	2	14.3		494179.242	4483845.298
2939	40.6842	-111.5843	0.52	0	5	13	2001	14	25	6.19	7.9	0	14	102	12.6	0.14	0.6	2.9		450625.55	4503865.351
2940	41.077	-111.6222	1.28	0	5	19	2001	18	46	36.52	11.74	0	11	116	18.5	0.09	0.4	2.1		447732.83	4547491.328
2941	40.4313	-111.7552	2.03	0	5	23	2001	20	20	7.78	4.01	0	6	151	16.1	0.39	2.1	22.5		435943.462	4475902.88
2942	40.5063	-111.1397	1.56	1	5	23	2001	22	30	49.84	15.4	0	16	178	14.4	0.2	1.1	0.5		488163.786	4483963.404
2943	40.3777	-111.9307	3.3	1	5	24	2001	2	40	40.92	5.86	0	46	45	6.3	0.34	0.6	1.2		420994.602	4470095.306
2944	40.3757	-111.922	1.51	1	5	24	2001	2	45	36.47	5.71	0	21	66	9.2	0.21	0.5	2.6		421730.825	4469865.571
2945	40.3718	-111.9215	1.14	1	5	24	2001	2	51	16.11	3.53	0	12	105	9.7	0.28	1.1	2.3		421768.761	4469432.229
2946	40.3728	-111.9267	1.18	0	5	24	2001	4	39	4.59	4.55	0	8	134	9.4	0.21	0.9	5.5		421328.461	4469547.841
2947	40.4605	-111.9787	2.15	0	5	24	2001	4	39	27.92	10.38	0	7	155	2.2	0.04	1.4	0.7		417021.709	4479330.169
2948	40.3685	-111.9295	1.67	1	5	24	2001	17	37	30.57	5.05	0	18	65	9.9	0.18	0.5	2.5		421085.737	4469073.037
2949	40.378	-111.919	0.89	0	5	25	2001	23	12	41.75	8.18	0	11	137	9.1	0.12	0.6	1.6		421988.154	4470118.219
2950	40.3742	-111.9312	1.18	1	5	27	2001	21	54	47.52	4.72	0	17	104	9.2	0.19	0.6	1.5		420948.067	4469707.254
2951	41.1197	-111.6028	1.57	1	5	27	2001	22	3	53.17	3.56	0	22	79	16.2	0.22	0.6	1.9		449395.297	4552220.103
2952	40.6983	-111.6043	2.34	1	6	6	2001	3	56	44.74	7.28	0	39	76	12.4	0.26	0.4	0.9		448946.266	4505441.942
2953	40.6693	-111.601	-0.06	0	6	6	2001	4	1	57.22	7.6	0	12	144	12.9	0.08	0.6	2.2		449203.052	4502220.905
2954	40.6693	-111.5988	0.1	0	6	6	2001	6	10	53.21	6.93	0	14	144	13.1	0.09	0.6	2.3		449388.999	4502219.636
2955	40.1742	-111.8217	0.81	0	6	6	2001	20	25	54.34	6.9	0	9	228	23.8	0.15	1.6	13.7		430038.087	4447415.656
2956	40.7297	-111.4167	0.66	0	6	9	2001	17	17	45.63	2.04	0	7	276	8.2	0.16	4.6	30		464812.068	4508835.395
2957	40.485	-111.3485	1.94	1	6	12	2001	20	35	56.29	10.18	0	28	109	11.2	0.26	0.6	1		470463.646	4481648.057
2958	40.5502	-111.9067	0.5	1	6	14	2001	5	4	10.08	5.5	0	13	77	5.6	0.19	0.6	1.8		423228.607	4489221.877
2959	40.5282	-112.1682	1.19	1	6	14	2001	6	5	4.55	0.35	0	15	88	10.7	0.27	0.8	4.3		401054.289	4487040.459

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
2960	40.4808	-111.156	0.32	0	6	15	2001	12	26	6.77	8.42	0	8	275	11.4	0.05	2.9	5.5		486777.748	4481135.224
2961	40.4962	-111.3525	1.57	1	6	16	2001	6	33	1.72	8.47	0	21	110	10.6	0.18	0.5	1		470129.6	4482892.603
2962	40.4943	-111.3473	0.48	0	6	16	2001	9	46	2.89	11.69	0	13	144	11	0.07	0.6	1.4		470569.412	4482679.956
2963	40.5072	-111.3248	0.58	0	6	20	2001	13	26	33.67	9.27	0	9	126	10.9	0.04	0.6	2.5		472481.363	4484104.595
2964	40.5083	-111.3215	0.5	0	6	21	2001	0	30	29.29	10.45	0	10	128	11	0.04	0.5	2.2		472761.4	4484225.671
2965	40.5122	-111.3147	0.2	0	6	21	2001	3	9	35.08	5.14	0	10	143	11.1	0.13	1	5		473339.065	4484656.495
2966	40.5078	-111.328	1.23	0	6	21	2001	4	7	2.21	11.72	0	19	124	10.7	0.1	0.4	0.9		472210.49	4484172.199
2967	40.5045	-111.33	-0.1	0	6	21	2001	6	35	51.84	10.55	0	9	169	10.9	0.04	0.7	2.9		472039.671	4483806.53
2968	40.507	-111.3225	0.23	0	6	21	2001	7	37	36.32	10.55	0	10	127	11.1	0.04	0.5	2.2		472676.149	4484081.68
2969	40.5028	-111.3307	0.14	0	6	21	2001	9	48	54.62	11.33	0	8	170	10.9	0.04	1.4	3.3		471979.654	4483618.052
2970	40.5068	-111.3228	0.63	0	6	21	2001	18	7	53.45	9.72	0	9	127	11.1	0.04	0.5	2.4		472650.65	4484059.573
2971	40.5057	-111.3262	0.42	0	6	21	2001	18	16	48.4	10.22	0	9	125	10.9	0.04	0.6	2.4		472362.132	4483938.533
2972	40.5047	-111.3285	-0.16	0	6	22	2001	2	47	59.7	10.6	0	8	167	10.9	0.04	1.3	3.3		472166.847	4483828.256
2973	40.5078	-111.3252	-0.1	0	6	22	2001	2	52	56.77	8.95	0	7	164	10.8	0.06	1.6	3.4		472447.718	4484171.32
2974	40.5045	-111.327	0.35	0	6	22	2001	2	55	30.11	11.98	0	8	166	11	0.06	0.9	3.8		472293.857	4483805.583
2975	40.5045	-111.3275	-0.08	0	6	22	2001	3	59	32.34	10.6	0	9	167	10.9	0.04	1	2.8		472251.492	4483805.74
2976	40.0178	-111.399	2.73	1	6	22	2001	12	2	28.68	5.9	0	25	99	36.4	0.2	0.5	1		465950.277	4429809.085
2977	40.5093	-111.3185	-0.02	0	6	22	2001	12	14	56.23	8.44	0	10	130	11.1	0.08	0.9	3		473015.972	4484335.749
2978	40.4938	-111.3435	0.64	0	6	22	2001	13	28	57.72	14.73	0	9	114	11.2	0.08	0.8	2.9		470891.213	4482623.195
2979	40.5035	-111.3288	0.43	0	6	22	2001	16	14	32.93	10.26	0	9	133	11	0.03	0.8	2.1		472140.932	4483695.15
2980	40.4995	-111.3365	0.94	0	6	22	2001	16	15	3.81	13.32	0	11	138	10.9	0.09	0.7	2.4		471486.82	4483253.609
2981	40.508	-111.3247	0.2	0	6	24	2001	0	6	12.61	8.07	0	9	126	10.8	0.05	0.6	2.5		472490.162	4484193.364
2982	40.5053	-111.331	0.15	0	6	24	2001	3	40	37.89	8.93	0	7	169	10.7	0.05	1.3	3.3		471955.276	4483895.647
2983	40.5088	-111.3238	0.44	0	6	24	2001	6	5	4.84	9.68	0	10	127	10.8	0.05	0.6	2.1		472566.74	4484281.884
2984	40.5107	-111.3187	0.79	0	6	25	2001	3	43	38.53	7.31	0	13	130	10.9	0.14	0.7	2.8		472999.589	4484491.211
2985	40.514	-111.3132	0.38	0	6	25	2001	3	50	3.82	6.08	0	13	133	11.1	0.12	0.9	2.9		473466.853	4484855.843
2986	40.5062	-111.3278	-0.31	0	6	25	2001	3	58	23.07	10.79	0	10	166	10.8	0.04	1.1	2.2		472226.775	4483994.535
2987	40.5063	-111.3287	0.05	0	6	25	2001	4	35	24.3	11.36	0	9	167	10.8	0.04	1	2.8		472150.563	4484005.919
2988	40.6993	-111.614	0.25	0	6	26	2001	12	7	4.57	7.85	0	10	156	11.6	0.09	0.6	3.1		448127.542	4505558.628
2989	40.7013	-111.5623	0.4	0	6	27	2001	10	3	43.4	2.68	0	13	163	11.4	0.08	0.7	8.5		452496.747	4505751.399
2990	40.699	-111.5662	0.54	0	6	27	2001	10	50	15.34	3.17	0	13	161	11.6	0.09	0.7	6.8		452165.627	4505498.205
2991	40.6918	-111.4222	0.06	0	6	29	2001	21	8	53	3.96	0	5	263	9.2	0.12	3.5	13.6		464327.403	4504630.548
2992	40.508	-111.3253	0.95	0	6	29	2001	23	48	22.63	10.17	0	13	126	10.8	0.05	0.4	1.6		472439.328	4484193.552
2993	40.5028	-111.3312	0.06	0	6	30	2001	0	52	47.79	12.32	0	9	170	10.9	0.04	1.3	2.6		471937.289	4483618.211
2994	40.5065	-111.3257	0.37	0	6	30	2001	1	22	40.75	8.72	0	11	126	10.9	0.07	0.5	2		472404.823	4484027.176
2995	40.5055	-111.3255	0.2	0	6	30	2001	2	32	56.13	11.2	0	10	125	11	0.05	0.6	2.7		472421.359	4483916.113
2996	40.4995	-111.3218	-0.19	0	6	30	2001	4	54	0.05	5.25	0	7	166	11.2	0.33	2.1	15		472732.42	4483248.962
2997	40.5173	-112.1665	1.55	1	6	30	2001	16	29	21.02	0.12	0	13	88	9.7	0.29	0.8	4.4		401182.273	4485828.61
2998	40.8185	-111.4265	0.17	0	7	1	2001	18	23	30.82	3.69	0	7	338	17.9	0.15	3.3	25.1		464032.433	4518696.664
2999	40.4658	-111.8928	1.5	1	7	2	2001	1	20	44.02	0.77	0	21	156	5.3	0.24	0.8	27.7		424310.72	4479841.281

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3000	40.2845	-111.3835	1.78	1	7	3	2001	6	36	10.15	5.48	0	22	100	17.9	0.17	0.5	1.5		467400.775	4459405.256
3001	40.8753	-111.5872	0.96	0	7	3	2001	6	59	39.85	9.03	0	13	97	21.4	0.12	0.4	3.2		450522.497	4525080.251
3002	40.4782	-111.8933	1.52	1	7	4	2001	0	43	3.37	1.45	0	12	71	5.7	0.25	0.7	999.9		424282.261	4481218.128
3003	40.7465	-112.0743	3.32	1	7	8	2001	13	55	51.41	9.39	0	56	67	5.2	0.31	0.4	0.6		409303.652	4511171.803
3004	40.5048	-111.3328	0.08	0	7	12	2001	10	35	3.57	8.5	0	9	170	10.7	0.06	1.3	2.6		471802.557	4483840.721
3005	40.5098	-111.321	0.85	0	7	12	2001	11	36	21.77	8.58	0	13	128	10.9	0.16	0.8	2.7		472804.368	4484392.017
3006	40.8548	-111.619	1.7	1	7	12	2001	22	47	23.75	7.74	0	29	90	21.2	0.19	0.4	1		447826.927	4522823.048
3007	40.8567	-111.6162	0.43	0	7	12	2001	22	52	52.43	9.93	0	12	166	21.5	0.1	0.6	2.7		448064.413	4523032.299
3008	40.727	-111.4322	0.99	0	7	18	2001	1	6	40.72	2.09	0	7	282	7.7	0.12	4.2	21		463501.703	4508542.009
3009	40.3592	-111.3045	0.65	0	7	25	2001	9	15	53.11	7.39	0	7	200	7.2	0.16	1.3	2.6		474144.656	4467670.637
3010	39.942	-111.9558	2.73	1	8	2	2001	13	59	46.51	1.17	0	25	63	15.2	0.35	0.7	5.5		418343.54	4421757.109
3011	40.4797	-111.574	0.38	0	8	3	2001	21	42	44.26	1.92	0	8	153	8.4	0.09	0.6	19.2		451347.979	4481159.648
3012	40.836	-111.5277	0.99	0	8	4	2001	8	56	9.3	6.3	0	15	107	21.1	0.13	0.4	5.1		455509.708	4520685.738
3013	40.8365	-111.5253	1.07	0	8	4	2001	9	11	22.41	7.72	0	18	108	21.1	0.13	0.4	3.2		455712.385	4520740.026
3014	40.7548	-111.4733	0.48	0	8	10	2001	14	42	42.88	3.31	0	5	308	11.1	0.17	24.2	11.8		460047.529	4511645.844
3015	40.7927	-111.5257	2.88	0	8	14	2001	21	20	16.55	8.75	0	6	320	16.6	0.17	4.9	7.9		455649.502	4515878.139
3016	39.9453	-111.9647	1.98	1	8	16	2001	6	38	23.16	1.19	0	23	63	16.1	0.38	0.9	19.7		417587.137	4422131.564
3017	40.8162	-111.5173	1.17	0	8	17	2001	0	54	46.46	3.8	0	5	321	18.8	0.3	39.7	54.1		456373.56	4518482.575
3018	40.6713	-111.5895	0.75	0	8	23	2001	20	37	32.38	10.6	0	12	157	12.8	0.05	0.6	1.4		450176.535	4502436.332
3019	40.5023	-111.3102	0.16	0	8	24	2001	6	31	43.51	10.23	0	7	133	10.9	0.02	0.6	2.9		473716.435	4483556.242
3020	40.5008	-111.312	0.12	0	8	24	2001	9	4	36.05	9.09	0	6	132	10.9	0.02	0.7	3.3		473563.33	4483390.28
3021	40.9108	-111.4322	1.99	1	8	30	2001	10	47	11.61	4.88	0	24	141	23.1	0.13	0.4	2		463602.309	4528944.996
3022	40.4572	-111.394	0.34	0	9	1	2001	10	32	48.93	2.19	0	7	134	12.2	0.06	0.7	25		466593.611	4478578.488
3023	40.7233	-111.4513	1.94	0	9	8	2001	0	2	16.09	1.97	0	11	100	7.3	0.22	1.3	15.3		461886.636	4508139.406
3024	40.7362	-111.4517	2	0	9	15	2001	2	1	6.71	2.64	0	8	190	8.7	0.19	1.8	13.7		461860.222	4509571.541
3025	40.769	-111.4567	1.22	0	9	15	2001	21	33	45.85	2.92	0	5	338	12.4	0.17	85.3	28.9		461456.986	4513214.697
3026	40.429	-111.3557	1.64	0	9	17	2001	18	44	37.44	5.05	0	6	161	8.7	0.27	3	18.7		469828.384	4475434.528
3027	40.7292	-111.4495	1.65	0	9	19	2001	2	8	5.98	1.84	0	13	102	7.9	0.19	0.7	19.9		462042.004	4508793.554
3028	40.5963	-111.3468	-0.02	0	9	24	2001	23	48	12.7	3.44	0	7	108	1.9	0.02	0.4	1		470656.332	4494001.894
3029	40.7168	-111.4143	1.12	0	9	25	2001	21	9	58.98	3.94	0	8	184	6.8	0.28	2.6	6.5		465007.98	4507402.477
3030	40.7198	-111.4192	0.92	0	9	25	2001	23	53	29.38	5.49	0	6	272	7.1	0.33	9.9	14.9		464595.711	4507737.454
3031	40.7287	-111.7568	1.12	0	9	27	2001	16	42	12.32	1.4	0	6	185	4.1	0.08	0.7	999.9		436091.417	4508916.301
3032	40.3092	-111.3093	2.21	1	10	1	2001	13	48	16.76	7.36	0	25	122	12.4	0.17	0.5	1		473717.692	4462122.205
3033	40.3917	-111.1922	0.91	0	10	1	2001	21	30	53.25	16.73	0	5	279	5.9	0.23	8	6.6		483687.988	4471251.291
3034	40.7207	-111.456	1.9	0	10	2	2001	21	46	47.56	1.97	0	11	99	7.1	0.24	1.1	17.5		461488.21	4507852.844
3035	40.465	-111.2822	1.41	0	10	3	2001	20	57	57.74	3.97	0	5	146	6.2	0.05	1.6	7.7		476075.668	4479407.986
3036	40.465	-111.9007	1.81	1	10	6	2001	21	18	37.36	1.18	0	24	77	4.6	0.36	0.7	4.5		423640.063	4479759.284
3037	40.4898	-111.4708	-0.07	0	10	11	2001	11	38	44.78	11.03	0	10	94	9.7	0.09	0.4	1.8		460101.188	4482228.974
3038	40.7273	-111.4542	1.43	0	10	11	2001	23	15	4.36	1.83	0	12	101	7.8	0.21	0.8	20.9		461644.02	4508584.687
3039	40.7265	-112.0687	1.13	0	10	19	2001	16	19	57.13	9.54	0	13	88	9.2	0.12	0.5	1.8		409749.405	4508945.885

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3040	40.6412	-111.5852	-0.11	0	10	21	2001	3	21	33.35	8.62	0	12	132	12.4	0.1	0.7	2.1		450517.73	4499092.691
3041	40.6437	-111.5815	0.45	0	10	21	2001	13	57	28.69	9.23	0	18	133	12.1	0.08	0.5	1.1		450832.424	4499368.125
3042	40.6435	-111.5815	0.21	0	10	21	2001	13	58	16.06	9.26	0	16	133	12.1	0.09	0.5	1.5		450832.277	4499345.924
3043	40.5228	-111.5185	1.91	1	10	23	2001	21	41	50.13	4.18	0	26	64	10.6	0.16	0.4	3		456080.278	4485914.658
3044	40.521	-111.5242	0.61	0	10	26	2001	16	21	54.26	4.73	0	11	106	11.8	0.08	0.4	3.8		455596.268	4485717.71
3045	40.5217	-111.5202	1.39	0	10	26	2001	17	29	10.29	1.85	0	16	77	11.5	0.1	0.4	12.7		455935.558	4485793.405
3046	40.8835	-111.6557	0.84	0	10	27	2001	13	32	32.19	13.7	0	8	104	17.2	0.14	0.7	3.1		444757.467	4526031.488
3047	40.5305	-111.4178	-0.03	0	10	27	2001	15	0	21.35	1.47	0	6	319	9.1	0.21	2.4	999.9		464614.183	4486724.078
3048	40.6198	-111.38	0.26	0	10	28	2001	22	7	50.8	0.3	0	6	114	2	0.1	0.4	0.4		467858.446	4496622.042
3049	41.0765	-111.5613	1.59	0	10	29	2001	16	30	40.55	2.41	0	7	110	13.6	0.12	0.6	12.7		452848.329	4547401.104
3050	40.4632	-111.2413	1.21	0	11	1	2001	23	25	39.52	10.46	0	6	230	5.8	0.05	1.8	3		479542.543	4479197.907
3051	40.6253	-111.3522	-0.07	0	11	14	2001	3	1	2.53	0.04	0	6	287	4.5	0.18	2	1.2		470212.303	4497222.774
3052	40.6253	-111.3713	-0.17	0	11	19	2001	1	5	33.82	2.01	0	8	178	2.6	0.3	1.5	6.8		468596.896	4497229.415
3053	40.5043	-112.1053	1.47	1	11	20	2001	5	0	58.63	11.27	0	23	65	6.5	0.15	0.5	0.8		406348.728	4484318.781
3054	40.5095	-112.0932	0.75	0	11	20	2001	7	43	9.66	8.71	0	21	80	7.1	0.16	0.4	0.9		407381.127	4484883.22
3055	39.9645	-111.9353	1.49	1	11	20	2001	17	53	5.03	2.02	0	11	70	11.9	0.37	1	3.4		420121.116	4424235.87
3056	40.653	-111.5798	1.75	1	11	22	2001	21	53	7.69	10.84	0	26	69	11.9	0.13	0.4	1.2		450982.97	4500399.509
3057	40.6137	-111.2975	0.04	0	12	11	2001	17	17	18.79	5.59	0	5	332	4	0.1	16.4	11.4		474834.269	4495918.068
3058	40.6457	-111.5838	0.61	1	12	13	2001	11	41	26.57	7.62	0	18	135	12.3	0.08	0.5	1.2		450639.425	4499591.42
3059	40.5682	-111.2702	0.25	0	12	21	2001	23	6	33.7	2.38	0	5	328	8.1	0.29	86.6	82.3		477128.1	4490860.04
3060	40.6343	-111.5848	-0.2	0	12	22	2001	18	43	48.71	7.08	0	11	192	11.9	0.07	1.2	2.1		450546.461	4498326.543
3061	40.6897	-111.4123	0.22	0	12	23	2001	7	40	44.22	11.31	0	11	185	4.2	0.11	1.1	1		465162.784	4504393.468
3062	40.7028	-111.4152	0.77	0	12	23	2001	7	40	29.29	10.63	0	13	176	5.3	0.1	0.7	1		464924.62	4505848.775
3063	40.6135	-111.5927	-0.24	0	12	24	2001	12	59	49.3	10.52	0	12	200	12.1	0.31	3.3	3		449862.844	4496022.148
3064	39.9567	-111.112	1.48	0	12	27	2001	17	27	47.7	17.64	0	8	200	29.9	0.1	0.9	2.4		490433.677	4422957.365
3065	40.403	-111.9568	1.5	0	12	28	2001	18	42	38.22	1.67	0	10	125	5.8	0.14	0.6	17.9		418809.38	4472927.257
3066	40.6342	-111.5977	-0.18	0	12	29	2001	3	48	32.3	5.37	0	9	329	12.9	0.06	1.8	4.6		449455.493	4498322.774
3067	40.6317	-111.5845	0.06	0	12	29	2001	6	13	24.16	6.93	0	12	125	11.8	0.08	0.5	1.8		450569.913	4498037.766
3068	39.9493	-111.9365	1.28	1	12	31	2001	3	37	56.5	1.64	0	13	140	11.8	0.25	0.8	3.8		420000.919	4422549.866
3069	40.9403	-111.701	0.94	0	12	31	2001	14	27	51.3	6.71	0	17	94	14.9	0.14	0.4	2.6		440991.453	4532366.375
3070	40.4335	-111.0437	0.29	0	12	31	2001	22	20	10.35	3.81	0	8	292	18.1	0.12	2	16		496293.477	4475874.202
3071	40.8803	-111.5647	0.92	0	1	2	2002	5	56	45.98	12.03	0	12	209	23.4	0.13	1	3.3		452421.938	4525622.818
3072	39.9555	-111.8663	1.28	0	1	7	2002	7	0	15.45	1.72	0	8	150	9.9	0.15	1.3	29.5		426004.413	4423177.43
3073	40.433	-111.1688	0.81	0	1	10	2002	17	54	54.58	5.02	0	6	290	7.7	0.05	26.4	40.9		485682.702	4475831.464
3074	40.681	-111.245	0.44	0	1	11	2002	0	24	33.01	3.78	0	6	327	11.3	0.19	34.4	17		479296.094	4503374.873
3075	40.5847	-111.3437	0.52	0	1	12	2002	0	35	58.46	0	0	5	236	3.2	0.14	2.3	1.9		470913.606	4492713.244
3076	40.6208	-111.3547	0.05	0	1	12	2002	0	53	1.53	0.29	0	8	122	1.2	0.07	0.6	0.3		469998.849	4496724.112
3077	40.6227	-111.3517	0.55	0	1	15	2002	22	48	3.57	1.66	0	9	124	1.2	0.35	1.7	6.1		470253.438	4496933.999
3078	40.6257	-111.354	0.85	0	1	18	2002	22	49	1.33	0.11	0	8	147	1.6	0.07	0.5	0.3		470060.244	4497267.786
3079	39.8192	-111.9857	2.36	1	1	19	2002	14	37	4.97	1.99	0	29	67	16.9	0.3	0.6	27.1		415638.699	4408155.217

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3080	40.6712	-111.507	0.07	0	1	21	2002	5	32	36.69	10.64	0	15	153	5.9	0.1	0.6	0.9		457149.25	4502381.747
3081	40.5962	-111.3797	0.27	0	1	21	2002	23	30	4.66	1.29	0	6	255	2.4	0.33	11.9	5.2		467872.522	4494002.278
3082	40.6218	-111.3578	0.92	0	1	30	2002	0	29	9.21	0.09	0	8	122	1.5	0.07	0.6	0.3		469737.096	4496836.176
3083	40.6948	-111.3957	-0.28	0	1	30	2002	9	28	37.5	12.1	0	10	211	5.5	0.09	1.4	0.8		466567.951	4504953.14
3084	40.731	-111.4543	1.04	1	2	5	2002	0	12	58.3	1.84	0	12	102	8.2	0.19	1	29.9		461637.7	4508995.449
3085	39.9157	-111.5637	1.67	1	2	6	2002	3	52	11.39	2.43	0	9	236	12.6	0.26	1.8	19.7		451823.48	4418552.881
3086	39.9148	-111.5663	2.17	1	2	6	2002	12	41	22.04	5.64	0	18	75	12.6	0.19	0.5	1.2		451600.637	4418454.397
3087	40.7312	-111.264	0.98	0	2	14	2002	15	3	58.99	1.65	0	15	165	7.2	0.22	0.8	41		477707.228	4508951.922
3088	39.9963	-111.3818	1.19	0	2	19	2002	5	41	21.5	3.15	0	12	201	21.5	0.12	1.3	14		467407.865	4427416.351
3089	40.8025	-111.577	0.95	0	3	4	2002	8	5	41.22	9.73	0	19	105	19.1	0.12	0.5	2		451328.733	4516993.212
3090	40.7718	-111.5235	1.64	0	3	6	2002	0	51	41.85	4.05	0	7	311	14.5	0.08	2.6	10.5		455821.259	4513557.004
3091	40.5457	-111.3518	-0.2	0	3	9	2002	2	7	53.86	7.88	0	10	156	6.2	0.04	0.6	1.7		470210.838	4488386.895
3092	41.0022	-111.0643	2.3	1	3	11	2002	20	22	4.58	12.31	0	31	179	31.6	0.3	1.1	0.9		494592.451	4539003.273
3093	40.6668	-111.53	1.04	1	3	20	2002	19	57	54.66	1.59	0	18	121	7.7	0.13	0.5	20.1		455202.378	4501904.795
3094	40.6907	-111.57	0.24	0	3	23	2002	11	47	34.63	2.12	0	15	157	11.6	0.1	0.6	10.9		451838.613	4504578.944
3095	40.2202	-111.1778	0.85	0	3	24	2002	2	43	7.71	3.24	0	12	239	22.4	0.21	2.6	23		484871.904	4452212.888
3096	40.4202	-111.9535	1.59	0	4	10	2002	20	6	28.52	4.54	0	25	58	3.9	0.2	0.4	1.1		419110.01	4474833.441
3097	40.5377	-111.3003	-0.16	0	4	10	2002	23	43	38.95	12.7	0	7	141	10.4	0.07	1.1	2		474568.654	4487482.756
3098	40.5407	-111.2952	-0.11	0	4	10	2002	23	49	10.74	12.19	0	6	144	10.7	0.07	0.8	2.4		475001.671	4487814.299
3099	40.5413	-111.2918	-0.23	0	4	11	2002	2	7	15.47	11.85	0	9	146	10.9	0.06	0.8	1.8		475289.813	4487879.941
3100	40.541	-111.2913	-0.12	0	4	14	2002	7	5	1.41	11.92	0	9	146	9.2	0.06	0.5	1.6		475332.044	4487846.501
3101	40.5478	-111.5607	-0.09	0	4	17	2002	12	43	1.45	2.28	0	10	231	11.1	0.17	2.2	18.2		452523.345	4488711.566
3102	39.967	-111.9308	1.5	1	4	20	2002	7	44	2.65	0.48	0	19	61	12.3	0.27	0.6	216.6		420508.339	4424509.33
3103	40.4298	-111.9667	0.99	0	4	23	2002	4	36	1.48	5.11	0	14	89	3	0.35	0.9	1.8		418001.833	4475911.218
3104	39.9892	-111.3697	1.17	0	4	27	2002	6	6	5.59	3.9	0	10	241	22.6	0.13	1.9	13.7		468437.509	4426623.965
3105	40.0127	-111.954	1.16	1	5	7	2002	10	8	42.2	3.19	0	19	70	12.1	0.2	0.5	2.1		418581.275	4429602.633
3106	40.9292	-111.6045	1.05	0	5	9	2002	11	20	38.57	5.73	0	28	93	22.3	0.16	0.3	1.8		449106.126	4531073.529
3107	40.796	-111.1273	0.57	0	5	12	2002	12	18	19.84	8.8	0	12	286	15.6	0.1	1.5	3.2		489260.933	4516119.323
3108	40.3808	-111.4277	0.12	0	5	17	2002	20	22	53.25	2.89	0	5	217	9.2	0.04	1.7	14.4		463695.209	4470111.477
3109	40.3305	-111.3953	0.63	0	5	23	2002	17	16	23.69	3.78	0	8	258	14.5	0.06	1.9	9		466420.508	4464515.506
3110	40.9535	-111.551	0.77	0	5	26	2002	4	59	31.94	7.8	0	16	125	21.8	0.13	0.4	3		453627.402	4533741.294
3111	40.752	-111.6237	0.56	0	5	30	2002	7	8	40.31	9.78	0	18	134	12.6	0.16	0.7	1.8		447349.603	4511414.373
3112	40.7515	-111.4382	0.76	0	6	4	2002	19	46	14.56	2.35	0	8	292	10.4	0.12	3.9	23.2		463008.59	4511264.141
3113	40.5198	-111.5015	0.77	0	6	4	2002	23	50	27.86	2.05	0	15	112	10.1	0.12	0.4	10.7		457518.381	4485573.326
3114	40.6277	-111.5867	-0.36	0	6	7	2002	12	51	46.77	3.01	0	7	143	11.9	0.12	1.2	9.8		450380.902	4497594.991
3115	40.6347	-111.5828	0.5	0	6	9	2002	16	10	4.73	5.48	0	15	128	11.8	0.06	0.5	2.2		450715.886	4498369.822
3116	40.8008	-111.797	0.97	0	6	13	2002	5	53	24.28	7.32	0	8	207	2.5	0.09	1.2	0.9		432769.363	4516949.909
3117	40.7487	-111.4432	0.74	0	6	19	2002	19	16	17.02	1.65	0	7	291	10.1	0.1	5.2	33		462584.936	4510955.446
3118	40.785	-111.4695	0.91	0	6	22	2002	15	46	13.27	3.03	0	7	305	14.3	0.16	11.5	28.1		460386.237	4514996.491
3119	40.6983	-112.0413	0.46	0	6	27	2002	0	1	51.33	8.18	0	14	114	8.2	0.14	0.5	1.8		412026.233	4505787.694

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3120	40.6122	-111.4042	-0.43	0	6	27	2002	23	49	23.03	8.33	0	9	76	0.3	0.06	0.7	1.3		465807.657	4495787.543
3121	40.4178	-111.9525	1.06	0	7	1	2002	0	38	58.35	5.02	0	18	93	4.2	0.2	0.5	1.4		419191.974	4474566.124
3122	40.1762	-111.1275	1.83	1	7	2	2002	2	12	40.66	7.78	0	25	155	28.5	0.18	0.6	1		489144.662	4447321.786
3123	41.1028	-112.1125	0.37	0	7	8	2002	5	50	36.77	3.54	0	11	115	13.7	0.11	0.4	5.9		406581.759	4550765.213
3124	40.7607	-111.58	0.53	0	7	13	2002	21	14	46.81	2.8	0	14	134	16.2	0.24	0.9	23.7		451044.994	4512354.826
3125	40.0292	-111.7455	1.32	1	7	17	2002	7	1	7.43	1.47	0	20	87	9.2	0.23	0.5	1.9		436391.144	4431264.31
3126	40.7692	-111.9867	0.66	0	7	25	2002	19	36	31.31	1.54	0	12	108	8.9	0.13	0.5	999.9		416727.613	4513604.838
3127	40.6672	-111.5922	0.23	0	7	27	2002	6	17	30.31	6.09	0	15	143	12.9	0.1	0.6	2.1		449945.269	4501982.749
3128	40.6432	-111.5815	-0.06	0	7	28	2002	11	29	36.78	6.79	0	11	176	12	0.11	1.6	2.8		450832.057	4499312.623
3129	39.8955	-111.6557	2.43	1	8	3	2002	23	26	0.08	7.85	0	32	66	11.6	0.15	0.4	0.8		443944.199	4416364.579
3130	41.0578	-111.6527	1.42	1	8	4	2002	1	37	37.39	2.87	0	14	124	24.6	0.2	0.6	2.6		445154.747	4545378.633
3131	40.4723	-111.9012	1.75	1	8	9	2002	20	45	51.73	4.42	0	21	71	4.8	0.21	0.5	1.7		423605.946	4480570.027
3132	40.6352	-111.5838	0.61	0	8	9	2002	23	10	4.77	6.43	0	5	330	11.9	0.03	3.2	8.6		450631.689	4498425.884
3133	40.3692	-111.9377	1.88	1	8	11	2002	4	22	46.54	7.24	0	29	65	9.7	0.2	0.4	1.2		420390.373	4469158.085
3134	40.3705	-111.9325	2.19	1	8	11	2002	4	29	47.82	6.4	0	27	65	9.6	0.18	0.4	0.9		420833.375	4469297.717
3135	40.734	-111.4538	1.17	0	8	11	2002	20	54	13.98	2.79	0	9	289	8.5	0.25	4.6	15.6		461681.643	4509328.245
3136	40.5317	-111.394	0.11	0	8	14	2002	11	51	37.08	2.01	0	11	108	5.7	0.14	0.8	11.1		466630.539	4486847.999
3137	40.6545	-111.3243	0.29	0	8	16	2002	22	4	14.51	5.75	0	7	312	4.9	0.3	4.5	5.4		472583.929	4500454.986
3138	39.954	-111.943	1.74	1	8	19	2002	2	11	56.64	4.72	0	21	61	11.2	0.19	0.4	1		419451.171	4423077.377
3139	40.5332	-112.1505	1.26	1	8	24	2002	17	18	45.84	2.72	0	13	86	10.6	0.16	0.6	1.7		402560.742	4487575.763
3140	40.6448	-111.503	0.38	0	8	26	2002	23	0	43.12	1.55	0	7	297	5.6	0.23	4.5	38.1		457470.562	4499449.311
3141	40.696	-111.3988	1.25	0	9	11	2002	22	13	39.51	1.89	0	12	100	5.4	0.19	0.7	14.2		466306.641	4505087.529
3142	40.6767	-111.666	0.53	1	9	12	2002	10	10	9.05	7.21	0	15	136	7.3	0.21	0.9	2		443715.393	4503081.925
3143	40.6495	-111.584	1.66	1	9	14	2002	4	2	32.56	8.67	0	36	69	12.2	0.21	0.4	0.8		450625.315	4500013.346
3144	40.4513	-111.4893	0.28	0	9	14	2002	20	8	55.37	10.66	0	7	199	17.1	0.07	0.8	3.4		458509.677	4477964.007
3145	40.4557	-111.4957	0.14	0	9	14	2002	20	24	33.86	11.51	0	11	107	5.3	0.16	0.7	2.3		457969.727	4478455.432
3146	40.4177	-111.9582	2.7	1	9	21	2002	20	14	15.02	11.55	0	37	60	4.2	0.15	0.4	0.6		418708.271	4474560.253
3147	40.6985	-111.629	0.77	0	9	23	2002	19	9	7.92	7.58	0	10	153	10.3	0.1	0.9	1.8		446859.656	4505478.789
3148	40.619	-111.5857	0.09	0	9	25	2002	3	40	47.4	12.4	0	10	194	11.6	0.15	2.2	1.7		450459.048	4496628.701
3149	40.485	-111.3328	0.99	0	9	25	2002	22	15	9.24	15.18	0	7	299	12.5	0.19	6.5	6.3		471794.267	4481642.92
3150	40.7533	-111.473	0.87	0	9	30	2002	23	40	37.65	6.52	0	9	299	10.9	0.17	2.3	6.1		460071.955	4511479.2
3151	40.5315	-111.294	1.33	0	10	1	2002	18	56	55.74	2.76	0	8	256	10.1	0.21	3.9	18.5		475099.885	4486792.753
3152	40.6177	-111.4132	0.43	0	10	2	2002	19	53	28.36	0.16	0	5	211	1.3	0.06	0.7	0.4		465049.188	4496401.592
3153	40.8288	-111.9008	1.41	1	10	8	2002	21	47	33.68	1.38	0	14	92	4.1	0.26	281.3	999.9		424045.195	4520142.908
3154	40.4073	-111.952	1.95	1	10	10	2002	6	52	43.83	6.2	0	34	60	5.3	0.23	0.5	0.9		419221.838	4473400.161
3155	40.4062	-111.9602	1.4	1	10	10	2002	16	8	5.47	6.79	0	20	99	5.5	0.23	0.7	2.2		418524.723	4473285.587
3156	40.4067	-111.9575	1.08	1	10	12	2002	12	43	26.89	4.68	0	20	99	5.4	0.25	0.7	1.9		418754.429	4473338.602
3157	40.655	-111.5752	0.96	0	10	16	2002	21	55	4.36	3.4	0	7	329	11.4	0.18	2.7	15.4		451373.314	4500618.963
3158	40.7395	-111.4455	0.56	0	10	17	2002	0	29	9.09	1.95	0	7	290	9.1	0.15	6.4	38.3		462385.586	4509935.183
3159	40.0365	-111.3342	1.76	1	10	18	2002	0	14	6.55	1.57	0	23	110	25.6	0.19	0.6	1.6		471487.955	4431861.866

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3160	40.8238	-111.8827	1.26	1	10	18	2002	20	3	33.74	1.37	0	8	118	3.3	0.22	999.9	0		425565.801	4519572.337
3161	40.0322	-111.3385	1.83	1	10	19	2002	8	28	7.07	3.73	0	23	138	25.2	0.15	0.5	1.2		471119.289	4431385.989
3162	40.615	-111.5873	0.17	0	10	19	2002	18	6	57.04	6.02	0	8	143	11.7	0.19	1.4	10		450320.749	4496185.591
3163	40.6403	-111.4603	1.01	0	10	22	2002	19	14	5.62	8.28	0	6	233	2.7	0.19	5.9	12.3		461078.313	4498930.028
3164	40.9605	-111.147	0.86	0	10	25	2002	8	43	23.65	6.84	0	13	241	28	0.15	2.1	14		487629.695	4534382.605
3165	40.7242	-111.419	0.89	0	10	25	2002	19	14	39.15	2.27	0	6	275	7.5	0.11	3.4	18.5		464614.933	4508225.793
3166	40.812	-111.886	1.14	1	10	31	2002	0	35	40.03	1.4	0	8	108	2	0.15	0.6	999.9		425274.282	4518265.251
3167	40.3598	-111.9032	1.37	0	11	2	2002	16	16	53.12	1.48	0	13	102	11.4	0.15	0.7	1.4		423308.77	4468084.209
3168	40.7555	-111.6228	2.49	1	11	3	2002	22	29	43.49	11.37	0	13	101	12.9	0.17	0.6	1.8		447428.335	4511802.354
3169	40.3708	-111.3295	2.32	1	11	3	2002	22	33	58.36	14.77	0	7	271	17.4	0.23	1.9	3.8		472026.678	4468965.814
3170	40.8247	-112.1483	0.5	1	11	3	2002	23	3	28.25	8.75	0	6	190	4.3	0.13	0.9	1.4		403169.842	4519931.783
3171	39.9187	-111.901	0.73	1	11	3	2002	23	59	32.54	2.34	0	7	114	10	0.16	0.8	16.1		422999.211	4419122.302
3172	40.7223	-111.6223	-0.25	0	11	4	2002	0	5	9.94	6.97	0	5	185	17	0.03	0.9	16.8		447444.417	4508116.674
3173	40.8235	-112.1447	0.94	1	11	4	2002	0	13	37.46	7.24	0	9	118	4.7	0.13	0.6	1.6		403471.677	4519794.6
3174	40.7487	-111.5818	0.7	0	11	4	2002	0	17	22.78	4.43	0	18	97	15.6	0.11	0.5	3.9		450884.233	4511023.764
3175	40.761	-111.5772	1.4	1	11	4	2002	0	18	57.98	2.42	0	22	88	16.3	0.15	0.4	13.3		451281.548	4512386.569
3176	40.749	-111.5717	0.28	0	11	4	2002	0	23	15.6	3.76	0	12	185	15.1	0.37	2.5	23.1		451737.1	4511051.463
3177	40.765	-111.5735	1.7	0	11	4	2002	0	23	40.62	1.33	0	28	90	16.4	0.26	0.5	2.3		451596.75	4512828.545
3178	40.746	-111.5823	0.51	0	11	4	2002	0	25	33.38	7.86	0	14	99	15.4	0.12	0.4	2.2		450840.034	4510724.329
3179	41.0487	-111.6697	0.95	1	11	4	2002	0	28	10.73	5.73	0	7	124	23.2	0.13	0.5	10.5		443718.502	4544379.255
3180	40.7393	-111.5778	-0.12	1	11	4	2002	0	31	29.51	2.94	0	10	202	15.5	0.24	1.2	25.4		451215.048	4509978.083
3181	39.9752	-111.9727	-0.2	0	11	4	2002	0	34	23.29	11.48	0	5	134	9	0.3	3.5	7.1		416939.886	4425457.653
3182	40.6125	-111.6997	-0.44	0	11	4	2002	0	34	29.52	5.84	0	5	241	20.9	0.2	15.4	34.6		440810.647	4495977.599
3183	40.3987	-111.696	0.55	0	11	4	2002	1	43	34.65	2.35	0	20	85	14.4	0.22	0.4	16		440936.385	4472243.052
3184	40.7548	-111.5773	0.98	1	11	4	2002	4	40	57.48	2.55	0	13	101	15.9	0.08	0.4	12.4		451268.58	4511698.39
3185	40.7497	-111.5735	0.91	1	11	4	2002	4	42	29.27	6.67	0	15	87	16.2	0.24	1	5.3		451585.651	4511130.158
3186	40.731	-111.582	-9.99	0	11	4	2002	4	42	23.74	8.23	0	8	197	14.9	0.17	1	5.7		450854.323	4509059.082
3187	40.4602	-111.9663	1.36	1	11	4	2002	7	23	26.46	8.49	0	34	73	1.2	0.2	0.4	0.7		418072.685	4479285.287
3188	40.922	-111.587	0.19	0	11	4	2002	9	57	50.15	8.96	0	12	120	24	0.14	0.7	3.4		450574.124	4530264.229
3189	40.3093	-111.391	0.93	0	11	4	2002	11	21	50.71	7.24	0	13	268	16.2	0.14	1	2.8		466775.389	4462160.752
3190	40.3155	-111.3927	0.56	0	11	4	2002	11	22	3.77	8.4	0	10	266	15.8	0.16	1.1	3		466633.986	4462849.57
3191	40.3163	-111.3943	0.37	0	11	4	2002	11	22	18.93	5.43	0	9	266	15.6	0.16	0.9	5.6		466498.436	4462938.971
3192	40.4587	-111.9607	0.91	1	11	4	2002	12	39	28.55	8.88	0	23	73	0.7	0.19	0.4	0.8		418545.674	4479113.603
3193	40.4662	-111.9603	1.19	1	11	4	2002	18	30	51.84	6.39	0	19	93	1.4	0.19	0.5	1.6		418588.644	4479945.746
3194	40.4687	-111.9722	2.48	1	11	4	2002	18	52	50.51	5.81	0	46	47	2.2	0.27	0.4	0.9		417582.839	4480234.294
3195	40.4125	-111.6928	0.59	0	11	6	2002	6	42	59.65	1.96	0	21	83	14.1	0.21	0.4	16.6		441219.95	4473772.709
3196	40.8217	-111.6662	1.35	1	11	6	2002	12	59	12.61	12.37	0	13	118	12.9	0.09	0.5	1		443820.66	4519177.89
3197	39.8298	-111.6465	1.54	0	11	8	2002	21	36	45.41	2.17	0	6	120	13.9	0.25	1.2	48.6		444677.974	4409066.878
3198	39.7767	-111.6643	2.41	1	11	8	2002	21	37	17.48	3.3	0	13	76	16.5	0.2	0.7	1.9		443111.044	4403184.586
3199	39.7862	-111.6555	2.74	1	11	9	2002	1	32	55.4	2.65	0	16	177	16.2	0.16	0.8	14.1		443872.378	4404233.413

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3200	39.7625	-111.6705	1.79	1	11	9	2002	4	58	41.95	2.95	0	11	94	17.4	0.19	0.6	14.7		442568.289	4401612.525
3201	39.7637	-111.6792	1.42	0	11	9	2002	7	47	0.65	2.95	0	10	93	16.9	0.21	0.8	16		441824.093	4401751.324
3202	39.7743	-111.6638	2.97	1	11	9	2002	8	9	51.68	3.56	0	24	71	16.7	0.17	0.5	1.7		443151.889	4402917.899
3203	40.9038	-111.6403	0.7	0	11	9	2002	10	24	27.53	9.86	0	10	103	19.7	0.12	0.5	4		446071.408	4528275.355
3204	41.0888	-111.476	1.96	1	11	11	2002	6	20	27.76	8.57	0	26	95	6.5	0.14	0.4	1.5		460021.384	4548723.925
3205	39.978	-111.8038	1.24	1	11	11	2002	13	57	41.02	3.52	0	8	100	10.1	0.14	0.5	5.8		431365.462	4425624.769
3206	39.9775	-111.81	1.88	1	11	12	2002	0	56	29.6	0.08	0	26	88	10.1	0.22	0.6	2.4		430835.548	4425574.063
3207	39.9718	-111.805	1.73	1	11	12	2002	2	2	59.57	1.02	0	13	101	9.4	0.28	0.9	17.1		431256.784	4424937.545
3208	39.9727	-111.8075	1.07	1	11	12	2002	13	43	43.66	1.82	0	12	99	9.5	0.19	0.8	21.4		431044.197	4425039.367
3209	39.9705	-111.8042	1.28	1	11	12	2002	13	53	36.06	1.88	0	13	102	9.2	0.16	0.6	16.5		431323.799	4424792.639
3210	39.9127	-111.7742	0.86	1	11	13	2002	8	37	57.32	8.44	0	10	162	3	0.16	2.2	2.9		433830.079	4418354.695
3211	40.5378	-111.551	0.76	1	11	14	2002	20	54	6.13	5.2	0	9	111	11.1	0.07	0.4	3		453337.747	4487596.371
3212	41.0797	-111.6528	2.66	1	11	15	2002	8	11	56.9	9.6	0	41	83	16.6	0.13	0.3	0.5		445164.543	4547809.854
3213	40.3107	-111.3063	0.22	0	11	16	2002	1	50	23.67	2.56	0	6	280	12.1	0.11	4.6	22.6		473973.189	4462287.814
3214	40.2988	-111.3005	0.54	0	11	16	2002	1	50	39.83	2.22	0	7	287	13.2	0.1	3.6	19.6		474461.544	4460965.269
3215	40.6285	-111.5768	-0.35	0	11	16	2002	5	59	15.14	8.85	0	7	144	11.1	0.03	1	2.5		451218.763	4497678.258
3216	40.542	-111.5522	0.47	1	11	22	2002	7	18	10.4	2.45	0	12	110	10.9	0.08	0.5	7.8		453239.044	4488063.213
3217	40.7997	-111.6863	0.78	1	11	23	2002	14	41	9	9.03	0	16	75	10.5	0.17	0.6	2.3		442106.536	4516748.814
3218	40.7905	-111.6735	0.02	0	11	23	2002	14	41	41.17	8.24	0	7	223	11.4	0.12	1.2	2.9		443178.455	4515719.18
3219	40.7775	-111.6833	0.66	0	11	23	2002	15	30	21.94	7.72	0	18	184	10.6	0.17	0.7	1.9		442340.405	4514282.491
3220	40.7192	-111.654	1.35	1	11	25	2002	17	32	48.61	6.78	0	22	73	8.7	0.14	0.5	1.9		444764.653	4507792.012
3221	40.8338	-111.4518	0.87	1	11	28	2002	1	40	42.06	8.92	0	13	153	19.6	0.08	0.5	3.5		461907.585	4520405.755
3222	40.7272	-112.1207	0.86	1	12	3	2002	7	4	21.74	7.49	0	9	119	8.3	0.14	0.6	1.8		405358.969	4509078.34
3223	40.7237	-111.5358	0.64	0	12	5	2002	15	41	17.28	8.14	0	12	176	10.9	0.11	0.9	2.5		454750.651	4508223.914
3224	40.9473	-111.6533	2.39	1	12	7	2002	7	37	6.82	7.83	0	47	83	17.8	0.16	0.3	0.6		445012.56	4533112.344
3225	40.803	-111.5962	0.03	0	12	9	2002	9	58	23.22	9.72	0	12	233	17.9	0.14	1	3.4		449709.538	4517059.551
3226	40.7238	-111.6217	1.09	1	12	9	2002	16	34	47.25	6.6	0	20	90	11.4	0.12	0.4	2		447496.269	4508282.823
3227	40.3788	-111.0338	0.65	0	12	10	2002	10	48	57.51	2.9	0	10	301	19.2	0.14	6.2	27.4		497130.848	4469802.241
3228	40.8502	-111.4873	1.54	0	12	17	2002	23	51	6.45	8.59	0	16	118	21.7	0.14	0.5	4.6		458924.605	4522242.31
3229	40.2818	-111.4602	0.37	0	12	22	2002	14	18	13.08	3.16	0	6	272	15.7	0.23	2.4	22.4		460879.352	4459136.605
3230	40.6625	-111.3048	0.38	0	12	29	2002	6	34	5.58	12.26	0	5	198	6.4	0.04	2.8	4.1		474235.524	4501337.115
3231	41.0475	-111.0823	1.39	0	12	29	2002	13	21	46.4	7.29	0	7	234	28.5	0.06	1.6	8.2		493083.415	4544033.296
3232	41.0498	-111.0712	2.26	1	12	30	2002	6	40	15.53	0.58	0	20	217	29.2	0.15	1.2	9.9		494016.48	4544287.8
3233	40.2955	-111.3972	0.27	0	12	31	2002	18	14	20.35	2.9	0	9	277	17.1	0.37	3.8	32.7		466241.684	4460631.345
3234	40.5038	-110.8728	1.01	0	1	11	2003	18	22	53.63	7.1	0	8	310	34	0.12	2.1	15		510777.54	4483684.301
3235	40.1165	-111.5105	1.46	1	1	13	2003	17	40	36.92	2.93	0	10	190	15.4	0.21	1.6	23.5		456497.919	4440812.585
3236	40.7278	-111.4352	0.92	0	1	21	2003	19	44	21.07	2.19	0	7	283	7.8	0.12	4.5	20		463248.799	4508632.064
3237	40.4828	-111.9047	1.15	1	1	24	2003	21	52	44.01	1.47	0	13	75	5.2	0.19	0.6	999.9		423321.198	4481738.579
3238	40.6315	-112.0135	0.84	0	1	31	2003	2	57	18.36	5.39	0	19	85	9.2	0.18	0.4	2.1		414289.46	4498345.049
3239	40.4653	-111.0447	0.77	0	2	4	2003	18	9	23.91	3.95	0	10	284	18.8	0.08	1.6	10.7		496210.446	4479404.008

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3240	40.7183	-111.3668	0.23	0	2	6	2003	2	15	17.23	9.68	0	9	249	9.1	0.06	1.2	1.7		469020.562	4507551.144
3241	40.716	-111.3735	0.43	0	2	6	2003	2	40	20.02	9.89	0	9	224	8.5	0.09	1	2.1		468453.602	4507298.219
3242	40.7313	-111.3762	0.25	0	2	6	2003	3	2	47.56	10.71	0	8	262	9.7	0.07	2.6	3.6		468232.83	4508997.561
3243	40.7467	-112.0408	1.61	0	2	9	2003	7	26	1.91	11.15	0	26	64	2.5	0.18	0.5	0.8		412132.155	4511159.927
3244	40.4715	-111.8998	1.28	1	2	12	2003	16	58	52.76	1.62	0	17	71	4.9	0.29	0.7	30.7		423723.72	4480480.015
3245	41.0817	-111.5665	1.94	0	2	12	2003	19	20	6.26	2.21	0	10	73	13.9	0.19	0.6	17		452415.254	4547981.19
3246	40.576	-111.4907	-0.06	0	2	19	2003	23	30	22.16	5.41	0	6	325	4.5	0.01	2	1		458467.976	4491806.458
3247	40.2478	-111.3442	2.38	1	2	20	2003	21	53	49.83	8.85	0	21	202	19.8	0.19	0.8	4.2		470725.642	4455317.998
3248	41.0507	-111.671	1.47	0	2	26	2003	0	10	51.56	2.29	0	12	67	14.2	0.19	0.7	21.7		443610.957	4544602.118
3249	40.4592	-111.8968	1.78	1	2	27	2003	20	21	39.5	1.78	0	13	166	4.8	0.19	0.9	15.8		423964.164	4479112.11
3250	40.5678	-110.7857	0.95	0	2	28	2003	18	8	8.88	7.07	0	7	319	38.6	0.07	1.5	16.6		518140.178	4490802.628
3251	40.491	-111.4898	0.57	0	3	1	2003	6	53	24.09	8.03	0	12	152	9.2	0.11	0.5	1.5		458491.731	4482370.939
3252	40.7757	-112.037	0.95	0	3	2	2003	10	41	19.71	5.74	0	16	80	12.9	0.18	0.5	3		412491.015	4514375.35
3253	41.0458	-111.6638	1.78	1	3	4	2003	0	26	36.48	2.17	0	24	68	14.7	0.19	0.5	17.1		444211.891	4544053.533
3254	40.4513	-111.889	1.53	1	3	6	2003	21	38	15.05	1.81	0	9	170	5.5	0.28	1.6	22.1		424616.672	4478228.513
3255	40.4715	-111.415	0.76	0	3	7	2003	23	48	16.39	6.77	0	14	120	11.4	0.14	0.5	2.4		464820.524	4480173.939
3256	40.4795	-111.4123	1.41	1	3	8	2003	1	41	49.19	4.03	0	24	82	11.3	0.17	0.4	3.7		465053.551	4481060.865
3257	40.4705	-111.4087	0.9	0	3	8	2003	2	12	19.2	6.8	0	11	122	11.9	0.08	0.4	2		465354.061	4480060.448
3258	40.476	-111.412	1.23	1	3	8	2003	2	23	27.88	5.45	0	21	82	11.7	0.14	0.4	2.4		465077.165	4480672.247
3259	40.784	-112.149	1.81	1	3	12	2003	4	28	40.3	5.71	0	40	61	8.3	0.17	0.3	1		403051.597	4515414.49
3260	40.7813	-112.1533	1.06	0	3	12	2003	5	3	34.29	6.2	0	13	118	8.5	0.11	0.4	1.8		402684.831	4515119.529
3261	40.9128	-111.5913	0.9	0	3	21	2003	23	43	58.6	9.24	0	19	96	23.5	0.2	0.5	3.3		450205.155	4529245.387
3262	40.5682	-111.5313	0.81	0	3	23	2003	7	49	56.2	1.86	0	15	97	7.8	0.17	0.7	15.1		455026.423	4490960.578
3263	40.7463	-111.9632	0.59	0	3	24	2003	8	56	0.38	7.5	0	11	94	8.4	0.08	0.4	1.7		418683.018	4511040.734
3264	40.7037	-111.4208	1.12	1	4	4	2003	1	38	14.14	10.18	0	17	176	5.3	0.14	0.8	1.2		464452.019	4505950.93
3265	40.7027	-111.417	0.46	0	4	4	2003	1	49	26.65	10.43	0	11	192	5.2	0.11	0.7	1.2		464772.506	4505838.395
3266	40.4855	-111.3352	0.24	0	4	6	2003	0	2	50.25	10.55	0	10	115	10.5	0.17	0.9	2.5		471591.071	4481699.19
3267	40.6302	-111.3583	0.61	0	4	7	2003	23	38	41.63	0.36	0	7	132	2.2	0.03	0.5	0.3		469698.603	4497768.77
3268	40.7285	-111.4225	1.33	0	4	8	2003	0	10	42.67	2.14	0	9	189	8	0.32	1.9	39.4		464321.649	4508704.53
3269	40.7108	-111.4212	0.44	0	4	8	2003	2	27	16.5	10.08	0	12	197	6.1	0.13	0.8	1.4		464422.006	4506739.222
3270	40.6222	-111.3552	0.89	0	4	8	2003	22	49	34.94	1.45	0	6	124	1.4	0.17	1.1	15		469957.185	4496879.686
3271	40.8747	-111.544	1.02	0	4	9	2003	0	7	29.13	10.63	0	14	106	24.6	0.16	0.6	4.9		454162.134	4524990.13
3272	40.3645	-111.5468	0.96	0	4	12	2003	17	40	27.23	11.33	0	14	113	5.7	0.23	0.9	1.9		453574.322	4468357.907
3273	40.3395	-111.3778	0.98	0	4	14	2003	9	1	21.7	6.48	0	12	159	13.2	0.09	0.6	2.6		467911.345	4465507.988
3274	40.4335	-111.4733	0.98	0	4	18	2003	21	54	18.37	5.72	0	9	147	5.1	0.18	1.2	3.9		459855.819	4475980.824
3275	40.805	-111.5547	0.85	0	4	20	2003	4	16	14.95	11.3	0	18	98	19	0.21	0.6	3		453211.554	4517258.588
3276	40.5068	-111.4153	0.19	0	4	20	2003	8	57	1.66	8.69	0	11	94	8.3	0.11	0.5	1.5		464813.534	4484092.362
3277	40.0642	-111.3132	1.4	0	4	23	2003	17	49	35.93	3.94	0	12	121	27.8	0.22	0.7	20.3		473290.373	4434929.818
3278	39.9965	-111.0498	1.5	0	5	1	2003	16	49	39.52	7.3	0	5	300	49.8	0.09	8.6	23.5		495748.87	4427369.94
3279	40.0873	-111.2975	1.19	0	5	1	2003	16	55	41.18	6.85	0	6	248	29.7	0.16	3.2	16.7		474637.839	4437489.139

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3280	40.094	-111.3153	0.94	0	5	1	2003	16	57	5.16	5.22	0	8	244	28.5	0.19	2.9	14.7		473123.004	4438238.013
3281	40.093	-111.3252	2.17	1	5	1	2003	17	4	7.31	11.02	0	18	117	27.6	0.22	0.8	1.8		472278.695	4438130.058
3282	40.0982	-111.3057	1.5	0	5	1	2003	17	5	12.11	6.9	0	6	234	29.4	0.05	1.9	7.7		473942.937	4438701.325
3283	40.1128	-111.361	1.14	0	5	1	2003	17	5	31.52	2.3	0	5	230	25.6	0.12	2.6	31.4		469235.878	4440339.481
3284	40.095	-111.3048	1.3	0	5	1	2003	17	20	30.59	3.95	0	7	246	29.3	0.13	2.4	14.3		474018.434	4438345.886
3285	40.0962	-111.3117	1.13	0	5	1	2003	17	29	7.79	3.95	0	7	244	28.8	0.11	2.3	12.8		473430.734	4438481.115
3286	40.0857	-111.2987	1.57	0	5	1	2003	17	30	2.57	3.9	0	11	249	29.6	0.2	2.7	17.8		474534.941	4437311.894
3287	40.093	-111.2807	1.22	0	5	1	2003	17	30	30.82	5.27	0	6	251	31.2	0.24	4	16.9		476072.053	4438117.141
3288	40.0863	-111.2905	1.55	0	5	1	2003	17	35	25.49	5.36	0	11	250	30.2	0.1	1.9	11.7		475234.234	4437376.175
3289	40.0977	-111.3185	1.46	1	5	1	2003	18	54	0.65	3	0	13	125	28.3	0.15	0.6	21.8		472851.698	4438649.656
3290	40.0987	-111.3223	2.14	1	5	1	2003	19	29	26.56	6.99	0	22	117	28.1	0.15	0.5	1.1		472528.195	4438761.815
3291	40.097	-111.3175	1.8	1	5	1	2003	19	30	55.06	7.9	0	23	118	28.4	0.15	0.4	0.9		472936.659	4438571.657
3292	40.0967	-111.311	1.59	1	5	1	2003	19	39	1.17	3.24	0	16	162	28.9	0.14	0.7	14.9		473490.596	4438536.402
3293	40.4512	-111.519	0.43	0	5	1	2003	23	39	26.48	2.79	0	13	115	4.2	0.17	0.5	4.7		455991.182	4477967.284
3294	40.45	-111.5178	0.6	0	5	2	2003	2	55	45.6	5.14	0	12	113	4.1	0.16	0.5	2.2		456092.156	4477833.487
3295	40.7135	-111.4083	0.79	0	5	16	2003	16	17	10.53	2.23	0	6	262	6.7	0.21	4.6	23.2		465513.042	4507033.789
3296	40.6507	-111.5817	1.67	1	5	20	2003	21	58	20.39	9.83	0	21	82	12.1	0.15	0.6	1.2		450820.652	4500145.262
3297	40.6483	-111.584	1.47	1	5	21	2003	10	1	24.72	9.01	0	26	68	12.2	0.14	0.4	0.8		450624.431	4499880.142
3298	40.4177	-111.4855	0.32	0	5	27	2003	3	3	1.2	8.06	0	11	171	3.5	0.1	0.6	1.4		458811.403	4474232.654
3299	40.2502	-111.8948	1.55	1	5	27	2003	23	17	30.31	2	0	9	153	7.9	0.21	1	22.3		423899.122	4455911.545
3300	40.6847	-111.4342	-0.16	0	5	29	2003	8	20	14.94	9.17	0	8	265	3	0.17	1.7	2.5		463309.6	4503847.361
3301	40.3253	-111.225	0.81	0	5	31	2003	17	8	51.12	8.67	0	11	224	10.1	0.14	1.4	2.5		480885.507	4463887.641
3302	40.524	-110.9872	0.56	0	6	9	2003	2	17	36.82	6.3	0	9	290	25.9	0.22	2	16.4		501084.207	4485918.812
3303	40.4382	-111.3632	0.57	0	6	11	2003	18	11	33.07	3.58	0	7	152	9.5	0.09	0.5	5.7		469196.407	4476458.306
3304	40.6745	-112.0493	1.2	0	6	11	2003	21	27	31.26	9.66	0	18	57	6.3	0.16	0.4	1.2		411318.799	4503153.786
3305	40.7607	-111.4473	1.06	0	6	12	2003	23	35	1.14	3.1	0	8	295	11.4	0.14	3.4	16.2		462245.601	4512289.265
3306	40.7612	-112.1385	0.77	0	6	14	2003	9	41	55.2	2.49	0	5	187	11	0.01	0.9	8.7		403904.718	4512871.945
3307	40.7555	-112.173	1.17	0	6	14	2003	20	34	0.9	2.03	0	8	139	11.1	0.13	0.8	15.6		400984.222	4512277.555
3308	40.5635	-111.0882	0.58	0	6	17	2003	3	32	13.73	3.37	0	8	262	16.7	0.08	1.1	13.1		492533.525	4490306.997
3309	40.4295	-111.499	1.16	0	6	18	2003	15	17	2.1	10.21	0	8	139	3	0.2	1.5	3		457673.489	4475548.823
3310	40.1855	-111.1747	1.33	0	6	18	2003	16	45	19.27	12.42	0	7	248	26.2	0.05	1.9	4		485128.087	4448360.865
3311	40.6222	-111.281	0.03	0	6	19	2003	17	34	10.47	10.01	0	9	134	5.5	0.16	1.2	2.5		476233.03	4496857.001
3312	40.5792	-111.2643	-0.08	0	6	19	2003	17	35	12.95	8.13	0	9	159	7.8	0.25	1.2	5.2		477631.188	4492079.54
3313	40.175	-111.1043	1.61	1	6	19	2003	21	26	40.88	7	0	10	259	29.4	0.25	5.5	17.3		491119.752	4447186.016
3314	40.8185	-111.8997	1.04	1	6	20	2003	21	11	3.11	1.6	0	7	170	3	0.23	1.6	16.9		424126.209	4518998.572
3315	40.1897	-111.1615	1.91	1	6	21	2003	13	56	35.66	0.18	0	24	150	26.1	0.27	1	1.8		486252.629	4448824.912
3316	40.4125	-111.283	1.3	0	6	25	2003	21	13	57.24	10.93	0	11	125	2.3	0.07	0.6	1.3		475989.175	4473580.762
3317	40.7618	-111.4308	0.92	0	7	2	2003	23	41	47.77	2.33	0	8	293	11.6	0.15	2.8	31.4		463638.888	4512404.403
3318	40.1887	-111.1605	1.35	1	7	3	2003	20	41	56.19	5.24	0	10	243	26.2	0.2	2.6	17.7		486337.552	4448713.764
3319	40.8707	-111.5023	2.01	1	7	8	2003	11	59	50.09	8.13	0	37	116	24.2	0.14	0.3	1.2		457673.275	4524525.104

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3320	40.3517	-111.4038	0.32	0	7	11	2003	6	9	40.37	3.7	0	5	290	14.2	0.1	14.9	47.9		465709.193	4466871.906
3321	40.4207	-111.5392	1.12	1	7	17	2003	15	21	58.71	11.94	0	9	251	1.3	0.17	1.4	2.3		454257.641	4474592.066
3322	40.491	-111.365	1.63	1	7	18	2003	11	5	42.13	10.22	0	22	102	10.7	0.21	0.5	1		469067.976	4482319.71
3323	40.49	-111.355	0.62	0	7	18	2003	11	7	24.47	12.94	0	12	107	11.2	0.18	0.7	1.7		469914.984	4482205.252
3324	40.484	-111.347	-0.23	0	7	18	2003	11	12	0.1	9.74	0	7	109	11.1	0.22	1.1	4.3		470590.339	4481536.556
3325	40.4925	-111.336	0.64	0	7	18	2003	14	11	53.21	8.5	0	5	179	11.2	0.14	1.4	5.1		471526.228	4482476.448
3326	40.7188	-111.6013	0.6	0	7	20	2003	3	9	17.7	5.67	0	19	168	12.9	0.16	0.8	3.3		449215.296	4507715.801
3327	40.3437	-111.4442	0.4	0	7	21	2003	10	59	17.71	6.67	0	9	250	10.5	0.18	1.4	3.6		462273.946	4466000.365
3328	40.4915	-111.3333	1.16	0	7	21	2003	19	16	33.12	9.59	0	8	178	10.9	0.1	0.8	2.5		471754.616	4482364.58
3329	40.492	-111.3368	0.31	0	7	21	2003	19	32	36.64	8.14	0	5	180	11.2	0.08	1.2	4		471458.221	4482421.206
3330	40.4893	-111.3427	0.11	0	7	22	2003	3	42	42.25	9.86	0	7	112	11.2	0.1	0.7	2.5		470957.067	4482123.431
3331	40.7125	-111.538	0.76	0	8	2	2003	14	48	52.33	1.85	0	12	171	10.2	0.14	0.8	22.7		454557.241	4506981.796
3332	40.7063	-111.4002	0.61	0	8	2	2003	22	32	19.13	2.17	0	8	180	6.3	0.25	1.2	21.8		466193.567	4506231.41
3333	40.8177	-111.9077	1.01	1	8	5	2003	20	49	20.54	1.83	0	14	68	9.3	0.25	0.8	27.4		423450.622	4518916.722
3334	40.287	-111.456	1.04	0	8	7	2003	17	52	44.35	3.93	0	8	157	22	0.28	1.4	23.1		461239.357	4459711.94
3335	40.7692	-111.4612	0.98	0	8	14	2003	16	3	30.85	3.42	0	7	300	12.4	0.17	3.1	17.9		461077.325	4513238.885
3336	41.0662	-111.6118	1.13	0	8	18	2003	0	17	33.65	10.68	0	9	72	18	0.13	0.6	2.8		448598.063	4546286.219
3337	40.4143	-111.9592	1.16	1	8	18	2003	16	33	53.43	5.08	0	21	118	4.6	0.22	0.5	1.4		418619.335	4474183.771
3338	40.7637	-111.452	0.71	0	8	23	2003	18	32	40.99	2.67	0	7	298	11.8	0.13	2.8	22.7		461850.611	4512624.314
3339	40.5145	-111.3528	1.81	1	8	25	2003	12	37	31.5	11.11	0	18	112	8.8	0.24	0.8	1.7		470112.303	4484924.01
3340	40.4618	-111.4013	0.27	0	8	25	2003	13	4	29.24	6.69	0	5	231	13.3	0.18	5.3	9.3		465976.979	4479091.873
3341	40.4812	-111.3713	0.1	0	8	25	2003	19	1	37.56	8.18	0	5	206	11.6	0.07	3.2	2.7		468529.503	4481234.138
3342	40.4922	-111.3525	0.55	0	8	26	2003	0	56	51.03	11.01	0	9	173	11	0.06	0.9	1.4		470127.827	4482448.603
3343	40.4993	-111.3357	0.62	0	8	27	2003	0	59	36.22	8.73	0	7	175	11.1	0.07	1	3.7		471554.523	4483231.151
3344	40.5053	-111.3588	2.87	1	8	28	2003	21	38	20.85	10.63	0	39	108	9.4	0.18	0.4	0.4		469599.854	4483904.857
3345	40.5003	-111.3382	0.92	0	8	28	2003	22	39	34.07	9.91	0	9	118	10.8	0.07	0.6	1.8		471343.111	4483342.96
3346	40.498	-111.3412	0.24	0	8	28	2003	23	36	43.33	8.46	0	8	116	10.9	0.06	0.7	2.4		471087.922	4483088.639
3347	40.5015	-111.3442	1.64	1	8	28	2003	23	54	43.73	9.3	0	15	115	10.4	0.13	0.5	1.1		470835.228	4483478.127
3348	40.7117	-111.4093	0.8	0	8	29	2003	0	10	50.84	3.94	0	8	181	6.5	0.29	1.7	8.9		465427.646	4506834.374
3349	40.498	-111.3415	0.63	0	8	29	2003	4	8	28.96	10.79	0	7	141	10.9	0.07	0.7	2		471062.502	4483088.737
3350	40.4893	-111.3567	0.15	0	8	29	2003	8	12	5.47	9.32	0	6	193	11.2	0.06	1.2	3.3		469770.601	4482128.133
3351	40.4997	-111.3383	0.16	0	8	29	2003	10	32	49.41	8.3	0	7	117	10.9	0.06	0.6	2.4		471334.382	4483276.393
3352	40.49	-111.359	0.84	0	8	29	2003	15	41	18.41	13.1	0	10	151	11	0.12	0.8	1.9		469575.997	4482206.624
3353	40.5	-111.3348	0.68	0	8	29	2003	15	41	54.07	9.15	0	6	174	11	0.08	1.1	3.8		471631.079	4483308.561
3354	40.4993	-111.338	0.43	0	8	29	2003	16	5	43.48	7.96	0	6	176	10.9	0.06	1.1	3.9		471359.632	4483231.895
3355	40.4933	-111.3548	0.78	0	8	29	2003	23	37	58.03	11.35	0	10	148	10.8	0.14	0.8	1.9		469933.407	4482571.484
3356	40.6655	-111.5633	0.39	0	8	31	2003	21	31	32.36	2.89	0	7	167	10.5	0.22	2.7	16.1		452386.797	4501777.99
3357	40.6617	-111.5675	1.06	0	8	31	2003	21	31	40.79	4.31	0	7	165	10.8	0.18	2.3	7.8		452029.066	4501358.459
3358	40.4987	-111.3355	0.31	0	9	1	2003	18	19	9.57	8.21	0	8	119	11.1	0.13	0.8	3.4		471571.217	4483164.487
3359	40.5012	-111.3383	0.67	0	9	2	2003	8	30	44.13	10.19	0	8	118	10.8	0.07	0.6	1.5		471335.021	4483442.893

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3360	40.5012	-111.3347	0.46	0	9	2	2003	9	2	33.15	8.82	0	7	120	10.9	0.07	0.6	2.5		471640.058	4483441.73
3361	40.7728	-111.4303	0.69	0	9	3	2003	19	18	24.88	8.03	0	8	209	12.8	0.17	1.5	7.5		463687.078	4513625.256
3362	40.8243	-111.8773	1.15	1	9	4	2003	16	41	41.65	0.1	0	10	121	3.4	0.19	0.6	0.8		426021.72	4519623.268
3363	40.4993	-111.3363	0.36	0	9	5	2003	3	21	26.02	9.39	0	7	118	11	0.04	0.5	2.7		471503.682	4483231.345
3364	40.2742	-111.049	1.13	0	9	5	2003	6	38	34.8	6.04	0	5	258	23.4	0.13	3.6	15.5		495834.153	4458192.611
3365	40.663	-111.5838	1.31	1	9	10	2003	0	43	6.08	10.15	0	21	71	12.2	0.14	0.5	1.1		450652.173	4501511.784
3366	40.5672	-111.0613	1.45	0	9	12	2003	1	29	17.77	15.17	0	11	272	18	0.06	1.8	0.5		494811.001	4490715.77
3367	40.5662	-111.1117	1.21	0	9	12	2003	1	36	22.36	11.4	0	11	253	15.2	0.13	1.3	2.7		490544.537	4490608.957
3368	40.5617	-111.1223	0.24	0	9	12	2003	3	40	43.74	4.37	0	7	247	15.1	0.1	1.1	10.7		489646.548	4490110.644
3369	40.2982	-111.3135	0.84	0	9	17	2003	22	13	1.25	2.95	0	10	200	13.7	0.2	1.3	14.3		473356.482	4460902.5
3370	40.64	-111.5785	-0.25	0	9	24	2003	14	28	12.3	9.5	0	6	181	11.7	0.06	1.7	1.9		451083.383	4498955.74
3371	40.7057	-111.4063	1.02	0	9	25	2003	23	58	31.46	1.86	0	8	178	6	0.19	1	25.5		465677.967	4506167.172
3372	40.5453	-111.2955	0.32	0	10	4	2003	23	2	4.55	2.86	0	9	143	10.4	0.09	0.6	10.7		474977.978	4488324.989
3373	40.7298	-112.0518	1.68	1	10	5	2003	2	28	2.8	5.03	0	35	58	10.2	0.19	0.3	1.4		411181.005	4509294.975
3374	40.7282	-112.0492	1.4	0	10	5	2003	3	5	20.42	1.65	0	22	79	10.2	0.18	0.4	37.5		411398.443	4509114.737
3375	40.7258	-112.0515	0.66	0	10	5	2003	3	6	14.85	1.5	0	13	86	9.9	0.19	0.5	999.9		411201.021	4508850.643
3376	40.6428	-111.3842	-0.07	0	10	12	2003	19	8	33.52	2.21	0	6	267	2.2	0.27	2.5	6.7		467514.345	4499176.648
3377	41.0313	-111.7163	1.16	0	10	15	2003	11	56	55.6	10.75	0	13	114	10.2	0.07	0.4	1.1		439786.361	4542478.764
3378	40.6565	-111.3782	0.55	0	10	20	2003	20	13	54.69	2.76	0	6	285	3.7	0.24	2.3	7.5		468028.21	4500695.192
3379	40.6375	-111.409	0.55	0	10	22	2003	22	20	12.93	2.95	0	7	123	0.9	0.41	1.9	3.7		465414.665	4498597.787
3380	40.7553	-112.0657	1.21	1	10	24	2003	1	28	41.75	1.89	0	20	82	12.2	0.2	0.4	17		410041.57	4512139.818
3381	40.6272	-111.417	0.36	0	10	24	2003	20	28	10.45	0.14	0	6	106	1.1	0.16	0.5	0.7		464732.758	4497457.633
3382	40.7748	-111.5193	1.49	1	10	24	2003	23	32	18.4	9.05	0	23	100	14.6	0.16	0.5	2.2		456177.674	4513887.915
3383	40.5173	-111.2575	0.8	0	10	25	2003	23	59	32.21	9.97	0	8	169	11.7	0.06	0.8	3.6		478186.626	4485206.877
3384	39.9735	-112.1785	1.51	1	10	26	2003	17	4	41.22	4.26	0	13	211	31.6	0.19	1.3	19.3		399363.463	4425480.943
3385	40.724	-112.053	1.33	1	11	3	2003	15	19	52.76	5.25	0	17	85	9.7	0.14	0.4	2.3		411071.948	4508652.349
3386	40.4955	-111.3555	0.69	0	11	6	2003	2	25	21.33	10.51	0	10	155	10.6	0.19	0.9	2.4		469875.071	4482815.923
3387	40.4918	-111.3615	0.26	0	11	6	2003	5	17	6.1	9.46	0	10	149	10.8	0.17	0.8	2.5		469364.949	4482407.289
3388	41.0265	-111.7105	2.09	1	11	10	2003	2	44	32.41	8.04	0	30	154	20.4	0.19	0.5	0.9		440269.586	4541941.924
3389	40.152	-111.1972	1.1	0	11	12	2003	2	53	37.59	3.93	0	12	149	29.4	0.22	0.7	19.5		483204.444	4444646.591
3390	40.739	-111.5127	0.48	0	11	17	2003	11	9	0.71	2.73	0	11	185	16.1	0.24	1.2	24.2		456711.416	4509910.644
3391	40.3485	-111.1688	2.95	1	11	17	2003	23	18	52.16	12.52	0	36	149	10.2	0.19	0.5	0.6		485664.796	4466452.149
3392	40.347	-111.1425	1.11	0	11	18	2003	20	2	33.83	6.55	0	10	239	12.1	0.2	2	3.4		487898.035	4466281.725
3393	40.5025	-111.3322	0.59	0	11	20	2003	22	1	33.46	8.73	0	7	171	10.9	0.08	1	4		471852.433	4483585.229
3394	40.6983	-111.49	0.17	0	11	21	2003	13	54	23.71	9.14	0	9	167	11.2	0.17	1.2	3.7		458602.837	4505381.808
3395	41.0362	-111.6337	1.68	0	11	21	2003	20	18	34.36	3.93	0	7	143	17.1	0.16	0.7	12.1		446733.877	4542969.015
3396	40.2952	-111.231	1.14	0	11	23	2003	0	27	14.94	7.03	0	6	227	38	0.26	2.6	20.2		480367.073	4460547.964
3397	40.4238	-111.9695	2.04	1	11	24	2003	7	34	37.81	3.84	0	43	60	3.7	0.24	0.4	0.9		417757.017	4475247.815
3398	40.424	-111.9665	2.22	1	11	24	2003	7	41	35.64	3.33	0	38	60	3.6	0.22	0.4	1		418011.754	4475267.227
3399	40.708	-111.3897	1.28	0	12	8	2003	21	33	37.64	2.43	0	9	181	7	0.21	1.1	17.5		467081.381	4506416.129

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3400	40.4662	-111.9487	1.11	0	12	12	2003	19	33	31.45	7.55	0	23	101	1.3	0.19	0.5	1.2		419572.072	4479935.113
3401	40.7465	-112.036	1.71	1	12	17	2003	18	39	17.58	8.49	0	26	69	12.6	0.19	0.4	1.5		412537.132	4511132.931
3402	40.7493	-112.037	1.6	1	12	17	2003	19	31	32.52	8.11	0	24	78	12.8	0.21	0.5	2.2		412456.379	4511444.749
3403	40.726	-112.0563	1.1	1	12	20	2003	1	40	55.39	8.07	0	16	82	9.7	0.17	0.5	1.9		410795.923	4508877.71
3404	40.3837	-111.5217	0.5	0	12	23	2003	21	13	56.12	10.49	0	12	186	3.4	0.19	0.9	1.7		455718	4470476.201
3405	40.6335	-111.4372	0.4	0	1	8	2004	18	3	28.99	6.16	0	6	239	2.8	0.69	11.5	8.9		463027.839	4498165.243
3406	40.6622	-111.5777	-0.01	0	1	13	2004	2	52	41.03	4.38	0	13	143	12.7	0.12	0.6	4		451167.217	4501419.576
3407	40.622	-111.4097	0.38	0	1	15	2004	18	19	55.37	0.6	0	7	80	1.1	0.15	0.5	0.2		465347.461	4496877.519
3408	40.6242	-111.3905	0.25	0	1	21	2004	17	29	9.44	0.6	0	6	130	1.4	0.01	0.4	0.2		466972.49	4497114.341
3409	40.3307	-111.3742	1.04	0	1	21	2004	17	30	4.42	2.44	0	11	164	13.6	0.21	0.9	21.5		468212.984	4464529.915
3410	40.6835	-111.37	0.15	0	1	24	2004	2	5	11.73	3.2	0	5	237	8.5	0.08	3.3	10.4		468734.026	4503689.337
3411	40.624	-111.4053	0.03	0	1	28	2004	16	45	48.53	0.68	0	6	96	0.8	0.02	0.4	0.2		465720.637	4497097.801
3412	40.1982	-111.6568	0.4	0	2	4	2004	21	35	30.45	10.68	0	6	152	20.2	0.39	2.2	8.6		444097.973	4449962.667
3413	40.6372	-111.3848	0.25	0	2	7	2004	17	42	3.76	1.66	0	6	186	1.9	0.42	3.5	13.2		467460.894	4498555.253
3414	40.7065	-112.104	0.53	0	2	7	2004	20	26	16.85	9.65	0	11	108	6.1	0.12	0.5	1.1		406740.394	4506762.625
3415	40.7057	-111.413	0.69	0	2	11	2004	0	54	25.21	2.5	0	8	178	5.7	0.24	1.4	13.4		465111.986	4506169.811
3416	40.5845	-111.5955	0.17	0	2	15	2004	15	27	38.46	9.1	0	13	174	14.2	0.07	0.6	1.4		449604.214	4492804.669
3417	40.5008	-111.3628	1.98	1	2	15	2004	17	52	19.1	9.32	0	27	105	9.8	0.22	0.5	1.2		469258.889	4483406.742
3418	40.4992	-111.3642	2.83	1	2	17	2004	1	2	59.9	10.99	0	38	104	9.9	0.18	0.4	0.6		469139.53	4483229.631
3419	40.4953	-111.337	0.01	0	2	17	2004	1	7	48.11	9.89	0	6	117	11.4	0.05	0.6	3.3		471442.671	4482787.571
3420	40.4987	-111.354	0.68	0	2	17	2004	4	46	42.9	13.07	0	9	109	10.3	0.2	0.8	3		470003.606	4483170.612
3421	40.496	-111.3428	0.04	0	2	20	2004	1	43	46.92	9.58	0	7	115	11	0.15	0.9	3.6		470951.481	4482867.164
3422	40.5047	-111.356	0.3	0	2	20	2004	7	6	19.05	11.55	0	6	204	9.7	0.07	2	4.3		469836.822	4483837.296
3423	40.495	-111.3373	0.43	0	2	22	2004	10	28	19.01	8.62	0	7	117	11.4	0.06	0.6	2.6		471417.122	4482754.368
3424	40.7728	-111.5845	0.72	0	2	22	2004	17	14	6.56	12.06	0	17	88	16.6	0.18	0.5	2.4		450674.116	4513700.517
3425	40.9665	-111.6217	1.16	1	2	27	2004	12	46	19.5	8.51	0	21	87	19.2	0.19	0.5	3.6		447687.468	4535224.332
3426	40.6075	-111.9898	1.4	1	3	5	2004	0	11	34.59	7.15	0	32	84	12	0.16	0.3	1.4		416263.807	4495658.117
3427	40.6065	-111.9952	1.49	1	3	5	2004	0	19	56.09	9.83	0	28	85	6	0.19	0.4	1		415805.71	4495552.263
3428	40.6087	-111.9898	1.24	0	3	5	2004	15	52	40.75	7.49	0	28	84	11.9	0.18	0.4	1.5		416265.305	4495791.322
3429	40.6078	-111.9893	0.97	1	3	5	2004	17	47	36.21	5.82	0	21	89	12	0.15	0.4	2		416306.482	4495690.942
3430	40.6362	-111.3972	1.13	0	3	5	2004	18	23	6.67	0.91	0	6	129	0.9	0.06	0.5	0.2		466411.832	4498448.911
3431	40.4987	-111.3413	0.15	0	3	13	2004	20	21	58.79	9.51	0	7	178	10.9	0.06	1	3.2		471079.749	4483166.372
3432	40.5067	-111.3545	1.83	1	3	14	2004	0	26	45.76	11.51	0	20	110	9.5	0.18	0.5	1		469964.806	4484058.784
3433	40.4972	-111.3458	0.62	0	3	14	2004	1	51	23.98	12.54	0	10	113	10.8	0.11	0.7	1.6		470697.786	4483001.356
3434	40.435	-111.5365	0.4	0	3	16	2004	3	41	42	5.92	0	10	86	2.5	0.16	0.6	1.7		454496.332	4476177.96
3435	40.7302	-112.0553	1.97	1	3	17	2004	2	38	22.49	7.2	0	35	82	4.1	0.19	0.4	1.4		410885.977	4509342.925
3436	40.7302	-112.0557	2.4	1	3	18	2004	21	22	37.49	7.97	0	43	58	4.2	0.2	0.4	1		410852.199	4509343.331
3437	40.4398	-111.4275	1.83	1	4	19	2004	10	20	7.1	1.69	0	26	98	8.9	0.21	0.4	28.3		463743.862	4476660.313
3438	40.464	-111.89	1.51	1	4	19	2004	21	42	10.02	1.63	0	17	86	5.5	0.27	0.8	22.5		424546.085	4479639.082
3439	40.6323	-111.3975	0.99	0	4	27	2004	18	3	45.12	0.73	0	6	123	0.7	0.03	0.5	0.2		466384.508	4498016.114

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3440	40.9022	-111.6565	2.27	1	5	2	2004	23	6	6.19	7.58	0	50	83	18.6	0.18	0.3	0.6		444705.639	4528107.852
3441	40.4642	-111.5463	0.13	0	5	5	2004	2	5	27.49	2.15	0	9	152	5.8	0.09	0.7	8.3		453685.184	4479424.245
3442	40.4903	-112.2657	1.95	0	5	5	2004	22	19	18.93	2.95	0	6	253	14.7	0.12	3	1.5		392735.526	4482947.396
3443	40.4435	-111.6448	0.49	0	5	12	2004	4	55	27.15	5.86	0	9	133	9.1	0.15	0.8	3.4		445317.614	4477182.877
3444	40.6438	-111.5937	0.79	0	5	14	2004	0	56	54.93	2.21	0	14	133	13	0.14	0.9	13		449800.947	4499386.116
3445	40.7528	-111.9337	1.06	0	5	23	2004	9	32	0.38	7.47	0	9	102	6.2	0.12	0.5	2.2		421181.229	4511735.367
3446	40.7528	-111.4422	1.2	0	6	4	2004	16	29	31.96	3.39	0	7	293	10.5	0.26	4.4	22.7		462671.649	4511410.141
3447	40.6707	-111.373	0.83	0	6	4	2004	16	36	28.06	1.14	0	6	192	5.2	0.15	999.9	999.9		468474.488	4502269.562
3448	40.4678	-111.4988	0.36	0	6	6	2004	14	9	39.74	6.21	0	13	96	6.5	0.17	0.5	2.3		457714.466	4479800.009
3449	40.4663	-111.4968	0.46	0	6	6	2004	14	11	59.04	7.37	0	11	98	6.4	0.14	0.5	1.9		457883.078	4479632.553
3450	40.7242	-112.067	0.67	0	6	8	2004	12	0	7.8	7.82	0	9	108	9.1	0.14	0.5	1.9		409889.868	4508688.823
3451	40.718	-112.0702	1	0	6	8	2004	13	14	30.86	10.1	0	11	88	8.4	0.1	0.6	1.4		409611.23	4508003.868
3452	40.714	-112.0737	0.51	0	6	8	2004	13	56	6.53	10.36	0	8	102	7.8	0.1	0.8	1.5		409310.188	4507563.449
3453	40.726	-112.0703	2.29	1	6	8	2004	14	56	25.11	8.67	0	34	89	5.5	0.17	0.4	1.2		409613.608	4508892.027
3454	40.4778	-111.9505	1.02	0	6	11	2004	12	59	45.75	7.23	0	17	85	2.5	0.16	0.5	1.3		419433.337	4481224.374
3455	40.4713	-111.9523	1.28	0	6	11	2004	13	22	9.73	7.85	0	22	67	1.8	0.19	0.5	1.3		419272.978	4480504.507
3456	40.4892	-111.9592	1.04	0	6	11	2004	14	9	33.99	6.76	0	14	133	3.9	0.18	0.9	1.8		418709.649	4482497.776
3457	40.4997	-111.3553	0.81	0	6	12	2004	5	22	48.95	12.35	0	13	109	10.2	0.17	0.7	1.7		469893.896	4483282.055
3458	40.978	-111.6795	1.66	1	6	14	2004	0	48	48.15	10.08	0	37	75	14.2	0.24	0.4	1.3		442833.822	4536537.157
3459	41.1133	-111.3487	1.46	1	6	15	2004	12	7	50.81	10	0	18	175	5	0.13	0.6	0.8		470724.047	4551393.14
3460	40.9018	-111.1798	0.82	0	6	25	2004	10	21	15.43	5.25	0	7	226	25.4	0.11	1.4	10.7		484856.12	4527871.582
3461	41.0288	-111.6165	0.61	0	6	26	2004	12	8	57.31	14.72	0	11	136	18.5	0.13	0.5	0.8		448173.841	4542137.177
3462	40.3893	-111.4563	0.74	0	6	27	2004	0	49	36.7	9.38	0	16	119	6.6	0.25	0.8	2.1		461272.393	4471067.095
3463	41.0278	-111.6228	1.71	1	6	28	2004	20	17	37.07	4.21	0	23	78	18	0.23	0.5	1.6		447643.436	4542029.926
3464	40.172	-111.1625	1.11	0	6	30	2004	11	12	50.59	5.46	0	9	252	27.9	0.33	3.4	21.6		486163.911	4446860.478
3465	40.7342	-112.06	1.27	1	7	12	2004	4	44	46.62	9.62	0	22	58	10.4	0.19	0.4	1.5		410494.443	4509791.734
3466	39.9418	-111.3278	1.13	0	7	15	2004	3	57	6.68	3.92	0	11	136	27.3	0.21	0.8	18.3		471995.322	4421349.052
3467	40.7955	-111.5175	1.01	0	7	19	2004	17	59	49.77	5.29	0	8	241	16.6	0.19	2.6	16.7		456343.129	4516184.842
3468	40.6342	-111.5837	-0.13	0	7	19	2004	23	53	55.81	6.94	0	10	146	11.9	0.17	1.1	2.8		450639.409	4498314.825
3469	40.3242	-111.3403	0.78	0	8	3	2004	22	36	33.82	4.41	0	8	180	12.2	0.14	0.9	6.6		471089.907	4463796.815
3470	41.0422	-111.473	1.29	0	8	12	2004	15	5	36.03	8.28	0	6	234	9.9	0.15	2	3.9		460245.295	4543549.428
3471	40.6982	-111.408	0.59	0	8	15	2004	20	26	50.07	1.61	0	8	174	5.2	0.19	1	28.6		465530.494	4505335.307
3472	40.7288	-111.4258	1.07	0	8	19	2004	16	38	31.86	3.31	0	6	281	7.9	0.26	8.7	17.5		464043.139	4508739.177
3473	40.4687	-111.9795	1.22	1	8	25	2004	4	21	10.67	10.27	0	19	74	2.7	0.17	0.4	0.9		416963.98	4480241.135
3474	40.4675	-111.9793	1.79	1	8	25	2004	4	21	33.66	8.36	0	25	73	2.6	0.21	0.4	1.3		416979.457	4480107.745
3475	40.4725	-111.9752	0.8	1	8	25	2004	8	29	36.13	9.92	0	15	90	2.7	0.17	0.5	0.9		417333.174	4480658.906
3476	40.5065	-111.5297	-0.23	0	8	25	2004	11	41	13.22	2.04	0	9	112	10.3	0.12	0.4	18.9		455120.707	4484110.982
3477	40.3645	-111.7408	1.05	1	8	30	2004	19	49	10.99	1.52	0	13	120	3	0.26	0.9	18		437102.755	4468477.78
3478	40.6998	-111.3975	1.04	0	9	3	2004	22	59	58.43	2.18	0	7	175	5.8	0.18	1	14.4		466418.382	4505508.847
3479	40.2363	-111.1078	1.13	0	9	8	2004	2	46	2.8	3.93	0	9	252	23.3	0.24	2.7	20.6		490830.02	4453990.316

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3480	40.3105	-111.3715	1.38	0	9	8	2004	14	8	52.39	3.12	0	14	173	15	0.19	0.9	13.9		468432.934	4462286.815
3481	40.9392	-111.4637	0.81	0	9	12	2004	0	8	51.03	2.41	0	15	132	20.3	0.25	0.7	20.8		460966.245	4532111.221
3482	40.6737	-111.4473	0.14	0	9	16	2004	12	1	55.28	11.52	0	7	201	1.9	0.14	1.7	1.7		462196.418	4502631.87
3483	40.4818	-111.3502	0.77	0	9	18	2004	23	17	35.15	1.52	0	6	194	2.5	0.27	2	27.3		470318.156	4481293.428
3484	40.3	-111.977	1.65	0	9	19	2004	22	43	53.79	1.51	0	13	135	4.2	0.28	0.9	37.7		416969.014	4461513.047
3485	40.4152	-111.3705	0.93	0	9	25	2004	20	15	40.84	9.8	0	9	115	9.7	0.13	0.6	1.8		468566.575	4473907.905
3486	40.413	-111.3607	0.95	0	9	26	2004	1	4	48.2	9.96	0	7	180	8.9	0.12	0.8	2.4		469397.018	4473660.269
3487	40.6285	-111.4093	0.7	0	9	28	2004	19	32	48.43	0.05	0	6	94	0.5	0.27	0.7	1.3		465384.649	4497598.879
3488	40.8158	-111.58	0.79	0	9	30	2004	10	29	37.7	11.79	0	12	160	19.9	0.16	0.7	3.6		451085.443	4518471.27
3489	40.7642	-111.4563	1.27	0	10	5	2004	20	24	11.49	3.23	0	8	298	11.9	0.23	4.8	17.4		461487.973	4512681.695
3490	40.3518	-110.961	1.12	0	10	5	2004	21	1	16.91	4.39	0	9	268	25.9	0.11	1.6	17.2		503311.881	4466805.497
3491	40.7063	-111.4168	0.64	0	10	7	2004	21	46	33.17	2.31	0	7	262	5.7	0.25	4.6	21.4		464791.297	4506237.93
3492	40.4845	-111.9132	1.07	1	10	11	2004	21	18	3.55	5.26	0	12	136	4.8	0.21	0.9	1.7		422602.714	4481934.703
3493	40.629	-111.3983	0.79	0	10	13	2004	22	56	21.12	0.05	0	5	118	0.6	0.11	0.8	1		466315.195	4497650.111
3494	40.4978	-111.3545	0.58	0	10	14	2004	6	22	33.8	11.9	0	10	98	1.6	0.17	0.9	1.9		469960.836	4483070.882
3495	40.64	-111.3872	0.63	0	10	14	2004	21	15	49.04	0.86	0	7	139	1.8	0.25	1	0.4		467259.314	4498866.952
3496	40.6192	-111.3885	0.66	0	10	15	2004	23	29	2.37	0.74	0	6	136	1.4	0.03	0.4	0.3		467139.195	4496558.58
3497	40.6195	-111.401	0.47	0	10	18	2004	19	3	57.38	0.01	0	6	112	1	0.06	0.3	0.5		466082.047	4496596.623
3498	40.6197	-111.3975	0.35	0	10	18	2004	23	37	8.37	1.06	0	5	220	1.1	0.05	1.7	0.2		466378.19	4496617.481
3499	40.5088	-111.501	0.16	0	10	20	2004	15	6	46.52	13.76	0	7	236	11.2	0.21	4.2	2.5		457553.8	4484352.077
3500	40.7147	-112.0613	1.19	0	10	25	2004	16	0	56.82	10.74	0	13	82	8.4	0.13	0.5	1.5		410358.508	4507628.423
3501	40.66	-111.3853	0.45	0	10	26	2004	21	53	18.78	3.44	0	5	223	3.7	0.2	3.9	3.6		467429.7	4501086.309
3502	40.765	-111.8473	1.26	1	10	28	2004	12	0	31.66	4.88	0	18	73	0.1	0.18	0.5	0.8		428487.89	4513015.642
3503	40.1847	-111.3012	1.31	0	11	4	2004	2	12	55.74	4.09	0	10	227	25.6	0.11	1.3	11.6		474359.044	4448300.928
3504	40.7	-111.3908	0.82	0	11	5	2004	23	6	21.05	2.16	0	7	177	6.2	0.27	1.4	25.6		466984.512	4505528.509
3505	40.4702	-111.9885	1.24	0	11	7	2004	23	41	42.79	10	0	16	90	3.4	0.13	0.4	0.7		416202.868	4480416.143
3506	40.4737	-111.9792	0.97	0	11	7	2004	23	41	56.18	10.43	0	9	119	3	0.12	0.5	0.9		416995.57	4480795.862
3507	40.4732	-111.9877	0.99	0	11	8	2004	16	29	46.92	9.74	0	11	128	3.5	0.22	0.7	1.4		416274.413	4480748.39
3508	40.474	-111.9837	-9.99	0	11	8	2004	16	30	21.28	10.9	0	10	89	3.3	0.18	0.7	1.2		416614.481	4480833.405
3509	40.4757	-111.9825	1.05	0	11	9	2004	11	19	48.78	8.8	0	15	119	3.4	0.17	0.5	1.1		416718.304	4481020.975
3510	40.8008	-111.7775	1.28	0	11	12	2004	14	47	29.66	7.44	0	23	66	3.5	0.22	0.5	1.5		434414.293	4516935.14
3511	40.792	-111.7725	0.15	0	11	12	2004	14	48	14.24	7.62	0	11	207	3.3	0.2	1.1	1.4		434827.464	4515954.55
3512	40.8058	-111.777	1.89	1	11	12	2004	14	51	56.13	8.38	0	29	90	3.9	0.17	0.4	1		434461.39	4517489.802
3513	40.8048	-111.7735	1.06	0	11	12	2004	15	1	50.96	8.17	0	16	119	4	0.17	0.6	1.4		434755.632	4517376.184
3514	40.793	-111.7845	0.75	0	11	12	2004	15	6	58.92	8.01	0	12	97	2.5	0.14	0.6	1.1		433816.059	4516074.544
3515	40.7902	-111.7802	0.72	0	11	12	2004	15	7	42	6.98	0	7	209	2.6	0.07	0.7	0.8		434176.064	4515760.488
3516	40.8005	-111.777	1.24	0	11	12	2004	15	12	55.23	7.89	0	17	118	3.5	0.21	0.7	1.5		434456.176	4516901.464
3517	40.8083	-111.7828	2.09	1	11	12	2004	15	15	52.57	8.03	0	23	65	3.8	0.18	0.4	0.8		433974.643	4517771.672
3518	40.7938	-111.7902	1.2	0	11	12	2004	15	17	3.28	8.28	0	9	173	2.2	0.1	1	0.9		433335.977	4516167.667
3519	40.7998	-111.773	1.69	1	11	12	2004	15	17	12.24	9.42	0	9	183	3.7	0.14	1.2	1.3		434792.913	4516820.776

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3520	40.7998	-111.7805	1.64	0	11	12	2004	15	18	6.55	8.93	0	17	117	3.2	0.19	0.7	1.3		434160.239	4516826.381
3521	40.7942	-111.7708	0.85	0	11	12	2004	15	18	53.91	7.28	0	15	163	3.5	0.19	0.7	1.3		434973.034	4516197.503
3522	40.804	-111.775	1.68	1	11	12	2004	15	27	0.79	7.93	0	26	118	3.9	0.21	0.5	1.2		434628.321	4517288.496
3523	40.8143	-111.7697	1.83	1	11	12	2004	15	33	50.27	8.79	0	27	91	5	0.17	0.4	1.1		435085.422	4518427.932
3524	40.7972	-111.779	1.74	1	11	12	2004	17	24	16.68	8	0	24	68	3.1	0.18	0.5	1.1		434284.209	4516536.637
3525	40.7937	-111.7777	1.05	0	11	12	2004	17	32	59.35	7.51	0	20	117	3	0.2	0.6	1.3		434390.432	4516147.139
3526	40.7912	-111.777	1.2	0	11	12	2004	17	36	5.78	8.2	0	16	116	2.9	0.18	0.6	1.2		434447.028	4515869.098
3527	40.8043	-111.778	2.05	1	11	12	2004	21	20	41.1	8.47	0	28	118	3.7	0.17	0.5	1.1		434375.563	4517324.039
3528	40.7923	-111.7743	0.63	0	11	12	2004	21	34	1.28	7.83	0	16	131	3.2	0.19	0.7	1.3		434675.898	4515989.191
3529	40.7927	-111.7825	1.93	1	11	13	2004	7	16	11.95	7.41	0	22	65	2.6	0.16	0.4	0.8		433984.492	4516039.734
3530	40.7957	-111.7832	0.99	0	11	13	2004	7	35	50.52	8.07	0	19	65	2.7	0.17	0.5	1		433928.41	4516373.283
3531	40.7843	-111.79	0.63	0	11	13	2004	7	36	23.61	8.95	0	12	159	1.6	0.21	0.9	1.2		433343.35	4515112.949
3532	40.804	-111.778	2.21	1	11	13	2004	7	52	22.73	8.34	0	26	118	3.7	0.16	0.4	1.1		434375.267	4517290.737
3533	40.7968	-111.7752	0.82	0	11	13	2004	8	41	24.04	8.09	0	15	118	3.4	0.19	0.7	1.5		434604.385	4516489.393
3534	40.5022	-111.3363	0	0	11	20	2004	0	37	53.97	7.96	0	7	119	10.8	0.07	0.7	2.9		471504.909	4483553.245
3535	40.5003	-111.3388	0.36	0	11	20	2004	0	39	27.83	9.1	0	8	95	0.2	0.07	0.8	1.7		471292.271	4483343.155
3536	39.888	-111.8575	1.65	0	11	20	2004	4	18	45.36	1.09	0	11	87	5.7	0.19	0.6	14.8		426684.12	4415678.279
3537	40.32	-111.337	0.75	0	11	28	2004	9	27	47.1	5	0	13	183	12.4	0.23	0.9	6.3		471368.483	4463329.556
3538	40.6728	-111.5975	0.77	0	11	30	2004	5	5	57.53	3.93	0	14	145	13.4	0.08	0.5	4.1		449501.517	4502607.403
3539	40.5028	-111.3492	1.43	0	12	3	2004	5	36	3.94	10.45	0	16	95	1.1	0.16	0.5	1.3		470412.139	4483624.092
3540	39.8222	-111.9172	1.95	1	12	4	2004	1	14	42.2	1.84	0	18	156	13.1	0.18	0.6	22.2		421504.792	4408425.836
3541	39.8007	-111.932	2.55	1	12	4	2004	16	5	55.31	2.18	0	15	121	15.5	0.23	0.8	19		420213.313	4406052.658
3542	39.821	-111.9288	1.61	0	12	4	2004	16	10	0.01	1.88	0	16	166	13.9	0.26	1	28.8		420510.65	4408302.892
3543	39.8337	-111.9138	1.56	0	12	4	2004	17	32	59.87	2.07	0	9	180	12.1	0.19	0.9	21.7		421808.812	4409699.238
3544	39.8173	-111.9217	2.19	1	12	4	2004	22	26	22.57	2.17	0	14	155	13.7	0.23	0.8	18.8		421114.067	4407885.947
3545	40.537	-111.3125	0.97	0	12	8	2004	18	27	10.89	2.2	0	7	180	4.5	0.18	0.9	11.2		473535.203	4487408.646
3546	40.4522	-111.0325	1.14	0	12	11	2004	10	20	19.11	3.64	0	10	259	19.4	0.11	2.3	11.2		497244.196	4477949.469
3547	41.0438	-111.097	1.58	0	12	18	2004	21	56	43.74	9.35	0	14	217	42.2	0.19	1.3	1.3		491847.554	4543623.827
3548	40.4705	-111.9778	1.14	0	12	19	2004	23	50	5.68	9.93	0	11	125	2.7	0.16	0.7	1.3		417110.311	4480439.341
3549	40.8058	-111.8868	1.64	0	12	22	2004	0	44	27.24	0.79	0	10	103	1.2	0.13	0.7	0.3		425199.846	4517577.685
3550	40.6127	-111.168	0.53	0	12	23	2004	4	33	57.13	9.35	0	5	230	8.2	0.04	2.4	5.5		485788.559	4495778.098
3551	40.479	-111.6142	1.06	0	12	27	2004	9	25	13.95	10.84	0	19	63	10.4	0.14	0.4	1.7		447940.082	4481104.885
3552	40.7242	-111.5057	1.94	1	12	28	2004	15	33	11.76	9.65	0	15	92	9.2	0.1	0.5	0.8		457292.985	4508264.342
3553	40.33	-111.339	1.24	0	1	3	2005	8	59	39.38	4.32	0	14	179	11.6	0.13	0.8	4.6		471202.813	4464440.173
3554	40.586	-111.5933	0.45	0	1	9	2005	22	23	37.25	8.9	0	12	112	12.2	0.09	0.6	1.3		449791.517	4492969.916
3555	39.9687	-111.096	1.74	0	1	10	2005	19	31	9.52	11.55	0	15	124	29.5	0.15	0.5	3.1		491801.728	4424287.646
3556	40.6147	-111.379	0.65	0	1	25	2005	22	0	37.8	0.59	0	6	151	1.9	0.05	0.6	0.4		467940.592	4496055.565
3557	40.868	-111.587	1.44	1	1	26	2005	21	3	52.68	12.66	0	11	254	23.9	0.15	1.6	2.8		450533.917	4524269.78
3558	40.6645	-111.3793	0.87	0	1	31	2005	23	5	32.91	5.9	0	5	293	4.3	0.22	12.6	11.5		467939.05	4501583.619
3559	40.9122	-111.499	1.59	1	2	1	2005	8	32	50.79	7.17	0	17	176	29.9	0.17	0.9	2		457977.619	4529130.346

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3560	40.6358	-111.3562	0.43	0	2	11	2005	17	12	34.76	1.74	0	5	167	4.2	0.32	3.4	48		469878.716	4498389.664
3561	40.6425	-111.5827	0.89	0	2	20	2005	0	49	26.55	8.44	0	14	133	12.2	0.09	0.5	1.6		450730.078	4499235.592
3562	39.8423	-111.4757	1.68	1	2	20	2005	22	58	2.84	3.24	0	15	118	23.5	0.2	0.6	14.4		459301.051	4410362.545
3563	40.6697	-111.5907	0.2	0	2	21	2005	22	45	41.18	3.12	0	10	215	14.1	0.07	2.1	13.6		450073.919	4502259.406
3564	40.619	-111.386	0.66	0	2	22	2005	21	53	25.04	0.87	0	6	139	1.6	0.1	0.6	0.3		467350.558	4496535.449
3565	40.7247	-111.4307	0.76	0	2	23	2005	19	15	40.12	3.25	0	9	186	7.4	0.34	2	15.9		463627.123	4508286.076
3566	40.6297	-111.3618	0.8	0	2	24	2005	17	59	27.89	6.07	0	6	149	3.7	0.28	2.5	5.6		469402.379	4497714.48
3567	40.6278	-111.3877	0.62	0	2	25	2005	18	21	7.38	1.32	0	7	121	1.5	0.16	0.8	0.4		467211.068	4497512.904
3568	40.6343	-111.3602	0.85	0	2	28	2005	21	9	40.75	1.5	0	7	146	3.8	0.07	0.9	17.6		469539.783	4498224.537
3569	40.4727	-111.984	0.8	0	3	2	2005	2	40	58.13	9.61	0	10	125	3.2	0.16	0.8	1.5		416587.442	4480689.386
3570	40.4692	-111.9807	1.18	0	3	2	2005	3	5	48.34	10.5	0	11	131	2.8	0.13	0.9	1.1		416862.867	4480297.766
3571	40.4653	-111.9785	1.13	0	3	2	2005	3	6	29.78	10.38	0	11	139	2.4	0.14	1	1.1		417044.572	4479862.789
3572	40.6357	-111.3628	0.69	0	3	2	2005	17	48	11.06	1.65	0	6	143	3.6	0.09	0.9	13.9		469320.555	4498380.845
3573	40.4477	-111.3512	1.67	0	3	5	2005	19	21	24.12	1.64	0	9	140	6.1	0.19	0.9	28		470218.342	4477508.682
3574	41.0845	-111.5452	1.01	0	3	9	2005	12	23	0.46	14.69	0	14	76	12.1	0.08	0.3	0.4		454206.359	4548280.616
3575	40.4527	-111.3478	1.99	0	3	10	2005	19	57	15.09	1.87	0	9	134	5.5	0.12	0.7	12.2		470508.847	4478062.537
3576	40.4727	-111.4765	0.05	0	3	12	2005	15	50	37.09	17.4	0	6	103	7.8	0.04	0.6	2.1		459607.881	4480333.465
3577	40.4462	-111.3585	1.29	1	3	14	2005	20	58	35.94	1.75	0	8	143	6.4	0.24	1.1	22.5		469598.627	4477344.67
3578	40.5022	-111.3567	1.93	1	3	19	2005	18	7	17.33	11.71	0	25	86	1.8	0.17	0.4	0.6		469776.39	4483560.035
3579	40.5017	-111.3328	0.15	0	3	22	2005	6	46	45.87	10.94	0	7	121	10.9	0.07	0.8	2.4		471801.259	4483496.621
3580	40.4988	-111.3505	1.7	1	3	22	2005	8	3	22.29	11.68	0	15	98	1.2	0.13	0.5	1.2		470300.225	4483180.528
3581	40.5002	-111.336	0.65	0	3	22	2005	8	12	52.28	7.62	0	8	118	10.9	0.1	0.5	2.8		471529.483	4483331.148
3582	40.498	-111.3495	0.68	0	3	22	2005	8	14	18.11	10.47	0	11	98	1.2	0.17	0.7	1.9		470384.609	4483091.392
3583	40.4388	-111.3532	1.31	0	3	24	2005	19	46	34.66	2.19	0	7	150	7.1	0.18	1.1	15.1		470044.792	4476521.466
3584	40.8823	-111.6387	1.14	0	3	24	2005	19	55	36.1	7.48	0	17	131	18.2	0.24	0.7	5.7		446188.749	4525887.689
3585	40.489	-111.367	0.63	0	3	29	2005	14	4	54.75	10.39	0	10	106	3	0.13	0.8	1.8		468897.562	4482098.413
3586	40.4992	-111.3368	0.53	0	3	29	2005	18	24	54.98	10.34	0	9	118	0.2	0.05	0.7	1.2		471461.272	4483220.406
3587	40.4922	-111.35	0.07	0	3	30	2005	0	2	53.01	9.21	0	7	187	11.1	0.03	1.1	2.9		470339.686	4482447.76
3588	40.4997	-111.3567	1.76	0	3	30	2005	0	19	5.19	11.99	0	19	97	1.8	0.16	0.5	1.2		469775.268	4483282.534
3589	40.5007	-111.3395	1.13	0	3	30	2005	5	39	49.99	12.48	0	13	95	0.3	0.11	0.5	1.1		471233.128	4483387.784
3590	40.3305	-111.4442	0.67	0	4	2	2005	19	15	0.01	8.16	0	9	255	11.6	0.07	0.9	2.1		462266.593	4464535.201
3591	40.4967	-111.3528	0.62	0	4	3	2005	12	46	15.17	12.32	0	10	99	1.5	0.17	0.8	1.9		470104.401	4482948.205
3592	40.4575	-111.2748	-0.06	0	4	3	2005	13	7	49.82	13.34	0	5	246	7.1	0.27	3.9	4.6		476700.434	4478573.512
3593	40.4877	-111.3577	0.13	0	4	3	2005	19	30	21.31	10.28	0	8	194	2.4	0.06	0.9	1.5		469685.133	4481950.876
3594	40.4977	-111.3458	1.32	1	4	3	2005	21	25	29.5	12.4	0	15	98	0.9	0.1	0.5	1.1		470698.004	4483056.857
3595	39.9617	-111.657	1.41	0	4	6	2005	11	13	41.62	1.42	0	10	161	6.3	0.23	0.8	999.9		443887.14	4423712.944
3596	40.6278	-111.3653	0.99	0	4	12	2005	17	59	26.41	1.77	0	6	149	3.4	0.1	0.8	9.4		469105.506	4497504.798
3597	40.0105	-112.0038	1.4	0	4	12	2005	22	48	53.09	2.24	0	7	189	16.2	0.21	2.2	44.8		414328.29	4429405.141
3598	40.6573	-111.3703	1.04	0	4	13	2005	19	23	18.36	1.72	0	6	213	4.2	0.16	2.8	21.8		468696.425	4500781.152
3599	40.6985	-112.0545	0.64	0	4	13	2005	23	31	21.62	7.53	0	9	140	20.4	0.12	0.8	5.1		410911.284	4505823.197

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3600	40.6388	-111.3573	0.78	0	4	14	2005	18	14	47.46	1.43	0	7	144	4.1	0.17	1.2	999.9		469787.05	4498723.05
3601	40.6225	-111.3482	0.97	0	4	15	2005	16	27	31.99	1.69	0	7	167	4.7	0.14	1.2	23.2		470549.378	4496910.621
3602	40.7482	-111.8307	1.09	0	4	18	2005	18	7	53.77	5.74	0	12	106	4.1	0.09	0.4	1.2		429871.291	4511137.335
3603	40.5358	-111.3083	0.93	0	5	1	2005	21	39	3.7	6.56	0	10	136	4.5	0.04	0.5	1.5		473890.424	4487274.193
3604	40.7198	-112.0678	1.39	0	5	10	2005	2	58	39.79	8.03	0	13	86	8.6	0.17	0.5	1.8		409816.367	4508201.213
3605	40.628	-111.326	1.13	0	5	18	2005	22	30	37	2.09	0	6	174	6.6	0.15	1.6	19.4		472429.311	4497513.942
3606	40.6733	-111.4068	-0.58	0	5	19	2005	0	35	10.96	12.11	0	8	199	3.2	0.21	2.6	2.2		465619.081	4502570.841
3607	40.6328	-111.3987	-0.18	0	5	19	2005	0	35	26.32	14.75	0	8	123	0.6	0.26	3.6	2		466283.278	4498072.075
3608	40.6422	-111.3572	0.95	0	5	21	2005	0	51	42.88	1.93	0	7	147	4.2	0.21	1.5	15.7		469797.038	4499100.425
3609	40.3912	-111.8488	1.57	0	5	24	2005	4	37	26.15	5.59	0	22	81	11	0.18	0.4	1.9		427961.412	4471523.853
3610	40.6372	-111.3688	1.11	0	5	24	2005	21	29	19.31	5.62	0	7	139	3.2	0.3	1.6	4.6		468813.874	4498549.458
3611	40.875	-110.9687	0.95	0	5	29	2005	15	2	15.56	10.98	0	12	231	30.7	0.21	1.9	2.3		502637.345	4524881.498
3612	40.4025	-111.9443	1.7	0	6	2	2005	7	47	35.3	4.79	0	19	116	5.9	0.19	0.5	0.8		419869.508	4472860.349
3613	40.4003	-111.9467	0.89	0	6	2	2005	9	21	35.71	6.47	0	11	118	6.1	0.15	0.6	1.2		419663.233	4472618.327
3614	40.5033	-111.3378	2.4	1	6	2	2005	21	22	35.89	13.75	0	27	118	0.3	0.13	0.5	0.4		471378.28	4483675.831
3615	40.5022	-111.339	0.73	0	6	2	2005	21	31	28.39	10.08	0	7	93	0.2	0.06	0.6	1.3		471276.134	4483554.121
3616	40.5042	-111.3227	0.52	0	6	2	2005	21	38	3.5	7	0	5	164	11.2	0.11	1.9	11.3		472658.067	4483770.942
3617	40.5002	-111.336	0.09	0	6	3	2005	0	24	53.41	8.84	0	7	118	11.9	0.12	0.8	3.1		471529.483	4483331.148
3618	40.4918	-111.353	-0.13	0	6	3	2005	1	0	33.78	9.87	0	7	189	11	0.09	1.4	3.4		470085.277	4482404.372
3619	40.5022	-111.3525	0.82	0	6	3	2005	23	43	31.22	12.27	0	11	95	1.4	0.18	0.7	2.1		470132.261	4483558.604
3620	40.5018	-111.3382	0.72	0	6	4	2005	4	2	27.39	10.26	0	8	93	0.2	0.05	0.5	1.2		471343.749	4483509.461
3621	40.5025	-111.3347	0.3	0	6	4	2005	7	22	18.87	8.18	0	7	119	10.8	0.04	0.5	2.1		471640.605	4483586.03
3622	40.5023	-111.3315	0.51	0	6	10	2005	10	8	23.94	9.26	0	10	121	0.4	0.12	0.6	1.2		471911.661	4483562.806
3623	41.0052	-111.5138	0.79	0	6	12	2005	11	23	38.75	13.65	0	9	110	15.3	0.12	0.7	1.6		456791.948	4539461.428
3624	40.6742	-111.5923	1.03	0	6	14	2005	20	26	7.01	6.32	0	15	147	13	0.08	0.6	1.7		449942.051	4502759.834
3625	40.7075	-111.4072	0.68	0	6	15	2005	2	49	51.92	2.16	0	7	196	6.1	0.19	1.1	14.4		465602.866	4506367.332
3626	40.6318	-111.3602	0.98	0	6	24	2005	23	32	3.59	1.73	0	6	148	3.8	0.09	0.8	12.1		469538.647	4497947.03
3627	40.633	-111.3637	1.05	0	6	27	2005	19	2	8.91	1.75	0	7	145	3.5	0.18	1.4	15.9		469243.209	4498081.451
3628	40.1018	-111.4033	1.8	1	6	30	2005	10	19	46.62	11.88	0	17	224	21.8	0.15	0.7	2.6		465625.561	4439134.052
3629	40.6302	-111.3585	1.21	0	6	30	2005	18	24	57.61	1.58	0	6	151	3.9	0.11	1.1	24.7		469681.689	4497768.839
3630	40.6347	-111.357	1.2	0	7	1	2005	19	59	44.82	1.69	0	8	138	4.1	0.14	0.9	16.9		469810.571	4498267.835
3631	40.7407	-111.4042	0.3	0	7	2	2005	16	31	13.58	12.78	0	7	277	9.6	0.23	5.1	6.2		465873.246	4510051.514
3632	41.0967	-111.602	1.36	0	7	7	2005	1	47	51.91	18.09	0	13	71	16.4	0.14	0.5	1.2		449444.818	4549666.353
3633	40.768	-111.4277	0.87	0	7	13	2005	22	40	37.88	3.71	0	8	208	12.2	0.2	1.9	19.9		463903.895	4513091.357
3634	40.6635	-111.4348	1.49	0	7	20	2005	21	6	39.39	0.7	0	8	195	0.7	0.18	1.4	0.3		463247.26	4501494.333
3635	40.6118	-111.8403	1.27	0	7	22	2005	22	49	24.3	5.46	0	33	51	2	0.2	0.3	0.7		428916.083	4496003.95
3636	40.5025	-111.3325	0.36	0	7	23	2005	9	48	3.95	9.84	0	7	121	10.9	0.07	0.7	2.4		471827.014	4483585.325
3637	40.6488	-111.438	1.41	0	7	30	2005	19	30	47.98	0.03	0	9	104	1.1	0.23	0.5	0.6		462968.643	4499863.927
3638	40.6967	-111.4025	1.01	0	8	6	2005	0	31	28.11	1.6	0	8	174	5.3	0.21	1.1	28.9		465994.395	4505166.657
3639	40.5925	-111.3723	1.4	1	8	7	2005	6	10	16.53	8.02	0	11	100	3.2	0.18	0.7	1.4		468496.921	4493588.897

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3640	40.6505	-111.4518	1.09	1	8	8	2005	18	2	16.47	0	0	9	131	1.4	0.11	0.9	0.7		461802.867	4500058.534
3641	40.6372	-111.3615	1.19	0	8	9	2005	18	19	43.36	1.65	0	7	140	3.8	0.18	1.1	20.7		469431.171	4498546.896
3642	40.62	-111.4015	0.31	0	8	10	2005	22	30	32.82	0.43	0	6	109	1.1	0.04	0.5	0.3		466040.008	4496652.317
3643	40.6263	-111.3923	0.61	0	8	10	2005	23	25	19.15	0.02	0	8	117	1.1	0.19	0.7	0.5		466821.289	4497348.124
3644	40.6502	-111.4462	1.65	0	8	11	2005	21	45	24.54	0.02	0	7	140	1.1	0.1	0.5	0.3		462276.148	4500022.816
3645	40.6238	-111.3848	0.66	0	8	13	2005	15	26	2.52	0.8	0	6	135	1.9	0.07	0.5	0.3		467454.388	4497067.817
3646	40.6353	-111.338	0.11	0	8	14	2005	1	46	22.41	2.49	0	5	159	5.7	0.06	1	9.5		471417.55	4498328.091
3647	40.6383	-111.3448	0.11	0	8	14	2005	6	13	39.09	1.66	0	7	143	5.7	0.17	1.1	39.7		470843.822	4498663.331
3648	40.6365	-111.343	0.02	0	8	14	2005	6	46	29.95	4.1	0	6	155	5.7	0.09	1.2	4.4		470995.251	4498462.931
3649	40.6252	-111.2652	1.02	1	8	15	2005	15	50	44	9.27	0	10	144	6.8	0.07	0.6	2.3		477570.398	4497185.861
3650	40.6362	-111.5983	1.8	1	8	15	2005	16	18	43.58	8.09	0	17	128	13.1	0.08	0.5	1.4		449406.263	4498545.126
3651	40.6375	-111.5993	1.82	1	8	15	2005	16	21	29.83	8.84	0	16	112	13.2	0.09	0.4	0.6		449322.684	4498690.006
3652	40.6352	-111.5988	0.19	0	8	15	2005	16	23	10.4	8.86	0	11	146	13.1	0.05	0.5	1.1		449363.226	4498434.41
3653	40.6372	-111.599	1.27	0	8	15	2005	16	43	46.96	8.4	0	15	144	13.2	0.08	0.5	1.3		449347.825	4498656.532
3654	40.6518	-111.5915	0.31	0	8	15	2005	16	46	47.87	5.93	0	7	205	13.2	0.22	8	14.2		449992.936	4500272.892
3655	40.6047	-111.5838	0.2	0	8	15	2005	17	13	50.61	11.54	0	7	205	11.3	0.1	2.8	1.2		450609.23	4495040.292
3656	40.6388	-111.5992	2.76	1	8	16	2005	9	54	5.2	9.97	0	34	61	6.3	0.13	0.3	0.5		449332.123	4498834.252
3657	40.6137	-111.3832	0.75	0	8	16	2005	15	6	43.96	1.43	0	6	148	1.6	0.33	1.8	52.4		467584.832	4495946.101
3658	40.637	-111.5993	0.49	0	8	16	2005	18	36	55.75	7.81	0	9	146	13.2	0.12	1	2.1		449322.305	4498634.504
3659	40.6252	-111.5993	1.34	1	8	17	2005	3	44	29.15	10.1	0	19	121	12.9	0.14	0.5	1.2		449313.383	4497324.665
3660	40.6248	-111.3822	0.77	0	8	19	2005	19	27	45.64	0.84	0	6	140	2	0.02	0.4	0.2		467674.774	4497177.861
3661	40.4467	-111.4807	1.26	0	8	21	2005	16	20	23.65	6.42	0	18	94	5.3	0.14	0.5	1.7		459236.14	4477449.404
3662	41.1015	-112.0275	-0.13	0	8	22	2005	1	41	1.61	8.51	0	10	87	11.4	0.17	0.6	3.9		413717.741	4550533.254
3663	40.6368	-111.5998	0.52	0	8	22	2005	18	20	34.26	9.44	0	13	146	6.1	0.1	0.6	1.4		449279.873	4498612.591
3664	40.731	-112.0415	1.34	0	8	23	2005	16	6	39.33	7.53	0	13	102	10.9	0.16	0.4	2.4		412052.381	4509417.815
3665	40.6273	-111.3935	0.25	0	8	24	2005	16	2	53.03	0.68	0	5	139	1.1	0.09	1	0.3		466720.295	4497459.58
3666	40.6243	-111.3857	0.77	0	8	24	2005	17	59	34.06	0.56	0	5	134	1.8	0.02	0.5	0.4		467378.511	4497123.651
3667	40.6193	-111.3438	0.99	0	8	25	2005	17	2	14.16	0.23	0	6	199	4.9	0.13	2.1	0.5		470920.141	4496553.95
3668	40.6098	-111.3757	0.63	0	8	25	2005	22	59	49.38	1.22	0	6	161	2.2	0.2	1.4	0.4		468217.416	4495510.456
3669	40.7665	-111.4532	1.17	0	8	27	2005	18	26	3.29	2.36	0	5	298	12.1	0.1	11.7	29.3		461750.934	4512935.652
3670	40.2892	-111.3238	1.31	0	8	27	2005	21	13	56.85	3.94	0	11	198	14.9	0.25	1.4	12.5		472477.46	4459906.684
3671	40.6325	-111.3525	1.48	0	8	29	2005	16	48	59.64	1.79	0	8	136	4.5	0.18	1.5	19.4		470190.132	4498022.095
3672	40.646	-111.3467	1.1	0	8	29	2005	20	32	25.27	2.33	0	5	296	5.2	0.09	1.3	9.7		470686.527	4499518.684
3673	40.621	-111.4045	0.39	0	8	31	2005	15	44	16.1	0.19	0	6	97	1.1	0.11	0.4	0.6		465786.769	4496764.482
3674	40.624	-111.3533	0.8	0	9	1	2005	17	12	23.59	1.8	0	7	125	4.3	0.14	0.8	14		470118.69	4497078.844
3675	40.6172	-111.3698	0.98	0	9	1	2005	19	22	15.97	0.06	0	7	115	2.8	0.18	0.7	1		468719.983	4496329.761
3676	41.0222	-111.3568	3	1	9	5	2005	9	31	55.12	7.41	0	15	179	11.5	0.14	0.6	0.8		470002.617	4541282.782
3677	41.1497	-111.6112	1.42	0	9	21	2005	6	18	31.22	10.8	0	18	87	17.4	0.15	0.4	1.7		448713.49	4555555.405
3678	40.2135	-111.0298	1.27	0	9	24	2005	15	59	46.68	5.21	0	12	264	29.3	0.17	3.2	15.6		497464.221	4451454.494
3679	40.6253	-111.3745	1	0	9	26	2005	15	5	59.99	0.5	0	5	144	2.7	0.01	0.5	0.6		468326.252	4497230.562

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3680	40.6298	-111.3643	1.12	0	9	27	2005	21	16	9.27	7.38	0	5	156	3.5	0.17	8.2	14.2		469190.998	4497726.453
3681	40.4468	-111.3555	1.6	0	9	28	2005	20	11	13.72	2.17	0	5	229	6.3	0.18	2.4	13.9		469853.301	4477410.241
3682	40.4543	-111.3485	1.41	0	10	6	2005	18	41	59.07	1.71	0	8	132	5.3	0.22	1.1	24.4		470450.193	4478240.37
3683	40.4548	-111.3543	1.34	0	10	11	2005	16	13	35.28	1.81	0	8	134	5.4	0.22	1	17.1		469958.624	4478297.826
3684	40.1075	-111.2862	2.73	1	10	13	2005	16	48	46.79	6.94	0	43	121	31.2	0.21	0.5	0.8		475608.389	4439728.024
3685	40.1127	-111.2762	2.62	1	10	13	2005	16	58	25.99	8.87	0	33	123	32.2	0.16	0.4	0.8		476462.441	4440302.491
3686	40.1168	-111.29	1.28	0	10	13	2005	18	23	41.01	3.96	0	13	125	31.3	0.2	0.6	14.7		475287.897	4440761.305
3687	40.6067	-111.3695	0	0	10	28	2005	20	17	24.79	2.77	0	5	171	2.7	0.05	0.9	3.4		468740.466	4495164.129
3688	40.5853	-111.594	0.64	0	11	1	2005	21	44	57.5	8.67	0	12	141	14.4	0.08	0.6	2.1		449731.755	4492892.614
3689	40.5883	-111.5965	0.38	0	11	2	2005	10	22	30.82	10.01	0	16	170	3.5	0.08	0.5	0.6		449522.443	4493227.051
3690	40.5878	-111.5968	0.59	0	11	3	2005	12	25	24.31	9.85	0	14	136	3.5	0.05	0.5	0.9		449496.68	4493171.722
3691	40.7105	-111.5643	1.43	0	11	4	2005	9	13	42.27	8.55	0	11	167	12.1	0.11	0.7	2.4		452334.346	4506773.725
3692	40.715	-111.562	0.85	0	11	4	2005	9	17	24.21	8.4	0	13	170	12.1	0.12	0.8	2.1		452531.82	4507272.001
3693	40.716	-111.5625	0.54	0	11	4	2005	9	17	45.21	8.19	0	13	170	12.2	0.14	0.8	2.3		452490.3	4507383.276
3694	40.5823	-111.5948	0.71	0	11	10	2005	17	56	25.93	8.88	0	14	176	3.7	0.07	0.6	1.3		449661.804	4492560.064
3695	40.5027	-111.3127	0.11	0	11	15	2005	20	27	39.49	6.04	0	6	132	2	0.19	1.5	2.9		473504.765	4483601.39
3696	39.9592	-112.093	1.3	0	11	17	2005	18	56	33.19	0.13	0	6	173	1.6	0.14	1.1	1		406645.341	4423800.748
3697	40.6065	-111.353	1.45	0	11	21	2005	23	56	28.12	4.92	0	5	108	4.1	0.25	1.8	5.6		470136.272	4495136.2
3698	40.5145	-111.3673	1.43	0	12	7	2005	23	26	5.65	1.45	0	11	90	3	0.18	0.6	49.6		468883.923	4484929.025
3699	40.6337	-111.352	1.33	0	12	9	2005	23	45	47.1	2.28	0	5	153	4.5	0.29	2.1	19		470232.948	4498155.129
3700	40.4398	-111.5362	0.36	0	12	11	2005	12	14	50.72	5.81	0	9	83	3	0.18	0.7	2		454525.011	4476710.603
3701	40.6298	-111.3583	0.86	0	12	14	2005	19	24	38.57	3.94	0	5	151	4	0.24	1.9	6.8		469698.422	4497724.369
3702	41.0922	-112.0887	0.9	0	12	16	2005	4	11	44.53	7.85	0	14	53	14.4	0.13	0.4	2.6		408565.613	4549563.222
3703	40.157	-111.2162	2.28	1	12	20	2005	12	57	32.17	2.49	0	31	123	28.6	0.19	0.5	1.3		481587.56	4445205.322
3704	40.1625	-111.21	1.32	0	12	21	2005	16	41	30.52	3.93	0	9	125	28.1	0.26	1.9	23.8		482117.02	4445814.52
3705	40.7025	-112.394	0.87	0	12	25	2005	5	55	0.2	1.92	0	13	83	22.5	0.14	0.5	24.4		382235.15	4506666.939
3706	40.7027	-111.4813	2.15	1	12	27	2005	21	55	57.14	8.61	0	42	90	6.1	0.21	0.4	0.6		459340.526	4505866.165
3707	40.7328	-112.0142	0.87	0	1	4	2006	8	33	3.6	2.27	0	13	88	12.6	0.18	0.5	12.7		414360.026	4509590.639
3708	40.6385	-111.3558	1.57	0	1	11	2006	18	11	58.31	5.63	0	5	145	4.2	0.35	3.1	10.9		469913.754	4498689.235
3709	40.705	-111.4017	1.14	0	1	11	2006	18	22	35.87	1.54	0	7	217	6.1	0.19	2	38.2		466066.196	4506087.682
3710	40.7047	-111.6223	2.2	1	1	12	2006	12	6	58.77	7.97	0	29	75	10.9	0.18	0.3	0.9		447430.576	4506162.987
3711	40.7437	-112.166	1.83	1	1	24	2006	21	13	1.04	2.9	0	28	102	10.9	0.17	0.5	1.1		401557.718	4510959.784
3712	40.7345	-112.1628	1.77	1	1	26	2006	5	14	0.66	1.95	0	19	129	9.9	0.12	0.5	1		401814.363	4509934.928
3713	40.7362	-112.1643	0.8	0	1	26	2006	5	15	10.81	5.48	0	10	129	10.1	0.13	0.6	2.3		401690.204	4510125.32
3714	40.4267	-111.5087	0.34	0	2	6	2006	11	16	6.02	10.27	0	9	133	2.1	0.2	0.8	2		456848.917	4475242.718
3715	40.2507	-111.51	0.66	0	2	8	2006	21	0	3.85	3.94	0	6	260	18.2	0.18	2.9	16		456626.08	4455707.802
3716	40.5598	-111.9687	2.14	1	2	9	2006	5	9	9.34	12.26	0	44	48	2.5	0.31	0.5	0.8		417990.631	4490343.37
3717	40.635	-111.359	1.39	0	2	9	2006	17	24	44.51	1.99	0	6	138	3.9	0.18	1.2	12.2		469641.578	4498301.824
3718	40.9327	-111.631	1.52	1	2	19	2006	19	49	45.89	10.26	0	29	88	20.2	0.17	0.4	2		446877.837	4531477.821
3719	40.9327	-111.633	1.02	1	2	19	2006	19	51	7.97	8.79	0	17	102	20.1	0.16	0.4	2.8		446709.462	4531479.038

FID_1	lat	lon	mag	fwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3720	40.9285	-111.626	1.78	1	2	19	2006	20	12	2.22	9.76	0	32	89	20.8	0.13	0.3	1.2		447295.439	4531008.557
3721	40.9252	-111.6287	0.9	1	2	19	2006	22	23	12.6	12.01	0	14	98	20.8	0.13	0.5	2		447065.484	4530643.858
3722	40.7152	-111.9333	0.88	1	2	21	2006	3	10	54.99	6.52	0	18	78	9.7	0.18	0.4	2.2		421170.626	4507561.161
3723	40.6348	-111.3565	1.45	0	2	24	2006	18	38	40.94	1.85	0	6	139	4.1	0.1	0.7	11		469852.898	4498278.764
3724	40.6417	-111.1755	1.6	1	2	28	2006	15	27	48.48	1.61	0	10	215	5.3	0.25	2.2	27.2		485160.539	4498998.405
3725	40.6283	-111.3543	1.69	0	3	8	2006	21	22	15.79	2.2	0	5	156	4.3	0.09	1	8.4		470036.034	4497556.495
3726	40.5027	-111.5843	0.02	0	3	11	2006	22	30	40.2	7.64	0	11	83	11	0.1	0.5	2.1		450491.857	4483718.391
3727	40.6723	-111.4193	1.1	0	3	15	2006	17	42	57.04	0.67	0	5	235	2.3	0.12	8.9	5.5		464562.105	4502464.801
3728	40.6767	-111.4728	0.49	0	3	19	2006	0	6	24.24	5.31	0	5	297	3.5	0.04	5.4	3.4		460043.068	4502976.16
3729	40.6317	-111.3613	1.63	0	3	20	2006	21	24	12.9	1.47	0	6	134	3.7	0.11	0.8	36.5		469445.576	4497936.312
3730	40.3952	-111.5502	0.69	0	3	28	2006	1	6	6.33	0.44	0	7	232	2.9	0.34	5	2.8		453306.846	4471767.346
3731	40.6382	-111.3517	1.02	0	3	29	2006	17	17	4.06	2.2	0	7	143	4.6	0.3	1.6	16.9		470260.315	4498654.54
3732	40.637	-111.3618	0.64	0	3	29	2006	19	24	39.08	1.63	0	5	143	3.7	0.11	1.1	25.4		469405.711	4498524.8
3733	39.9672	-111.5825	1.85	0	4	2	2006	7	9	36.55	9.26	0	14	109	6.9	0.14	0.5	0.9		450254.041	4424279.185
3734	40.0202	-111.2628	1.39	0	4	6	2006	12	18	21.11	2.81	0	11	118	31.6	0.19	0.7	25.3		477574.069	4430032.298
3735	40.3478	-111.4268	0.5	0	4	19	2006	12	55	31.46	2.82	0	7	142	11.2	0.31	1.4	20.5		463753.933	4466448.183
3736	40.6272	-111.3818	0.48	0	4	26	2006	20	49	1.86	0.39	0	5	135	2	0.1	0.9	0.8		467709.76	4497444.12
3737	40.3753	-110.9437	1.33	0	5	3	2006	11	26	54.51	4.14	0	12	186	26.8	0.17	1.4	16.4		504779.338	4469414.723
3738	40.3247	-111.4798	0.94	0	5	9	2006	7	16	54.03	6.13	0	16	86	10.7	0.15	0.4	2.4		459238.984	4463907.2
3739	40.7562	-111.6623	1.95	1	5	21	2006	22	50	10.08	8.19	0	35	76	10.3	0.16	0.3	1		444094.634	4511904.47
3740	40.4572	-111.335	1.52	0	5	24	2006	18	15	38.48	1.98	0	6	127	4.9	0.1	0.8	8.7		471596.1	4478557.837
3741	40.5423	-111.5478	0.36	0	5	29	2006	10	28	13.12	7.38	0	5	200	12.5	0.14	7.4	27.5		453611.85	4488094.188
3742	40.9227	-110.9927	1.07	0	6	1	2006	17	19	38.59	17.88	0	10	226	41.1	0.22	2.4	1.7		500614.658	4530176.112
3743	40.6457	-111.5818	0.65	0	6	5	2006	17	14	50.57	8.16	0	13	136	7.8	0.11	0.6	2		450808.527	4499590.3
3744	40.8188	-111.693	1.7	1	6	11	2006	2	31	12.1	11.67	0	31	76	10.6	0.13	0.3	0.6		441558.107	4518873.493
3745	40.2468	-111.0733	3.41	1	6	11	2006	10	1	50.22	10.37	0	40	151	24.1	0.18	0.5	0.7		493765.718	4455152.766
3746	40.7813	-111.8333	1.19	1	6	15	2006	21	32	3.82	0.26	0	9	94	2.1	0.18	0.9	0.5		429686.69	4514813.737
3747	40.5305	-111.5353	0.3	0	6	18	2006	10	3	20.71	13.08	0	9	115	10.9	0.19	1	3.6		454662.411	4486777.869
3748	41.0228	-111.0647	2.44	1	7	3	2006	21	42	47.75	9.3	0	31	160	40.8	0.18	0.8	0.7		494560.506	4541290.099
3749	40.7035	-111.4025	0.85	0	7	3	2006	23	4	42.77	2.02	0	6	178	5.9	0.11	0.9	14.9		465997.853	4505921.485
3750	40.7545	-112.0492	1.97	1	7	7	2006	23	57	53.21	9.91	0	26	84	3.4	0.16	0.4	1		411433.338	4512034.229
3751	40.751	-112.0428	1.81	1	7	8	2006	5	23	32.91	8.72	0	22	81	2.8	0.17	0.4	1.4		411968.977	4511639.263
3752	40.7542	-112.039	1.96	1	7	11	2006	1	29	40.65	9.51	0	15	102	2.5	0.13	0.4	1.4		412293.976	4511990.682
3753	40.6547	-111.442	1.69	0	7	12	2006	19	55	0.19	0.32	0	5	138	0.5	0.03	0.4	0.3		462633.747	4500520.538
3754	40.4065	-111.4403	0.07	0	7	20	2006	5	16	1.26	3.89	0	8	218	15.6	0.09	1	12.6		462639.876	4472969.382
3755	40.953	-111.4835	0.86	0	7	26	2006	17	12	6.33	20.4	0	6	266	19.3	0.25	3.5	2.8		459307.969	4533652.173
3756	40.6452	-111.5843	0.35	0	8	7	2006	9	40	6.3	7.96	0	12	135	15	0.09	0.6	2.1		450596.781	4499536.199
3757	40.5832	-111.3482	0.64	0	8	10	2006	18	47	24.96	2.75	0	5	112	5.2	0.16	1.7	12.7		470532.124	4492548.237
3758	40.5887	-111.5942	0.18	0	8	13	2006	15	6	4.43	8.01	0	11	171	14.4	0.07	0.8	2		449717.376	4493270.137
3759	40.652	-111.5858	1.62	1	8	25	2006	19	10	27.8	9.99	0	25	69	8.2	0.11	0.4	0.9		450474.981	4500291.867

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3760	40.645	-111.5952	0.56	0	8	25	2006	19	10	47.9	10.44	0	11	146	7.1	0.14	0.8	2		449675.018	4499520.178
3761	40.5985	-111.5602	1.02	0	8	28	2006	18	33	45.3	3.23	0	6	163	12.9	0.09	1.4	12.7		452601.473	4494339.102
3762	40.8067	-111.9153	1.26	0	9	1	2006	20	8	19.77	0.15	0	8	151	2.9	0.23	1.1	0.8		422796.93	4517702.3
3763	40.606	-111.5527	1.51	0	9	12	2006	18	50	17.02	2.33	0	11	156	11.2	0.21	1.2	20.3		453241.278	4495167.611
3764	40.5013	-111.3572	1.08	0	9	13	2006	18	53	3.57	12.24	0	11	146	1.8	0.17	0.8	1.6		469733.62	4483460.306
3765	40.5025	-112.234	1.49	0	9	18	2006	15	59	18.22	0.64	0	8	238	12.8	0.2	2.7	2.2		395441.021	4484263.584
3766	40.2745	-111.8727	1.69	0	9	18	2006	21	52	53.04	1.92	0	12	261	6.8	0.16	2.9	15.1		425805.259	4458590.049
3767	40.7658	-111.5807	0.86	0	9	19	2006	18	26	28.08	12.71	0	12	176	16.5	0.18	0.8	2.1		450989.656	4512921.346
3768	40.7558	-111.5845	0.73	0	9	19	2006	18	28	22.6	13.35	0	10	195	15.7	0.16	0.8	2		450661.545	4511813.418
3769	40.7252	-112.2567	1.64	0	10	4	2006	18	21	14.56	2.2	0	14	153	15.8	0.13	0.8	1		393870.582	4509011.814
3770	40.7452	-112.2507	0.82	0	10	4	2006	18	40	9.61	6.84	0	5	147	13.5	0.02	0.7	2.6		394408.93	4511224.746
3771	40.493	-111.3563	0.52	0	10	8	2006	2	26	12.53	12.6	0	9	103	2	0.18	0.9	2.7		469806.158	4482538.696
3772	40.8268	-111.8965	1.3	0	10	11	2006	22	6	51.72	0.05	0	7	112	3.8	0.07	0.6	0.3		424405.501	4519917.174
3773	40.3093	-111.7767	0.56	0	10	13	2006	4	46	58.22	8.88	0	14	89	9.5	0.14	0.6	1.3		434000.888	4462376.813
3774	40.8767	-110.9263	1.1	0	10	16	2006	8	9	5.03	9.03	0	11	265	33.4	0.15	2.8	1.1		506209.819	4525072.353
3775	40.683	-111.3722	1.23	0	11	1	2006	18	4	10.51	3.32	0	5	210	6.3	0.11	1.3	10.2		468547.885	4503634.62
3776	40.4677	-111.9582	1.15	0	11	11	2006	6	47	42.58	9.13	0	12	86	1.5	0.13	0.6	0.8		418768.486	4480110.314
3777	40.155	-111.8645	0.91	0	11	11	2006	15	45	40.98	5.77	0	7	276	28.1	0.21	5.6	14.7		426373.184	4445319.137
3778	40.7362	-112.0467	2.45	1	11	17	2006	6	22	8.2	7.47	0	67	39	1.4	0.21	0.3	0.5		411620.151	4510000.274
3779	39.8335	-112.002	1.55	0	11	20	2006	16	30	39.23	3.53	0	18	139	14.9	0.2	0.5	2.6		414261.414	4409757.871
3780	39.8365	-111.9995	2.02	1	11	20	2006	16	40	52.05	4.31	0	20	117	14.7	0.21	0.5	2.1		414479.058	4410088.448
3781	40.9973	-111.653	2.12	1	11	24	2006	16	5	31.99	11.57	0	27	78	15.8	0.22	0.5	1.3		445079.291	4538662.654
3782	40.9985	-111.6503	1.89	1	11	24	2006	16	7	30.39	11	0	28	78	15.9	0.18	0.4	1.4		445307.368	4538794.172
3783	40.1445	-111.2958	1.04	0	12	3	2006	5	24	33.29	3.94	0	14	117	30	0.17	0.6	13.3		474803.885	4443837.438
3784	40.9247	-111.6995	0.81	0	12	11	2006	19	12	30.25	10.61	0	11	214	16.1	0.14	1.2	2.3		441103.868	4530633.617
3785	41.127	-111.5745	3.35	1	12	20	2006	18	15	36.27	7.94	0	58	131	11.8	0.2	0.4	0.7		451776.42	4553014.443
3786	40.9788	-111.5798	1.64	1	12	31	2006	15	19	30.9	12.13	0	23	95	21.1	0.12	0.4	2		451222.193	4536565.515
3787	40.6265	-111.377	0.79	0	1	5	2007	17	44	22.96	0.55	0	6	222	2.4	0.07	1.7	0.8		468115.382	4497364.668
3788	40.4838	-111.5018	0.54	0	1	8	2007	10	43	47.76	3.45	0	8	100	8.1	0.08	0.6	4.5		457470.238	4481577.451
3789	40.8143	-111.683	1.29	0	1	27	2007	19	21	58.05	10.96	0	22	78	11.2	0.15	0.5	1.4		442397.538	4518367.341
3790	40.6187	-111.3983	1.22	0	1	31	2007	16	44	5.62	0.06	0	8	90	0.9	0.1	0.5	0.6		466310.02	4496506.784
3791	40.7415	-111.6242	0.64	0	2	4	2007	14	51	13.73	9.87	0	12	183	16.1	0.17	0.8	2.4		447299.106	4510249.115
3792	40.5172	-111.3098	0.43	0	2	8	2007	21	48	26.33	8.23	0	8	191	2.8	0.12	2	1.8		473756.137	4485210.027
3793	40.6243	-111.4085	-0.27	0	2	9	2007	10	10	13.71	6.35	0	6	135	0.8	0.01	0.8	0.7		465450.142	4497132.353
3794	40.6243	-111.3948	0.75	0	2	9	2007	18	33	48.65	0.9	0	6	199	1.1	0.02	0.8	0.2		466608.855	4497127.064
3795	39.9427	-111.6587	1.83	1	2	11	2007	20	51	18.24	1.6	0	21	68	8.4	0.21	0.5	31.4		443726.376	4421605.193
3796	40.3922	-111.4348	0.24	0	2	14	2007	2	18	46.17	8.27	0	7	206	8.2	0.13	0.8	2.6		463098.754	4471379.795
3797	40.4568	-111.3323	0.2	0	2	14	2007	15	27	3.4	9.68	0	6	159	8.1	0.12	0.9	2.8		471824.861	4478512.573
3798	39.8543	-111.9855	1.5	0	2	19	2007	20	0	55.18	9.73	0	8	129	13.6	0.1	0.5	2.3		415698.746	4412050.78
3799	40.6262	-111.3935	0.69	0	2	28	2007	17	25	59.03	1.47	0	6	126	1.1	0.23	1.9	4.7		466719.749	4497337.477

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3800	40.6213	-111.365	0.83	0	3	1	2007	17	14	57.41	0.04	0	7	156	3.2	0.17	0.9	0.5		469127.885	4496783.176
3801	40.202	-111.7262	1.15	0	3	4	2007	1	0	31.89	8.27	0	16	123	16.6	0.18	0.7	3.4		438194.551	4450430.465
3802	40.8098	-111.6412	0.74	0	3	5	2007	8	45	32.52	10.33	0	20	147	14.5	0.17	0.6	2		445919.211	4517841.182
3803	40.6267	-111.3503	0.8	0	3	7	2007	17	35	34.84	1.84	0	6	183	4.7	0.17	1.5	20.6		470373.616	4497377.537
3804	40.6937	-111.3962	1.08	0	3	9	2007	15	47	47.74	8.38	0	5	254	7.1	0.13	5.8	5.9		466525.156	4504831.226
3805	40.7052	-111.39	1	0	3	19	2007	14	56	22.29	2.24	0	6	196	6.7	0.13	1.1	15.6		467054.66	4506105.43
3806	40.9597	-111.6868	0.93	0	3	19	2007	23	19	3.05	11.21	0	13	136	14.6	0.14	0.6	2		442203.704	4534510.476
3807	40.324	-111.3182	0.74	0	3	26	2007	0	45	55.52	2.35	0	14	190	11.2	0.16	0.8	14.7		472967.33	4463767.634
3808	40.717	-111.5695	0.72	0	4	6	2007	4	48	19.26	6.39	0	15	94	12.8	0.15	0.6	2.2		451899.785	4507498.091
3809	41.025	-111.625	1.32	0	4	8	2007	1	58	39.22	13	0	20	79	17.8	0.12	0.4	1.1		447456.263	4541720.418
3810	40.51	-111.1177	0.59	0	4	23	2007	10	51	0.39	13.48	0	11	252	15.9	0.13	1.5	2.8		490028.305	4484371.384
3811	40.6162	-111.41	0.74	0	4	25	2007	20	26	3.76	0.15	0	7	87	1	0.12	0.4	0.4		465319.087	4496233.822
3812	40.7933	-111.9808	0.97	0	5	3	2007	8	36	52.78	1.86	0	9	93	8	0.2	0.9	23.2		417255.466	4516274.54
3813	40.7408	-111.505	0.61	0	5	4	2007	2	31	49.17	6.92	0	14	187	10.7	0.1	0.8	2.9		457362.699	4510106.685
3814	40.4908	-111.3688	0.53	0	5	4	2007	21	1	13.86	11.69	0	9	105	3	0.17	0.8	1.9		468745.851	4482298.849
3815	40.4875	-111.3742	0.78	0	5	4	2007	22	57	13	10.78	0	14	108	3.6	0.19	0.7	1.8		468286.671	4481934.476
3816	40.4892	-111.374	0.48	0	5	5	2007	6	51	55.76	10.34	0	13	107	3.5	0.19	0.7	1.6		468304.42	4482123.104
3817	40.4858	-111.3757	0.22	0	5	5	2007	6	54	35.68	10.19	0	13	109	3.8	0.19	0.7	2		468158.742	4481746.316
3818	40.3275	-111.5177	1.38	0	5	8	2007	13	22	47	1.9	0	16	163	9.6	0.19	0.7	19		456021.024	4464236.13
3819	40.6067	-111.3913	0.84	0	5	10	2007	21	36	52.05	0.56	0	6	146	0.9	0.19	1	0.5		466896.191	4495172.099
3820	40.7347	-111.5918	1.14	0	5	11	2007	12	56	20.08	7.75	0	14	94	14.2	0.14	0.5	2.2		450029.548	4509475.333
3821	40.6135	-111.4017	0.94	0	5	11	2007	21	20	31.76	0.64	0	5	103	0.3	0.08	0.6	0.3		466019.798	4495930.878
3822	40.6165	-111.4028	0.74	0	5	12	2007	18	28	42.83	0.54	0	5	138	0.7	0.02	0.6	0.3		465928.272	4496264.311
3823	40.8092	-112.1588	0.61	0	5	15	2007	18	45	54.21	8.5	0	9	117	5.4	0.09	0.6	1.1		402261.664	4518222.794
3824	40.6732	-112.0513	1.21	0	5	19	2007	18	2	42.71	9.48	0	21	46	6.1	0.14	0.3	0.7		411148.041	4503011.498
3825	40.6697	-112.044	0.81	0	5	20	2007	19	39	24.8	8.34	0	13	87	6.6	0.13	0.4	1.1		411760.406	4502615.624
3826	40.7268	-111.4682	0.39	0	5	24	2007	8	33	43.83	8.44	0	17	183	8	0.17	0.9	2		460461.458	4508535.394
3827	40.0427	-111.2883	1.44	0	5	25	2007	23	59	49.11	1.65	0	25	106	29.5	0.21	0.5	1.4		475406.116	4432536.327
3828	40.3833	-111.459	0.57	0	5	27	2007	9	46	13.29	1.85	0	10	121	6.7	0.22	0.7	15.4		461039.778	4470402.291
3829	40.5685	-111.9358	2.32	1	5	29	2007	3	5	14.48	7.85	0	59	36	3.5	0.23	0.3	0.6		420786.216	4491278.996
3830	40.6192	-111.3945	1.33	0	5	29	2007	17	2	26.7	7.73	0	6	129	1.1	0.18	1.9	3.5		466631.691	4496560.837
3831	40.8688	-111.557	2.14	1	5	31	2007	6	0	59.07	12.98	0	16	180	23.4	0.16	0.6	1.7		453062.573	4524342.072
3832	40.8698	-111.5618	1.56	0	5	31	2007	6	1	38.89	13.07	0	16	102	23	0.18	0.6	2.7		452658.795	4524455.664
3833	40.8818	-111.5525	1.23	0	5	31	2007	6	6	27.31	10.38	0	19	104	24.3	0.11	0.4	1.3		453450.889	4525782.771
3834	40.8813	-111.5547	1.91	1	5	31	2007	6	27	54.43	7.63	0	35	104	24.1	0.18	0.4	0.9		453265.182	4525728.439
3835	40.6163	-111.3847	0.9	0	5	31	2007	19	39	33.35	0.56	0	5	143	1.5	0.01	0.5	0.4		467459.207	4496235.261
3836	40.4797	-111.3038	1.24	0	6	5	2007	16	31	24.19	2.26	0	7	180	3.7	0.19	1.7	4.9		474250.077	4481045.757
3837	40.1005	-111.307	1.58	0	6	6	2007	19	50	29.85	2.73	0	21	108	29.4	0.17	0.5	16.7		473833.009	4438956.989
3838	40.0965	-111.3048	0.97	0	6	6	2007	20	0	15.14	3.93	0	11	120	29.4	0.17	0.5	13.8		474019.004	4438512.374
3839	40.5803	-111.3368	0.23	0	6	14	2007	0	40	9.26	10.72	0	5	117	6.1	0.02	2.7	8		471495.667	4492222.58

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3840	40.5768	-111.338	0.75	0	6	14	2007	0	42	59.19	6.5	0	10	117	6	0.24	0.9	2.5		471392.617	4491834.463
3841	40.0552	-111.0272	2.06	1	6	14	2007	15	14	42.07	10.3	0	21	135	32.4	0.18	0.6	2		497680.087	4433884.262
3842	40.4403	-111.3428	1.57	0	6	18	2007	17	42	9.26	1.79	0	11	146	6.8	0.26	0.9	23.7		470927.473	4476684.49
3843	40.9735	-111.8272	0.87	0	6	20	2007	21	47	45.59	12.59	0	17	103	5.9	0.11	0.4	1.1		430403.013	4536144.757
3844	40.9807	-111.8308	0.69	0	6	20	2007	21	49	44.55	12.39	0	10	174	5.1	0.15	0.7	1.8		430107.723	4536946.908
3845	40.9758	-111.8158	0.71	0	6	21	2007	11	31	13.6	13.57	0	10	158	5.8	0.06	0.5	0.6		431364.553	4536391.063
3846	40.9672	-111.816	0.36	0	6	21	2007	11	31	47.56	13.05	0	12	158	6.8	0.2	0.8	1.8		431338.81	4535436.53
3847	40.5907	-111.4238	1.12	0	6	21	2007	18	51	54.9	0.04	0	7	156	1.6	0.21	0.6	0.8		464138.149	4493408.793
3848	40.5622	-111.4432	0.6	0	6	26	2007	23	41	42.92	0.29	0	6	217	3.6	0.14	1.2	0.8		462480.603	4490253.322
3849	40.5617	-111.445	1.22	0	6	28	2007	16	27	32.05	0.12	0	6	219	3.8	0.27	1.6	1.3		462327.942	4490198.59
3850	40.509	-111.37	1.24	0	6	29	2007	13	26	43.3	8.22	0	11	93	3	0.07	0.4	1.1		468652.629	4484319.478
3851	40.3887	-111.4903	0.15	0	7	7	2007	20	12	49.41	1.64	0	6	185	4.2	0.25	1.4	23.1		458386.327	4471015.942
3852	40.8172	-111.7532	0.7	0	7	8	2007	3	49	29.19	7.91	0	19	84	6.2	0.2	0.5	1.8		436479.769	4518737.765
3853	40.816	-111.8837	1.56	0	7	11	2007	20	36	40.23	0.12	0	11	98	2.4	0.15	0.5	0.6		425472.744	4518707.324
3854	40.4267	-111.3828	1.62	0	7	16	2007	14	23	5.91	12.49	0	8	165	9.2	0.2	1	3.4		467528.564	4475188.838
3855	40.5815	-111.5952	0.83	0	7	18	2007	1	42	50.23	7.73	0	22	96	12.4	0.1	0.4	0.7		449627.352	4492471.491
3856	40.6193	-111.3877	0.84	0	7	18	2007	15	58	12.06	0.39	0	6	137	1.5	0.06	0.5	0.3		467206.911	4496569.382
3857	40.5632	-111.4692	0.88	0	7	19	2007	17	0	24.78	3.94	0	5	248	4.6	0.35	6.1	8.2		460280.139	4490375.72
3858	40.6207	-111.3965	1.12	0	7	19	2007	18	6	10.77	0.21	0	7	186	1.1	0.13	0.5	0.6		466463.273	4496728.102
3859	40.741	-112.0223	0.79	0	7	20	2007	10	47	39.54	4.67	0	13	71	12.8	0.15	0.4	3.9		413686.643	4510508.83
3860	40.7408	-112.029	2.23	1	7	20	2007	13	42	23.49	7.68	0	55	55	1.6	0.22	0.3	0.5		413120.689	4510493.238
3861	40.7512	-112.0367	0.64	0	7	20	2007	14	32	6.46	2.39	0	8	132	12.9	0.17	0.8	13		412484.197	4511655.364
3862	40.9232	-111.6873	1.29	0	7	21	2007	21	54	32.95	9.13	0	22	78	17	0.17	0.4	1		442129.775	4530458.96
3863	40.631	-111.382	0.47	0	7	25	2007	14	59	46.66	1.53	0	6	161	2	0.25	1.5	18.7		467694.677	4497866.004
3864	40.622	-111.3893	0.65	0	7	25	2007	19	31	23.77	0.61	0	6	133	1.6	0.2	0.7	0.4		467072.903	4496869.686
3865	40.6368	-111.3677	0.75	0	7	27	2007	16	25	20.83	1.84	0	5	173	3.2	0.08	1.2	9.5		468906.706	4498504.668
3866	40.5825	-111.457	0.59	0	7	30	2007	18	5	22.63	1.43	0	5	237	2.2	0.29	8.7	271.5		461324.041	4492512.627
3867	40.6235	-111.4093	0.73	0	7	30	2007	22	35	27.28	0.87	0	5	150	0.9	0.15	0.8	0.3		465382.067	4497043.865
3868	40.618	-111.4053	0.7	0	8	1	2007	14	42	2.4	0.63	0	6	88	0.9	0.07	0.6	0.2		465717.57	4496431.785
3869	40.6198	-111.4127	0.85	0	8	2	2007	16	11	23.2	0.28	0	6	94	1.4	0.18	0.5	0.6		465092.574	4496634.499
3870	40.759	-111.4372	0.89	0	8	8	2007	22	41	38.3	2.91	0	5	296	11.2	0.18	16.5	36.8		463097.154	4512096.26
3871	40.6217	-111.4263	0.59	0	8	9	2007	18	36	0.7	1.52	0	5	183	2	0.32	2.1	23.1		463943.263	4496850.887
3872	40.6208	-111.3942	0.58	0	8	15	2007	16	4	59.85	0.12	0	8	108	1.2	0.19	0.6	0.9		466657.862	4496738.328
3873	40.2573	-111.884	1.6	0	8	15	2007	19	34	35.09	2.82	0	24	101	7.6	0.24	0.6	2		424825.509	4456690.413
3874	40.7207	-111.598	0.83	0	8	18	2007	11	37	31.9	7.73	0	17	130	13.2	0.14	0.7	2.3		449495.446	4507924.808
3875	40.1302	-111.2635	1.17	0	8	20	2007	8	8	44.62	3.93	0	16	130	31.4	0.23	0.8	17.7		477550.483	4442241.58
3876	40.6153	-111.3887	1.06	0	8	20	2007	20	10	25.75	0.02	0	6	104	1.1	0.27	1	1.1		467120.366	4496125.745
3877	40.3362	-111.4728	1.02	0	8	26	2007	13	45	26.89	1.66	0	19	136	9.8	0.22	0.6	42.4		459840.483	4465180.469
3878	41.0268	-111.6438	1.95	1	9	2	2007	18	48	22.89	8.18	0	39	75	16.2	0.17	0.4	0.9		445877.212	4541931.725
3879	40.4385	-111.3382	1.6	0	9	10	2007	16	7	5.48	1.81	0	10	148	7	0.26	1.1	24.7		471316.83	4476483.188

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3880	40.4435	-111.3473	1.42	1	9	12	2007	16	34	37.65	1.79	0	11	144	6.5	0.21	0.9	21.7		470547.228	4477041.178
3881	40.3328	-111.4345	0.99	0	9	12	2007	17	37	3.55	2.34	0	9	146	11.9	0.17	0.7	18.6		463091.834	4464786.405
3882	40.555	-111.4037	1.48	0	9	13	2007	18	58	24.41	4.69	0	5	181	3	0.12	1	2.8		465820.85	4489438.041
3883	40.5852	-111.4007	1.63	0	9	13	2007	23	5	6.74	0.03	0	10	90	0.8	0.18	0.5	0.7		466090.092	4492789.131
3884	40.6542	-112.0623	1.48	1	9	14	2007	15	10	50.11	1.56	0	10	80	4.8	0.15	0.5	28.1		410192.862	4500913.563
3885	39.8365	-112.0132	2.08	1	9	17	2007	0	13	3.73	5.37	0	18	69	14.2	0.25	0.7	2.7		413306.813	4410101.639
3886	40.4442	-111.3365	1.1	0	9	17	2007	16	25	20.32	2.02	0	7	141	6.3	0.28	1.5	21.5		471463.42	4477115.332
3887	41.0425	-111.6603	1.47	0	9	18	2007	18	18	53.66	2.81	0	24	70	14.9	0.24	0.6	1.5		444503.273	4543684.963
3888	40.7105	-111.4953	0.98	0	9	19	2007	17	23	6.73	11.21	0	13	174	7.5	0.13	0.9	1.4		458162.705	4506738.573
3889	40.5445	-111.3695	0.92	0	9	20	2007	17	35	42.01	1.58	0	6	164	5.3	0.24	4	39.3		468711.503	4488259.826
3890	40.7245	-111.5963	0.49	0	9	21	2007	6	21	37.62	6.7	0	14	131	13.5	0.12	0.7	2.7		449641.886	4508345.651
3891	40.713	-111.595	0.16	0	9	21	2007	6	23	3.84	6.81	0	9	182	13.4	0.12	1.4	4		449743.024	4507068.349
3892	40.7188	-111.5985	0.84	0	9	21	2007	6	23	25.43	4.91	0	25	129	13.2	0.22	0.6	2.2		449451.781	4507714.186
3893	40.3592	-111.8782	1.57	1	9	24	2007	4	27	35.11	8.97	0	29	67	6.7	0.18	0.4	1.2		425430.901	4467996.238
3894	40.6182	-111.3803	1.07	0	9	25	2007	16	38	43	0.16	0	5	179	2	0.06	0.6	0.5		467832.304	4496444.548
3895	40.6177	-111.3977	1.06	0	9	26	2007	19	37	12.85	0.6	0	6	126	0.8	0.07	0.5	0.2		466360.27	4496395.552
3896	40.593	-111.422	1.09	0	9	26	2007	22	42	17.13	0.8	0	6	153	1.7	0.15	0.6	0.4		464291.688	4493663.366
3897	40.7488	-112.1577	0.71	0	9	30	2007	15	59	41.57	4.09	0	18	75	11.2	0.14	0.4	3		402265.947	4511516.649
3898	40.7382	-112.1872	1.04	0	10	7	2007	4	5	41.48	5.6	0	10	133	11.1	0.17	0.8	2.6		399759.562	4510373.234
3899	40.959	-111.4985	1.36	0	10	9	2007	5	59	0.53	8.38	0	28	120	19.2	0.16	0.4	1.2		458049.343	4534325.32
3900	40.682	-111.5152	0.5	0	10	10	2007	15	14	31.22	9.69	0	11	158	6.9	0.16	1	2.5		456463.224	4503584.618
3901	40.0065	-111.8243	1.56	0	10	18	2007	21	24	48.65	0.48	0	15	82	7.9	0.16	0.6	10.4		429644.245	4428804.024
3902	40.5603	-111.4293	0.62	0	10	22	2007	19	58	21.79	1.46	0	6	171	2.9	0.13	1.2	41.9		463656.293	4490036.593
3903	40.8758	-111.5917	1.43	0	10	24	2007	23	25	4.68	8.16	0	14	95	21.1	0.14	0.4	3.6		450143.7	4525138.307
3904	40.6005	-111.4212	0.76	0	10	24	2007	23	49	31.57	1.43	0	5	120	2	0.21	1.1	66		464363.365	4494495.558
3905	40.5875	-111.4217	0.99	0	10	31	2007	22	27	25.32	0.03	0	7	160	1.2	0.13	0.5	0.6		464314.15	4493052.733
3906	40.5883	-111.4325	0.74	0	11	5	2007	18	5	25.74	0.03	0	7	173	2.1	0.24	0.7	0.9		463400.646	4493145.967
3907	41.165	-111.5287	1.62	0	11	19	2007	5	13	13.86	10.33	0	24	104	11.4	0.16	0.4	1.1		455646.506	4557208.59
3908	40.848	-111.615	1.09	0	11	26	2007	9	29	9.74	10.17	0	26	70	15.6	0.18	0.4	1.3		448158.773	4522065.822
3909	40.6252	-111.3742	1.03	0	12	1	2007	23	13	31.35	1.66	0	7	123	2.7	0.26	1.3	13.7		468351.578	4497219.354
3910	40.6222	-111.355	1	0	12	2	2007	22	32	44.94	1.67	0	6	162	4.1	0.21	1.7	31.6		469974.101	4496879.618
3911	40.6862	-111.3962	1.36	0	12	5	2007	15	33	40.87	7.3	0	7	121	4.8	0.21	1.1	4.5		466521.403	4503998.697
3912	40.5205	-111.3335	1.01	0	12	7	2007	18	46	18.71	1.54	0	6	177	2.2	0.18	3.3	23.2		471749.837	4485583.651
3913	40.686	-111.3952	0.56	0	12	13	2007	22	57	19.88	5.44	0	8	104	4.8	0.2	0.9	3.1		466605.802	4503976.116
3914	40.5062	-111.3628	1.05	0	12	17	2007	22	40	8.48	0.17	0	6	186	2.4	0.1	0.9	0.8		469261.355	4484006.143
3915	40.0978	-111.3088	1.29	0	12	19	2007	8	13	7.6	2.3	0	18	108	29.1	0.15	0.4	1.4		473678.546	4438657.84
3916	40.5045	-111.3608	0.82	0	12	19	2007	18	53	38.62	0.04	0	7	186	2.2	0.27	2.1	1.7		469430.035	4483816.748
3917	40.5043	-111.32	0.33	0	12	20	2007	2	9	36.66	8.78	0	9	128	1.4	0.15	1.2	2.1		472886.875	4483781.208
3918	40.7032	-111.4492	0.71	0	1	3	2008	19	6	16.62	10.61	0	17	96	5.1	0.14	0.4	1.1		462052.577	4505907.307
3919	40.7088	-111.4437	1.36	0	1	3	2008	19	9	11.21	12.57	0	28	59	5.6	0.2	0.4	0.8		462520.346	4506526.57

Post-1962

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3920	40.3777	-111.4472	2.02	1	1	4	2008	12	39	2	2.62	0	24	92	7.8	0.23	0.5	8.1		462038.23	4469775.57
3921	40.2442	-111.8942	1.44	0	1	8	2008	17	36	47.42	2.08	0	13	116	8.6	0.24	0.8	17.8		423943.436	4455245.047
3922	40.3813	-111.4623	2.1	1	1	13	2008	5	29	47.84	7.32	0	39	70	6.6	0.2	0.4	1.2		460758.511	4470181.754
3923	40.4855	-111.3438	0.3	0	1	13	2008	6	55	41.15	13.31	0	10	111	1.9	0.16	0.7	1.8		470862.201	4481701.994
3924	39.933	-111.2808	1.27	0	1	14	2008	22	15	24.46	8.42	0	12	106	31.4	0.19	0.7	5.3		476007.57	4420358.655
3925	41.1015	-112.0788	0.8	0	1	19	2008	5	16	30	2.21	0	15	72	15.5	0.13	0.3	12.1		409409.857	4550585.315
3926	40.1463	-111.7008	0.96	0	1	29	2008	17	18	13.43	2.42	0	11	106	13.7	0.25	0.8	17.5		40307.528	4444230.667
3927	40.4593	-111.51	0.72	0	1	30	2008	6	41	35.64	1.53	0	20	75	5.3	0.21	0.5	39.7		56759.537	4478861.935
3928	39.9318	-111.6602	1.86	1	2	6	2008	23	23	9.02	6.37	0	34	64	9.6	0.22	0.3	1.3		43589.279	4420396.345
3929	40.356	-111.8872	1.6	0	2	14	2008	19	5	2.74	2.03	0	16	70	5.9	0.2	0.6	9.8		24663.127	4467648.665
3930	40.3545	-111.891	1.26	1	2	18	2008	10	18	50.62	0.5	0	25	70	5.6	0.23	0.5	1.3		24338.768	4467485.409
3931	40.6213	-111.5975	0.13	0	2	19	2008	11	42	16.66	7.8	0	15	132	12.7	0.17	0.6	2.3		19462.682	4496890.717
3932	40.724	-111.8457	1.29	1	2	26	2008	0	33	9.63	1.61	0	21	58	7.1	0.21	0.5	21.6		28579.082	4508463.078
3933	40.7487	-112.166	0.46	0	2	26	2008	11	8	28.94	1.63	0	12	127	11.4	0.14	0.6	25.6		1565.091	4511514.825
3934	40.4392	-111.3408	1.5	0	2	28	2008	20	57	53.57	1.89	0	9	148	7	0.27	1.4	24.3		471096.62	4476561.735
3935	40.3543	-111.8998	1.31	1	3	2	2008	2	19	50.45	1.69	0	19	89	5.2	0.2	0.5	16.9		423591.261	4467470.771
3936	40.8142	-111.775	2.54	1	3	7	2008	11	21	52.88	10.45	0	39	43	4.7	0.17	0.3	0.7		434638.331	4518420.77
3937	40.6223	-111.4238	0.5	0	3	15	2008	11	31	5.68	3.91	0	5	196	1.9	0.25	2.3	4.2		464155.036	4496916.468
3938	40.3413	-111.4677	1.84	1	3	16	2008	7	37	26.86	3.59	0	30	135	9.5	0.2	0.5	5.2		460276.668	4465744.254
3939	40.9517	-111.7363	0.93	0	3	24	2008	7	41	7.94	10.15	0	14	56	11.8	0.16	0.5	2.7		438030.616	4533656.31
3940	40.5625	-110.7088	0.98	0	4	3	2008	4	21	6.88	6.68	0	7	257	41	0.21	28.2	153.7		524651.602	4490232.996
3941	40.5108	-111.4532	0.7	0	4	3	2008	22	20	22.15	6.44	0	5	239	10.2	0.11	6.4	14.8		461604.712	4484552.173
3942	40.9735	-111.4583	2.57	1	4	8	2008	10	6	24.55	5.03	0	53	54	9.9	0.22	0.4	0.7		461440.776	4535916.438
3943	40.6892	-111.391	0.97	0	4	11	2008	0	2	15.56	1.72	0	9	120	5.3	0.27	1	36.8		466962.281	4504329.741
3944	40.873	-111.6328	1.04	0	4	12	2008	12	29	33.7	10.88	0	15	111	18	0.16	0.5	2.9		446678.372	4524851.703
3945	40.7817	-111.5693	1.45	0	4	18	2008	7	53	23.27	11.68	0	26	40	16.1	0.17	0.4	0.8		451963.26	4514680.035
3946	39.9712	-111.8805	0.85	0	4	20	2008	1	29	23.98	1.86	0	9	124	11.9	0.19	0.8	29.1		424808.695	4424931.876
3947	39.9798	-111.879	1.32	0	4	20	2008	1	39	23.38	1.64	0	17	87	11.4	0.21	0.4	36.4		424946.2	4425885.144
3948	39.9727	-111.8802	1.8	1	4	20	2008	2	58	3.4	3.28	0	17	64	12.1	0.22	0.6	6.8		424835.957	4425098.111
3949	39.9718	-111.8853	1.95	1	4	20	2008	3	23	13.18	2.04	0	20	90	12.3	0.16	0.5	13		424399.449	4425002.529
3950	39.9688	-111.8788	1.63	0	4	20	2008	10	40	36.49	3.78	0	20	64	11.7	0.19	0.5	4.6		424951.246	4424664.063
3951	39.9728	-111.8783	1.48	0	4	20	2008	11	53	33.77	5	0	19	65	12	0.19	0.5	3.2		424998.318	4425107.611
3952	39.9703	-111.8718	1.63	1	4	20	2008	13	21	28.61	1.69	0	17	89	11.4	0.19	0.5	35.3		425550.675	4424824.684
3953	39.9655	-111.8815	1.36	0	4	20	2008	15	27	59.87	2.2	0	7	128	11.6	0.18	0.7	19.9		424717.045	4424300.066
3954	39.9598	-111.8813	1.78	1	4	20	2008	22	17	29.34	1.03	0	18	62	11.1	0.28	0.6	2.2		424727.875	4423667.243
3955	39.9805	-111.8895	2.81	1	4	20	2008	22	17	57.65	2.7	0	42	47	11.8	0.25	0.4	1.1		424050.415	4425971.73
3956	39.9708	-111.8722	1.48	0	4	20	2008	22	22	56.58	1.72	0	16	89	11.5	0.18	0.5	29.7		425517.059	4424880.514
3957	39.9703	-111.8808	1.45	0	4	20	2008	22	28	7.09	1.85	0	16	90	11.9	0.17	0.5	19.3		424782.089	4424832.236
3958	39.9652	-111.8767	1.32	0	4	21	2008	1	31	14.98	1.66	0	20	64	11.2	0.21	0.5	41.8		425126.659	4424262.728
3959	39.9742	-111.8938	1.83	1	4	21	2008	8	39	33.68	2.92	0	38	58	12.6	0.26	0.4	1.3		423676.247	4425276.151

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FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
3960	39.9617	-111.8885	1.43	0	4	21	2008	15	15	21.92	0.93	0	14	59	11.7	0.25	0.7	13.8		424115.012	4423884.228
3961	39.9678	-111.8838	1.39	0	4	21	2008	22	15	21.74	1.83	0	11	62	11.9	0.18	0.5	21.7		424523.144	4424557.291
3962	39.9695	-111.8813	1.63	0	4	22	2008	0	10	7.93	1.74	0	9	125	11.9	0.12	0.5	26.8		424738.513	4424743.865
3963	39.9655	-111.8748	1.18	1	4	22	2008	7	24	16.21	1.35	0	19	65	11.2	0.23	0.5	2.2		425289.254	4424294.432
3964	39.9645	-111.8705	1.07	0	4	22	2008	15	4	25.42	1.65	0	19	67	10.9	0.23	0.6	48.1		425655.41	4424179.847
3965	39.9673	-111.8772	1.4	0	4	22	2008	21	54	50.64	6.04	0	8	65	11.4	0.13	0.6	2.7		425086.249	4424496.23
3966	39.9752	-111.8867	1.54	0	4	23	2008	21	49	17.9	1.93	0	12	107	12.2	0.2	0.7	22.2		424283.646	4425381.09
3967	40.7425	-111.554	1.15	0	4	27	2008	17	22	17.8	9.22	0	28	118	13.4	0.17	0.4	1		453226.787	4510320.347
3968	40.5433	-111.528	0.07	0	5	6	2008	8	41	8.93	6.82	0	11	158	9.3	0.1	0.6	2.2		455289.202	4488194.958
3969	41.1115	-111.7233	1.21	0	5	20	2008	18	33	30.59	2.21	0	9	123	13.4	0.19	0.8	19.2		439271.768	4551386.787
3970	40.6983	-112.2173	0.51	0	5	21	2008	17	13	45.85	7.65	0	10	189	9.8	0.19	1.1	2.3		397156.636	4505978.829
3971	40.7118	-111.4015	0.89	1	6	6	2008	16	4	16.24	3.94	0	7	199	6.8	0.28	1.8	9		466086.541	4506842.434
3972	40.4493	-111.5003	0.34	0	6	7	2008	23	11	15.51	9.7	0	11	109	4.6	0.2	0.7	2.2		457575.668	4477747.234
3973	40.6795	-111.6113	0.23	0	6	14	2008	13	43	0.69	4.54	0	15	104	11.9	0.14	0.5	4.1		448340.358	4503359.15
3974	40.0618	-111.4307	1.41	0	6	17	2008	3	21	39.42	2.21	0	12	180	17.2	0.22	1.2	18.8		463268.682	4434705.307
3975	40.7597	-111.9828	1.6	1	6	20	2008	9	54	48.65	3.18	0	22	58	2.9	0.19	0.4	2.8		417044.946	4512546.573
3976	40.2572	-111.8705	1.66	1	6	27	2008	21	20	3.04	1.86	0	11	129	8.3	0.3	1.2	30.5		425973.442	4456667.953
3977	40.7208	-112.0597	0.44	0	6	30	2008	2	35	29.17	9.5	0	11	96	9.1	0.14	0.7	2.4		410501.823	4508303.933
3978	40.9042	-111.6897	1.95	1	7	1	2008	7	31	52.75	11.51	0	23	76	17	0.1	0.3	0.9		441911.067	4528351.38
3979	39.9208	-111.0638	1.46	0	7	1	2008	16	31	56.88	13.74	0	8	263	24.3	0.1	1.8	1.9		494547.764	4418968.802
3980	41.026	-111.653	0.71	0	7	3	2008	22	3	47.7	9.2	0	10	142	15.4	0.21	1	4.3		445103.12	4541848.662
3981	40.6975	-111.403	1.01	0	7	10	2008	20	11	32.07	2.09	0	7	137	5.3	0.09	0.7	10.7		465952.559	4505255.654
3982	40.3118	-111.2462	1.36	0	7	16	2008	18	33	53.25	12.61	0	12	118	11.2	0.22	0.8	3		479080.329	4462393.981
3983	40.4972	-111.3692	1.73	0	7	16	2008	21	41	23.31	1.66	0	7	196	2.9	0.22	1.8	14.6		468714.925	4483009.391
3984	40.6108	-111.023	0.94	0	7	25	2008	13	30	59.25	3.95	0	10	218	18.1	0.13	1.3	12.9		498054.331	4495553.886
3985	40.5043	-111.3737	0.7	0	7	25	2008	21	52	53.05	0.01	0	6	193	3.2	0.1	3.4	2.9		468336.944	4483799.098
3986	40.5163	-110.9618	0.75	0	7	27	2008	15	17	28.02	6.76	0	7	249	27.4	0.09	1.6	12.7		503236.05	4485064.732
3987	40.5027	-111.386	0.86	0	7	31	2008	23	14	3.01	1.63	0	7	202	4.2	0.19	2.1	21.7		467294.004	4483625.985
3988	40.7673	-111.9817	1.14	0	8	4	2008	5	56	54.32	3.15	0	14	64	8.6	0.12	0.4	5.1		417147.234	4513389.19
3989	40.6988	-111.4017	1.23	0	8	5	2008	14	30	40.69	1.51	0	11	108	5.5	0.23	0.8	65.6		466063.049	4505399.457
3990	39.9698	-111.8822	1.08	0	8	5	2008	20	51	26.27	2.23	0	13	90	11.9	0.18	0.6	10.5		424661.982	4424777.922
3991	40.954	-111.6208	1.85	1	8	8	2008	7	13	40.17	10.79	0	29	54	19.8	0.13	0.3	1.4		447753.342	4533836.173
3992	40.7128	-112.0722	2.28	1	8	11	2008	6	5	46.44	12.39	0	44	50	3.5	0.23	0.4	0.6		409435.261	4507428.693
3993	39.9775	-111.8848	2.05	1	8	12	2008	10	39	0.5	7.81	0	28	62	11.9	0.19	0.4	1.7		424448.424	4425634.76
3994	39.9817	-111.8855	1.65	1	8	12	2008	12	36	3.96	5.82	0	24	87	11.5	0.18	0.4	1.4		424393.281	4426101.521
3995	40.4903	-111.34	0.39	0	8	14	2008	10	18	56.64	12.22	0	9	115	1.2	0.09	0.6	1.5		471186.313	4482233.546
3996	39.9802	-111.8823	1.22	0	8	14	2008	15	34	59.71	2.14	0	10	86	11.6	0.14	0.5	11.6		424664.863	4425932.324
3997	40.4945	-111.356	0.68	0	8	15	2008	7	28	6.01	10.63	0	17	64	1.9	0.15	0.5	1.1		469832.253	4482705.094
3998	40.4865	-111.3223	0.6	0	8	19	2008	22	37	33.84	11.34	0	6	174	2	0.14	1.4	2.6		472684.781	4481806.117
3999	39.9772	-111.8853	1.05	0	8	21	2008	20	42	47.62	2.64	0	6	121	11.9	0.1	0.6	13.1		424405.399	4425601.887

FID_1	lat	lon	mag	lwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
4000	39.9797	-111.874	1.22	0	8	22	2008	7	24	37.87	4.57	0	18	66	11.4	0.15	0.4	1.1		425373.024	4425869.848
4001	39.9812	-111.879	1.45	0	8	23	2008	17	40	49.37	4.49	0	16	64	11.4	0.15	0.4	2.7		424947.732	4426040.533
4002	40.3175	-111.9003	1.54	1	8	26	2008	20	52	10.49	1.23	0	7	146	2.7	0.3	781.1	999.9		423507.253	4463386.442
4003	40.4727	-111.3315	0.68	0	8	27	2008	3	14	23.52	3.01	0	11	113	3.2	0.09	0.5	1.8		471899.318	4480277.209
4004	40.7273	-111.2573	0.42	0	8	30	2008	4	54	7.28	1.79	0	7	283	6.6	0.11	2.2	16.4		478271.724	4508517.325
4005	40.4888	-111.3478	0.99	0	9	4	2008	20	0	55.06	11.74	0	12	148	1.7	0.08	0.6	1.2		470524.635	4482069.622
4006	40.698	-111.4115	1.08	0	9	8	2008	15	12	54.44	1.42	0	10	100	5	0.15	0.6	999.9		465234.695	4505314.485
4007	40.7028	-111.4002	1.56	0	9	11	2008	16	28	46.52	2.48	0	7	137	6	0.25	1.4	16.7		466191.797	4505842.895
4008	40.3565	-111.8978	1.72	1	9	25	2008	22	11	3.47	2.12	0	24	88	5.4	0.22	0.5	6.4		423763.576	4467713.244
4009	40.7013	-111.527	0.33	0	9	25	2008	22	43	6.24	5.99	0	7	145	8.8	0.09	0.7	4.3		455478.914	4505732.912
4010	40.7162	-111.7923	1.04	0	10	1	2008	14	32	42.75	1.64	0	10	108	4.4	0.27	1	18.8		433081.044	4507555.174
4011	40.7033	-111.4	0.69	0	10	6	2008	16	53	53.5	1.52	0	9	111	6	0.2	0.8	60.3		466208.945	4505898.32
4012	40.6785	-111.4473	0.92	0	10	8	2008	19	29	5.23	4.69	0	6	180	2.4	0.15	2.8	1.6		462199.129	4503164.688
4013	40.2535	-111.3588	0.5	0	10	19	2008	6	52	46.89	15.75	0	7	290	19.8	0.02	4.2	2.2		469486.463	4455955.593
4014	40.322	-111.3713	1.37	0	10	19	2008	6	54	28.19	8.17	0	12	169	14.1	0.13	0.7	2.9		468455.28	4463563.205
4015	40.3247	-111.3703	1.26	0	10	19	2008	6	55	5.9	9.04	0	13	168	13.8	0.14	0.7	2.7		468541.491	4463862.541
4016	40.3668	-111.8875	1.56	1	10	23	2008	21	52	26.25	1.73	0	21	84	11.3	0.22	0.5	37.3		424649.679	4468847.713
4017	40.3323	-111.9372	1.53	1	10	29	2008	21	9	11.88	0.22	0	7	145	2	0.15	0.8	1.1		420389.441	4465061.757
4018	40.8777	-111.5822	2.61	1	11	2	2008	19	33	55.47	4.13	0	33	80	21.9	0.18	0.4	1.1		450945.572	4525343.856
4019	39.991	-111.9038	2.02	1	11	3	2008	6	26	19.12	2.75	0	35	67	11.2	0.26	0.6	1.6		422841.212	4427149.428
4020	39.9898	-111.9015	2.29	1	11	3	2008	7	6	29.61	1.36	0	28	98	11.3	0.21	0.5	1.8		423036.223	4427014.249
4021	40.869	-111.5655	1.62	0	11	3	2008	9	9	58.34	11.51	0	26	116	22.7	0.18	0.5	1.1		452346.432	4524368.864
4022	40.7008	-111.3977	0.72	0	11	15	2008	18	25	9.46	2.2	0	8	110	5.9	0.19	1	15.5		466401.988	4505619.928
4023	40.0842	-111.404	1.23	0	11	16	2008	15	27	10.47	5.92	0	17	190	21	0.15	1	4.2		465557.026	4437180.855
4024	40.3285	-111.7638	1.28	0	11	16	2008	16	59	11.14	1.29	0	15	103	7.2	0.25	0.8	2.7		435115.444	4464498.441
4025	40.4548	-111.3412	0.53	0	11	17	2008	11	43	29.67	10.59	0	10	100	8.6	0.12	0.6	2.1		471069.386	4478293.452
4026	40.4572	-111.4255	0.55	0	12	1	2008	14	22	49.13	2.05	0	10	132	9.9	0.15	0.6	21		463922.788	4478590.882
4027	40.8258	-112.0722	1.45	0	12	9	2008	7	35	7.37	9.52	0	13	89	9.8	0.08	0.5	1.5		409588.567	4519972.589
4028	40.7518	-111.4915	0.46	0	12	11	2008	9	39	36.87	12.37	0	10	193	11.3	0.08	0.9	2.6		458509.349	4511321.273
4029	40.8922	-111.5927	2.12	1	12	11	2008	23	38	35.45	4.92	0	28	79	22	0.13	0.3	0.9		450071.767	4526959.41
4030	40.695	-111.4838	0.76	0	12	14	2008	13	23	28.61	9.44	0	16	133	5.6	0.14	0.6	1.3		459124.623	4505012.592
4031	40.7005	-111.4008	1.23	0	12	23	2008	16	41	41.46	2.04	0	7	175	5.7	0.15	0.8	13.8		466139.945	4505587.816
4032	39.8855	-111.9687	0.87	0	1	4	2009	5	46	23.66	2.6	0	11	94	11.9	0.14	0.6	12		417173.406	4415497.979
4033	40.6847	-111.4273	1.02	0	1	20	2009	15	58	13.9	0.79	0	9	226	3.1	0.15	2.2	1.2		463892.66	4503844.503
4034	39.9637	-111.9023	1.6	0	1	20	2009	22	5	35.71	8.88	0	15	83	12.7	0.19	0.6	1.7		422938.611	4424118.044
4035	40.469	-111.9493	1.65	1	1	24	2009	1	3	55.2	0.07	0	21	67	1.6	0.2	0.4	0.9		419524.548	4480246.464
4036	40.4905	-110.9622	1.34	0	2	2	2009	8	14	8.19	6.98	0	12	154	26.3	0.12	0.6	10.1		503203.392	4482200.92
4037	40.7083	-111.7237	1.11	0	2	11	2009	9	37	32.83	6.75	0	16	137	2.9	0.19	0.6	0.9		438867.936	4506628.227
4038	40.3473	-111.8842	1.59	0	2	16	2009	5	59	18.69	1.57	0	11	74	5.4	0.21	0.7	37.3		424908.226	4466680.422
4039	39.9642	-111.8945	1.84	1	2	17	2009	3	28	47.15	1.57	0	22	58	12.2	0.22	0.5	2.2		423605.34	4424166.83

Post-1962

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	ipd	no_	gap	dmn	rms	erh	erz	qual	X	Y
4040	40.5192	-111.3888	0.93	0	3	4	2009	7	10	25.79	3.19	0	9	144	4.9	0.05	0.7	2.7		467064.831	4485458.535
4041	40.5993	-111.5055	-0.44	0	3	8	2009	9	9	34.04	5.56	0	7	165	4.7	0.02	1.6	1.1		457230.17	4494399.893
4042	40.7273	-112.0557	1.37	0	3	13	2009	1	47	8.86	8.87	0	10	110	9.9	0.13	0.6	2.8		410848.328	4509021.41
4043	40.4642	-111.9528	1.8	0	3	13	2009	16	45	32.97	0	0	10	68	1	0.18	0.6	1.2		419222.085	4479716.853
4044	40.5295	-111.459	0.23	0	3	19	2009	4	52	55.01	5.41	0	10	91	7.2	0.1	0.5	2.1		461124.136	4486630.429
4045	40.4133	-111.6007	0.52	0	3	22	2009	15	35	11.04	7.47	0	12	75	6.2	0.2	0.6	1.8		449034.753	4473804.324
4046	40.4623	-111.7865	0.83	0	3	28	2009	19	11	33.65	2.28	0	10	121	11.3	0.16	0.6	13.6		433319.195	4479367.062
4047	40.7842	-111.109	0.93	0	3	28	2009	20	10	46.16	15.35	0	12	158	15.2	0.1	1.1	0.4		490803.099	4514807.379
4048	40.2125	-111.1297	1.09	0	4	1	2009	5	7	9.28	6.97	0	9	144	33.3	0.12	0.6	10.5		488963.24	4451351.139
4049	40.5772	-111.5103	2.76	1	4	1	2009	23	57	58.94	7.98	0	38	49	5.8	0.19	0.4	0.6		456809.83	4491949.087
4050	40.5877	-111.5103	0.56	0	4	2	2009	0	0	48.57	7.24	0	14	89	5.3	0.08	0.6	1.1		456816.583	4493114.609
4051	40.604	-111.5167	-0.01	0	4	2	2009	0	1	22.98	7.18	0	8	171	5.7	0.04	1.5	0.9		456285.608	4494927.106
4052	40.5817	-111.511	-0.15	0	4	2	2009	3	58	58.8	7.96	0	8	178	5.6	0.08	1.7	1.1		456753.482	4492448.94
4053	40.5813	-111.5075	2.53	1	4	2	2009	3	59	22.2	8.05	0	38	54	5.3	0.22	0.4	1.2		457049.436	4492402.826
4054	40.5838	-111.5105	-0.18	0	4	2	2009	4	6	51.27	6.54	0	10	175	5.5	0.09	1	1.1		456797.149	4492681.799
4055	40.6187	-111.5185	-0.26	0	4	2	2009	5	13	53.43	6.59	0	8	179	6.1	0.06	1.8	1.6		456142.934	4496559.741
4056	40.5788	-111.5058	1.41	1	4	9	2009	9	1	48.05	7.77	0	23	81	5.3	0.1	0.4	0.8		457191.717	4492124.493
4057	40.9135	-111.6405	0.92	0	4	27	2009	0	50	7.09	9.09	0	15	201	20.5	0.2	0.9	3.9		446062.446	4529352.263
4058	40.4568	-111.3383	1.39	0	5	6	2009	23	26	51.33	2.4	0	6	205	5	0.13	4.3	11.1		471316.13	4478514.504
4059	40.8223	-111.8873	1.69	0	5	8	2009	2	19	38.84	1.39	0	10	109	3.1	0.19	200.4	999.9		425176.213	4519409.742
4060	40.4508	-111.4035	0.01	0	5	11	2009	3	16	30.46	14.65	0	8	139	11.2	0.24	1.3	3.8		465784.879	4477871.729
4061	40.4752	-111.364	-0.04	0	5	11	2009	8	19	24.42	13.33	0	10	179	3.8	0.16	1.3	1.9		469145.488	4480565.562
4062	40.4397	-111.3543	1.42	0	5	12	2009	19	21	11.67	1.8	0	7	226	7	0.18	2.3	21.4		469951.9	4476621.739
4063	40.745	-111.6005	0.5	0	5	17	2009	8	1	3.34	6.53	0	14	181	13.9	0.12	0.7	2.8		449302.754	4510623.676
4064	40.6158	-111.394	0.59	0	5	21	2009	21	45	11.56	0.63	0	6	132	0.9	0.06	0.5	0.2		466672.293	4496183.239
4065	40.6168	-111.398	1.1	0	5	27	2009	18	3	14.19	0.7	0	6	126	0.8	0.02	0.6	0.2		466334.442	4496295.764
4066	39.9465	-111.8488	1.37	0	5	29	2009	3	48	51.9	3.61	0	9	76	8.2	0.15	0.5	3.9		427489.703	4422164.138
4067	40.736	-111.9535	1.22	0	6	5	2009	10	32	5.61	10.47	0	10	141	8.7	0.06	0.5	1.5		419489.521	4509888.423
4068	40.7425	-111.4508	1.16	0	6	10	2009	17	38	58.99	1.82	0	6	291	9.4	0.14	8.1	46.4		461939.805	4510270.482
4069	40.394	-111.087	1.34	0	6	12	2009	12	43	48.51	10.54	0	10	248	14.4	0.27	1.8	3.6		492616.564	4471492.49
4070	40.1553	-111.2165	2.84	1	6	23	2009	14	54	28.88	5.71	0	30	110	28.8	0.24	0.6	2.2		481561.551	4445016.696
4071	40.1655	-111.21	1.47	0	6	23	2009	15	27	10.41	5.27	0	8	140	27.8	0.22	1.1	19.9		482117.807	4446147.5
4072	40.1527	-111.2195	1.24	0	6	23	2009	16	4	32.17	3.92	0	12	122	29.1	0.25	0.8	25.4		481305.34	4444728.74
4073	40.4995	-111.3537	0.07	0	6	27	2009	9	16	23.84	10.85	0	8	109	10.2	0.11	0.8	2.8		470029.382	4483259.311
4074	40.3445	-110.9928	0.7	0	6	28	2009	6	39	3.38	3.85	0	8	264	23.6	0.12	2.9	22.7		500611.49	4465994.515
4075	40.5845	-111.5053	0	0	7	2	2009	3	37	45.47	9.15	0	11	94	8.2	0.12	0.7	1.9		457237.665	4492756.962
4076	40.5027	-111.3345	0.76	0	7	7	2009	0	8	0.36	15.4	0	7	193	0.2	0.11	1	2.1		471657.636	4483608.166
4077	40.0045	-111.6373	1.45	0	7	9	2009	12	10	34.18	3.94	0	20	102	1.3	0.18	0.6	0.7		445603.638	4428451.157
4078	39.9557	-111.962	1.55	0	7	13	2009	1	20	13.5	7.7	0	12	91	9.6	0.17	0.5	1.8		417830.244	4423283.391
4079	39.961	-111.9693	1.79	0	7	13	2009	1	31	18.93	7.94	0	20	71	9	0.22	0.5	1.6		417213.092	4423878.4

FID_1	lat	lon	mag	iwa	month_	day_	year_	hour_	min_	sec	depth	lpd	no_	gap	dmn	rms	erh	erz	qual	X	Y
4080	39.958	-111.9688	1.46	0	7	13	2009	1	34	2.74	2.46	0	12	153	17.1	0.24	1.2	19.4		417252.181	4423544.959
4081	39.9687	-111.9697	2.02	1	7	13	2009	4	57	50.28	7.61	0	28	94	9.1	0.24	0.5	1.4		417188.219	4424733.412
4082	40.5195	-111.3712	0.58	0	7	21	2009	18	13	52.39	1.63	0	7	137	3.6	0.11	0.7	13.8		468555.867	4485485.411
4083	40.4688	-111.4655	-0.12	0	7	22	2009	7	37	5.69	1.69	0	7	145	8.1	0.09	0.8	30.2		460538.053	4479895.59
4084	40.1592	-111.2213	1.39	0	8	14	2009	9	45	19.59	3.93	0	11	123	28.4	0.22	0.7	23.4		481153.832	4445450.577
4085	40.3262	-111.4722	1.55	1	8	15	2009	17	33	6.81	1.94	0	23	73	10.8	0.24	0.6	21.6		459885.526	4464070.224
4086	40.521	-111.4505	1.27	0	8	17	2009	19	49	32.23	5.67	0	12	82	7.6	0.1	0.4	2.1		461839.241	4485683.208
4087	40.5257	-111.4585	1.14	0	8	22	2009	6	21	0.72	2.1	0	16	79	7.5	0.12	0.4	10.7		461164.291	4486208.405
4088	40.5365	-111.47	0.13	0	8	22	2009	6	55	40.35	3.92	0	7	226	7.2	0.04	1.3	3		460196.609	4487412.344
4089	40.4908	-111.3432	0.25	0	8	23	2009	12	56	17.84	11.71	0	9	112	1.3	0.07	0.6	1.4		470915.341	4482290.096
4090	40.0837	-111.0907	1.57	0	8	26	2009	15	40	11.19	6.98	0	9	131	38.1	0.27	1.2	37		492267.336	4437051.108
4091	40.8342	-111.8965	1.77	0	8	26	2009	22	26	29.77	3.93	0	9	107	4.6	0.17	1	2.4		424413.905	4520738.634
4092	40.5558	-111.0978	0.74	0	9	3	2009	12	2	35.65	6.15	0	7	258	16.9	0.08	3.5	14.4		491719.898	4489453.147
4093	40.5188	-110.7697	1.32	0	10	2	2009	15	47	17.35	6.76	0	7	279	41.9	0.09	3	20.4		519508.767	4485367.005
4094	40.8677	-111.5917	0.42	0	10	5	2009	8	26	53.59	15.47	0	10	198	20.6	0.14	0.8	3.2		450137.624	4524239.144
4095	40.8172	-111.8918	1.44	0	10	6	2009	22	30	26.11	1.62	0	6	112	2.6	0.09	0.7	8.4		424790.974	4518847.453
4096	40.742	-112.0385	1.73	1	10	9	2009	22	11	12.65	11.13	0	24	56	14.2	0.17	0.5	1		412320.159	4510635.893
4097	40.7382	-112.0415	2.01	1	10	9	2009	22	17	26.9	9.4	0	31	57	14.6	0.18	0.4	1		412061.862	4510217.066
4098	40.3445	-111.8408	1.57	0	10	31	2009	15	31	7.85	4.68	0	10	80	8.4	0.17	0.5	3.6		428591.116	4466333.701
4099	40.8088	-111.9012	2.12	0	11	11	2009	20	2	4.51	0.16	0	7	164	2.1	0.23	2.5	1.1		423988.638	4517923.095
4100	40.8657	-111.5638	0.99	0	11	18	2009	23	13	15.72	13.69	0	11	143	22.6	0.19	1	2.7		452487.33	4524001.615
4101	40.8793	-111.5622	1	0	11	18	2009	23	16	56.53	7.75	0	16	139	23.5	0.24	0.9	7.4		452631.86	4525510.454
4102	40.8622	-111.5583	0.3	0	11	18	2009	23	18	7.56	9.26	0	8	199	23	0.16	1.1	6.8		452948.352	4523610.119
4103	40.8492	-111.5713	0.58	0	11	18	2009	23	20	41.97	11.98	0	10	261	21.4	0.18	1.2	4.4		451843.338	4522174.087
4104	40.8812	-111.5673	1.31	0	11	19	2009	4	50	34.27	9.36	0	22	111	23.1	0.18	0.5	1.8		452203.525	4525724.142
4105	40.8808	-111.5393	2.95	1	11	19	2009	12	24	52.09	8.18	0	46	55	25.2	0.22	0.4	0.7		454562.333	4525664.828
4106	40.8592	-111.5377	1	0	11	19	2009	12	27	42.75	12.76	0	16	143	23.8	0.12	0.6	1.6		454682.414	4523266.232
4107	40.858	-111.5465	1.54	0	11	19	2009	12	29	27.39	13.09	0	14	189	23.7	0.17	1	3		453939.912	4523137.614
4108	39.9288	-111.2557	1.18	0	11	21	2009	7	39	12.82	4.63	0	13	174	33.6	0.17	0.7	11.5		478150.859	4419886.056
4109	40.4973	-111.3252	0.49	0	11	29	2009	10	38	10.29	9.71	0	10	124	1	0.12	0.7	1.5		472443.422	4483005.818
4110	39.8882	-111.6792	1.17	0	12	16	2009	12	35	37.91	7.56	0	13	81	9.6	0.2	0.6	2.1		441929.007	4415569.367
4111	40.7182	-111.4115	0.78	0	12	16	2009	20	49	0.51	2.06	0	7	202	7.1	0.14	2	18.9		465245.198	4507556.771
4112	40.8767	-111.5977	1.26	0	12	20	2009	2	54	52.16	10.18	0	13	138	20.7	0.1	0.5	2.7		449638.823	4525241.649
4113	40.9928	-112.0787	0.57	0	12	22	2009	17	3	12.26	3.33	0	6	241	12.8	0.18	2.1	13.7		409269.048	4538518.082
4114	40.991	-112.0538	1.01	0	12	23	2009	0	56	49.46	2.65	0	9	112	14.9	0.16	0.7	14.8		411361.045	4538292.691
4115	40.7528	-112.0563	2.88	1	12	23	2009	9	2	1.75	6.16	0	33	105	3.4	0.2	0.4	0.7		410831.721	4511852.706
4116	40.7523	-112.0533	1.05	0	12	23	2009	10	53	48.74	5.85	0	8	104	14.9	0.1	0.6	4.4		411084.306	4511794.158
4117	40.3773	-111.9007	0.96	0	12	25	2009	9	27	5.89	12.04	0	23	93	7.4	0.18	0.5	0.8		423540.829	4470024.537
4118	40.3548	-111.4333	1.04	0	12	28	2009	8	55	12.49	2.45	0	7	137	10.3	0.15	0.9	14.6		463205.722	4467227.848
4119	40.5103	-111.4605	1.02	0	12	30	2009	10	4	57.5	6.55	0	12	86	9	0.12	0.5	2.1		460985.961	4484499.876

Appendix F4-Utah Geologic Survey (2010) Fault Information

Computation Sheet

NRCS–ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State	Project		
Utah	Tibble Fork		
By Ana Varga	Date 4/29/2010	Checked by	Date	Job No.

Subject: Calculation of R w/ Elevation btw fault & dam

Sheet 1 of 1

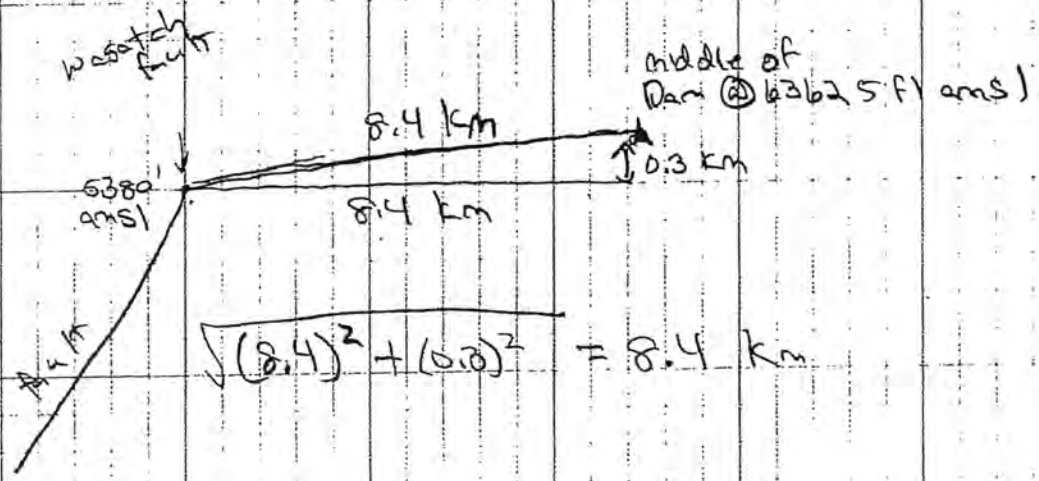
Top of dam = 6388.5 ft amsl
Dam height ≈ 62 ft
Bottom of dam = 6386.5 ft amsl

Wasatch fault @ Grove Creek 5380' amsl

middle of dam is @ 6362.5 ft amsl

Elevation difference btw Wasatch fault and middle of the dam is

6362.5 − 5380 = 982.5 ft = 0.299 km



$$\sqrt{(8.4)^2 + (0.3)^2} = 8.4 \text{ km}$$

Note: with the elevation difference between wasatch fault and middle of the dam

R = 8.4

Computation Sheet

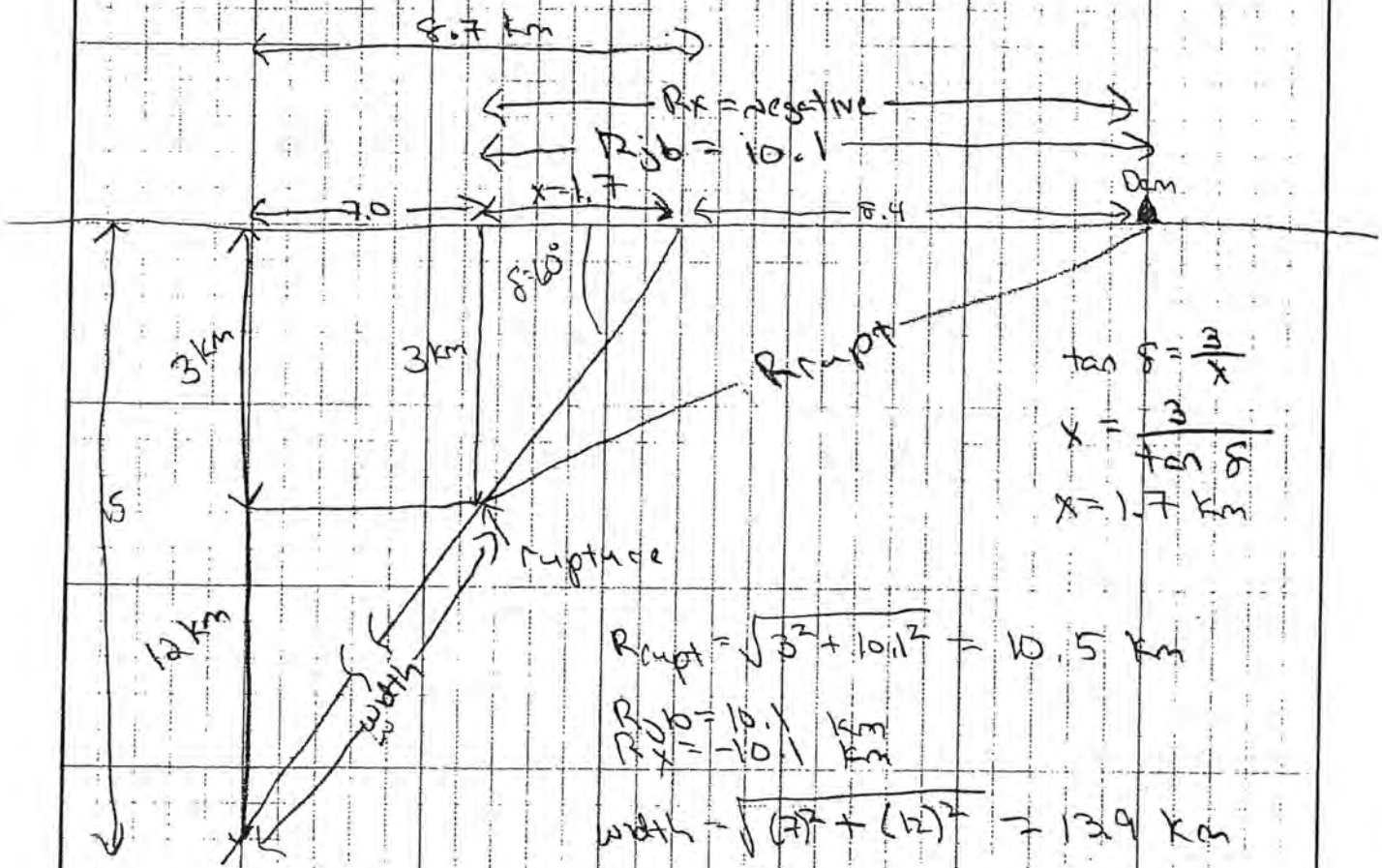
NRCS–ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State	Project		
UTAH	Tibble Fork		
By: Ana Vargo	Date: 4/29/2010	Checked by:	Date:
Job No.			
Subject: NGA Models-2008		Sheet 1 of	

CASE 1: For Provo Section of Wasatch fault $\delta = 60°$

& CASE 2 Top of seismogenic zone = 3 km
Bottom of seismogenic zone = 15 km



$\tan \delta = \frac{3}{x}$

$x = \frac{3}{\tan \delta}$

$x = 1.7$ km

$R_{rupt} = \sqrt{3^2 + 10.1^2} = 10.5$ km

$R_{jb} = 10.1$ km
$R_x = -10.1$ km

$width = \sqrt{(7)^2 + (12)^2} = 13.9$ km

$u = 1$

$F_{RV} = \emptyset$

$F_{DM} = 1$

$F_{HW} = \emptyset$

$Z_{TOR} = 3$ km

$V_{S30} = 760$

$F_{measured} = \emptyset$

$Z_{1.0}$ = Default

$Z_{2.5}$ = Default

$F_{AS} = \emptyset$

$HW_{taper} = \emptyset$

Case 1

$M_0 = 7.2$ (Hellings and others, 2002)

Case 2

$M_0 = 7.5$ (USGS 2010) website

Computation Sheet

NRCS–ENG-523A Rev. 6-2002

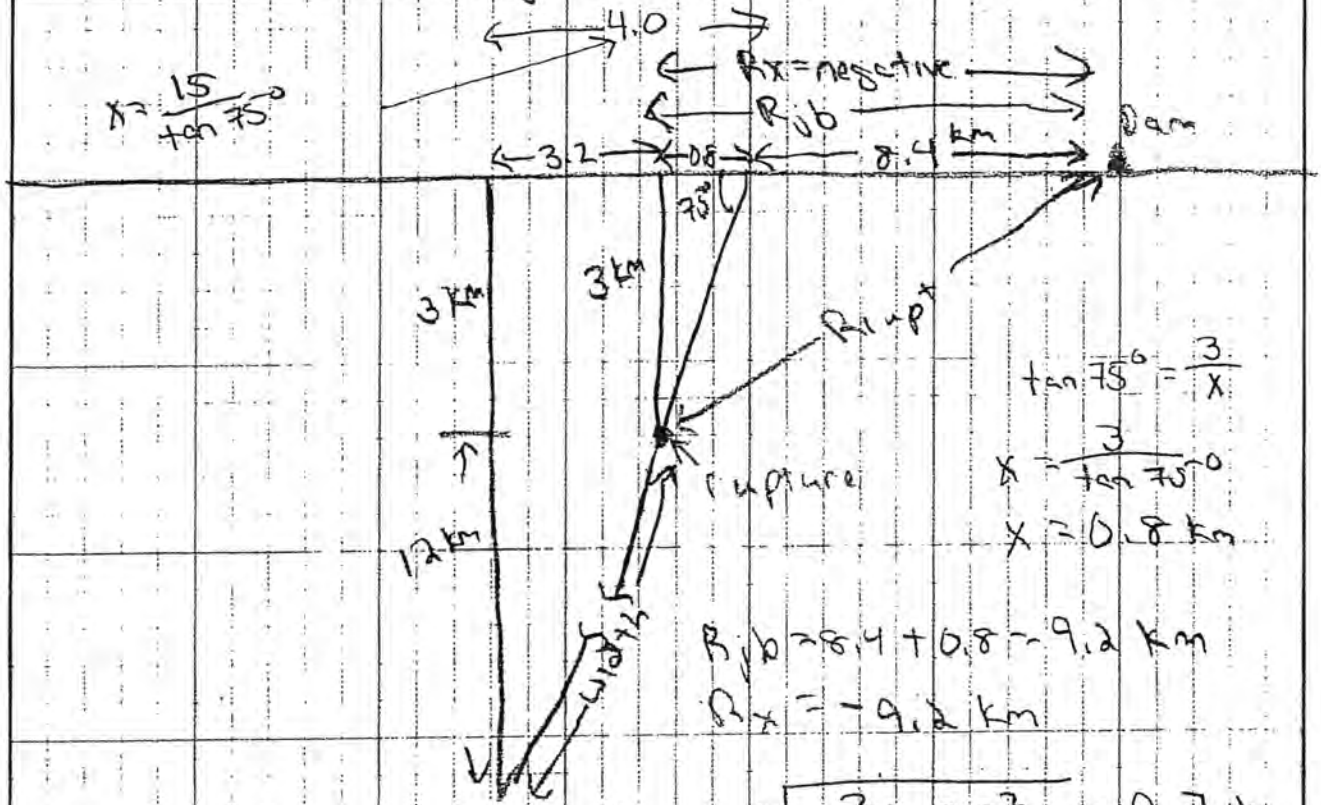
U.S. Department of Agriculture
Natural Resources Conservation Service

State	Project			
Utah	Tibble Fork			
By Ana Vargo	Date 4/29/2010	Checked by	Date	Job No.
Subject NGA Models - 2008				Sheet ____ of ____

Case 3 For Provo Section fault dips 75° (UGS 2010) $\delta = 75°$

Top of seismogenic zone = 3 km
Bottom of seismogenic zone = 15 km

$x = \frac{15}{\tan 75°}$



$\tan 75° = \frac{3}{x}$

$x = \frac{3}{\tan 75°}$

$x = 0.8$ km

$R_{jb} = 8.4 + 0.8 = 9.2$ km

$R_x = -9.2$ km

$R_{rupt} = \sqrt{3^2 + 9.2^2} = 9.7$ km

$\text{width} = \sqrt{(3.2)^2 + (12)^2} = 12.4$ km

$u = 1$

$F_{RV} = \emptyset$

$F_{NM} = 1$

$F_{HW} = \emptyset$

$Z_{tor} = 3$ km

$V_{S30} = 760$

$F_{measured} = \emptyset$

$Z_{1.0}$ = default

$Z_{2.5}$ = default

$F_{as} = \emptyset$

$W_{taper} = \emptyset$

$M_0 = 7.2$

Computation Sheet

NRCS–ENG-523A Rev. 6-2002

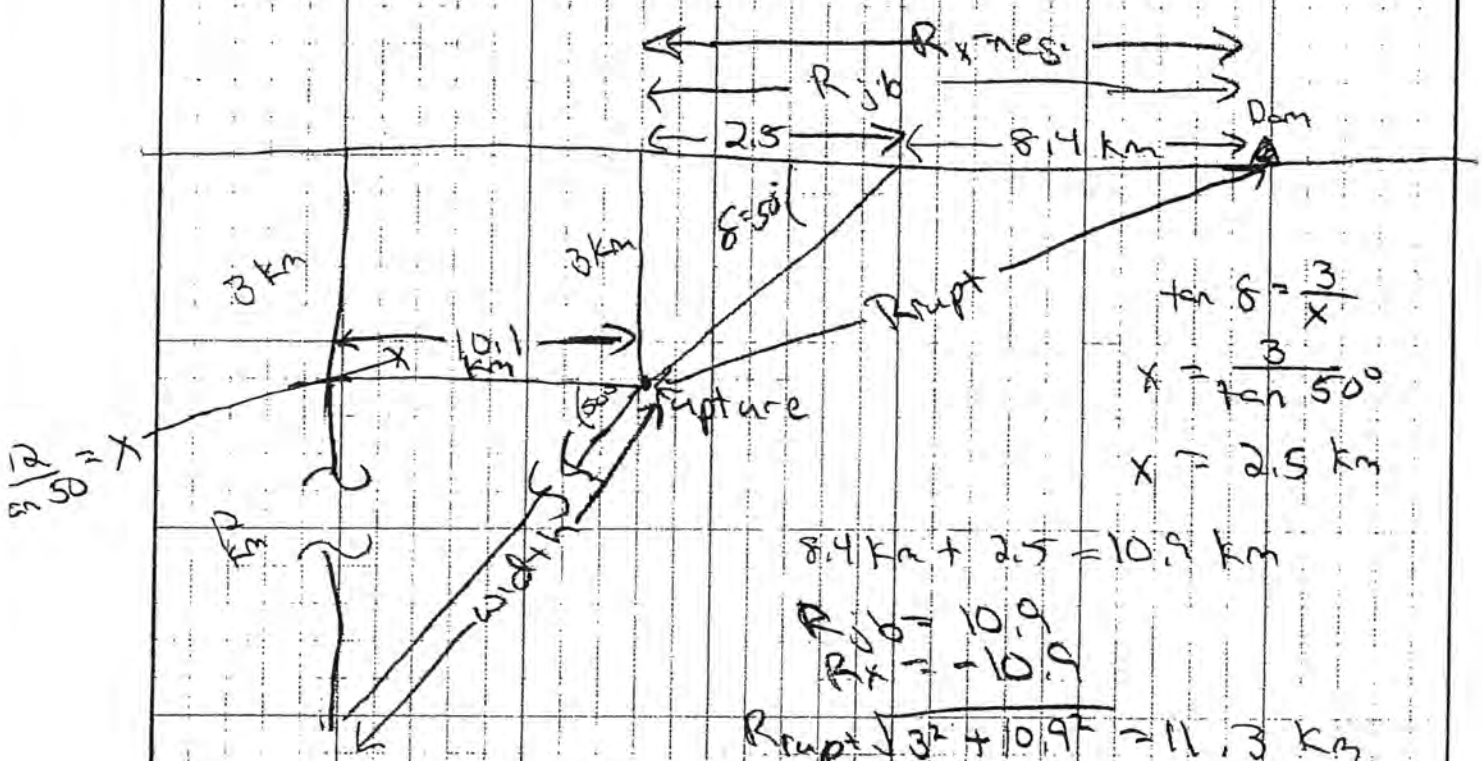
U.S. Department of Agriculture
Natural Resources Conservation Service

State	Project		
UTAH	Tibble Fork		
By: Ann Vargo	Date: 4/29/2010	Checked by	Date	Job No.
Subject: NGA Models - 2008			Sheet ____ of ____

CASE 4: For Prob Section of Wasatch Fault $\delta = 50$

Top of seismogenic zone = 3 km

Bottom of seismogenic zone = 15 km



$\tan \delta = \frac{3}{x}$

$x = \frac{3}{\tan 50°}$

$x = 2.5$ km

8.4 km $+ 2.5 = 10.9$ km

$R_{jb} = 10.9$

$R_x = -10.9$

$R_{rupt} = \sqrt{3^2 + 10.9^2} = 11.3$ km

$\text{width} = \sqrt{10.1^2 + 12^2} = 15.7$ km

$u = 1$

$F_{RV} = \emptyset$

$F_{NM} = 1$

$F_{HM} = \emptyset$

$Z_{tor} = 3$ km

$V_{S30} = 760$

$F_{measured} = \emptyset$

$Z_{1.0}$ = Default

$Z_{2.5}$ = Default

$F_{AS} = \emptyset$

$H_{w\,taper} = \emptyset$

$M_0 = 7.2$

NGA PREDICTED GROUND MOTIONS, CASE #3

CALCULATION OF WEIGHTED AVERAGE 2008 NGA MODELS: This Excel file calculates the weighted average of the spectral values from the NGA models

by Linda Al Atik, PEER - Sep. 2008 - l_atik@berkeley.edu

NGA Model:	AB08	BA08	CB08	CY08	IB8
Weight:	[redacted]				
σ(ln)	0.5[redacted]	0.118	0.274	0.272	0.506
N	[redacted]				

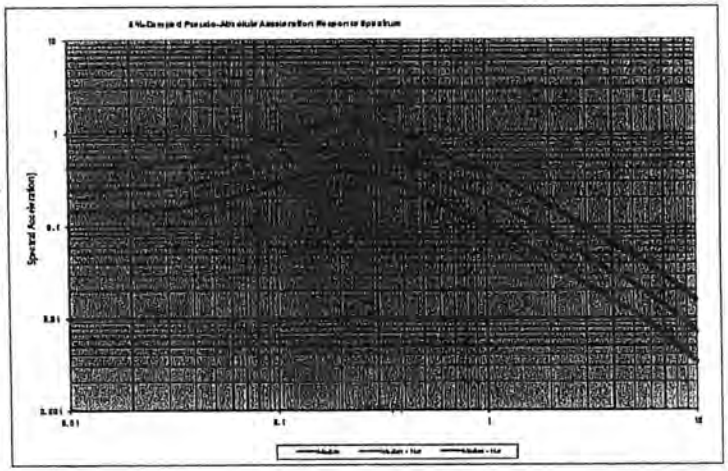
AB08: Abrahamson & Silva 2008 NGA Model
BA08: Boore & Atkinson 2008 NGA Model
CB08: Campbell & Bozorgnia 2008 NGA Model
CY08: Chiou & Youngs 2008 NGA Model
IB8: Idriss 2008 NGA Model

Explanatory Variables

[redacted]

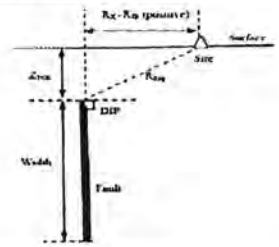
Geometric Mean Horizontal Component

GMP	T (s)	SA Median	SA Median + N σ	SA Median - N σ	SD Median
PSA (g)	0.010	2.472E-01	4.266E-01	1.437E-01	6.137E-04
SD (cm)	0.020	2.509E-01	4.322E-01	1.457E-01	3.492E-03
	0.030	2.589E-01	4.570E-01	1.540E-01	6.009E-03
	0.050	3.201E-01	5.620E-01	1.824E-01	1.987E-02
	0.075	4.091E-01	7.306E-01	2.291E-01	6.712E-02
	0.10	5.103E-01	9.166E-01	2.836E-01	1.267E-01
	0.15	6.493E-01	1.175E+00	3.573E-01	3.621E-01
	0.20	6.994E-01	1.275E+00	3.825E-01	6.346E-01
	0.25	6.846E-01	1.251E+00	3.685E-01	1.015E+00
	0.30	6.515E-01	1.194E+00	3.207E-01	1.322E+00
	0.40	6.063E-01	1.106E+00	2.727E-01	2.011E+00
	0.50	4.114E-01	7.716E-01	2.194E-01	2.563E+00
	0.75	2.426E-01	4.673E-01	1.387E-01	3.387E+00
	1.0	1.963E-01	3.939E-01	1.026E-01	4.922E+00
	1.5	1.210E-01	2.378E-01	6.157E-02	6.761E+00
	2.0	8.180E-02	1.608E-01	4.088E-02	8.543E+00
	3.0	4.589E-02	9.216E-02	2.290E-02	1.225E+01
	4.0	3.040E-02	6.106E-02	1.539E-02	1.207E+01
	5.0	2.339E-02	4.819E-02	1.136E-02	1.462E+01
	7.5	1.194E-02	2.629E-02	5.661E-03	1.570E+01
	10.0	7.533E-03	1.633E-02	3.232E-03	1.746E+01
PGA (g)	0	2.464E-01	4.340E-01	1.432E-01	
PGV (cm/s)	-1	5.329E+02	1.107E+03	3.615E+02	

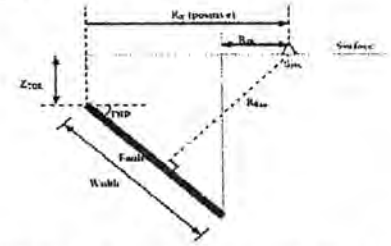


DEFINITION OF PARAMETERS

- N = Number of standard deviations to be considered in the calculations
- PSA = Pseudo-absolute acceleration response spectrum (g); 5% damping)
- PGA = Peak ground acceleration (g)
- PGV = Peak ground velocity (cm/s)
- SD = Relative displacement response spectrum (cm); 5% damping)
- M = Moment magnitude
- R_{JB} = Closest distance to coseismic rupture (km), used in AB08, CB08 and CY08. See Figures a, b and c for illustration
- R_{RUP} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustration
- R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). Used in AB08 and CY08. See Figures a, b and c for illustration
- U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise, used in BA08
- F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
- F_N = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
- F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise, used in AB08 and CY08
- Z_{TOR} = Depth to top of coseismic rupture (km), used in AB08, CB08 and CY08
- δ = Average dip of rupture plane (degrees), used in AB08, CB08 and CY08
- V_{S30} = Average shear-wave velocity (m/sec) in top 30m of site profile
- $F_{inferred}$ = V$_{S30}$ Factor: 1 if V$_{S30}$ is measured, 0 if V$_{S30}$ is inferred, used in AB08 and CY08
- $Z_{1.0}$ = Depth to 1.0 km/sec velocity horizon (m), used in AB08 and CY08. Enter "DEFAULT" in order to use the default values or enter your site specific number
- $Z_{2.5}$ = Depth of 2.5 km/s shear-wave velocity horizon (km), used in CB08. Enter "DEFAULT" in order to use the default value or enter your site specific number
- W = Fault rupture width (km), used in AB08
- F_{AS} = Aftershock factor: 0 for mainshock; 1 for aftershock, used in AB08 and CY08
- HW Taper = To choose the hanging wall taper to be used in AB08. Enter 0 to use the hanging wall taper as published in Abrahamson and Silva (2008), or enter 1 to use the revised hanging wall taper suggested by Norm Abrahamson

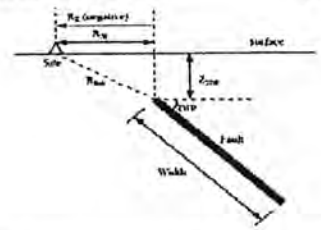


(a) Strike slip faulting



(b) Reverse or normal faulting, hanging-wall site

Figures (a), (b) and (c): Definition of Fault Geometry and Distance Measures
Courtesy of Sue Yerkes



(c) Reverse or normal faulting, foot-wall site

NGA PREDICTED GROUND MOTIONS, CASE #4

CALCULATION OF WEIGHTED AVERAGE 2008 NGA MODEL: *This Excel file calculates the weighted average of the spectral values from the NGA models*

by Linda Al Atik, PEER - Sep, 2008 - l_atik@berkeley.edu

NGA Model:	AB08	BA08	CB08	CY08	IB8
Weight:	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PSA	[redacted]	0.109	0.210	0.344	0.278
N	[redacted]				

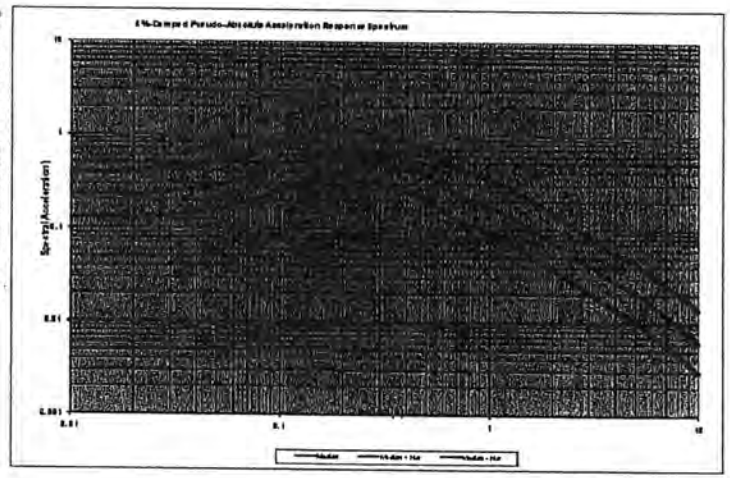
AB08: Abrahamson & Silva 2008 NGA Model
BA08: Boore & Atkinson 2008 NGA Model
CB08: Campbell & Bozorgnia 2008 NGA Model
CY08: Chiou & Youngs 2008 NGA Model
IB8: Idriss 2008 NGA Model

Explanatory Variables

[redacted]

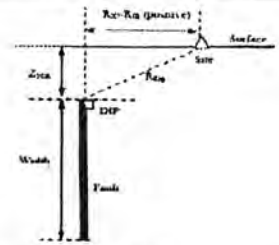
Geomeiric Mean Horizontal Component

OMP	T (s)	SA Median	SA Median + Hz	SA Median - Hz	SD Median
PSA (g)	0.010	3.234E-01	3.630E-01	1.291E-01	6.620E-04
SD (cm)	0.020	3.266E-01	3.859E-01	1.309E-01	2.240E-03
	0.030	3.416E-01	4.198E-01	1.392E-01	6.397E-03
	0.050	3.875E-01	5.052E-01	1.638E-01	1.784E-02
	0.075	3.574E-01	5.570E-01	2.095E-01	6.120E-02
	0.10	4.589E-01	6.269E-01	3.647E-01	1.139E-01
	0.15	5.840E-01	1.051E+00	3.215E-01	3.262E-01
	0.20	5.296E-01	1.152E+00	3.442E-01	6.252E-01
	0.25	6.894E-01	1.082E+00	3.212E-01	9.144E-01
	0.30	8.334E-01	9.867E-01	2.885E-01	1.192E+00
	0.40	4.563E-01	8.481E-01	2.467E-01	1.812E+00
	0.50	3.707E-01	6.357E-01	1.976E-01	2.300E+00
	0.75	2.176E-01	4.100E-01	1.164E-01	3.036E+00
	1.0	1.701E-01	3.451E-01	9.226E-02	4.433E+00
	1.5	1.080E-01	2.143E-01	6.546E-02	6.087E+00
	2.0	7.291E-02	1.449E-01	3.676E-02	7.240E+00
	3.0	4.126E-02	8.293E-02	2.086E-02	9.217E+00
	4.0	2.728E-02	5.510E-02	1.363E-02	1.083E+01
	5.0	2.096E-02	4.320E-02	1.096E-02	1.201E+01
	7.5	1.060E-02	2.341E-02	6.019E-03	1.461E+01
	10.0	6.261E-03	1.364E-02	2.876E-03	1.664E+01
PGA (g)	0	3.215E-01	3.816E-01	1.288E-01	
PGV (cm/s)	-1	5.634E+02	9.857E+02	3.223E+02	

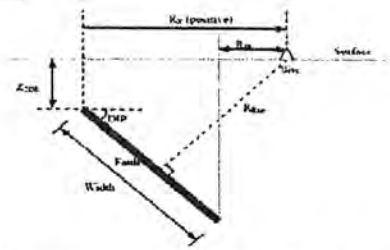


DEFINITION OF PARAMETERS

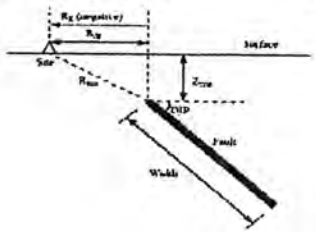
- N = Number of standard deviations to be considered in the calculations
- PSA = Pseudo-absolute acceleration response spectrum (g; 5% damping)
- PGA = Peak ground acceleration (g)
- PGV = Peak ground velocity (cm/s)
- SD = Relative displacement response spectrum (cm; 5% damping)
- M = Moment magnitude
- R_{rup} = Closest distance to coseismic rupture (km), used in AB08, CB08 and CY08. See Figures a, b and c for illustration
- R_{jb} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustration
- R_x = Horizontal distance from top of rupture measured perpendicular to fault strike (km), used in AB08 and CY08. See Figures a, b and c for illustration
- U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise, used in BA08
- F_{rv} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
- F_n = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
- F_{hw} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise, used in AB08 and CY08
- Z_{top} = Depth to top of coseismic rupture (km), used in AB08, CB08 and CY08
- δ = Average dip of rupture plane (degrees), used in AB08, CB08 and CY08
- V_{s30} = Average shear-wave velocity (m/sec) in top 30m of site profile
- $F_{measured}$ = V$_{s30}$ Factor: 1 if V$_{s30}$ is measured, 0 if V$_{s30}$ is inferred, used in AB08 and CY08
- $Z_{1.0}$ = Depth to 1.0 km/sec velocity horizon (km), used in AB08 and CY08. Enter "DEFAULT" in order to use the default values or enter your site specific number
- $Z_{2.5}$ = Depth of 2.5 km/sec shear-wave velocity horizon (km), used in CB08. Enter "DEFAULT" in order to use the default value or enter your site specific number
- W = Fault rupture width (km), used in AB08
- F_{AS} = Aftershock factor: 0 for mainshock; 1 for aftershock, used in AB08 and CY08
- HW Taper = To choose the hanging wall taper to be used in AB08. Enter 0 to use the hanging wall taper as published in Abrahamson and Silva (2008), or enter 1 to use the revised hanging wall taper suggested by Norm Abrahamson



(a) Strike slip faulting



(b) Reverse or normal faulting, hanging-wall site



(c) Reverse or normal faulting, foot-wall site

Figures (a), (b) and (c): Definition of Fault Geometry and Distance Measures
Courtesy of Norm Abrahamson

NGA PREDICTED GROUND MOTIONS, CASE #1

CALCULATION OF WEIGHTED AVERAGE 2008 NGA MODELS This Excel file calculates the weighted average of the spectral values from the NGA models

by Linda Al Atik, PEER - Sep, 2009 - l_atik@berkeley.edu

NGA Model:	AS08	BA08	CB08	CY08	IB	
Weight:	[redacted]					
SES	0.164	0.113	0.222	0.206	0.295	
N	[redacted]					

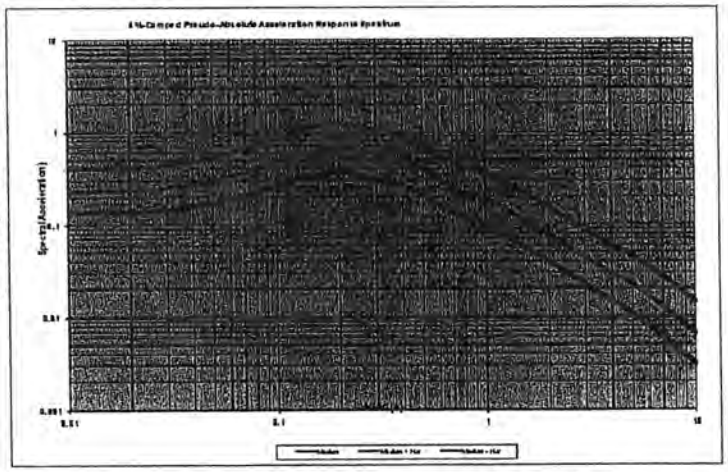
AS08: Abrahamson & Silva 2008 NGA Model
BA08: Boore & Atkinson 2008 NGA Model
CB08: Campbell & Bozorgnia 2008 NGA Model
CY08: Chiou & Youngs 2008 NGA Model
IB: Idriss 2008 NGA Model

Explanatory Variables

[redacted]

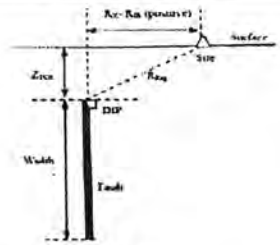
Geometric Mean Horizontal Component

OMP	T (s)	SA Median	SA Median+ Hσ	SA Median - Hσ	SD Median
PBA (g)	0.010	2.336E-01	4.022E-01	1.356E-01	5.797E-04
SD (cm)	0.020	2.370E-01	4.084E-01	1.376E-01	2.363E-03
	0.030	2.539E-01	4.411E-01	1.461E-01	5.572E-03
	0.040	3.022E-01	5.329E-01	1.720E-01	1.076E-02
	0.075	3.862E-01	6.503E-01	2.161E-01	6.393E-02
	0.10	4.821E-01	8.086E-01	2.577E-01	1.197E-01
	0.15	6.129E-01	1.113E+00	3.376E-01	3.423E-01
	0.20	6.810E-01	1.209E+00	3.814E-01	6.563E-01
	0.25	6.184E-01	1.135E+00	3.370E-01	9.595E-01
	0.30	5.594E-01	1.036E+00	3.026E-01	1.260E+00
	0.40	4.784E-01	8.891E-01	2.576E-01	1.900E+00
	0.50	3.886E-01	7.291E-01	2.072E-01	2.411E+00
	0.75	2.263E-01	4.304E-01	1.211E-01	3.388E+00
	1.0	1.570E-01	3.023E-01	8.160E-02	4.542E+00
	1.5	1.140E-01	2.242E-01	5.807E-02	6.369E+00
	2.0	7.626E-02	1.516E-01	3.846E-02	7.571E+00
	3.0	4.314E-02	8.670E-02	2.151E-02	9.938E+00
	4.0	2.863E-02	5.763E-02	1.416E-02	1.135E+01
	5.0	2.103E-02	4.519E-02	1.066E-02	1.361E+01
	7.5	1.113E-02	2.362E-02	5.269E-03	1.554E+01
	10.0	6.648E-03	1.427E-02	3.028E-03	1.628E+01
PGA (g)	0	2.328E-01	4.037E-01	1.342E-01	
PGV (cm)	-1	5.903E+02	1.032E+03	3.372E+02	

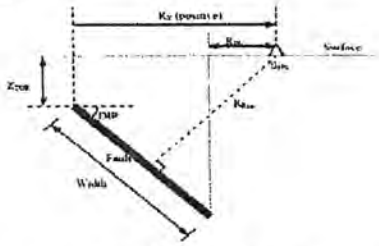


DEFINITION OF PARAMETERS

- N = Number of standard deviations to be considered in the calculations
- PBA = Pseudo-absolute acceleration response spectrum (g; 5% damping)
- PGA = Peak ground acceleration (g)
- PGV = Peak ground velocity (cm/s)
- SD = Relative displacement response spectrum (cm; 5% damping)
- M = Moment magnitude
- R_{RUP} = Closest distance to coseismic rupture (km), used in AS08, CB08 and CY08. See Figures a, b and c for illustration
- R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustration
- R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km), used in AS08 and CY08. See Figures a, b and c for illustration
- U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise, used in BA08
- F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
- F_N = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
- F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise, used in AS08 and CY08
- Z_{TOR} = Depth to top of coseismic rupture (km), used in AS08, CB08 and CY08
- δ = Average dip of rupture plane (degrees), used in AS08, CB08 and CY08
- V_{S30} = Average shear-wave velocity (m/sec) in top 30m of site profile
- $F_{Measured}$ = V_S30 flag: 1 if V_S30 is measured, 0 if V_S30 is inferred, used in AS08 and CY08
- $Z_{1.0}$ = Depth to 1.0 km/sec velocity horizon (km), used in AS08 and CY08. Enter "DEFAULT" in order to use the default values or enter your site specific number
- $Z_{2.5}$ = Depth of 2.5 km/sec shear-wave velocity horizon (km), used in CB08. Enter "DEFAULT" in order to use the default value or enter your site specific number
- W = Fault rupture width (km), used in AS08
- F_{AS} = Aftershock factor: 0 for mainshock; 1 for aftershock, used in AS08 and CY08
- HW Taper = To choose the hanging wall taper to be used in AS08. Enter 0 to use the hanging wall taper as published in Abrahamson and Silva (2008), or enter 1 to use the revised hanging wall taper suggested by Norm Abrahamson

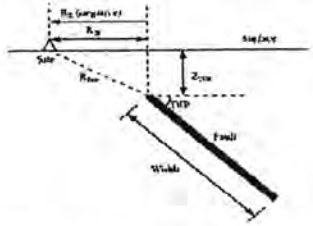


(a) Strike slip faulting



(b) Reverse or normal faulting, hanging-wall site

Figures (a), (b) and (c): Definition of Fault Geometry and Distance Measures
Courtesy of Norm Abrahamson



(c) Reverse or normal faulting, foot-wall site

NGA PREDICTED GROUND MOTIONS, CASE #2

CALCULATION OF WEIGHTED AVERAGE 2008 NGA MODELS *This Excel file calculates the weighted average of the spectral values from the NGA models*

by Linda Al Atik, PEER - Sep, 2009 - l_atik@berkeley.edu

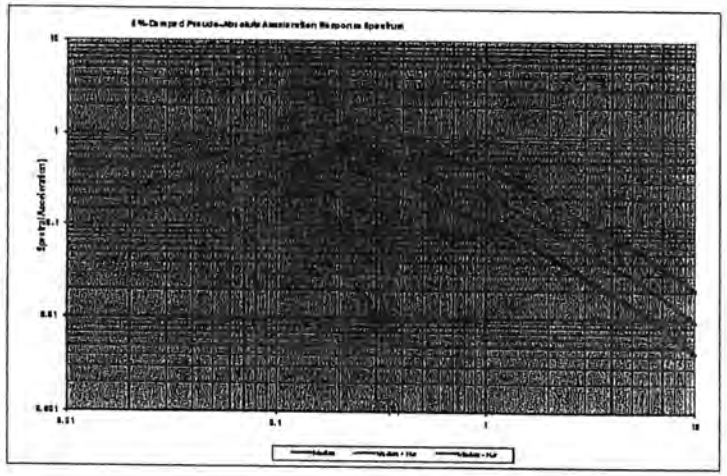
NGA Model:	AS08	BA08	CB08	CY08	IM
Weight:					
MEA	0.213	0.123	0.250	0.298	0.116
N					

AS08: Abrahamson & Silva 2008 NGA Model
BA08: Boore & Atkinson 2008 NGA Model
CB08: Campbell & Bozorgnia 2008 NGA Model
CY08: Chiou & Youngs 2008 NGA Model
IM: Idriss 2008 NGA Model

Explanatory Variables

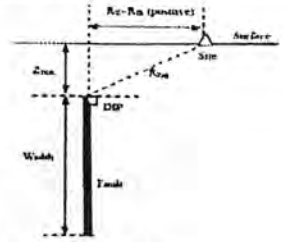
Geometric Mean Horizontal Component

OMP	T (s)	SA Median	SA Median + Nσ	SA Median - Nσ	SD Median
PSA (g)	0.010	2.542E-01	4.352E-01	1.486E-01	5.310E-04
SD (cm)	0.020	2.580E-01	4.400E-01	1.505E-01	2.662E-03
	0.030	2.764E-01	4.774E-01	1.600E-01	6.176E-03
	0.050	3.276E-01	5.723E-01	1.876E-01	3.033E-02
	0.075	4.185E-01	7.442E-01	2.330E-01	5.816E-02
	0.10	5.188E-01	9.294E-01	2.896E-01	1.388E-01
	0.15	6.601E-01	1.193E+00	3.652E-01	3.687E-01
	0.20	7.092E-01	1.291E+00	3.896E-01	7.042E-01
	0.25	6.704E-01	1.228E+00	3.671E-01	1.040E+00
	0.30	6.097E-01	1.122E+00	3.314E-01	1.392E+00
	0.40	5.240E-01	9.694E-01	2.837E-01	2.092E+00
	0.50	4.314E-01	8.049E-01	2.313E-01	2.677E+00
	0.75	2.605E-01	4.912E-01	1.382E-01	3.679E+00
	1.0	2.173E-01	4.179E-01	1.130E-01	5.394E+00
	1.5	1.342E-01	2.667E-01	6.953E-02	7.606E+00
	2.0	9.280E-02	1.829E-01	4.712E-02	9.215E+00
	3.0	5.391E-02	1.073E-01	2.702E-02	1.202E+01
	4.0	3.612E-02	7.340E-02	1.804E-02	1.434E+01
	5.0	2.616E-02	5.767E-02	1.276E-02	1.747E+01
	7.5	1.510E-02	3.194E-02	7.142E-03	2.108E+01
	10.0	9.376E-03	2.038E-02	4.203E-03	2.327E+01
PGA (g)	0	2.634E-01	4.336E-01	1.491E-01	
PGV (cm)	-1	7.295E+02	1.277E+03	4.172E+02	

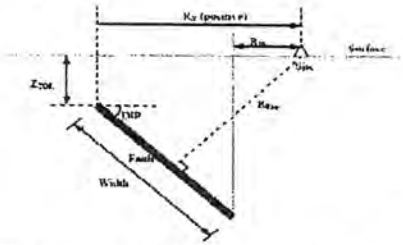


DEFINITION OF PARAMETERS

- N = Number of standard deviations to be considered in the calculations
- PSA = Pseudo-absolute acceleration response spectrum (g; 5% damping)
- PGA = Peak ground acceleration (g)
- PGV = Peak ground velocity (cm/s)
- SD = Relative displacement response spectrum (cm; 5% damping)
- M = Moment magnitude
- R_{RUP} = Closest distance to coseismic rupture (km), used in AS08, CB08 and CY08. See Figures a, b and c for illustration
- R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustration
- R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km), used in AS08 and CY08. See Figures a, b and c for illustration
- U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise, used in BA08
- F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
- F_N = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
- F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise, used in AS08 and CY08
- Z_{TOR} = Depth to top of coseismic rupture (km), used in AS08, CB08 and CY08
- δ = Average dip of rupture plane (degrees), used in AS08, CB08 and CY08
- V_{S30} = Average shear-wave velocity (m/sec) in top 30m of site profile
- $F_{inferred}$ = V_S30 Factor: 1 if V_S30 is inferred; 0 if V_S30 is measured, used in AS08 and CY08
- $Z_{1.0}$ = Depth to 1.0 km/sec velocity horizon (m), used in AS08 and CY08. Enter "DEFAULT" in order to use the default values or enter your site specific number
- $Z_{2.5}$ = Depth of 2.5 km/s shear-wave velocity horizon (km), used in CB08. Enter "DEFAULT" in order to use the default value or enter your site specific number
- W = Fault rupture width (km), used in AS08
- F_{AS} = Aftershock factor: 0 for mainshock; 1 for aftershock, used in AS08 and CY08
- *HW Taper* = To choose the hanging wall taper to be used in AS08. Enter 0 to use the hanging wall taper as published in Abrahamson and Silva (2008), or enter 1 to use the revised hanging wall taper suggested by Norm Abrahamson

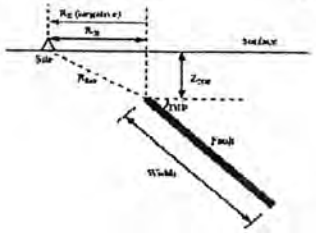


(a) Strike slip faulting



(b) Reverse or normal faulting, hanging-wall site

Figures (a), (b) and (c): Definition of Fault Geometry and Distance Measures
Courtesy of Ben Yeager



(c) Reverse or normal faulting, foot-wall site

APPENDIX G

HYDROLOGY

APPENDIX G1

Computation of USU 72 and 24 Hour PMP

```
USU Modified HMR49 PMP LOCAL and GENERAL STORM 03/03/2011 13:24:18
Tibble Fork
Local Storm PMP Computation * USU * 03/03/2011 13:24
-----------
Tibble Fork
-----------
Area (mi2) 35.65 Minimum Elevation (feet) 6318.30
Lattitude: 40.5161d 0m 0s
Longitude: 111.6267d 0m 0s
UTM Coordinates East,North 446910.98 4485023.98
1-Hr 1-Mi2 PMP 10.00
Elevation Reduction 0.934
Depth/Area/Duration for Utah
8.84 13.08 15.90 17.67 19.43 19.79 20.05 20.23 20.32
Areal Reduced PMP
0.83 1.22 1.49 1.65 1.82 1.85 1.87 1.89 1.90
Ordered Hourly Increments
0.02 0.03 1.65 0.17 0.02 0.01
Ordered 15 Min Increments
0.83 0.40 0.26 0.17
Distribution Table for Utah Div. of Water Resources STORM Program
1. 2. 2.25 2.50 2.75 3. 4. 5. 6.
0.0089 0.0263 0.4612 0.6698 0.8088 0.8958 0.9828 0.9956 1.0000
UTAH DIVISION OF WATER RESOURCES 03/03/2011 13:24
General Storm PMP Computation USU Don Jensen
-----------
Tibble Fork
-----------
Area (mi2) 35.65
Lattitude: 40.5161d 0m 0s
Longitude: 111.6267d 0m 0s
UTM Coordinates East,North 446910.98 4485023.98
One Square Mile Convergence PMP = 10.67
One Square Mile 72-Hour PMP = 10.67
Areal and Duration Reduced 72-Hour PMP(inches) = 10.26
=====
```

```
USU Modified HMR49 PMP GENERAL STORM 03/03/2011 13:24:59
Tibble Fork
UTAH DIVISION OF WATER RESOURCES 03/03/2011 13:24
General Storm PMP Computation USU Don Jensen
-----------
Tibble Fork
-----------
Area (mi2) 35.65
Lattitude: 40.5161d 0m 0s
Longitude: 111.6267d 0m 0s
UTM Coordinates East,North 446910.98 4485023.98
One Square Mile Convergence PMP = 10.67
One Square Mile 72-Hour PMP = 10.67
Areal and Duration Reduced 24-Hour PMP(inches) = 8.39
======
*** Warning: Only the 72-hour Duration is fully documented ***
```

APPENDIX G2

Flood Routing for 100-Year Storm

Tibble Fork - 100 Year 24 Hour Storm
Flood Routing Program Input Data

Time Unit = (HOURS) Increment = 0.0100 Beg Time = 0.0000
End Time = 72.0000 Initial Elev = 987.00 Initial Storage = 166.00
QFACT = 1.0000

For your information a 998.5 is equal to the height of the dam at 6388.5

Elevation-Capacity Data

Elevations

955.00 960.00 970.00 980.00 987.00 990.00 992.00
998.50

Capacities

0.0 10.0 30.0 95.0 166.0 210.0 250.0
366.0

Spillway/Outlet No. 1 Emergency Spillway

Crest Elevation = 992.00
CC = 3.200 CL = 100.00 CK = 0.000 EX = 1.5000

Spillway/Outlet No. 2 Principal Spillway

Crest Elevation = 987.00
CC = 3.200 CL = 13.75 CK = 0.000 EX = 1.5000
Dia = 3.8970 Length = 7.00 Outlet El = 984.00 Minor Loss Coef = 1.50
Roughness Height = 0.00100

Inflow Hydrograph Table

Time

0.00	0.10	0.20	0.30	0.40	0.50	0.60
0.70	0.80	0.90	1.00	1.10	1.20	1.30
1.40	1.50	1.60	1.70	1.80	1.90	2.00
2.10	2.20	2.30	2.40	2.50	2.60	2.70
2.80	2.90	3.00	3.10	3.20	3.30	3.40
3.50	3.60	3.70	3.80	3.90	4.00	4.10
4.20	4.30	4.40	4.50	4.60	4.70	4.80
4.90	5.00	5.10	5.20	5.30	5.40	5.50
5.60	5.70	5.80	5.90	6.00	6.10	6.20
6.30	6.40	6.50	6.60	6.70	6.80	6.90
7.00	7.10	7.20	7.30	7.40	7.50	7.60
7.70	7.80	7.90	8.00	8.10	8.20	8.30
8.40	8.50	8.60	8.70	8.80	8.90	9.00

5.5	5.5	5.5	5.4	5.4	5.4	5.3
5.3	5.3	5.2	5.2	5.2	5.1	5.1
5.1	5.0	5.0	5.0	5.0	4.9	4.9
4.9	4.8	4.8	4.8	4.8	4.7	4.7
4.7	4.6	4.6	4.6	4.6	4.5	4.5
4.5	4.5	4.4	4.4	4.4	4.4	4.3
4.3	4.3	4.3	4.2	4.2	4.2	4.2
4.1	4.1	4.1	4.1	4.1	4.0	4.0
4.0	4.0	3.9	3.9	3.9	3.9	3.9
3.8	3.8	3.8	3.8	3.8	3.7	3.7
3.7	3.7	3.7	3.7	3.6	3.6	3.6
3.6	3.6	3.6	3.7	3.7	3.8	3.9
4.0	4.2	4.5	4.9	5.4	6.0	6.8
7.8	8.9	10.2	11.8	13.7	16.0	18.9
23.0	28.6	35.6	43.8	53.2	63.5	74.6
86.6	99.3	112.8	127.0	141.8	157.4	171.6
184.3	197.7	211.7	387.3	731.3	1113.5	1481.0
1811.8	2100.6	2349.1	2565.5	2753.8	2919.1	3066.6
3200.0	3322.1	3434.2	3536.4	3629.7	3715.5	3794.9
3868.1	3935.1	3995.5	4048.7	4094.3	4132.3	4162.3
4183.8	4197.8	4207.0	4213.8	4219.7	4225.3	4230.7
4235.3	4239.3	4242.8	4245.7	4247.5	4247.3	4245.3
4242.1	4238.0	4232.6	4225.6	4217.0	4206.9	4195.7
4183.2	4169.0	4152.6	4133.7	4112.7	4090.0	4065.8
4040.3	4013.6	3986.0	3957.5	3928.2	3898.1	3867.2
3835.5	3803.1	3769.9	3735.9	3701.1	3665.5	3628.8
3591.0	3551.9	3511.9	3470.8	3428.7	3385.4	3340.8
3294.9	3248.1	3200.8	3153.4	3106.3	3059.9	3013.9
2968.4	2923.4	2879.3	2836.6	2795.3	2755.3	2716.3
2678.1	2640.8	2604.4	2568.8	2533.9	2499.7	2466.1
2433.1	2400.9	2369.5	2338.7	2308.5	2278.9	2250.0
2221.9	2194.7	2168.2	2142.3	2116.7	2091.6	2066.6
2041.9	2017.2	1992.6	1968.0	1943.6	1919.3	1895.1
1870.9	1846.7	1822.2	1797.5	1772.6	1747.3	1721.7
1695.7	1669.5	1643.3	1617.1	1591.1	1565.1	1539.2
1513.4	1487.5	1461.7	1435.9	1410.2	1384.5	1359.0
1333.7	1308.8	1284.1	1259.6	1235.5	1211.5	1187.8
1164.4	1141.1	1118.2	1095.6	1073.3	1051.5	1030.1
1009.2	988.6	968.4	948.5	929.0	909.7	890.7
872.0	853.6	835.5	817.8	800.4	783.3	766.6
750.2	734.1	718.2	702.6	687.2	672.1	657.3
642.7	628.5	614.5	600.8	587.4	574.3	561.4
548.8	536.4	524.3	512.3	500.7	489.3	478.1
467.2	456.6	446.1	436.0	426.0	416.3	406.8
397.6	388.5	379.7	371.1	362.8	354.7	346.8
339.2	331.8	324.6	317.6	310.8	304.2	297.8
291.6	285.6	279.8	274.2	268.7	263.5	258.4

253.6	248.9	244.4	240.0	235.9	232.0	228.3
224.8	221.6	218.7	216.3	214.4	213.7	213.2
212.7	212.2	211.7	211.1	210.5	209.9	209.3
208.6	207.9	207.2	206.5	205.8	205.0	204.2
203.4	202.6	201.8	200.9	200.0	199.1	198.2
197.3	196.4	195.4	194.5	193.5	192.5	191.5
190.4	189.4	188.4	187.3	186.2	185.1	184.0
182.9	181.8	180.6	179.5	178.3	177.2	176.0
174.8	173.6	172.4	171.1	169.9	168.7	167.4
166.1	164.5	162.8	161.1	159.3	157.5	155.8
154.0	152.2	150.4	148.6	146.9	145.1	143.3
141.5	139.6	137.8	136.0	134.2	132.4	130.6
128.8	126.9	125.1	123.3	121.5	119.6	117.8
116.0	114.2	112.4	110.5	108.7	106.9	105.1
103.3	101.4	99.6	97.8	96.0	94.2	92.4
90.6	88.8	87.0	85.3	83.5	81.7	80.0
78.2	76.5	74.7	73.0	71.3	69.6	67.9
66.2	64.5	62.8	61.2	59.5	57.9	56.3
54.7	53.1	51.6	50.0	48.5	47.0	45.5
44.0	42.6	41.2	39.8	38.5	37.1	35.8
34.6	33.3	32.1	31.0	29.8	28.8	27.7
26.7	25.7	24.8	23.9	23.1	22.3	21.5
20.8	20.1	19.5	18.9	18.4	17.9	17.4
17.0	16.6	16.2	15.8	15.5	15.2	14.9
14.7	14.4	14.2	14.0	13.8	13.6	13.4
13.3	13.1	13.0	12.8	12.7	12.5	12.4
12.3	12.2	12.1	11.9	11.8	11.7	11.6
11.5	11.4	11.3	11.2	11.1	11.1	11.0
10.9	10.8	10.7	10.6	10.5	10.5	10.4
10.3	10.2	10.1	10.1	10.0	9.9	9.8
9.7	9.7	9.6	9.5	9.5	9.4	9.3
9.2	9.2	9.1	9.0	9.0	8.9	8.8
8.8	8.7	8.7	8.6	8.5	8.5	8.4
8.3	8.3	8.2	8.2	8.1	8.1	8.0
7.9	7.9	7.8	7.8	7.7	7.7	7.6
7.6	7.5	7.5	7.4	7.4	7.3	7.3
7.2	7.2	7.1	7.1	7.0	7.0	6.9
6.9	6.8	6.8	6.7	6.7	6.6	6.6
6.6	6.5	6.5	6.4	6.4	6.3	6.3
6.3	6.2	6.2	6.1	6.1	6.1	6.0
6.0	6.0	5.9	5.9	5.8	5.8	5.8
5.7	5.7	5.7	5.6	5.6	5.6	5.5
5.5	5.5	5.4	5.4	5.4	5.3	5.3
5.3	5.2	5.2	5.2	5.1	5.1	5.1
5.0	5.0	5.0	4.9	4.9	4.9	4.9
4.8	4.8	4.8	4.7	4.7	4.7	4.7
4.6	4.6	4.6	4.6	4.5	4.5	4.5

4.5	4.4	4.4	4.4	4.4	4.3	4.3
4.3	4.3	4.2	4.2	4.2	4.2	4.1
4.1	4.1	4.1	4.0	4.0	4.0	4.0
4.0	3.9	3.9	3.9	3.9	3.8	3.8
3.8	3.8	3.8	3.7	3.7	3.7	3.7
3.7	3.6	3.6	3.6	3.6	3.6	3.6

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir			Spillway/Outlet 1 Emergency Spillw		Spillway/Outlet 2 Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
0.000	1.2	166.0	987.000	0.0	0.000	0.0	0.000	0.0
0.200	5.0	166.1	987.004	0.0	0.000	0.0	0.004	0.0
0.400	5.7	166.1	987.010	0.0	0.000	0.0	0.010	0.0
0.600	5.9	166.2	987.017	0.1	0.000	0.0	0.017	0.1
0.800	5.9	166.3	987.023	0.2	0.000	0.0	0.023	0.2
1.000	5.9	166.4	987.029	0.2	0.000	0.0	0.029	0.2
1.200	5.8	166.5	987.036	0.3	0.000	0.0	0.036	0.3
1.400	5.8	166.6	987.042	0.4	0.000	0.0	0.042	0.4
1.600	5.7	166.7	987.048	0.5	0.000	0.0	0.048	0.5
1.800	5.6	166.8	987.054	0.5	0.000	0.0	0.054	0.5
2.000	5.6	166.9	987.059	0.6	0.000	0.0	0.059	0.6
2.200	5.5	167.0	987.065	0.7	0.000	0.0	0.065	0.7
2.400	5.4	167.0	987.070	0.8	0.000	0.0	0.070	0.8
2.600	5.4	167.1	987.075	0.9	0.000	0.0	0.075	0.9
2.800	5.3	167.2	987.080	1.0	0.000	0.0	0.080	1.0
3.000	5.2	167.2	987.085	1.1	0.000	0.0	0.085	1.1
3.200	5.2	167.3	987.090	1.2	0.000	0.0	0.090	1.2
3.400	5.1	167.4	987.094	1.3	0.000	0.0	0.094	1.3
3.600	5.0	167.4	987.098	1.4	0.000	0.0	0.098	1.4
3.800	5.0	167.5	987.102	1.4	0.000	0.0	0.102	1.4
4.000	4.9	167.6	987.106	1.5	0.000	0.0	0.106	1.5
4.200	4.9	167.6	987.110	1.6	0.000	0.0	0.110	1.6
4.400	4.8	167.7	987.114	1.7	0.000	0.0	0.114	1.7
4.600	4.8	167.7	987.117	1.8	0.000	0.0	0.117	1.8
4.800	4.7	167.8	987.120	1.8	0.000	0.0	0.120	1.8
5.000	4.6	167.8	987.123	1.9	0.000	0.0	0.123	1.9
5.200	4.6	167.9	987.126	2.0	0.000	0.0	0.126	2.0
5.400	4.5	167.9	987.129	2.0	0.000	0.0	0.129	2.0
5.600	4.5	167.9	987.132	2.1	0.000	0.0	0.132	2.1
5.800	4.4	168.0	987.135	2.2	0.000	0.0	0.135	2.2
6.000	4.4	168.0	987.137	2.2	0.000	0.0	0.137	2.2
6.200	4.3	168.0	987.140	2.3	0.000	0.0	0.140	2.3
6.400	4.3	168.1	987.142	2.3	0.000	0.0	0.142	2.3
6.600	4.2	168.1	987.144	2.4	0.000	0.0	0.144	2.4
6.800	4.2	168.1	987.146	2.5	0.000	0.0	0.146	2.5
7.000	4.1	168.2	987.148	2.5	0.000	0.0	0.148	2.5
7.200	4.1	168.2	987.150	2.5	0.000	0.0	0.150	2.5
7.400	4.1	168.2	987.151	2.6	0.000	0.0	0.151	2.6
7.600	4.0	168.2	987.153	2.6	0.000	0.0	0.153	2.6
7.800	4.0	168.3	987.154	2.7	0.000	0.0	0.154	2.7

8.000	3.9	168.3	987.156	2.7	0.000	0.0	0.156	2.7
8.200	3.9	168.3	987.157	2.7	0.000	0.0	0.157	2.7
8.400	3.8	168.3	987.158	2.8	0.000	0.0	0.158	2.8
8.600	3.8	168.3	987.160	2.8	0.000	0.0	0.160	2.8
8.800	3.8	168.4	987.161	2.8	0.000	0.0	0.161	2.8
9.000	3.7	168.4	987.162	2.9	0.000	0.0	0.162	2.9
9.200	3.7	168.4	987.163	2.9	0.000	0.0	0.163	2.9
9.400	3.7	168.4	987.164	2.9	0.000	0.0	0.164	2.9
9.600	3.6	168.4	987.164	2.9	0.000	0.0	0.164	2.9
9.800	3.6	168.4	987.165	3.0	0.000	0.0	0.165	3.0
10.000	3.6	168.4	987.166	3.0	0.000	0.0	0.166	3.0
10.200	3.7	168.4	987.167	3.0	0.000	0.0	0.167	3.0
10.400	3.9	168.5	987.167	3.0	0.000	0.0	0.167	3.0
10.600	4.2	168.5	987.169	3.0	0.000	0.0	0.169	3.0
10.800	4.9	168.5	987.170	3.1	0.000	0.0	0.170	3.1
11.000	6.0	168.5	987.173	3.2	0.000	0.0	0.173	3.2
11.200	7.8	168.6	987.177	3.3	0.000	0.0	0.177	3.3
11.400	10.2	168.7	987.183	3.5	0.000	0.0	0.183	3.5
11.600	13.7	168.8	987.193	3.7	0.000	0.0	0.193	3.7
11.800	18.9	169.0	987.206	4.1	0.000	0.0	0.206	4.1
12.000	28.6	169.3	987.228	4.8	0.000	0.0	0.228	4.8
12.200	43.8	169.8	987.262	5.9	0.000	0.0	0.262	5.9
12.400	63.5	170.6	987.315	7.8	0.000	0.0	0.315	7.8
12.600	86.6	171.7	987.389	10.7	0.000	0.0	0.389	10.7
12.800	112.8	173.1	987.487	14.9	0.000	0.0	0.487	14.9
13.000	141.8	174.9	987.610	21.0	0.000	0.0	0.610	21.0
13.200	171.6	177.1	987.759	29.1	0.000	0.0	0.759	29.1
13.400	197.7	179.6	987.928	39.4	0.000	0.0	0.928	39.4
13.600	387.3	183.0	988.161	55.0	0.000	0.0	1.161	55.0
13.800	1113.5	194.0	988.906	115.8	0.000	0.0	1.906	115.8
14.000	1811.8	215.5	990.276	194.1	0.000	0.0	6.276	194.1
14.200	2349.1	246.7	991.835	216.9	0.000	0.0	7.835	216.9

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir		Spillway/Outlet 1			Spillway/Outlet 2		
				Emergency Spillw		Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
14.400	2753.8	280.7	993.718	962.3	1.718	720.8	9.718	241.5
14.600	3066.6	304.4	995.048	1960.5	3.048	1703.0	11.048	257.5
14.800	3322.1	318.5	995.840	2674.3	3.840	2407.7	11.840	266.6
15.000	3536.4	326.9	996.312	3136.9	4.312	2865.1	12.312	271.9
15.200	3715.5	332.3	996.614	3446.9	4.614	3171.7	12.614	275.2
15.400	3868.1	336.1	996.827	3670.6	4.827	3393.2	12.827	277.5
15.600	3995.5	339.0	996.987	3842.9	4.987	3563.7	12.987	279.2
15.800	4094.3	341.2	997.111	3977.7	5.111	3697.2	13.111	280.5
16.000	4162.3	342.8	997.203	4078.9	5.203	3797.4	13.203	281.5
16.200	4197.8	343.9	997.264	4146.9	5.264	3864.7	13.264	282.2
16.400	4213.8	344.6	997.299	4186.1	5.299	3903.5	13.299	282.6
16.600	4225.3	344.9	997.319	4208.3	5.319	3925.5	13.319	282.8
16.800	4235.3	345.2	997.332	4223.2	5.332	3940.3	13.332	282.9
17.000	4242.8	345.3	997.342	4233.9	5.342	3950.9	13.342	283.0
17.200	4247.5	345.5	997.349	4241.6	5.349	3958.6	13.349	283.1
17.400	4245.3	345.5	997.352	4244.8	5.352	3961.7	13.352	283.1
17.600	4238.0	345.5	997.350	4242.5	5.350	3959.4	13.350	283.1
17.800	4225.6	345.4	997.343	4235.2	5.343	3952.2	13.343	283.0
18.000	4206.9	345.1	997.331	4222.2	5.331	3939.3	13.331	282.9
18.200	4183.2	344.8	997.315	4203.6	5.315	3920.9	13.315	282.7
18.400	4152.6	344.5	997.293	4179.3	5.293	3896.8	13.293	282.5
18.600	4112.7	343.9	997.264	4147.5	5.264	3865.3	13.264	282.2
18.800	4065.8	343.3	997.229	4107.8	5.229	3826.0	13.229	281.8
19.000	4013.6	342.6	997.187	4061.5	5.187	3780.2	13.187	281.4
19.200	3957.5	341.7	997.140	4010.1	5.140	3729.2	13.140	280.9
19.400	3898.1	340.8	997.090	3954.6	5.090	3674.3	13.090	280.3
19.600	3835.5	339.9	997.036	3895.6	5.036	3615.9	13.036	279.7
19.800	3769.9	338.8	996.978	3833.5	4.978	3554.3	12.978	279.1
20.000	3701.1	337.8	996.918	3768.2	4.918	3489.7	12.918	278.5
20.200	3628.8	336.6	996.854	3699.7	4.854	3421.9	12.854	277.8
20.400	3551.9	335.4	996.786	3627.5	4.786	3350.4	12.786	277.0
20.600	3470.8	334.1	996.714	3551.1	4.714	3274.8	12.714	276.3
20.800	3385.4	332.8	996.637	3470.6	4.637	3195.2	12.637	275.4
21.000	3294.9	331.3	996.555	3385.8	4.555	3111.2	12.555	274.5
21.200	3200.8	329.8	996.469	3296.5	4.469	3022.9	12.469	273.6
21.400	3106.3	328.1	996.379	3204.6	4.379	2932.0	12.379	272.6
21.600	3013.9	326.5	996.287	3112.5	4.287	2840.9	12.287	271.6
21.800	2923.4	324.9	996.196	3021.4	4.196	2750.9	12.196	270.6
22.000	2836.6	323.3	996.107	2932.5	4.107	2662.9	12.107	269.6
22.200	2755.3	321.7	996.020	2847.4	4.020	2578.8	12.020	268.6

22.400	2678.1	320.2	995.936	2766.5	3.936	2498.8	11.936	267.7
22.600	2604.4	318.8	995.856	2689.5	3.856	2422.7	11.856	266.8
22.800	2533.9	317.4	995.778	2616.1	3.778	2350.2	11.778	265.9
23.000	2466.1	316.1	995.703	2545.8	3.703	2280.7	11.703	265.1
23.200	2400.9	314.8	995.631	2478.2	3.631	2213.9	11.631	264.2
23.400	2338.7	313.5	995.561	2413.4	3.561	2149.9	11.561	263.4
23.600	2278.9	312.3	995.492	2351.2	3.492	2088.6	11.492	262.7
23.800	2221.9	311.2	995.427	2291.8	3.427	2029.8	11.427	261.9
24.000	2168.2	310.0	995.363	2235.1	3.363	1973.9	11.363	261.2
24.200	2116.7	308.9	995.303	2181.2	3.303	1920.7	11.303	260.5
24.400	2066.6	307.9	995.244	2129.4	3.244	1869.6	11.244	259.8
24.600	2017.2	306.9	995.186	2079.1	3.186	1820.0	11.186	259.1
24.800	1968.0	305.8	995.129	2029.7	3.129	1771.2	11.129	258.5
25.000	1919.3	304.8	995.072	1980.8	3.072	1723.0	11.072	257.8
25.200	1870.9	303.8	995.015	1932.5	3.015	1675.3	11.015	257.1
25.400	1822.2	302.8	994.958	1884.4	2.958	1627.9	10.958	256.5
25.600	1772.6	301.7	994.900	1835.9	2.900	1580.1	10.900	255.8
25.800	1721.7	300.7	994.840	1786.9	2.840	1531.8	10.840	255.1
26.000	1669.5	299.6	994.779	1736.8	2.779	1482.4	10.779	254.4
26.200	1617.1	298.5	994.716	1685.9	2.716	1432.2	10.716	253.6
26.400	1565.1	297.3	994.652	1634.7	2.652	1381.8	10.652	252.9
26.600	1513.4	296.2	994.587	1583.6	2.587	1331.5	10.587	252.1
26.800	1461.7	295.0	994.522	1532.7	2.522	1281.3	10.522	251.3
27.000	1410.2	293.8	994.456	1481.9	2.456	1231.3	10.456	250.5
27.200	1359.0	292.6	994.389	1431.3	2.389	1181.5	10.389	249.7
27.400	1308.8	291.4	994.322	1381.1	2.322	1132.2	10.322	248.9
27.600	1259.6	290.2	994.255	1331.7	2.255	1083.6	10.255	248.1
27.800	1211.5	289.1	994.188	1283.3	2.188	1036.0	10.188	247.3
28.000	1164.4	287.9	994.122	1235.8	2.122	989.3	10.122	246.5
28.200	1118.2	286.7	994.056	1189.2	2.056	943.5	10.056	245.7
28.400	1073.3	285.5	993.991	1143.7	1.991	898.8	9.991	244.9
28.600	1030.1	284.4	993.926	1099.4	1.926	855.3	9.926	244.1

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir		Spillway/Outlet 1		Emergency Spillw	Spillway/Outlet 2	Principal Spillw	
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
28.800	988.6	283.2	993.862	1056.7	1.862	813.3	9.862	243.3
29.000	948.5	282.1	993.800	1015.3	1.800	772.8	9.800	242.5
29.200	909.7	281.0	993.739	975.4	1.739	733.7	9.739	241.8
29.400	872.0	280.0	993.678	936.8	1.678	695.7	9.678	241.0
29.600	835.5	278.9	993.619	899.3	1.619	659.0	9.619	240.3
29.800	800.4	277.8	993.560	863.1	1.560	623.6	9.560	239.6
30.000	766.6	276.8	993.503	828.2	1.503	589.4	9.503	238.8
30.200	734.1	275.8	993.446	794.6	1.446	556.4	9.446	238.1
30.400	702.6	274.8	993.391	762.1	1.391	524.7	9.391	237.4
30.600	672.1	273.8	993.336	730.7	1.336	494.0	9.336	236.7
30.800	642.7	272.9	993.282	700.5	1.282	464.5	9.282	236.0
31.000	614.5	271.9	993.229	671.3	1.229	435.9	9.229	235.4
31.200	587.4	271.0	993.177	643.2	1.177	408.5	9.177	234.7
31.400	561.4	270.1	993.126	616.2	1.126	382.1	9.126	234.1
31.600	536.4	269.2	993.075	590.2	1.075	356.8	9.075	233.4
31.800	512.3	268.3	993.026	565.3	1.026	332.5	9.026	232.8
32.000	489.3	267.4	992.977	541.3	0.977	309.2	8.977	232.1
32.200	467.2	266.6	992.930	518.3	0.930	286.8	8.930	231.5
32.400	446.1	265.8	992.883	496.3	0.883	265.4	8.883	230.9
32.600	426.0	264.9	992.837	475.2	0.837	244.9	8.837	230.3
32.800	406.8	264.1	992.792	455.1	0.792	225.4	8.792	229.7
33.000	388.5	263.3	992.747	435.9	0.747	206.7	8.747	229.1
33.200	371.1	262.6	992.704	417.5	0.704	189.0	8.704	228.6
33.400	354.7	261.8	992.661	400.1	0.661	172.1	8.661	228.0
33.600	339.2	261.1	992.620	383.6	0.620	156.1	8.620	227.5
33.800	324.6	260.3	992.579	368.0	0.579	141.0	8.579	226.9
34.000	310.8	259.6	992.539	353.2	0.539	126.8	8.539	226.4
34.200	297.8	258.9	992.501	339.2	0.501	113.3	8.501	225.9
34.400	285.6	258.3	992.463	326.1	0.463	100.7	8.463	225.4
34.600	274.2	257.6	992.426	313.8	0.426	88.9	8.426	224.9
34.800	263.5	256.9	992.389	302.2	0.389	77.8	8.389	224.4
35.000	253.6	256.3	992.354	291.3	0.354	67.4	8.354	223.9
35.200	244.4	255.7	992.319	281.3	0.319	57.8	8.319	223.5
35.400	235.9	255.1	992.286	271.9	0.286	48.9	8.286	223.0
35.600	228.3	254.5	992.253	263.3	0.253	40.7	8.253	222.6
35.800	221.6	253.9	992.221	255.4	0.221	33.2	8.221	222.1
36.000	216.3	253.4	992.190	248.3	0.190	26.6	8.190	221.7
36.200	213.7	252.9	992.162	242.3	0.162	20.9	8.162	221.4
36.400	212.7	252.5	992.138	237.4	0.138	16.4	8.138	221.0
36.600	211.7	252.1	992.116	233.4	0.116	12.7	8.116	220.7

36.800	210.5	251.7	992.097	230.2	0.097	9.7	8.097	220.5
37.000	209.3	251.4	992.080	227.4	0.080	7.2	8.080	220.2
37.200	207.9	251.1	992.063	225.1	0.063	5.1	8.063	220.0
37.400	206.5	250.9	992.048	223.1	0.048	3.3	8.048	219.8
37.600	205.0	250.6	992.032	221.5	0.032	1.9	8.032	219.6
37.800	203.4	250.3	992.017	220.1	0.017	0.7	8.017	219.4
38.000	201.8	250.0	992.001	219.2	0.001	0.0	8.001	219.2
38.200	200.0	249.7	991.986	219.0	0.000	0.0	7.986	219.0
38.400	198.2	249.4	991.970	218.7	0.000	0.0	7.970	218.7
38.600	196.4	249.0	991.952	218.5	0.000	0.0	7.952	218.5
38.800	194.5	248.7	991.933	218.2	0.000	0.0	7.933	218.2
39.000	192.5	248.3	991.913	217.9	0.000	0.0	7.913	217.9
39.200	190.4	247.8	991.891	217.6	0.000	0.0	7.891	217.6
39.400	188.4	247.4	991.868	217.3	0.000	0.0	7.868	217.3
39.600	186.2	246.9	991.843	217.0	0.000	0.0	7.843	217.0
39.800	184.0	246.3	991.817	216.6	0.000	0.0	7.817	216.6
40.000	181.8	245.8	991.789	216.2	0.000	0.0	7.789	216.2
40.200	179.5	245.2	991.760	215.8	0.000	0.0	7.760	215.8
40.400	177.2	244.6	991.729	215.4	0.000	0.0	7.729	215.4
40.600	174.8	243.9	991.697	215.0	0.000	0.0	7.697	215.0
40.800	172.4	243.3	991.663	214.5	0.000	0.0	7.663	214.5
41.000	169.9	242.5	991.627	214.0	0.000	0.0	7.627	214.0
41.200	167.4	241.8	991.590	213.5	0.000	0.0	7.590	213.5
41.400	164.5	241.0	991.551	212.9	0.000	0.0	7.551	212.9
41.600	161.1	240.2	991.510	212.3	0.000	0.0	7.510	212.3
41.800	157.5	239.3	991.466	211.7	0.000	0.0	7.466	211.7
42.000	154.0	238.4	991.421	211.1	0.000	0.0	7.421	211.1
42.200	150.4	237.4	991.372	210.4	0.000	0.0	7.372	210.4
42.400	146.9	236.4	991.321	209.6	0.000	0.0	7.321	209.6
42.600	143.3	235.4	991.268	208.9	0.000	0.0	7.268	208.9
42.800	139.6	234.3	991.213	208.1	0.000	0.0	7.213	208.1
43.000	136.0	233.1	991.155	207.2	0.000	0.0	7.155	207.2

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir		Spillway/Outlet 1			Spillway/Outlet 2		
				Emergency Spillw		Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
43.200	132.4	231.9	991.095	206.4	0.000	0.0	7.095	206.4
43.400	128.8	230.7	991.033	205.5	0.000	0.0	7.033	205.5
43.600	125.1	229.4	990.969	204.5	0.000	0.0	6.969	204.5
43.800	121.5	228.0	990.902	203.5	0.000	0.0	6.902	203.5
44.000	117.8	226.7	990.833	202.5	0.000	0.0	6.833	202.5
44.200	114.2	225.2	990.762	201.5	0.000	0.0	6.762	201.5
44.400	110.5	223.8	990.689	200.4	0.000	0.0	6.689	200.4
44.600	106.9	222.3	990.613	199.2	0.000	0.0	6.613	199.2
44.800	103.3	220.7	990.536	198.1	0.000	0.0	6.536	198.1
45.000	99.6	219.1	990.457	196.9	0.000	0.0	6.457	196.9
45.200	96.0	217.5	990.375	195.6	0.000	0.0	6.375	195.6
45.400	92.4	215.8	990.292	194.3	0.000	0.0	6.292	194.3
45.600	88.8	214.1	990.207	193.0	0.000	0.0	6.207	193.0
45.800	85.3	212.4	990.120	191.7	0.000	0.0	6.120	191.7
46.000	81.7	210.6	990.031	190.3	0.000	0.0	6.031	190.3
46.200	78.2	208.8	989.919	188.5	0.000	0.0	5.919	188.5
46.400	74.7	207.0	989.794	186.5	0.000	0.0	5.794	186.5
46.600	71.3	205.1	989.667	184.4	0.000	0.0	5.667	184.4
46.800	67.9	203.2	989.540	178.1	0.000	0.0	2.540	178.1
47.000	64.5	201.5	989.421	165.7	0.000	0.0	2.421	165.7
47.200	61.2	199.9	989.311	154.6	0.000	0.0	2.311	154.6
47.400	57.9	198.4	989.210	144.5	0.000	0.0	2.210	144.5
47.600	54.7	197.0	989.115	135.4	0.000	0.0	2.115	135.4
47.800	51.6	195.7	989.028	127.0	0.000	0.0	2.028	127.0
48.000	48.5	194.5	988.945	119.4	0.000	0.0	1.945	119.4
48.200	45.5	193.4	988.868	112.3	0.000	0.0	1.868	112.3
48.400	42.6	192.3	988.794	105.8	0.000	0.0	1.794	105.8
48.600	39.8	191.3	988.725	99.7	0.000	0.0	1.725	99.7
48.800	37.1	190.3	988.659	94.0	0.000	0.0	1.659	94.0
49.000	34.6	189.4	988.597	88.8	0.000	0.0	1.597	88.8
49.200	32.1	188.5	988.537	83.8	0.000	0.0	1.537	83.8
49.400	29.8	187.7	988.480	79.2	0.000	0.0	1.480	79.2
49.600	27.7	186.9	988.426	74.9	0.000	0.0	1.426	74.9
49.800	25.7	186.1	988.374	70.8	0.000	0.0	1.374	70.8
50.000	23.9	185.4	988.324	67.0	0.000	0.0	1.324	67.0
50.200	22.3	184.7	988.276	63.5	0.000	0.0	1.276	63.5
50.400	20.8	184.1	988.231	60.1	0.000	0.0	1.231	60.1
50.600	19.5	183.4	988.188	57.0	0.000	0.0	1.188	57.0
50.800	18.4	182.8	988.147	54.0	0.000	0.0	1.147	54.0
51.000	17.4	182.2	988.108	51.3	0.000	0.0	1.108	51.3

51.200	16.6	181.7	988.070	48.7	0.000	0.0	1.070	48.7
51.400	15.8	181.2	988.035	46.3	0.000	0.0	1.035	46.3
51.600	15.2	180.7	988.002	44.1	0.000	0.0	1.002	44.1
51.800	14.7	180.2	987.970	42.0	0.000	0.0	0.970	42.0
52.000	14.2	179.8	987.940	40.1	0.000	0.0	0.940	40.1
52.200	13.8	179.4	987.911	38.3	0.000	0.0	0.911	38.3
52.400	13.4	179.0	987.885	36.6	0.000	0.0	0.885	36.6
52.600	13.1	178.6	987.859	35.0	0.000	0.0	0.859	35.0
52.800	12.8	178.2	987.835	33.6	0.000	0.0	0.835	33.6
53.000	12.5	177.9	987.812	32.2	0.000	0.0	0.812	32.2
53.200	12.3	177.6	987.791	30.9	0.000	0.0	0.791	30.9
53.400	12.1	177.3	987.770	29.7	0.000	0.0	0.770	29.7
53.600	11.8	177.0	987.751	28.6	0.000	0.0	0.751	28.6
53.800	11.6	176.7	987.732	27.6	0.000	0.0	0.732	27.6
54.000	11.4	176.5	987.715	26.6	0.000	0.0	0.715	26.6
54.200	11.2	176.2	987.698	25.7	0.000	0.0	0.698	25.7
54.400	11.1	176.0	987.682	24.8	0.000	0.0	0.682	24.8
54.600	10.9	175.8	987.667	24.0	0.000	0.0	0.667	24.0
54.800	10.7	175.6	987.653	23.2	0.000	0.0	0.653	23.2
55.000	10.5	175.4	987.639	22.5	0.000	0.0	0.639	22.5
55.200	10.4	175.2	987.626	21.8	0.000	0.0	0.626	21.8
55.400	10.2	175.0	987.613	21.1	0.000	0.0	0.613	21.1
55.600	10.1	174.8	987.601	20.5	0.000	0.0	0.601	20.5
55.800	9.9	174.6	987.590	19.9	0.000	0.0	0.590	19.9
56.000	9.7	174.5	987.579	19.4	0.000	0.0	0.579	19.4
56.200	9.6	174.3	987.568	18.8	0.000	0.0	0.568	18.8
56.400	9.5	174.2	987.558	18.3	0.000	0.0	0.558	18.3
56.600	9.3	174.0	987.548	17.8	0.000	0.0	0.548	17.8
56.800	9.2	173.9	987.539	17.4	0.000	0.0	0.539	17.4
57.000	9.0	173.8	987.529	16.9	0.000	0.0	0.529	16.9
57.200	8.9	173.6	987.521	16.5	0.000	0.0	0.521	16.5
57.400	8.8	173.5	987.512	16.1	0.000	0.0	0.512	16.1

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir			Spillway/Outlet 1 Emergency Spillw		Spillway/Outlet 2 Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
57.600	8.7	173.4	987.504	15.7	0.000	0.0	0.504	15.7
57.800	8.5	173.3	987.496	15.4	0.000	0.0	0.496	15.4
58.000	8.4	173.2	987.489	15.0	0.000	0.0	0.489	15.0
58.200	8.3	173.1	987.481	14.7	0.000	0.0	0.481	14.7
58.400	8.2	173.0	987.474	14.4	0.000	0.0	0.474	14.4
58.600	8.1	172.9	987.467	14.1	0.000	0.0	0.467	14.1
58.800	7.9	172.8	987.461	13.8	0.000	0.0	0.461	13.8
59.000	7.8	172.7	987.454	13.5	0.000	0.0	0.454	13.5
59.200	7.7	172.6	987.448	13.2	0.000	0.0	0.448	13.2
59.400	7.6	172.5	987.442	12.9	0.000	0.0	0.442	12.9
59.600	7.5	172.4	987.436	12.7	0.000	0.0	0.436	12.7
59.800	7.4	172.3	987.430	12.4	0.000	0.0	0.430	12.4
60.000	7.3	172.2	987.425	12.2	0.000	0.0	0.425	12.2
60.200	7.2	172.2	987.419	11.9	0.000	0.0	0.419	11.9
60.400	7.1	172.1	987.414	11.7	0.000	0.0	0.414	11.7
60.600	7.0	172.0	987.409	11.5	0.000	0.0	0.409	11.5
60.800	6.9	171.9	987.404	11.3	0.000	0.0	0.404	11.3
61.000	6.8	171.9	987.399	11.1	0.000	0.0	0.399	11.1
61.200	6.7	171.8	987.394	10.9	0.000	0.0	0.394	10.9
61.400	6.6	171.7	987.390	10.7	0.000	0.0	0.390	10.7
61.600	6.6	171.6	987.385	10.5	0.000	0.0	0.385	10.5
61.800	6.5	171.6	987.381	10.3	0.000	0.0	0.381	10.3
62.000	6.4	171.5	987.376	10.2	0.000	0.0	0.376	10.2
62.200	6.3	171.5	987.372	10.0	0.000	0.0	0.372	10.0
62.400	6.2	171.4	987.368	9.8	0.000	0.0	0.368	9.8
62.600	6.1	171.3	987.364	9.7	0.000	0.0	0.364	9.7
62.800	6.1	171.3	987.360	9.5	0.000	0.0	0.360	9.5
63.000	6.0	171.2	987.356	9.4	0.000	0.0	0.356	9.4
63.200	5.9	171.2	987.353	9.2	0.000	0.0	0.353	9.2
63.400	5.8	171.1	987.349	9.1	0.000	0.0	0.349	9.1
63.600	5.8	171.1	987.345	8.9	0.000	0.0	0.345	8.9
63.800	5.7	171.0	987.342	8.8	0.000	0.0	0.342	8.8
64.000	5.6	171.0	987.338	8.7	0.000	0.0	0.338	8.7
64.200	5.6	170.9	987.335	8.5	0.000	0.0	0.335	8.5
64.400	5.5	170.9	987.332	8.4	0.000	0.0	0.332	8.4
64.600	5.4	170.8	987.328	8.3	0.000	0.0	0.328	8.3
64.800	5.4	170.8	987.325	8.2	0.000	0.0	0.325	8.2
65.000	5.3	170.7	987.322	8.0	0.000	0.0	0.322	8.0
65.200	5.2	170.7	987.319	7.9	0.000	0.0	0.319	7.9
65.400	5.2	170.6	987.316	7.8	0.000	0.0	0.316	7.8

65.600	5.1	170.6	987.313	7.7	0.000	0.0	0.313	7.7
65.800	5.0	170.5	987.310	7.6	0.000	0.0	0.310	7.6
66.000	5.0	170.5	987.307	7.5	0.000	0.0	0.307	7.5
66.200	4.9	170.5	987.304	7.4	0.000	0.0	0.304	7.4
66.400	4.9	170.4	987.302	7.3	0.000	0.0	0.302	7.3
66.600	4.8	170.4	987.299	7.2	0.000	0.0	0.299	7.2
66.800	4.7	170.3	987.296	7.1	0.000	0.0	0.296	7.1
67.000	4.7	170.3	987.294	7.0	0.000	0.0	0.294	7.0
67.200	4.6	170.3	987.291	6.9	0.000	0.0	0.291	6.9
67.400	4.6	170.2	987.289	6.8	0.000	0.0	0.289	6.8
67.600	4.5	170.2	987.286	6.7	0.000	0.0	0.286	6.7
67.800	4.5	170.2	987.284	6.6	0.000	0.0	0.284	6.6
68.000	4.4	170.1	987.281	6.6	0.000	0.0	0.281	6.6
68.200	4.4	170.1	987.279	6.5	0.000	0.0	0.279	6.5
68.400	4.3	170.1	987.276	6.4	0.000	0.0	0.276	6.4
68.600	4.3	170.0	987.274	6.3	0.000	0.0	0.274	6.3
68.800	4.2	170.0	987.272	6.2	0.000	0.0	0.272	6.2
69.000	4.2	170.0	987.270	6.2	0.000	0.0	0.270	6.2
69.200	4.1	169.9	987.267	6.1	0.000	0.0	0.267	6.1
69.400	4.1	169.9	987.265	6.0	0.000	0.0	0.265	6.0
69.600	4.0	169.9	987.263	5.9	0.000	0.0	0.263	5.9
69.800	4.0	169.8	987.261	5.9	0.000	0.0	0.261	5.9
70.000	4.0	169.8	987.259	5.8	0.000	0.0	0.259	5.8
70.200	3.9	169.8	987.257	5.7	0.000	0.0	0.257	5.7
70.400	3.9	169.7	987.255	5.7	0.000	0.0	0.255	5.7
70.600	3.8	169.7	987.253	5.6	0.000	0.0	0.253	5.6
70.800	3.8	169.7	987.251	5.5	0.000	0.0	0.251	5.5
71.000	3.7	169.7	987.249	5.5	0.000	0.0	0.249	5.5
71.200	3.7	169.6	987.247	5.4	0.000	0.0	0.247	5.4
71.400	3.7	169.6	987.245	5.3	0.000	0.0	0.245	5.3
71.600	3.6	169.6	987.243	5.3	0.000	0.0	0.243	5.3
71.800	3.6	169.5	987.241	5.2	0.000	0.0	0.241	5.2

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir			Spillway/Outlet 1 Emergency Spillw		Spillway/Outlet 2 Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
36.000	216.3	253.4	992.190	248.3	0.190	26.6	8.190	221.7
36.100	214.4	253.1	992.176	245.2	0.176	23.6	8.176	221.5
36.200	213.7	252.9	992.162	242.3	0.162	20.9	8.162	221.4
36.300	213.2	252.7	992.149	239.7	0.149	18.5	8.149	221.2
36.400	212.7	252.5	992.138	237.4	0.138	16.4	8.138	221.0
36.500	212.2	252.3	992.127	235.3	0.127	14.4	8.127	220.9
36.600	211.7	252.1	992.116	233.4	0.116	12.7	8.116	220.7
36.700	211.1	251.9	992.106	231.7	0.106	11.1	8.106	220.6
36.800	210.5	251.7	992.097	230.2	0.097	9.7	8.097	220.5
36.900	209.9	251.6	992.088	228.7	0.088	8.4	8.088	220.3
37.000	209.3	251.4	992.080	227.4	0.080	7.2	8.080	220.2
37.100	208.6	251.3	992.071	226.2	0.071	6.1	8.071	220.1
37.200	207.9	251.1	992.063	225.1	0.063	5.1	8.063	220.0
37.300	207.2	251.0	992.055	224.1	0.055	4.2	8.055	219.9
37.400	206.5	250.9	992.048	223.1	0.048	3.3	8.048	219.8
37.500	205.8	250.7	992.040	222.3	0.040	2.6	8.040	219.7
37.600	205.0	250.6	992.032	221.5	0.032	1.9	8.032	219.6
37.700	204.2	250.4	992.025	220.7	0.025	1.2	8.025	219.5
37.800	203.4	250.3	992.017	220.1	0.017	0.7	8.017	219.4
37.900	202.6	250.2	992.009	219.6	0.009	0.3	8.009	219.3
38.000	201.8	250.0	992.001	219.2	0.001	0.0	8.001	219.2
38.100	200.9	249.9	991.994	219.1	0.000	0.0	7.994	219.1
38.200	200.0	249.7	991.986	219.0	0.000	0.0	7.986	219.0
38.300	199.1	249.6	991.978	218.8	0.000	0.0	7.978	218.8
38.400	198.2	249.4	991.970	218.7	0.000	0.0	7.970	218.7
38.500	197.3	249.2	991.961	218.6	0.000	0.0	7.961	218.6
38.600	196.4	249.0	991.952	218.5	0.000	0.0	7.952	218.5
38.700	195.4	248.9	991.943	218.4	0.000	0.0	7.943	218.4
38.800	194.5	248.7	991.933	218.2	0.000	0.0	7.933	218.2
38.900	193.5	248.5	991.923	218.1	0.000	0.0	7.923	218.1
39.000	192.5	248.3	991.913	217.9	0.000	0.0	7.913	217.9
39.100	191.5	248.0	991.902	217.8	0.000	0.0	7.902	217.8
39.200	190.4	247.8	991.891	217.6	0.000	0.0	7.891	217.6
39.300	189.4	247.6	991.880	217.5	0.000	0.0	7.880	217.5
39.400	188.4	247.4	991.868	217.3	0.000	0.0	7.868	217.3
39.500	187.3	247.1	991.856	217.2	0.000	0.0	7.856	217.2
39.600	186.2	246.9	991.843	217.0	0.000	0.0	7.843	217.0
39.700	185.1	246.6	991.830	216.8	0.000	0.0	7.830	216.8
39.800	184.0	246.3	991.817	216.6	0.000	0.0	7.817	216.6
39.900	182.9	246.1	991.804	216.4	0.000	0.0	7.804	216.4

40.000	181.8	245.8	991.789	216.2	0.000	0.0	7.789	216.2
40.100	180.6	245.5	991.775	216.0	0.000	0.0	7.775	216.0
40.200	179.5	245.2	991.760	215.8	0.000	0.0	7.760	215.8
40.300	178.3	244.9	991.745	215.6	0.000	0.0	7.745	215.6
40.400	177.2	244.6	991.729	215.4	0.000	0.0	7.729	215.4
40.500	176.0	244.3	991.713	215.2	0.000	0.0	7.713	215.2
40.600	174.8	243.9	991.697	215.0	0.000	0.0	7.697	215.0
40.700	173.6	243.6	991.680	214.7	0.000	0.0	7.680	214.7
40.800	172.4	243.3	991.663	214.5	0.000	0.0	7.663	214.5
40.900	171.1	242.9	991.645	214.2	0.000	0.0	7.645	214.2
41.000	169.9	242.5	991.627	214.0	0.000	0.0	7.627	214.0
41.100	168.7	242.2	991.609	213.7	0.000	0.0	7.609	213.7
41.200	167.4	241.8	991.590	213.5	0.000	0.0	7.590	213.5
41.300	166.1	241.4	991.571	213.2	0.000	0.0	7.571	213.2
41.400	164.5	241.0	991.551	212.9	0.000	0.0	7.551	212.9
41.500	162.8	240.6	991.531	212.6	0.000	0.0	7.531	212.6
41.600	161.1	240.2	991.510	212.3	0.000	0.0	7.510	212.3
41.700	159.3	239.8	991.489	212.0	0.000	0.0	7.489	212.0
41.800	157.5	239.3	991.466	211.7	0.000	0.0	7.466	211.7
41.900	155.8	238.9	991.444	211.4	0.000	0.0	7.444	211.4
42.000	154.0	238.4	991.421	211.1	0.000	0.0	7.421	211.1
42.100	152.2	237.9	991.397	210.7	0.000	0.0	7.397	210.7
42.200	150.4	237.4	991.372	210.4	0.000	0.0	7.372	210.4
42.300	148.6	236.9	991.347	210.0	0.000	0.0	7.347	210.0
42.400	146.9	236.4	991.321	209.6	0.000	0.0	7.321	209.6
42.500	145.1	235.9	991.295	209.3	0.000	0.0	7.295	209.3
42.600	143.3	235.4	991.268	208.9	0.000	0.0	7.268	208.9
42.700	141.5	234.8	991.241	208.5	0.000	0.0	7.241	208.5
42.800	139.6	234.3	991.213	208.1	0.000	0.0	7.213	208.1
42.900	137.8	233.7	991.184	207.7	0.000	0.0	7.184	207.7
43.000	136.0	233.1	991.155	207.2	0.000	0.0	7.155	207.2
43.100	134.2	232.5	991.126	206.8	0.000	0.0	7.126	206.8

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir		Spillway/Outlet 1		Emergency Spillw	Spillway/Outlet 2	Principal Spillw	
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
43.200	132.4	231.9	991.095	206.4	0.000	0.0	7.095	206.4
43.300	130.6	231.3	991.064	205.9	0.000	0.0	7.064	205.9
43.400	128.8	230.7	991.033	205.5	0.000	0.0	7.033	205.5
43.500	126.9	230.0	991.001	205.0	0.000	0.0	7.001	205.0
43.600	125.1	229.4	990.969	204.5	0.000	0.0	6.969	204.5
43.700	123.3	228.7	990.935	204.0	0.000	0.0	6.935	204.0
43.800	121.5	228.0	990.902	203.5	0.000	0.0	6.902	203.5
43.900	119.6	227.4	990.868	203.0	0.000	0.0	6.868	203.0
44.000	117.8	226.7	990.833	202.5	0.000	0.0	6.833	202.5
44.100	116.0	226.0	990.798	202.0	0.000	0.0	6.798	202.0
44.200	114.2	225.2	990.762	201.5	0.000	0.0	6.762	201.5
44.300	112.4	224.5	990.725	200.9	0.000	0.0	6.725	200.9
44.400	110.5	223.8	990.689	200.4	0.000	0.0	6.689	200.4
44.500	108.7	223.0	990.651	199.8	0.000	0.0	6.651	199.8
44.600	106.9	222.3	990.613	199.2	0.000	0.0	6.613	199.2
44.700	105.1	221.5	990.575	198.7	0.000	0.0	6.575	198.7
44.800	103.3	220.7	990.536	198.1	0.000	0.0	6.536	198.1
44.900	101.4	219.9	990.497	197.5	0.000	0.0	6.497	197.5
45.000	99.6	219.1	990.457	196.9	0.000	0.0	6.457	196.9
45.100	97.8	218.3	990.416	196.2	0.000	0.0	6.416	196.2
45.200	96.0	217.5	990.375	195.6	0.000	0.0	6.375	195.6
45.300	94.2	216.7	990.334	195.0	0.000	0.0	6.334	195.0
45.400	92.4	215.8	990.292	194.3	0.000	0.0	6.292	194.3
45.500	90.6	215.0	990.250	193.7	0.000	0.0	6.250	193.7
45.600	88.8	214.1	990.207	193.0	0.000	0.0	6.207	193.0
45.700	87.0	213.3	990.163	192.3	0.000	0.0	6.163	192.3
45.800	85.3	212.4	990.120	191.7	0.000	0.0	6.120	191.7
45.900	83.5	211.5	990.076	191.0	0.000	0.0	6.076	191.0
46.000	81.7	210.6	990.031	190.3	0.000	0.0	6.031	190.3
46.100	80.0	209.7	989.981	189.5	0.000	0.0	5.981	189.5
46.200	78.2	208.8	989.919	188.5	0.000	0.0	5.919	188.5
46.300	76.5	207.9	989.856	187.5	0.000	0.0	5.856	187.5
46.400	74.7	207.0	989.794	186.5	0.000	0.0	5.794	186.5
46.500	73.0	206.0	989.730	185.5	0.000	0.0	5.730	185.5
46.600	71.3	205.1	989.667	184.4	0.000	0.0	5.667	184.4
46.700	69.6	204.2	989.603	183.4	0.000	0.0	5.603	183.4
46.800	67.9	203.2	989.540	178.1	0.000	0.0	2.540	178.1
46.900	66.2	202.4	989.479	171.7	0.000	0.0	2.479	171.7
47.000	64.5	201.5	989.421	165.7	0.000	0.0	2.421	165.7
47.100	62.8	200.7	989.365	160.0	0.000	0.0	2.365	160.0

47.200	61.2	199.9	989.311	154.6	0.000	0.0	2.311	154.6
47.300	59.5	199.1	989.259	149.4	0.000	0.0	2.259	149.4
47.400	57.9	198.4	989.210	144.5	0.000	0.0	2.210	144.5
47.500	56.3	197.7	989.162	139.8	0.000	0.0	2.162	139.8
47.600	54.7	197.0	989.115	135.4	0.000	0.0	2.115	135.4
47.700	53.1	196.4	989.071	131.1	0.000	0.0	2.071	131.1
47.800	51.6	195.7	989.028	127.0	0.000	0.0	2.028	127.0
47.900	50.0	195.1	988.986	123.1	0.000	0.0	1.986	123.1
48.000	48.5	194.5	988.945	119.4	0.000	0.0	1.945	119.4
48.100	47.0	194.0	988.906	115.8	0.000	0.0	1.906	115.8
48.200	45.5	193.4	988.868	112.3	0.000	0.0	1.868	112.3
48.300	44.0	192.8	988.831	109.0	0.000	0.0	1.831	109.0
48.400	42.6	192.3	988.794	105.8	0.000	0.0	1.794	105.8
48.500	41.2	191.8	988.759	102.7	0.000	0.0	1.759	102.7
48.600	39.8	191.3	988.725	99.7	0.000	0.0	1.725	99.7
48.700	38.5	190.8	988.692	96.8	0.000	0.0	1.692	96.8
48.800	37.1	190.3	988.659	94.0	0.000	0.0	1.659	94.0
48.900	35.8	189.9	988.628	91.4	0.000	0.0	1.628	91.4
49.000	34.6	189.4	988.597	88.8	0.000	0.0	1.597	88.8
49.100	33.3	189.0	988.567	86.3	0.000	0.0	1.567	86.3
49.200	32.1	188.5	988.537	83.8	0.000	0.0	1.537	83.8
49.300	31.0	188.1	988.508	81.5	0.000	0.0	1.508	81.5
49.400	29.8	187.7	988.480	79.2	0.000	0.0	1.480	79.2
49.500	28.8	187.3	988.453	77.0	0.000	0.0	1.453	77.0
49.600	27.7	186.9	988.426	74.9	0.000	0.0	1.426	74.9
49.700	26.7	186.5	988.399	72.8	0.000	0.0	1.399	72.8
49.800	25.7	186.1	988.374	70.8	0.000	0.0	1.374	70.8
49.900	24.8	185.8	988.349	68.9	0.000	0.0	1.349	68.9

Tibble Fork - 100 Year 24 Hour Storm

Inflow Hydrograph
Maximum Inflow (cfs) = 4247.50
Volume (Acre-Feet) = 3994.42

Outflow Hydrograph
Maximum Outflow (cfs) = 4244.85
Volume (Acre-Feet) = 3974.65
Maximum Elevati on (ft)= 997.352

Spillway (Outlet) 1
Maximum Head (feet) = 5.352
Maximum Flow (cfs) = 3961.74

Spillway (Outlet) 2
Maximum Head (feet) = 13.352
Maximum Flow (cfs) = 283.11

Table 1. Water surface elevation compared to wall height (4248 cfs)

H Station	Bottom Elev	Wall Height	Water Surface Elevation	Difference (Water Surface - Wall Height)
133.5	979.25	992.00	993.94	1.94
168.5	979.25	992.00	991.27	-0.73
189.5	979.25	998.00	988.61	-9.39
210.5	979.25	998.00	988.37	-9.63
229.88	979.25	991.25	987.54	-3.71
244.47	978.07	985.41	984.65	-0.77
250.47	976.615	983.01	982.43	-0.58
251.47	976.372	982.61	982.10	-0.51
252.47	976.13	982.21	981.77	-0.44
253.47	975.887	981.81	981.44	-0.37
254.47	975.645	981.41	981.12	-0.29
255.47	975.402	981.01	980.81	-0.20
256.47	975.16	980.61	980.49	-0.12
257.47	974.917	980.21	980.19	-0.03
258.47	974.674	979.81	979.88	0.07
259.47	974.432	979.41	979.58	0.17
260.22	974.25	979.11	979.58	0.46
261.22	973.85	978.71	979.08	0.37
262.22	973.451	978.31	978.59	0.28
263.22	973.051	977.91	978.11	0.20
264.22	972.652	977.51	977.63	0.12
265.22	972.252	977.11	977.16	0.05
266.22	971.852	976.71	976.69	-0.02

267.22	971.453	976.31	976.22	-0.09
268.22	971.053	975.91	975.76	-0.15
306	955.94	960.80	959.71	-1.09
342.6	941.3	946.16	944.50	-1.66
362	933.5	945.50	936.39	-9.11

Tibble Fork - 100 Year 24 Hour Storm

	Reservoir		Spillway/Outlet 1		Spillway/Outlet 2			
				Emergency Spillw		Principal Spillw		
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
28.800	988.6	283.2	993.862	1056.7	1.862	813.3	9.862	243.3
29.000	948.5	282.1	993.800	1015.3	1.800	772.8	9.800	242.5
29.200	909.7	281.0	993.739	975.4	1.739	733.7	9.739	241.8
29.400	872.0	280.0	993.678	936.8	1.678	695.7	9.678	241.0
29.600	835.5	278.9	993.619	899.3	1.619	659.0	9.619	240.3
29.800	800.4	277.8	993.560	863.1	1.560	623.6	9.560	239.6
30.000	766.6	276.8	993.503	828.2	1.503	589.4	9.503	238.8
30.200	734.1	275.8	993.446	794.6	1.446	556.4	9.446	238.1
30.400	702.6	274.8	993.391	762.1	1.391	524.7	9.391	237.4
30.600	672.1	273.8	993.336	730.7	1.336	494.0	9.336	236.7
30.800	642.7	272.9	993.282	700.5	1.282	464.5	9.282	236.0
31.000	614.5	271.9	993.229	671.3	1.229	435.9	9.229	235.4
31.200	587.4	271.0	993.177	643.2	1.177	408.5	9.177	234.7
31.400	561.4	270.1	993.126	616.2	1.126	382.1	9.126	234.1
31.600	536.4	269.2	993.075	590.2	1.075	356.8	9.075	233.4
31.800	512.3	268.3	993.026	565.3	1.026	332.5	9.026	232.8
32.000	489.3	267.4	992.977	541.3	0.977	309.2	8.977	232.1
32.200	467.2	266.6	992.930	518.3	0.930	286.8	8.930	231.5
32.400	446.1	265.8	992.883	496.3	0.883	265.4	8.883	230.9
32.600	426.0	264.9	992.837	475.2	0.837	244.9	8.837	230.3
32.800	406.8	264.1	992.792	455.1	0.792	225.4	8.792	229.7
33.000	388.5	263.3	992.747	435.9	0.747	206.7	8.747	229.1
33.200	371.1	262.6	992.704	417.5	0.704	189.0	8.704	228.6
33.400	354.7	261.8	992.661	400.1	0.661	172.1	8.661	228.0
33.600	339.2	261.1	992.620	383.6	0.620	156.1	8.620	227.5
33.800	324.6	260.3	992.579	368.0	0.579	141.0	8.579	226.9
34.000	310.8	259.6	992.539	353.2	0.539	126.8	8.539	226.4
34.200	297.8	258.9	992.501	339.2	0.501	113.3	8.501	225.9
34.400	285.6	258.3	992.463	326.1	0.463	100.7	8.463	225.4
34.600	274.2	257.6	992.426	313.8	0.426	88.9	8.426	224.9
34.800	263.5	256.9	992.389	302.2	0.389	77.8	8.389	224.4
35.000	253.6	256.3	992.354	291.3	0.354	67.4	8.354	223.9
35.200	244.4	255.7	992.319	281.3	0.319	57.8	8.319	223.5
35.400	235.9	255.1	992.286	271.9	0.286	48.9	8.286	223.0
35.600	228.3	254.5	992.253	263.3	0.253	40.7	8.253	222.6
35.800	221.6	253.9	992.221	255.4	0.221	33.2	8.221	222.1
36.000	216.3	253.4	992.190	248.3	0.190	26.6	8.190	221.7
36.200	213.7	252.9	992.162	242.3	0.162	20.9	8.162	221.4
36.400	212.7	252.5	992.138	237.4	0.138	16.4	8.138	221.0
36.600	211.7	252.1	992.116	233.4	0.116	12.7	8.116	220.7

36.800	210.5	251.7	992.097	230.2	0.097	9.7	8.097	220.5
37.000	209.3	251.4	992.080	227.4	0.080	7.2	8.080	220.2
37.200	207.9	251.1	992.063	225.1	0.063	5.1	8.063	220.0
37.400	206.5	250.9	992.048	223.1	0.048	3.3	8.048	219.8
37.600	205.0	250.6	992.032	221.5	0.032	1.9	8.032	219.6
37.800	203.4	250.3	992.017	220.1	0.017	0.7	8.017	219.4
38.000	201.8	250.0	992.001	219.2	0.001	0.0	8.001	219.2
38.200	200.0	249.7	991.986	219.0	0.000	0.0	7.986	219.0
38.400	198.2	249.4	991.970	218.7	0.000	0.0	7.970	218.7
38.600	196.4	249.0	991.952	218.5	0.000	0.0	7.952	218.5
38.800	194.5	248.7	991.933	218.2	0.000	0.0	7.933	218.2
39.000	192.5	248.3	991.913	217.9	0.000	0.0	7.913	217.9
39.200	190.4	247.8	991.891	217.6	0.000	0.0	7.891	217.6
39.400	188.4	247.4	991.868	217.3	0.000	0.0	7.868	217.3
39.600	186.2	246.9	991.843	217.0	0.000	0.0	7.843	217.0
39.800	184.0	246.3	991.817	216.6	0.000	0.0	7.817	216.6
40.000	181.8	245.8	991.789	216.2	0.000	0.0	7.789	216.2
40.200	179.5	245.2	991.760	215.8	0.000	0.0	7.760	215.8
40.400	177.2	244.6	991.729	215.4	0.000	0.0	7.729	215.4
40.600	174.8	243.9	991.697	215.0	0.000	0.0	7.697	215.0
40.800	172.4	243.3	991.663	214.5	0.000	0.0	7.663	214.5
41.000	169.9	242.5	991.627	214.0	0.000	0.0	7.627	214.0
41.200	167.4	241.8	991.590	213.5	0.000	0.0	7.590	213.5
41.400	164.5	241.0	991.551	212.9	0.000	0.0	7.551	212.9
41.600	161.1	240.2	991.510	212.3	0.000	0.0	7.510	212.3
41.800	157.5	239.3	991.466	211.7	0.000	0.0	7.466	211.7
42.000	154.0	238.4	991.421	211.1	0.000	0.0	7.421	211.1
42.200	150.4	237.4	991.372	210.4	0.000	0.0	7.372	210.4
42.400	146.9	236.4	991.321	209.6	0.000	0.0	7.321	209.6
42.600	143.3	235.4	991.268	208.9	0.000	0.0	7.268	208.9
42.800	139.6	234.3	991.213	208.1	0.000	0.0	7.213	208.1
43.000	136.0	233.1	991.155	207.2	0.000	0.0	7.155	207.2

Tibble Fork - 100 Year 24 Hour Storm

Reservoir		Spillway/Outlet 1 Emergency Spillw		Spillway/Outlet 2 Principal Spillw				
Time (HOURS)	Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)	Head (Feet)	Outflow (cfs)
43.200	132.4	231.9	991.095	206.4	0.000	0.0	7.095	206.4
43.400	128.8	230.7	991.033	205.5	0.000	0.0	7.033	205.5
43.600	125.1	229.4	990.969	204.5	0.000	0.0	6.969	204.5
43.800	121.5	228.0	990.902	203.5	0.000	0.0	6.902	203.5
44.000	117.8	226.7	990.833	202.5	0.000	0.0	6.833	202.5
44.200	114.2	225.2	990.762	201.5	0.000	0.0	6.762	201.5
44.400	110.5	223.8	990.689	200.4	0.000	0.0	6.689	200.4
44.600	106.9	222.3	990.613	199.2	0.000	0.0	6.613	199.2
44.800	103.3	220.7	990.536	198.1	0.000	0.0	6.536	198.1
45.000	99.6	219.1	990.457	196.9	0.000	0.0	6.457	196.9
45.200	96.0	217.5	990.375	195.6	0.000	0.0	6.375	195.6
45.400	92.4	215.8	990.292	194.3	0.000	0.0	6.292	194.3
45.600	88.8	214.1	990.207	193.0	0.000	0.0	6.207	193.0
45.800	85.3	212.4	990.120	191.7	0.000	0.0	6.120	191.7
46.000	81.7	210.6	990.031	190.3	0.000	0.0	6.031	190.3
46.200	78.2	208.8	989.919	188.5	0.000	0.0	5.919	188.5
46.400	74.7	207.0	989.794	186.5	0.000	0.0	5.794	186.5
46.600	71.3	205.1	989.667	184.4	0.000	0.0	5.667	184.4
46.800	67.9	203.2	989.540	178.1	0.000	0.0	2.540	178.1
47.000	64.5	201.5	989.421	165.7	0.000	0.0	2.421	165.7
47.200	61.2	199.9	989.311	154.6	0.000	0.0	2.311	154.6
47.400	57.9	198.4	989.210	144.5	0.000	0.0	2.210	144.5
47.600	54.7	197.0	989.115	135.4	0.000	0.0	2.115	135.4
47.800	51.6	195.7	989.028	127.0	0.000	0.0	2.028	127.0
48.000	48.5	194.5	988.945	119.4	0.000	0.0	1.945	119.4
48.200	45.5	193.4	988.868	112.3	0.000	0.0	1.868	112.3
48.400	42.6	192.3	988.794	105.8	0.000	0.0	1.794	105.8
48.600	39.8	191.3	988.725	99.7	0.000	0.0	1.725	99.7
48.800	37.1	190.3	988.659	94.0	0.000	0.0	1.659	94.0
49.000	34.6	189.4	988.597	88.8	0.000	0.0	1.597	88.8
49.200	32.1	188.5	988.537	83.8	0.000	0.0	1.537	83.8
49.400	29.8	187.7	988.480	79.2	0.000	0.0	1.480	79.2
49.600	27.7	186.9	988.426	74.9	0.000	0.0	1.426	74.9
49.800	25.7	186.1	988.374	70.8	0.000	0.0	1.374	70.8
50.000	23.9	185.4	988.324	67.0	0.000	0.0	1.324	67.0
50.200	22.3	184.7	988.276	63.5	0.000	0.0	1.276	63.5
50.400	20.8	184.1	988.231	60.1	0.000	0.0	1.231	60.1
50.600	19.5	183.4	988.188	57.0	0.000	0.0	1.188	57.0
50.800	18.4	182.8	988.147	54.0	0.000	0.0	1.147	54.0
51.000	17.4	182.2	988.108	51.3	0.000	0.0	1.108	51.3
51.200	16.6	181.7	988.070	48.7	0.000	0.0	1.070	48.7
51.400	15.8	181.2	988.035	46.3	0.000	0.0	1.035	46.3
51.600	15.2	180.7	988.002	44.1	0.000	0.0	1.002	44.1
51.800	14.7	180.2	987.970	42.0	0.000	0.0	0.970	42.0

52.000	14.2	179.8	987.940	40.1	0.000	0.0	0.940	40.1
52.200	13.8	179.4	987.911	38.3	0.000	0.0	0.911	38.3
52.400	13.4	179.0	987.885	36.6	0.000	0.0	0.885	36.6
52.600	13.1	178.6	987.859	35.0	0.000	0.0	0.859	35.0
52.800	12.8	178.2	987.835	33.6	0.000	0.0	0.835	33.6
53.000	12.5	177.9	987.812	32.2	0.000	0.0	0.812	32.2
53.200	12.3	177.6	987.791	30.9	0.000	0.0	0.791	30.9
53.400	12.1	177.3	987.770	29.7	0.000	0.0	0.770	29.7
53.600	11.8	177.0	987.751	28.6	0.000	0.0	0.751	28.6
53.800	11.6	176.7	987.732	27.6	0.000	0.0	0.732	27.6
54.000	11.4	176.5	987.715	26.6	0.000	0.0	0.715	26.6
54.200	11.2	176.2	987.698	25.7	0.000	0.0	0.698	25.7
54.400	11.1	176.0	987.682	24.8	0.000	0.0	0.682	24.8
54.600	10.9	175.8	987.667	24.0	0.000	0.0	0.667	24.0
54.800	10.7	175.6	987.653	23.2	0.000	0.0	0.653	23.2
55.000	10.5	175.4	987.639	22.5	0.000	0.0	0.639	22.5
55.200	10.4	175.2	987.626	21.8	0.000	0.0	0.626	21.8
55.400	10.2	175.0	987.613	21.1	0.000	0.0	0.613	21.1
55.600	10.1	174.8	987.601	20.5	0.000	0.0	0.601	20.5
55.800	9.9	174.6	987.590	19.9	0.000	0.0	0.590	19.9
56.000	9.7	174.5	987.579	19.4	0.000	0.0	0.579	19.4
56.200	9.6	174.3	987.568	18.8	0.000	0.0	0.568	18.8
56.400	9.5	174.2	987.558	18.3	0.000	0.0	0.558	18.3
56.600	9.3	174.0	987.548	17.8	0.000	0.0	0.548	17.8
56.800	9.2	173.9	987.539	17.4	0.000	0.0	0.539	17.4
57.000	9.0	173.8	987.529	16.9	0.000	0.0	0.529	16.9
57.200	8.9	173.6	987.521	16.5	0.000	0.0	0.521	16.5
57.400	8.8	173.5	987.512	16.1	0.000	0.0	0.512	16.1

Tibble Fork - 100 Year 24 Hour Storm

Time (HOURS)	Reservoir Inflow (cfs)	Reservoir Volume (Ac-Ft)	Elev (Feet)	Spillway/Outlet 1 Emergency Spillw Outflow (cfs)	Spillway/Outlet 1 Emergency Spillw Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)	Spillway/Outlet 2 Principal Spillw Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)
57.600	8.7	173.4	987.504	15.7	0.000	0.0	0.504	15.7
57.800	8.5	173.3	987.496	15.4	0.000	0.0	0.496	15.4
58.000	8.4	173.2	987.489	15.0	0.000	0.0	0.489	15.0
58.200	8.3	173.1	987.481	14.7	0.000	0.0	0.481	14.7
58.400	8.2	173.0	987.474	14.4	0.000	0.0	0.474	14.4
58.600	8.1	172.9	987.467	14.1	0.000	0.0	0.467	14.1
58.800	7.9	172.8	987.461	13.8	0.000	0.0	0.461	13.8
59.000	7.8	172.7	987.454	13.5	0.000	0.0	0.454	13.5
59.200	7.7	172.6	987.448	13.2	0.000	0.0	0.448	13.2
59.400	7.6	172.5	987.442	12.9	0.000	0.0	0.442	12.9
59.600	7.5	172.4	987.436	12.7	0.000	0.0	0.436	12.7
59.800	7.4	172.3	987.430	12.4	0.000	0.0	0.430	12.4
60.000	7.3	172.2	987.425	12.2	0.000	0.0	0.425	12.2
60.200	7.2	172.2	987.419	11.9	0.000	0.0	0.419	11.9
60.400	7.1	172.1	987.414	11.7	0.000	0.0	0.414	11.7
60.600	7.0	172.0	987.409	11.5	0.000	0.0	0.409	11.5
60.800	6.9	171.9	987.404	11.3	0.000	0.0	0.404	11.3
61.000	6.8	171.9	987.399	11.1	0.000	0.0	0.399	11.1
61.200	6.7	171.8	987.394	10.9	0.000	0.0	0.394	10.9
61.400	6.6	171.7	987.390	10.7	0.000	0.0	0.390	10.7
61.600	6.6	171.6	987.385	10.5	0.000	0.0	0.385	10.5
61.800	6.5	171.6	987.381	10.3	0.000	0.0	0.381	10.3
62.000	6.4	171.5	987.376	10.2	0.000	0.0	0.376	10.2
62.200	6.3	171.5	987.372	10.0	0.000	0.0	0.372	10.0
62.400	6.2	171.4	987.368	9.8	0.000	0.0	0.368	9.8
62.600	6.1	171.3	987.364	9.7	0.000	0.0	0.364	9.7
62.800	6.1	171.3	987.360	9.5	0.000	0.0	0.360	9.5
63.000	6.0	171.2	987.356	9.4	0.000	0.0	0.356	9.4
63.200	5.9	171.2	987.353	9.2	0.000	0.0	0.353	9.2
63.400	5.8	171.1	987.349	9.1	0.000	0.0	0.349	9.1
63.600	5.8	171.1	987.345	8.9	0.000	0.0	0.345	8.9
63.800	5.7	171.0	987.342	8.8	0.000	0.0	0.342	8.8
64.000	5.6	171.0	987.338	8.7	0.000	0.0	0.338	8.7
64.200	5.6	170.9	987.335	8.5	0.000	0.0	0.335	8.5
64.400	5.5	170.9	987.332	8.4	0.000	0.0	0.332	8.4
64.600	5.4	170.8	987.328	8.3	0.000	0.0	0.328	8.3
64.800	5.4	170.8	987.325	8.2	0.000	0.0	0.325	8.2
65.000	5.3	170.7	987.322	8.0	0.000	0.0	0.322	8.0
65.200	5.2	170.7	987.319	7.9	0.000	0.0	0.319	7.9
65.400	5.2	170.6	987.316	7.8	0.000	0.0	0.316	7.8
65.600	5.1	170.6	987.313	7.7	0.000	0.0	0.313	7.7

65.800	5.0	170.5	987.310	7.6	0.000	0.0	0.310	7.6
66.000	5.0	170.5	987.307	7.5	0.000	0.0	0.307	7.5
66.200	4.9	170.5	987.304	7.4	0.000	0.0	0.304	7.4
66.400	4.9	170.4	987.302	7.3	0.000	0.0	0.302	7.3
66.600	4.8	170.4	987.299	7.2	0.000	0.0	0.299	7.2
66.800	4.7	170.3	987.296	7.1	0.000	0.0	0.296	7.1
67.000	4.7	170.3	987.294	7.0	0.000	0.0	0.294	7.0
67.200	4.6	170.3	987.291	6.9	0.000	0.0	0.291	6.9
67.400	4.6	170.2	987.289	6.8	0.000	0.0	0.289	6.8
67.600	4.5	170.2	987.286	6.7	0.000	0.0	0.286	6.7
67.800	4.5	170.2	987.284	6.6	0.000	0.0	0.284	6.6
68.000	4.4	170.1	987.281	6.6	0.000	0.0	0.281	6.6
68.200	4.4	170.1	987.279	6.5	0.000	0.0	0.279	6.5
68.400	4.3	170.1	987.276	6.4	0.000	0.0	0.276	6.4
68.600	4.3	170.0	987.274	6.3	0.000	0.0	0.274	6.3
68.800	4.2	170.0	987.272	6.2	0.000	0.0	0.272	6.2
69.000	4.2	170.0	987.270	6.2	0.000	0.0	0.270	6.2
69.200	4.1	169.9	987.267	6.1	0.000	0.0	0.267	6.1
69.400	4.1	169.9	987.265	6.0	0.000	0.0	0.265	6.0
69.600	4.0	169.9	987.263	5.9	0.000	0.0	0.263	5.9
69.800	4.0	169.8	987.261	5.9	0.000	0.0	0.261	5.9
70.000	4.0	169.8	987.259	5.8	0.000	0.0	0.259	5.8
70.200	3.9	169.8	987.257	5.7	0.000	0.0	0.257	5.7
70.400	3.9	169.7	987.255	5.7	0.000	0.0	0.255	5.7
70.600	3.8	169.7	987.253	5.6	0.000	0.0	0.253	5.6
70.800	3.8	169.7	987.251	5.5	0.000	0.0	0.251	5.5
71.000	3.7	169.7	987.249	5.5	0.000	0.0	0.249	5.5
71.200	3.7	169.6	987.247	5.4	0.000	0.0	0.247	5.4
71.400	3.7	169.6	987.245	5.3	0.000	0.0	0.245	5.3
71.600	3.6	169.6	987.243	5.3	0.000	0.0	0.243	5.3
71.800	3.6	169.5	987.241	5.2	0.000	0.0	0.241	5.2

APPENDIX G3

Discharge/Elevation Table Calculation for New Tibble Fork Spillway

For your information a 998.5 is equal to the height of the dam at 6388.5 ft

03/10/2011
Tibble Fork

Spillway Discharge Computations Input Data 07:01:29

Data File: H:\lee\Tibble\Hydrology\TibbleSW.dat

Maximum Head = 8.00
Starting Elevation = 992.00
Number of Steps = 13

Spillway Control Type is Crest with Weir and Prismatic Channel

Spillway Crest	End	Right	Left
Coefficients	3.0000	3.0000	3.0000
Crest Lengths	30.00	35.00	35.00
Head Exponents	1.5000	1.5000	1.5000
Elevations	992.00	992.00	992.00
Contraction	0.0000	0.0000	0.0000
End Slope (H/V)		3.000	3.000

Critical Station Index = 7

Subcritical Flow Starting at Critical Depth.

Manning "N" = 0.01500 for Reaches not specified in Channel N Values

Number of Integration Steps per Print Interval = 100
Integration Step Size (feet) = 0.0100

Spillway Channel Geometry

Station (feet)									
133.5	189.5	229.9	231.4	244.5	260.2	269.9	306.0	342.6	362.0
Bottom Elevation (feet)									
979.25	979.25	979.25	979.18	978.07	974.25	970.39	955.94	941.30	933.50
Bottom Width (feet)									
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Channel Side Slope - Right (H/V)									
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Channel Side Slope - Left (H/V)									
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Channel N Values									
0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500

03/10/2011
Tibble Fork

Res Head	Res Elev	Spillway Disch.	End Weir Q	Left Weir Q	Right Weir Q	Total Weir Q	Channel Depth	Channel Energy
0.00	992.0	0.0	0.0	0.0	0.0	0.0	0.000	970.39
0.62	992.6	147.0	43.4	51.8	51.8	147.0	0.263	976.87
1.23	993.2	422.1	122.9	149.6	149.6	422.1	0.616	980.36
1.85	993.8	787.0	225.8	280.6	280.6	787.0	1.056	982.49
2.46	994.5	1229.3	347.6	440.9	440.9	1229.3	1.562	984.25
3.08	995.1	1742.7	485.8	628.5	628.5	1742.7	2.121	985.88
3.69	995.7	2323.4	638.5	842.4	842.4	2323.4	2.726	987.47
4.31	996.3	2968.7	804.7	1082.0	1082.0	2968.7	3.371	989.06
4.92	996.9	3677.1	983.1	1347.0	1347.0	3677.1	4.053	990.64
5.54	997.5	4447.3	1173.1	1637.1	1637.1	4447.3	4.768	992.24
6.15	998.2	5278.7	1373.9	1952.4	1952.4	5278.7	5.515	993.86
6.77	998.8	6170.6	1585.1	2292.8	2292.8	6170.6	6.292	995.49
7.38	999.4	7122.8	1806.1	2658.3	2658.3	7122.8	7.098	997.15
8.00	1000.0	8135.0	2036.5	3049.3	3049.3	8135.0	7.931	998.83

APPENDIX G4

Flood Routing for USU PMP Storm

Tibble Fork - PMP 24 Hour Storm
Flood Routing Program Input Data

Time Unit = (HOURS) Increment = 0.0100 Beg Time = 0.0000
End Time = 48.0000 Initial Elev = 987.00 Initial Storage = 166.00
QFACT = 1.0000

For your information a 998.5 is equal to the height of the dam at 6388.5

Elevation-Capacity Data
Elevations

955.00	960.00	970.00	980.00	987.00	990.00	992.00
998.50						

Capacities

0.0	10.0	30.0	95.0	166.0	210.0	250.0
366.0						

Spillway/Outlet No. 1 Emergency Spillway

Crest Elevation = 992.00
CC = 3.200 CL = 100.00 CK = 0.000 EX = 1.5000

Spillway/Outlet No. 2 Principal Spillway

Crest Elevation = 987.00
CC = 3.200 CL = 13.75 CK = 0.000 EX = 1.5000
Dia = 3.8970 Length = 7.00 Outlet El = 984.00 Minor Loss Coef = 1.50
Roughness Height = 0.00100

Inflow Hydrograph Table
Time

0.00	0.10	0.20	0.30	0.40	0.50	0.60
0.70	0.80	0.90	1.00	1.10	1.20	1.30
1.40	1.50	1.60	1.70	1.80	1.90	2.00
2.10	2.20	2.30	2.40	2.50	2.60	2.70
2.80	2.90	3.00	3.10	3.20	3.30	3.40
3.50	3.60	3.70	3.80	3.90	4.00	4.10
4.20	4.30	4.40	4.50	4.60	4.70	4.80
4.90	5.00	5.10	5.20	5.30	5.40	5.50
5.60	5.70	5.80	5.90	6.00	6.10	6.20
6.30	6.40	6.50	6.60	6.70	6.80	6.90
7.00	7.10	7.20	7.30	7.40	7.50	7.60
7.70	7.80	7.90	8.00	8.10	8.20	8.30
8.40	8.50	8.60	8.70	8.80	8.90	9.00
9.10	9.20	9.30	9.40	9.50	9.60	9.70
9.80	9.90	10.00	10.10	10.20	10.30	10.40
10.50	10.60	10.70	10.80	10.90	11.00	11.10
11.20	11.30	11.40	11.50	11.60	11.70	11.80
11.90	12.00	12.10	12.20	12.30	12.40	12.50
12.60	12.70	12.80	12.90	13.00	13.10	13.20
13.30	13.40	13.50	13.60	13.70	13.80	13.90
14.00	14.10	14.20	14.30	14.40	14.50	14.60
14.70	14.80	14.90	15.00	15.10	15.20	15.30

15.40	15.50	15.60	15.70	15.80	15.90	16.00
16.10	16.20	16.30	16.40	16.50	16.60	16.70
16.80	16.90	17.00	17.10	17.20	17.30	17.40
17.50	17.60	17.70	17.80	17.90	18.00	18.10
18.20	18.30	18.40	18.50	18.60	18.70	18.80
18.90	19.00	19.10	19.20	19.30	19.40	19.50
19.60	19.70	19.80	19.90	20.00	20.10	20.20
20.30	20.40	20.50	20.60	20.70	20.80	20.90
21.00	21.10	21.20	21.30	21.40	21.50	21.60
21.70	21.80	21.90	22.00	22.10	22.20	22.30
22.40	22.50	22.60	22.70	22.80	22.90	23.00
23.10	23.20	23.30	23.40	23.50	23.60	23.70
23.80	23.90	24.00	24.10	24.20	24.30	24.40
24.50	24.60	24.70	24.80	24.90	25.00	25.10
25.20	25.30	25.40	25.50	25.60	25.70	25.80
25.90	26.00	26.10	26.20	26.30	26.40	26.50
26.60	26.70	26.80	26.90	27.00	27.10	27.20
27.30	27.40	27.50	27.60	27.70	27.80	27.90
28.00	28.10	28.20	28.30	28.40	28.50	28.60
28.70	28.80	28.90	29.00	29.10	29.20	29.30
29.40	29.50	29.60	29.70	29.80	29.90	30.00
30.10	30.20	30.30	30.40	30.50	30.60	30.70
30.80	30.90	31.00	31.10	31.20	31.30	31.40
31.50	31.60	31.70	31.80	31.90	32.00	32.10
32.20	32.30	32.40	32.50	32.60	32.70	32.80
32.90	33.00	33.10	33.20	33.30	33.40	33.50
33.60	33.70	33.80	33.90	34.00	34.10	34.20
34.30	34.40	34.50	34.60	34.70	34.80	34.90
35.00	35.10	35.20	35.30	35.40	35.50	35.60
35.70	35.80	35.90	36.00	36.10	36.20	36.30
36.40	36.50	36.60	36.70	36.80	36.90	37.00
37.10	37.20	37.30	37.40	37.50	37.60	37.70
37.80	37.90	38.00	38.10	38.20	38.30	38.40
38.50	38.60	38.70	38.80	38.90	39.00	39.10
39.20	39.30	39.40	39.50	39.60	39.70	39.80
39.90	40.00	40.10	40.20	40.30	40.40	40.50
40.60	40.70	40.80	40.90	41.00	41.10	41.20
41.30	41.40	41.50	41.60	41.70	41.80	41.90
42.00	42.10	42.20	42.30	42.40	42.50	42.60
42.70	42.80	42.90	43.00	43.10	43.20	43.30
43.40	43.50	43.60	43.70	43.80	43.90	44.00
44.10	44.20	44.30	44.40	44.50	44.60	44.70
44.80	44.90	45.00	45.10	45.20	45.30	45.40
45.50	45.60	45.70	45.80	45.90	46.00	46.10
46.20	46.30	46.40	46.50	46.60	46.70	46.80
46.90	47.00	47.10	47.20	47.30	47.40	47.50
47.60	47.70	47.80	47.90	48.00		

Discharges

1.2	4.1	5.0	5.4	5.7	5.8	5.9
5.9	5.9	5.9	5.9	5.9	5.8	5.8
5.8	5.7	5.7	5.7	5.6	5.6	5.6
5.5	5.5	5.5	5.4	5.4	5.4	5.3
5.3	5.3	5.2	5.2	5.2	5.1	5.1
5.1	5.0	5.0	5.0	5.0	4.9	4.9
4.9	4.8	4.8	4.8	4.8	4.7	4.7

4.7	4.6	4.6	4.6	4.6	4.5	4.5
4.5	4.5	4.4	4.4	4.4	4.4	4.3
4.3	4.3	4.3	4.2	4.2	4.2	4.2
4.1	4.1	4.1	4.1	4.1	4.0	4.0
4.0	4.0	3.9	3.9	3.9	3.9	3.9
3.9	3.8	3.8	3.8	3.8	3.8	3.8
3.8	3.9	3.9	3.9	4.0	4.1	4.2
4.3	4.5	4.7	5.0	5.3	5.7	6.2
6.8	7.4	8.2	9.1	10.2	11.4	12.8
14.3	16.1	18.0	20.1	22.4	25.0	27.9
31.1	34.9	39.5	45.2	52.0	60.0	69.0
78.9	89.7	101.3	113.7	126.8	140.6	155.0
169.0	180.8	193.4	206.6	280.8	568.1	925.8
1287.8	1623.2	1921.8	2182.4	2409.1	2610.3	2788.5
2948.3	3094.1	3228.6	3354.1	3471.3	3580.0	3681.7
3776.8	3865.5	3948.0	4024.3	4094.7	4159.4	4218.1
4270.9	4317.1	4356.2	4389.5	4419.5	4448.1	4476.3
4504.9	4533.4	4561.6	4589.7	4617.4	4644.7	4670.7
4694.6	4717.0	4738.4	4758.8	4777.9	4795.6	4811.8
4826.8	4840.4	4852.6	4862.9	4870.6	4875.8	4878.7
4879.7	4879.0	4876.7	4873.1	4868.2	4862.1	4854.7
4846.2	4836.5	4825.7	4813.6	4800.3	4785.8	4770.1
4753.1	4734.6	4714.5	4692.8	4669.8	4645.4	4619.5
4591.9	4562.5	4531.7	4499.6	4466.7	4433.4	4400.1
4366.9	4333.7	4300.5	4267.3	4234.6	4202.8	4171.8
4141.3	4111.1	4081.1	4051.4	4021.8	3992.5	3963.1
3933.8	3904.4	3875.1	3845.9	3816.8	3787.7	3758.5
3729.3	3700.2	3671.4	3642.6	3613.8	3584.8	3555.4
3525.4	3494.9	3463.7	3431.8	3399.2	3365.9	3331.9
3297.3	3262.0	3226.0	3189.0	3151.0	3112.1	3072.3
3031.6	2990.2	2948.1	2905.5	2862.6	2819.7	2776.6
2733.3	2689.9	2646.4	2602.8	2559.0	2515.2	2471.4
2427.7	2384.2	2341.0	2298.1	2255.7	2213.5	2171.8
2130.3	2089.3	2048.6	2008.4	1968.7	1929.6	1891.0
1853.1	1815.8	1779.1	1742.9	1707.3	1672.1	1637.4
1603.1	1569.3	1535.9	1503.0	1470.6	1438.5	1406.7
1375.4	1344.5	1314.0	1284.0	1254.5	1225.4	1196.9
1168.8	1141.3	1114.3	1087.9	1062.0	1036.7	1011.9
987.6	963.9	940.6	917.8	895.5	873.6	852.2
831.4	811.0	791.1	771.7	752.8	734.3	716.3
698.7	681.5	664.8	648.5	632.7	617.3	602.4
587.9	573.8	560.2	546.9	534.0	521.4	509.2
497.3	485.8	474.5	463.6	453.0	442.8	432.7
423.0	413.5	404.3	395.4	386.6	378.1	369.9
361.8	354.0	346.5	339.1	331.9	325.0	318.2
311.6	305.2	299.0	293.0	287.1	281.4	275.9
270.5	265.3	260.3	255.4	250.7	246.2	241.8
237.6	233.6	229.9	226.3	223.0	220.0	217.3
215.1	213.9	213.4	212.9	212.4	211.9	211.3
210.7	210.1	209.5	208.8	208.1	207.4	206.7
205.9	205.2	204.4	203.6	202.7	201.9	201.0
200.1	199.2	198.3	197.3	196.4	195.4	194.4
193.4	192.4	191.4	190.3	189.3	188.2	187.1
186.0	184.9	183.8	182.7	181.5	180.4	179.2
178.0	176.9	175.7	174.5	173.3	172.1	170.9

169.7	168.4	167.2	165.9	164.3	162.6	160.9
159.1	157.4	155.7	153.9	152.2	150.4	148.7
146.9	145.1	143.4	141.6	139.8	138.0	136.3
134.5	132.7	130.9	129.1	127.3	125.5	123.7
121.9	120.1	118.3	116.5	114.7	112.9	111.0
109.2	107.4	105.6	103.8	102.0	100.2	98.4
96.6	94.9	93.1	91.3	89.5		

Tibble Fork - PMP 24 Hour Storm

Time (HOURS)	Reservoir Inflow (cfs)	Reservoir Volume (Ac-Ft)	Elev (Feet)	Spillway/Outlet 1 Emergency Spillw Outflow (cfs)	Spillway/Outlet 1 Emergency Spillw Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)	Spillway/Outlet 2 Principal Spillw Head (Feet)	Outflow (cfs)
0.000	1.2	166.0	987.000	0.0	0.000	0.0	0.000	0.0
0.200	5.0	166.1	987.004	0.0	0.000	0.0	0.004	0.0
0.400	5.7	166.1	987.010	0.0	0.000	0.0	0.010	0.0
0.600	5.9	166.2	987.017	0.1	0.000	0.0	0.017	0.1
0.800	5.9	166.3	987.023	0.2	0.000	0.0	0.023	0.2
1.000	5.9	166.4	987.029	0.2	0.000	0.0	0.029	0.2
1.200	5.8	166.5	987.036	0.3	0.000	0.0	0.036	0.3
1.400	5.8	166.6	987.042	0.4	0.000	0.0	0.042	0.4
1.600	5.7	166.7	987.048	0.5	0.000	0.0	0.048	0.5
1.800	5.6	166.8	987.054	0.5	0.000	0.0	0.054	0.5
2.000	5.6	166.9	987.059	0.6	0.000	0.0	0.059	0.6
2.200	5.5	167.0	987.065	0.7	0.000	0.0	0.065	0.7
2.400	5.4	167.0	987.070	0.8	0.000	0.0	0.070	0.8
2.600	5.4	167.1	987.075	0.9	0.000	0.0	0.075	0.9
2.800	5.3	167.2	987.080	1.0	0.000	0.0	0.080	1.0
3.000	5.2	167.2	987.085	1.1	0.000	0.0	0.085	1.1
3.200	5.2	167.3	987.090	1.2	0.000	0.0	0.090	1.2
3.400	5.1	167.4	987.094	1.3	0.000	0.0	0.094	1.3
3.600	5.0	167.4	987.098	1.4	0.000	0.0	0.098	1.4
3.800	5.0	167.5	987.102	1.4	0.000	0.0	0.102	1.4
4.000	4.9	167.6	987.106	1.5	0.000	0.0	0.106	1.5
4.200	4.9	167.6	987.110	1.6	0.000	0.0	0.110	1.6
4.400	4.8	167.7	987.114	1.7	0.000	0.0	0.114	1.7
4.600	4.8	167.7	987.117	1.8	0.000	0.0	0.117	1.8
4.800	4.7	167.8	987.120	1.8	0.000	0.0	0.120	1.8
5.000	4.6	167.8	987.123	1.9	0.000	0.0	0.123	1.9
5.200	4.6	167.9	987.126	2.0	0.000	0.0	0.126	2.0
5.400	4.5	167.9	987.129	2.0	0.000	0.0	0.129	2.0
5.600	4.5	167.9	987.132	2.1	0.000	0.0	0.132	2.1
5.800	4.4	168.0	987.135	2.2	0.000	0.0	0.135	2.2
6.000	4.4	168.0	987.137	2.2	0.000	0.0	0.137	2.2
6.200	4.3	168.0	987.140	2.3	0.000	0.0	0.140	2.3
6.400	4.3	168.1	987.142	2.3	0.000	0.0	0.142	2.3
6.600	4.2	168.1	987.144	2.4	0.000	0.0	0.144	2.4
6.800	4.2	168.1	987.146	2.5	0.000	0.0	0.146	2.5
7.000	4.1	168.2	987.148	2.5	0.000	0.0	0.148	2.5
7.200	4.1	168.2	987.150	2.5	0.000	0.0	0.150	2.5
7.400	4.1	168.2	987.151	2.6	0.000	0.0	0.151	2.6
7.600	4.0	168.2	987.153	2.6	0.000	0.0	0.153	2.6
7.800	4.0	168.3	987.154	2.7	0.000	0.0	0.154	2.7
8.000	3.9	168.3	987.156	2.7	0.000	0.0	0.156	2.7
8.200	3.9	168.3	987.157	2.7	0.000	0.0	0.157	2.7
8.400	3.9	168.3	987.158	2.8	0.000	0.0	0.158	2.8
8.600	3.8	168.3	987.160	2.8	0.000	0.0	0.160	2.8
8.800	3.8	168.4	987.161	2.8	0.000	0.0	0.161	2.8
9.000	3.8	168.4	987.162	2.9	0.000	0.0	0.162	2.9
9.200	3.9	168.4	987.163	2.9	0.000	0.0	0.163	2.9
9.400	3.9	168.4	987.164	2.9	0.000	0.0	0.164	2.9

9.600	4.1	168.4	987.165	3.0	0.000	0.0	0.165	3.0
9.800	4.3	168.4	987.167	3.0	0.000	0.0	0.167	3.0
10.000	4.7	168.5	987.168	3.0	0.000	0.0	0.168	3.0
10.200	5.3	168.5	987.170	3.1	0.000	0.0	0.170	3.1
10.400	6.2	168.5	987.173	3.2	0.000	0.0	0.173	3.2
10.600	7.4	168.6	987.177	3.3	0.000	0.0	0.177	3.3
10.800	9.1	168.7	987.183	3.4	0.000	0.0	0.183	3.4
11.000	11.4	168.8	987.190	3.7	0.000	0.0	0.190	3.7
11.200	14.3	168.9	987.201	4.0	0.000	0.0	0.201	4.0
11.400	18.0	169.1	987.214	4.4	0.000	0.0	0.214	4.4
11.600	22.4	169.4	987.232	4.9	0.000	0.0	0.232	4.9
11.800	27.9	169.7	987.254	5.6	0.000	0.0	0.254	5.6
12.000	34.9	170.1	987.282	6.6	0.000	0.0	0.282	6.6
12.200	45.2	170.7	987.319	7.9	0.000	0.0	0.319	7.9
12.400	60.0	171.4	987.368	9.8	0.000	0.0	0.368	9.8
12.600	78.9	172.4	987.433	12.6	0.000	0.0	0.433	12.6
12.800	101.3	173.6	987.519	16.4	0.000	0.0	0.519	16.4
13.000	126.8	175.2	987.625	21.8	0.000	0.0	0.625	21.8
13.200	155.0	177.1	987.756	28.9	0.000	0.0	0.756	28.9
13.400	180.8	179.3	987.908	38.1	0.000	0.0	0.908	38.1
13.600	206.6	181.8	988.077	49.2	0.000	0.0	1.077	49.2
13.800	568.1	186.4	988.388	72.0	0.000	0.0	1.388	72.0
14.000	1287.8	199.9	989.313	154.8	0.000	0.0	2.313	154.8
14.200	1921.8	223.5	990.675	200.2	0.000	0.0	6.675	200.2

Tibble Fork - PMP 24 Hour Storm

Time (HOURS)	Reservoir Inflow (cfs)	Reservoir Volume (Ac-Ft)	Spillway/Outlet 1 Elev (Feet)	Spillway/Outlet 1 Emergency Spillw Outflow (cfs)	Spillway/Outlet 2 Emergency Spillw Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)	Spillway/Outlet 2 Principal Spillw Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)
14.400	2409.1	255.9	992.329	284.1	0.329	60.5	8.329	223.6
14.600	2788.5	287.2	994.083	1208.0	2.083	961.9	10.083	246.0
14.800	3094.1	307.9	995.245	2130.0	3.245	1870.2	11.245	259.8
15.000	3354.1	320.4	995.942	2772.4	3.942	2504.7	11.942	267.7
15.200	3580.0	328.1	996.376	3201.9	4.376	2929.3	12.376	272.6
15.400	3776.8	333.4	996.671	3506.1	4.671	3230.3	12.671	275.8
15.600	3948.0	337.3	996.890	3738.8	4.890	3460.6	12.890	278.2
15.800	4094.7	340.4	997.064	3926.3	5.064	3646.3	13.064	280.0
16.000	4218.1	342.9	997.204	4080.8	5.204	3799.3	13.204	281.5
16.200	4317.1	344.9	997.318	4207.3	5.318	3924.6	13.318	282.8
16.400	4389.5	346.5	997.407	4306.7	5.407	4023.0	13.407	283.7
16.600	4448.1	347.7	997.474	4382.9	5.474	4098.5	13.474	284.4
16.800	4504.9	348.7	997.531	4447.0	5.531	4162.0	13.531	285.0
17.000	4561.6	349.6	997.583	4506.6	5.583	4221.0	13.583	285.5
17.200	4617.4	350.5	997.633	4564.1	5.633	4278.0	13.633	286.1
17.400	4670.7	351.4	997.681	4619.8	5.681	4333.2	13.681	286.6
17.600	4717.0	352.2	997.726	4671.4	5.726	4384.4	13.726	287.0
17.800	4758.8	352.9	997.766	4717.8	5.766	4430.4	13.766	287.5
18.000	4795.6	353.5	997.801	4759.4	5.801	4471.5	13.801	287.8
18.200	4826.8	354.1	997.833	4795.6	5.833	4507.5	13.833	288.2
18.400	4852.6	354.6	997.859	4826.5	5.859	4538.1	13.859	288.4
18.600	4870.6	354.9	997.880	4851.2	5.880	4562.6	13.880	288.7
18.800	4878.7	355.2	997.894	4867.7	5.894	4578.9	13.894	288.8
19.000	4879.0	355.3	997.900	4875.3	5.900	4586.5	13.900	288.9
19.200	4873.1	355.3	997.901	4875.7	5.901	4586.8	13.901	288.9
19.400	4862.1	355.2	997.896	4869.9	5.896	4581.1	13.896	288.8
19.600	4846.2	355.0	997.886	4858.7	5.886	4570.0	13.886	288.7
19.800	4825.7	354.8	997.873	4842.6	5.873	4554.0	13.873	288.6
20.000	4800.3	354.5	997.855	4821.7	5.855	4533.3	13.855	288.4
20.200	4770.1	354.1	997.833	4795.9	5.833	4507.8	13.833	288.2
20.400	4734.6	353.6	997.807	4765.3	5.807	4477.4	13.807	287.9
20.600	4692.8	353.1	997.775	4729.1	5.775	4441.5	13.775	287.6
20.800	4645.4	352.4	997.739	4687.0	5.739	4399.8	13.739	287.2
21.000	4591.9	351.7	997.698	4639.2	5.698	4352.4	13.698	286.8
21.200	4531.7	350.9	997.651	4585.2	5.651	4298.9	13.651	286.3
21.400	4466.7	349.9	997.599	4525.3	5.599	4239.6	13.599	285.7
21.600	4400.1	348.9	997.543	4461.5	5.543	4176.4	13.543	285.1
21.800	4333.7	347.9	997.486	4396.2	5.486	4111.6	13.486	284.5
22.000	4267.3	346.9	997.428	4330.3	5.428	4046.4	13.428	283.9
22.200	4202.8	345.8	997.370	4265.0	5.370	3981.7	13.370	283.3
22.400	4141.3	344.8	997.313	4201.5	5.313	3918.8	13.313	282.7
22.600	4081.1	343.8	997.258	4140.1	5.258	3858.0	13.258	282.1
22.800	4021.8	342.9	997.204	4080.0	5.204	3798.5	13.204	281.5
23.000	3963.1	341.9	997.150	4020.9	5.150	3739.9	13.150	281.0
23.200	3904.4	341.0	997.096	3962.2	5.096	3681.8	13.096	280.4
23.400	3845.9	340.0	997.043	3903.7	5.043	3623.9	13.043	279.8
23.600	3787.7	339.0	996.989	3845.6	4.989	3566.3	12.989	279.2
23.800	3729.3	338.1	996.936	3787.5	4.936	3508.8	12.936	278.7

24.000	3671.4	337.1	996.882	3729.6	4.882	3451.5	12.882	278.1
24.200	3613.8	336.2	996.828	3672.0	4.828	3394.5	12.828	277.5
24.400	3555.4	335.2	996.774	3614.4	4.774	3337.5	12.774	276.9
24.600	3494.9	334.2	996.718	3555.7	4.718	3279.4	12.718	276.3
24.800	3431.8	333.2	996.661	3495.3	4.661	3219.6	12.661	275.7
25.000	3365.9	332.1	996.600	3432.4	4.600	3157.4	12.600	275.0
25.200	3297.3	331.0	996.537	3367.0	4.537	3092.6	12.537	274.3
25.400	3226.0	329.8	996.471	3298.9	4.471	3025.3	12.471	273.6
25.600	3151.0	328.6	996.402	3228.0	4.402	2955.1	12.402	272.9
25.800	3072.3	327.2	996.328	3153.6	4.328	2881.6	12.328	272.0
26.000	2990.2	325.9	996.251	3075.8	4.251	2804.6	12.251	271.2
26.200	2905.5	324.4	996.170	2995.0	4.170	2724.7	12.170	270.3
26.400	2819.7	322.9	996.086	2911.9	4.086	2642.5	12.086	269.4
26.600	2733.3	321.4	995.999	2827.6	3.999	2559.2	11.999	268.4
26.800	2646.4	319.8	995.911	2742.4	3.911	2475.0	11.911	267.4
27.000	2559.0	318.2	995.821	2656.8	3.821	2390.4	11.821	266.4
27.200	2471.4	316.6	995.730	2570.6	3.730	2305.3	11.730	265.4
27.400	2384.2	314.9	995.638	2484.4	3.638	2220.1	11.638	264.3
27.600	2298.1	313.3	995.545	2398.8	3.545	2135.5	11.545	263.3
27.800	2213.5	311.6	995.451	2314.1	3.451	2051.9	11.451	262.2
28.000	2130.3	309.9	995.358	2230.6	3.358	1969.5	11.358	261.1
28.200	2048.6	308.3	995.266	2148.6	3.266	1888.5	11.266	260.1
28.400	1968.7	306.6	995.173	2068.0	3.173	1809.0	11.173	259.0
28.600	1891.0	305.0	995.082	1989.3	3.082	1731.4	11.082	257.9

Tibble Fork - PMP 24 Hour Storm

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28.800	1815.8	303.4	994.992	1912.7	2.992	1655.8	10.992	256.9
29.000	1742.9	301.8	994.903	1838.3	2.903	1582.5	10.903	255.8
29.200	1672.1	300.2	994.815	1766.1	2.815	1511.3	10.815	254.8
29.400	1603.1	298.7	994.728	1696.0	2.728	1442.2	10.728	253.8
29.600	1535.9	297.2	994.643	1627.7	2.643	1375.0	10.643	252.8
29.800	1470.6	295.7	994.558	1561.3	2.558	1309.5	10.558	251.8
30.000	1406.7	294.2	994.475	1496.6	2.475	1245.9	10.475	250.8
30.200	1344.5	292.7	994.392	1433.6	2.392	1183.8	10.392	249.8
30.400	1284.0	291.2	994.310	1372.2	2.310	1123.4	10.310	248.8
30.600	1225.4	289.8	994.229	1312.5	2.229	1064.7	10.229	247.8
30.800	1168.8	288.3	994.149	1254.7	2.149	1007.9	10.149	246.8
31.000	1114.3	286.9	994.070	1198.8	2.070	952.9	10.070	245.9
31.200	1062.0	285.6	993.992	1144.8	1.992	899.9	9.992	244.9
31.400	1011.9	284.2	993.917	1093.0	1.917	849.0	9.917	244.0
31.600	963.9	282.9	993.842	1043.2	1.842	800.1	9.842	243.1
31.800	917.8	281.6	993.770	995.5	1.770	753.3	9.770	242.2
32.000	873.6	280.3	993.698	949.6	1.698	708.3	9.698	241.3
32.200	831.4	279.1	993.629	905.7	1.629	665.3	9.629	240.4
32.400	791.1	277.9	993.561	863.6	1.561	624.0	9.561	239.6
32.600	752.8	276.7	993.495	823.5	1.495	584.7	9.495	238.7
32.800	716.3	275.5	993.430	785.2	1.430	547.2	9.430	237.9
33.000	681.5	274.4	993.367	748.6	1.367	511.5	9.367	237.1
33.200	648.5	273.3	993.306	713.8	1.306	477.5	9.306	236.4
33.400	617.3	272.2	993.246	680.8	1.246	445.2	9.246	235.6
33.600	587.9	271.2	993.188	649.4	1.188	414.5	9.188	234.9
33.800	560.2	270.2	993.132	619.7	1.132	385.6	9.132	234.1
34.000	534.0	269.2	993.078	591.7	1.078	358.2	9.078	233.4
34.200	509.2	268.3	993.026	565.1	1.026	332.3	9.026	232.8
34.400	485.8	267.4	992.975	540.0	0.975	307.9	8.975	232.1
34.600	463.6	266.5	992.925	516.2	0.925	284.7	8.925	231.5
34.800	442.8	265.7	992.877	493.7	0.877	262.9	8.877	230.8
35.000	423.0	264.8	992.831	472.5	0.831	242.3	8.831	230.2
35.200	404.3	264.0	992.785	452.4	0.785	222.8	8.785	229.6
35.400	386.6	263.2	992.742	433.4	0.742	204.4	8.742	229.1
35.600	369.9	262.5	992.699	415.4	0.699	186.9	8.699	228.5
35.800	354.0	261.7	992.657	398.4	0.657	170.5	8.657	228.0
36.000	339.1	261.0	992.617	382.4	0.617	154.9	8.617	227.4
36.200	325.0	260.3	992.577	367.2	0.577	140.3	8.577	226.9
36.400	311.6	259.6	992.538	352.8	0.538	126.4	8.538	226.4
36.600	299.0	258.9	992.501	339.3	0.501	113.4	8.501	225.9
36.800	287.1	258.3	992.464	326.5	0.464	101.1	8.464	225.4
37.000	275.9	257.6	992.428	314.4	0.428	89.5	8.428	224.9
37.200	265.3	257.0	992.392	303.1	0.392	78.7	8.392	224.5
37.400	255.4	256.4	992.358	292.5	0.358	68.5	8.358	224.0
37.600	246.2	255.8	992.324	282.5	0.324	59.0	8.324	223.5
37.800	237.6	255.2	992.291	273.2	0.291	50.1	8.291	223.1
38.000	229.9	254.6	992.258	264.6	0.258	41.9	8.258	222.6
38.200	223.0	254.0	992.226	256.7	0.226	34.5	8.226	222.2

38.400	217.3	253.5	992.196	249.5	0.196	27.7	8.196	221.8
38.600	213.9	253.0	992.167	243.3	0.167	21.9	8.167	221.4
38.800	212.9	252.5	992.142	238.2	0.142	17.1	8.142	221.1
39.000	211.9	252.1	992.120	234.1	0.120	13.3	8.120	220.8
39.200	210.7	251.8	992.100	230.7	0.100	10.2	8.100	220.5
39.400	209.5	251.5	992.083	227.9	0.083	7.6	8.083	220.3
39.600	208.1	251.2	992.066	225.5	0.066	5.5	8.066	220.0
39.800	206.7	250.9	992.050	223.5	0.050	3.6	8.050	219.8
40.000	205.2	250.6	992.035	221.7	0.035	2.1	8.035	219.6
40.200	203.6	250.4	992.020	220.3	0.020	0.9	8.020	219.4
40.400	201.9	250.1	992.004	219.3	0.004	0.1	8.004	219.2
40.600	200.1	249.8	991.989	219.0	0.000	0.0	7.989	219.0
40.800	198.3	249.4	991.972	218.8	0.000	0.0	7.972	218.8
41.000	196.4	249.1	991.955	218.5	0.000	0.0	7.955	218.5
41.200	194.4	248.7	991.936	218.3	0.000	0.0	7.936	218.3
41.400	192.4	248.3	991.915	218.0	0.000	0.0	7.915	218.0
41.600	190.3	247.9	991.893	217.7	0.000	0.0	7.893	217.7
41.800	188.2	247.4	991.870	217.4	0.000	0.0	7.870	217.4
42.000	186.0	246.9	991.845	217.0	0.000	0.0	7.845	217.0
42.200	183.8	246.4	991.819	216.6	0.000	0.0	7.819	216.6
42.400	181.5	245.8	991.791	216.3	0.000	0.0	7.791	216.3
42.600	179.2	245.2	991.761	215.8	0.000	0.0	7.761	215.8
42.800	176.9	244.6	991.730	215.4	0.000	0.0	7.730	215.4
43.000	174.5	244.0	991.698	215.0	0.000	0.0	7.698	215.0

Tibble Fork - PMP 24 Hour Storm

Time (HOURS)	Reservoir Inflow (cfs)	Volume (Ac-Ft)	Elev (Feet)	Spillway/Outlet 1 Emergency Spillw Outflow (cfs)	Head (Feet)	Spillway/Outlet 2 Principal Spillw Outflow (cfs)	Head (Feet)	Outflow (cfs)
43.200	172.1	243.3	991.663	214.5	0.000	0.0	7.663	214.5
43.400	169.7	242.6	991.628	214.0	0.000	0.0	7.628	214.0
43.600	167.2	241.8	991.590	213.5	0.000	0.0	7.590	213.5
43.800	164.3	241.0	991.551	212.9	0.000	0.0	7.551	212.9
44.000	160.9	240.2	991.510	212.3	0.000	0.0	7.510	212.3
44.200	157.4	239.3	991.466	211.7	0.000	0.0	7.466	211.7
44.400	153.9	238.4	991.420	211.0	0.000	0.0	7.420	211.0
44.600	150.4	237.4	991.372	210.4	0.000	0.0	7.372	210.4
44.800	146.9	236.4	991.321	209.6	0.000	0.0	7.321	209.6
45.000	143.4	235.4	991.268	208.9	0.000	0.0	7.268	208.9
45.200	139.8	234.3	991.213	208.1	0.000	0.0	7.213	208.1
45.400	136.3	233.1	991.155	207.2	0.000	0.0	7.155	207.2
45.600	132.7	231.9	991.095	206.4	0.000	0.0	7.095	206.4
45.800	129.1	230.7	991.033	205.5	0.000	0.0	7.033	205.5
46.000	125.5	229.4	990.969	204.5	0.000	0.0	6.969	204.5
46.200	121.9	228.1	990.903	203.6	0.000	0.0	6.903	203.6
46.400	118.3	226.7	990.834	202.5	0.000	0.0	6.834	202.5
46.600	114.7	225.3	990.763	201.5	0.000	0.0	6.763	201.5
46.800	111.0	223.8	990.691	200.4	0.000	0.0	6.691	200.4
47.000	107.4	222.3	990.616	199.3	0.000	0.0	6.616	199.3
47.200	103.8	220.8	990.539	198.1	0.000	0.0	6.539	198.1
47.400	100.2	219.2	990.460	196.9	0.000	0.0	6.460	196.9
47.600	96.6	217.6	990.379	195.7	0.000	0.0	6.379	195.7
47.800	93.1	215.9	990.296	194.4	0.000	0.0	6.296	194.4
48.000	89.5	214.2	990.211	193.1	0.000	0.0	6.211	193.1
48.200	85.9	212.5	990.125	191.7	0.000	0.0	6.125	191.7
48.400	82.3	210.7	990.037	190.4	0.000	0.0	6.037	190.4
48.600	78.7	208.9	989.927	188.6	0.000	0.0	5.927	188.6
48.800	75.1	207.1	989.802	186.6	0.000	0.0	5.802	186.6
49.000	71.5	205.2	989.676	184.6	0.000	0.0	5.676	184.6
49.200	67.9	203.4	989.548	179.0	0.000	0.0	2.548	179.0
49.400	64.3	201.6	989.428	166.5	0.000	0.0	2.428	166.5
49.600	60.7	200.0	989.317	155.2	0.000	0.0	2.317	155.2
49.800	57.1	198.5	989.215	145.0	0.000	0.0	2.215	145.0
50.000	53.5	197.1	989.119	135.7	0.000	0.0	2.119	135.7
50.200	49.9	195.8	989.029	127.2	0.000	0.0	2.029	127.2
50.400	46.3	194.5	988.944	119.3	0.000	0.0	1.944	119.3
50.600	42.7	193.3	988.864	112.0	0.000	0.0	1.864	112.0
50.800	39.1	192.2	988.788	105.2	0.000	0.0	1.788	105.2
51.000	35.5	191.2	988.715	98.8	0.000	0.0	1.715	98.8
51.200	31.9	190.1	988.645	92.8	0.000	0.0	1.645	92.8
51.400	28.3	189.1	988.578	87.2	0.000	0.0	1.578	87.2
51.600	24.7	188.2	988.512	81.8	0.000	0.0	1.512	81.8
51.800	21.1	187.2	988.449	76.7	0.000	0.0	1.449	76.7
52.000	17.5	186.3	988.387	71.9	0.000	0.0	1.387	71.9

Tibble Fork - PMP 24 Hour Storm

Inflow Hydrograph
Maximum Inflow (cfs) = 4879.70
Volume (Acre-Feet) = 5369.77

Outflow Hydrograph
Maximum Outflow (cfs) = 4876.41
Volume (Acre-Feet) = 5349.45
Maximum Elevati on (ft)= 997.901

Spillway (Outlet) 1
Maximum Head (feet) = 5.901
Maximum Flow (cfs) = 4587.53

Spillway (Outlet) 2
Maximum Head (feet) = 13.901
Maximum Flow (cfs) = 288.88