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Shear-wave velocity map for California: Collaborative Research with CGS, and UNR

NEHRP Element(s): I
Keywords: Site effects, Ground motions, Surficial deposits, Seismic zonation, Engineering seismology

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SHEAR-WAVE VELOCITY MAP FOR CALIFORNIA: COLLABORATIVE RESEARCH WITH CGS, AND UNR

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NON-TECHNICAL ABSTRACT

Measurement of shear velocity in the shallow subsurface is one part of the information needed to estimate earthquake hazards. Near-surface conditions affect the intensity of earthquake shaking. With our measurements we can estimate the expected ground motion and contribute towards the reduction of earthquake loss. As well, our measurements at California Integrated Seismic Network sites will serve to calibrate the earthquake recordings from each site. This calibration will help improve seismologists' ability to predict earthquake ground shaking. We use the refraction microtremor method to make our measurements. We compare our measurements with the ground conditions predicted by a consensus earth model developed by the Southern California Earthquake Center. For deep soils the model predictions are close to our measurements, but in rock our measurements show softer ground conditions than those predicted by the model.

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TECHNICAL ABSTRACT

The University of Nevada, Reno and subcontractor Optim Seismic Data Solutions measured shallow shear-velocity profiles near 21 CISN seismic recording stations, and an additional 7 locations in the Shavers and Maniobara Valleys, and Joshua Tree National Park. Linear arrays 96.4 to 230 m long of 24 channels, 4.5 Hz vertical geophones measured seismic microtremor at each site for over a half hour. Surveys were performed an average of 109 meters from the CISN station to the center of the measurement array. The noninvasive refraction microtremor method used ambient noise mainly from traffic. SeisOpt®ReMi™ analysis of the survey data yielded shear-velocity profiles resolved to an average depth of 128 m. Vs10, Vs30, Vs50, and Vs100 were computed using slowness averaging from the surface to 10, 30, 50, and 100 m depths respectively. The depths at which the velocity exceeded, or nearly exceeded, 0.5, 1.0, and 1.5 km/s were determined from the profiles, and these depths and the averaged velocities are also summarized for 52 previously measured sites in table form. The SCEC Community Velocity Model (CVM) version 4 was also queried for its Vs30 predictions for the same sites. For sites outside the boundaries of the SCEC CVM basin model, our Vs30 measurements differed greatly from the CVM predictions. The lowest measured Vs30 for all 73 CISN stations we measured was 218 m/s, at site LLS, Ellis substation located in Fountain Valley, in Quaternary alluvium near the Santa Ana River. The highest was 932 m/s at site PFO, Piñon Flat Observatory in the San Jacinto Mountains. Using the SCEC CVM, sites with a predicted model Vs30 greater than or equal to 1200 m/s have been classified as "rock" and those with a predicted Vs30 less than 1200 m/s have been classified "soil." Our average measured Vs30 for "rock" sites is 546 m/s by arithmetic averaging and 489 m/s by slowness averaging. Similarly, our average measured Vs30 for "soil" sites is 383 m/s by arithmetic averaging and 350 m/s by slowness averaging.

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NEHRP Element(s): I
Keywords: Site effects, Ground motions, Surficial deposits, Seismic zonation, Engineering seismology

Investigations Undertaken

Objectives:

Measurement of shear-wave velocity (Vs) in the shallow subsurface is essential for the estimation of seismic hazard, the development of seismic-hazard maps, and for the calibration of recorded ground motion data. Previously, shallow shear velocities have been measured and released in Southern California by the USGS, the Rosrine project, and by the 214 site characterizations conducted along the San Gabriel River in 2003 under USGS-NEHRP sponsorship (Thelen et al., 2006). In 2006, 50 site characterizations were conducted at ground-motion recording sites under USGS-NEHRP sponsorship (external grant award number 05HQGR0078) as an initial effort to assist development of the Next-Generation Attenuation (NGA) model. These assessments at sites of ground-motion recording will allow more complete regressions of Northridge and later ground motions and spectra against other site parameters such as Vs100 and depths to interfaces. The present study measured 28 additional locations with 21 CISN stations, which, integrated with the previous 52 measurements will contribute to microzonation studies of the Los Angeles Basin, and to the national hazard mapping effort. We compare our shallow shear velocities measured by the refraction microtremor technique (Louie, 2001) against those predicted by the SCEC Community Velocity Model (CVM v. 4), and also against nearby Rosrine borehole data.

Background:

This project will provide detailed characterization of the near-surface conditions of ground-motion recording sites, which will enhance our understanding of expected ground motion and contribute towards the reduction of earthquake losses in Southern California.

The vertically averaged 30 m shear velocity (Vs30) is used to define NEHRP soil hazard classification for earthquake shaking as outlined by the NEHRP-UBC provisions (BSSC, 1998). Borehole sounding is a traditional method for obtaining Vs30. But, due to the high cost of borehole measurements, Louie (2001) developed the refraction microtremor technique (commercially available as SeisOpt®ReMi™) as a more rapid and cost-effective method of measuring Vs30 to meet the NEHRP-UBC code, and to derive site conditions. In this method, microtremor noise from sources such as traffic on streets and freeways

excites Rayleigh waves, which are recorded over a half hour by a linear array of vertical refraction geophones. The noise records are transformed into slowness–frequency (*p-f*) space, and a dispersion curve picked along a minimum-velocity envelope. Modeling the dispersion curve produces a depth–velocity sounding, which can be vertically averaged to the single Vs30 value used by the NEHRP-UBC code.

Methods:

This project was funded by USGS to measure shear-wave velocity profiles at 21 additional CISN sites in the Inland Empire of Southern California (east of Los Angeles County; Fig. 1). The data were collected near the end of 2007 using the refraction microtremor method (Louie, 2001). Data analysis was done using the commercial SeisOpt®ReMi™ software.

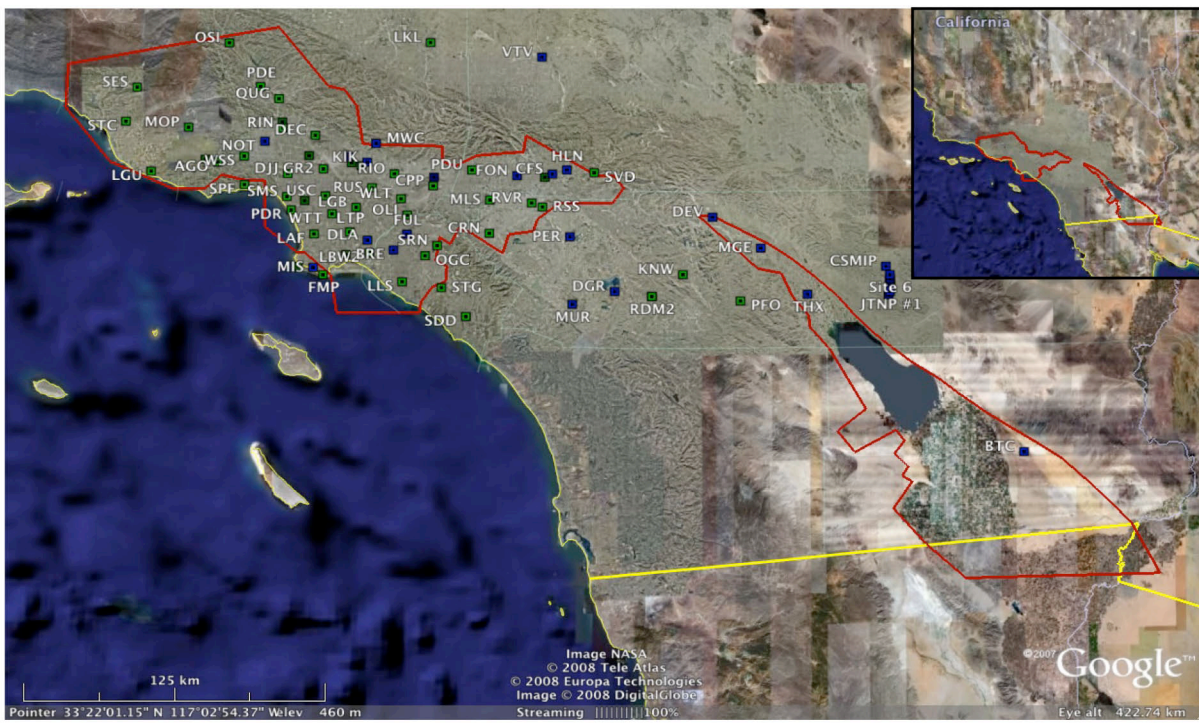

Figure 1. Google Earth map showing the locations of arrays measuring site conditions of CISN stations. Inset shows study area. Green squares show arrays recorded prior to 2007, and blue square represent arrays recorded under this project during 2007. The Shavers and Maniobra Valleys and Joshua Tree National Park arrays are labeled "CSMIP" and "JTNP." The red outline denotes the areas of the Los Angeles Basin and Salton Trough basin models from the CVM (Magistrale, 2000).

After analysis of the data and modeling of the depth–shear-velocity [*Vs(z)*] profile for each measured array, we computed summary values of Vs10, Vs30, Vs50 and Vs100 for depth ranges of 10, 30, 50, and 100 meters by arithmetic slowness averaging with the formula below:

$$VsZ = \frac{Z}{\sum_{1}^{N} \frac{z_i}{V_i}}$$

where Z is the total depth, Z_i is the thickness of layer with shear velocity V_i. Similarly, we have picked Z0.5, Z1.0 and Z1.5, which are the depths where the shear velocity first exceeds, or nearly exceeds, 0.5 km/s, 1.0 km/s and 1.5 km/s respectively. The velocities selected were the closest to the target values possible, with the corresponding "error" relating to the velocity exceeded in the profile, not the depth.

A second set of shear wave velocities were predicted at each measurement site using the Southern California Earthquake Center's Community Velocity Model (CVM), version 4. The CVM shear-wave velocities were obtained from the version 4 Fortran code at 0 and 30 meters depth. The Vs30 from the CVM was then calculated by the arithmetic slowness averaging formula above, assuming the 0-meter depth value represented 0-15 m depth and the 30-m depth value represented 15-30 m depth. This CVM Vs30 was then compared to our measured Vs30 for comparison.

Results:

Table 1 summarizes measurement array center locations, distance from the target CISN station, and resulting average shear velocities to 10-, 30-, 50-, and 100- meter depths, denoted by Vs10, Vs30, Vs50, and Vs100 respectively.

2007 Meas. Arrays	**Lat. (WGS84)**	**Long. (WGS84)**	**Dist. (m)**	**Depth (m)**	**Vs10 (m/s)**	**Vs30 (m/s)**	**Vs50 (m/s)**	**Vs100 (m/s)**
BRE	33.810170	-117.981849	275	63	201	238	282	385
BTC	33.013025	-115.220529	117	178	248	273	318	419
CFS	34.105594	-117.283118	32	220	240	320	343	441
Cottonwood	33.708810	-115.802335	-	158	497	823	1002	1197
CSMIP-1646	33.741370	-115.819355	70	61	596	863	1044	1239
DEV	33.935446	-116.580155	193	140	310	499	612	738
DGR	33.649820	-117.010038	57	18	405	554	609	659
DLA	33.847151	-118.097333	156	97	174	233	273	388
FON	34.099423	-117.438918	22	48	417	509	574	635
FUL	33.871495	-117.923212	69	77	217	306	397	512
HLN	34.121371	-117.219406	41	56	294	347	398	599
JTNP_Line1	33.642900	-115.802000	-	66	373	517	560	711
JTNP_Line2	33.654100	-115.802000	-	110	342	482	525	706
JTNP_Line3	33.669000	-115.802000	-	95	335	433	489	615
JTNP_Line4	33.682600	-115.802000	-	135	300	387	438	575
JTNP_Line5	33.692500	-115.802000	-	105	264	363	426	533
KIK	34.150453	-118.101712	17	150	283	393	445	563
MGE	33.816549	-116.367703	92	45	234	277	348	475
MIS	33.739979	-118.336101	97	130	289	363	502	705
MUR	33.600610	-117.195373	69	330	340	630	893	1298
MWC	34.223226	-118.062558	392	40	300	557	697	860
NOT	34.229389	-118.558011	92	350	203	312	455	540
OrocopiaMts	33.630795	-115.809585	-	300	604	793	884	967
PASC	34.171925	-118.185611	67	80	423	807	987	1185
PER	33.861898	-117.205621	42	60	320	556	778	1108
PSR	34.092710	-117.805590	171	130	557	765	884	954

Prior ReMi Arrays	Lat. (WGS84)	Long. (WGS84)	Dist. (m)	Depth (m)	Vs10 (m/s)	Vs30 (m/s)	Vs50 (m/s)	Vs100 (m/s)
VTV	34.559779	-117.329987	103	215	279	377	416	619
AGO	34.146430	-118.766275	66	45	300	409	474	545
CLT	34.093060	-117.316360	53	100	211	304	377	509
CPP	34.059520	-117.808700	-	100	210	279	332	399
CRN	33.876030	-117.560305	77	70	311	340	382	421
DEC	34.253410	-118.332795	96	52	391	450	548	734
DJJ	34.103990	-118.454270	254	100	298	336	380	428
FMP	33.712115	-118.292425	141	52	281	350	411	492
GR2	34.123490	-118.296260	-	46	305	414	538	715
GSA	34.136590	-118.127810	49	75	279	337	386	499
HLL	34.174290	-118.359570	238	62	229	302	347	404
KNW1	33.714100	-116.711900	-	85	461	700	824	951
KNW2	33.714100	-116.711900	-	60	480	726	819	906
LAF	33.869959	-118.333781	247	100	209	281	311	339
LBW2	33.798396	-118.088072	52	71	196	278	311	368
LCG	33.999925	-118.377360	70	100	237	330	366	406
LFP	34.305370	-118.481260	624	100	363	466	507	545
LGB	33.974950	-118.149100	39	100	287	350	428	553
LGU	34.109200	-119.065480	118	100	424	563	642	831
LKL	34.616400	-117.824910	-	46	245	330	391	478
LLS	33.686866	-117.942895	267	100	148	218	276	392
LTP	33.879131	-118.175901	220	68	194	258	291	353
MLS	34.005258	-117.558689	280	100	276	336	366	515
MOP	34.281490	-118.900930	372	100	206	246	284	352
OGC	33.787950	-117.842940	101	67	352	372	389	469
OLI	33.945265	-117.922520	112	62	218	312	375	484
OSI	34.612750	-118.724900	233	63	254	420	572	860
PAS	34.148295	-118.171140	-	75	375	633	777	1098
PDE	34.442500	-118.581260	99	100	187	257	342	459
PDR	33.962865	-118.436610	41	100	274	321	388	478
PDU	34.121385	-117.637785	81	58	470	503	595	697
PFO1	33.611700	-116.459400	-	75	598	932	1133	1350
PFO2	33.611700	-116.459400	-	50	420	676	803	935
QUG	34.395765	-118.497830	54	100	387	442	480	525
RDM1	33.630000	-116.847800	-	65	413	662	824	1009
RDM2	33.630000	-116.847800	-	60	397	610	686	757
RIN	34.282230	-118.478910	43	47	239	331	434	601
RIO	34.105645	-117.980700	146	100	363	473	510	554
RPV	33.743835	-118.403465	74	100	477	567	647	736
RSS	33.978127	-117.327090	541	100	311	387	430	488
RUS	34.051525	-118.079830	129	57	215	300	348	438
RVR	33.993415	-117.374285	108	100	311	634	847	1132
SDD	33.552980	-117.661700	43	100	375	412	438	529
SES	34.437090	-119.137860	38	80	408	447	485	583
SMS	34.014810	-118.456285	49	78	311	376	429	530
SPF	34.059930	-118.645970	69	100	388	483	569	783

Prior Meas. Arrays	Lat. (WGS84)	Long. (WGS84)	Dist. (m)	Depth (m)	Vs10 (m/s)	Vs30 (m/s)	Vs50 (m/s)	Vs100 (m/s)
SRN	33.827810	-117.789515	82	46	229	305	362	425
STC	34.303275	-119.184995	165	100	257	325	397	501
STG	33.664100	-117.769992	133	52	268	279	307	403
STS	33.791017	-118.193110	529	100	175	244	305	420
SVD	34.110251	-117.098956	426	74	373	505	670	911
TOV	34.156690	-118.821300	-	100	781	882	917	950
USC	34.018595	-118.285730	85	100	282	348	390	472
WLT	34.009150	-117.950875	38	80	257	265	305	388
WSS	34.170680	-118.648960	133	100	203	322	392	593
WTT	33.949020	-118.255640	40	72	178	264	330	448

Table 1. Summary of result showing measured, averaged shear velocities obtained.

Among previous and present arrays, we got following high and low shear velocities (Table 2).

Locations	High Vs10	Low Vs10	High Vs30	Low Vs30	High Vs50	Low Vs50	High Vs100	Low Vs100
Prior, m/s	TOV **781**	LLS **148**	PFO1 **932**	LLS **218**	PFO1 **1133**	LLS **276**	PFO1 **1350**	LAF **339**
2007, m/s	CSMIP-1646 **596**	DLA **174**	CCSMIP-1646 **863**	DLA **233**	CSMIP-1646 **1044**	DLA **273**	CSMIP-1646 **1239**	BRE **385**

Table 2. High and low shear velocities depth-averages.

Table 3 summarizes the values of Z0.5, Z1.0 and Z1.5, which are the depths where the shear velocity first exceeds, or nearly exceeds, 0.5 km/s, 1.0 km/s and 1.5 km/s respectively.

2007 Meas. Arrays	Z0.5, m	Vs>0.5, m/s	Z1.0, m	Vs>1.0, m/s	Z1.5, m	Vs>1.5, m/s
BRE	40	609	-	-	-	-
BTC	38	614	-	-	-	-
CFS	10	384	-	-	-	-
Cottonwood	0	357	6	951	18	1488
CSMIP	0	596	15	1523	15	1523
DEV	12	690	16	928	-	-
DGR	0	405	-	-	-	-
DLA	42	673	-	-	-	-
FON	5	472	-	-	-	-
FUL	7	323	-	-	-	-
HLN	47	464	-	-	-	-
JTNP_Line1	9	641	65	1230	65	1230
JTNP_Line2	9	607	52	1110	52	1110
JTNP_Line3	9	507	42	829	-	-
JTNP_Line4	20	545	51	844	-	-
JTNP_Line5	8	448	38	711	-	-

2007 Meas. Arrays	Z0.5, m	Vs>0.5, m/s	Z1.0, m	Vs>1.0, m/s	Z1.5, m	Vs>1.5, m/s
KIK	12	531	47	764	118	1835
MGE	10	305	35	748	-	-
MIS	6.5	416	30	1183	30	1183
MUR	0	318	9	931	25	2379
MWC	4	483	12	1121	-	-
NOT	5	297	22	1477	22	1477
OrocopiaMts	0	604	14	1067	134	1547
PASC	3	374	7	1482	7	1482
PER	10	315	27	797	27	1927
PSR	5	411	19	936	27	1967
THX	52	567	-	-	-	-
VTV	5	456	48	1208	48	1208
Prior Meas. Arrays	**Z0.5, m**	**Vs>0.5, m/s**	**Z1.0, m**	**Vs>1.0, m/s**	**Z1.5, m**	**Vs>1.5, m/s**
AGO	12	460	35	640	-	-
CLT	24	543	80	874	-	-
CPP	33	499	-	-	-	-
CRN	25	469	-	-	-	-
DEC	18	461	41	1111	41	1111
DJJ	32	489	-	-	-	-
FMP	17	401	34	613	-	-
GR2	10	343	36	1065	36	1065
GSA	28	494	65	858	-	-
HLL	54	487	-	-	-	-
KNW1	0	461	13	1069	17	1124
KNW2	0	455	13	1014	13	1014
LAF	27	372	-	-	-	-
LBW2	61	473	-	-	-	-
LCG	66	462	-	-	-	-
LFP	10	523	36	589	-	-
LGB	14	378	64	849	-	-
LGU	4	466	45	1178	45	1178
LKL	19	411	36	616	-	-
LLS	24	462	61	778	-	-
LTP	57	468	-	-	-	-
MLS	21	396	48	870	-	-
MOP	50	465	-	-	-	-
OGC	40	433	57	628	-	-
OLI	23	445	40	684	0	0
OSI	13	660	27	1256	27	1256
PAS	2	484	11	877	21	1181
PDE	21	476	31	697	-	-
PDR	21	412	70	629	-	-
PDU	4	472	48	843	-	-
PFO1	0	598	11	1260	21	1671

Prior Meas. Arrays	Z0.5, m	Vs>0.5, m/s	Z1.0, m	Vs>1.0, m/s	Z1.5, m	Vs>1.5, m/s
PFO2	0	420	11	899	14	1118
QUG	18	543	52	579	-	-
RDM1	0	413	11	899	22	1301
RDM2	0	392	13	845	-	-
RIN	23	497	34	978	-	-
RIO	4	489	41	606	-	-
RPV	9	517	46	855	-	-
RSS	26	516	62	581	-	-
RUS	31	443	47	594	0	0
RVR	3	420	7	864	16	1672
SDD	37	544	73	837	-	-
SDD	3	489	-	-	-	-
SES	10	503	70	858	-	-
SES	21	435	70	858	-	-
SMS	29	543	65	784	-	-
SPF	9	499	33	816	69	1909
SRN	36	516	-	-	-	-
STC	17	399	34	679	-	-
STG	42	584	42	584	-	-
STS	24	490	61	746	-	-
SVD	11	526	28	1310	74	1473
TOV	0	619	37	985	-	-
USC	26	475	62	654	-	-
WLT	31	407	68	648	-	-
WSS	23	558	48	1215	48	1215
WTT	30	532	66	814	-	-

Table 3. Summary result of depths where the shear velocity first exceeds 0.5 km/s, 1.0 km/s and 1.5 km/s and the associated shear velocity. Dashes(-) denote data not available.

We have classified each site as rock or soil according to the Vs30 estimated in the SCEC CVM. Sites with Vs30 greater than 1200 m/s are considered as rock sites; sites with lower CVM Vs30s are considered soil sites (Table 4).

The Vs30-value comparisons fall into three different categories. The Vs30 values from our measurements and the CVM differed by various amounts (Table 4). The percent difference (CVM prediction minus measurement) was >600% for some sites with a maximum of 925% and a minimum of -72%. For the first group, differences range above 300%, with the SCEC CVM v4 far over-predicting Vs30. CVM velocities are from ~2100 to ~3400 m/s. For the second group, the differences range from 42% to 300%; the SCEC CVM has a surface velocity of 818.7 m/s and increases with depth to 30 m. For the third group, differences range <42% (including negative differences, where the SCEC CVM underpredicts the measurement), and the CVM shows a Vs30 of 500 m/s or less.

The large difference in values between the SCEC CVM and our survey measurements can be explained by inspection of geologic maps of the area together with the rules inherent in the CVM. A first order look at the data reveals that the bulk of the

measurements with large differences to the CVM lie on the edge of or outside the basin models (outlined in Fig. 1). The CVM determines that anything that is outside modeled basins is hard rock (Magistrale et al., 2000; and the SCEC CVM v4 website) even though there are no hard rock sites in California (Field, 2000). All the sites in the first, very over-predicted group of comparisons lie outside the CVM basins, and our direct measurements reveal Vs30 values that are much lower than hard-rock shear velocities assumed by the CVM (Fig. 2). About 30 of the 73 sites measure to within ±20% of the CVM predictions; these tend to be within basins in deep soil. The set of sites showing moderate over-prediction by the CVM have been classed in the CVM as NEHRP C or B.

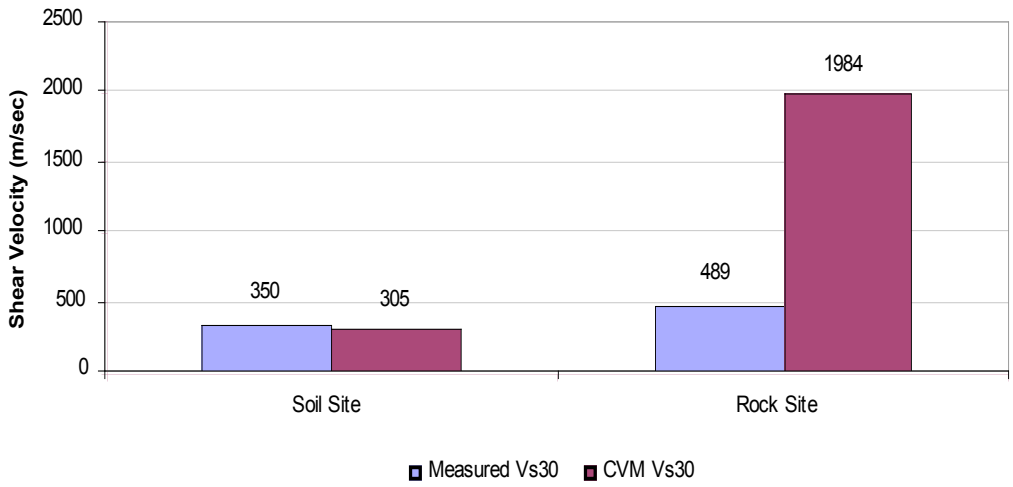

Figure. 2 Comparison between slowness averaged Vs30 values obtained from our measurements and predicted by the SCEC CVM across all designated soil and all rock sites. Note overprediction of Vs30 by the SCEC CVM at rock sites as well as the minor underprediction at soil sites.

The depth-averaged shear velocity to the depth of 30 m at both rock and soil sites were obtained by slowness averaging, which preserves the total vertical travel time of seismic waves along the profiles (Table 5).

We also compare our Vs30 measurements with those of nearby Rosrine boreholes. For this we took two high-Vs30 Rosrine logs and two high Vs30 measurements (Fig. 3). Similarly, we took two low-Vs30 Rosrine boreholes and two nearby low-velocity measurements (Fig. 4).

Soil sites by CVM velocity;

Stations	Meas. Vs30 m/s	CVM m/s	%diff
LCG	330	225	-32
OGC	372	228	-39
LLS	218	228	5
LTP	258	229	-11
DLA	233	230	-1
LBW2	278	230	-17
LGB	350	230	-34
MOP	246	230	-6
WTT	264	230	-13
PDR	321	233	-28
STS	244	233	-5
BRE	238	237	-1
TOV	882	241	-73
RUS	300	254	-15
USC	348	265	-24
CFS	320	271	-15
HLN	347	271	-22
MLS	336	271	-19
RVR	634	271	-57
WLT	265	273	3
CPP	279	273	-2
AGO	409	274	-33
RIO	473	276	-42
NOT	315	280	-11
CLT	304	284	-7
OLI	312	293	-6
LFP	466	294	-37
HLL	302	296	-2
FON	509	299	-41
CRN	340	299	-12
PDU	503	299	-41
RSS	387	299	-23
LAF	281	302	7
OSI	420	302	-28
PSR	772	304	-61
KIK	395	321	-19
SMS	376	323	-14
FUL	306	324	6
WSS	322	330	3
DEC	450	353	-21
PDE	257	353	38
QUG	442	353	-20
GSA	337	355	5

Soil sites by CVM velocity;

Stations	Meas. Vs30 m/s	CVM m/s	%diff
LGU	563	359	-36
SES	447	359	-20
STC	325	359	10
DJJ	336	374	11
GR2	414	385	-7
SVD	505	448	-11
PASC	807	452	-44
RIN	331	467	41
PAS	633	495	-22
DEV	499	822	65
MGE	277	822	197
THX	301	822	173
BTC	273	831	205

Rock sites by CVM velocity;

Stations	Meas. Vs30 m/s	CVM m/s	%diff
CSMIP	863	1266	47
Cottonwood	823	1277	55
JTNP_Line5	363	1282	253
JTNP_Line4	387	1284	232
JTNP_Line3	433	1287	197
JTNP_Line2	482	1291	168
JTNP_Line1	517	1294	150
OrocopiaMts	793	1297	64
PFO1	932	1325	42
PFO2	676	1325	96
SRN	305	2151	605
STG	279	2217	695
SDD	412	2329	465
RDM1	662	2827	327
RDM2	610	2827	363
FMP	350	2858	716
MIS	363	2890	696
MWC	557	2893	419
VTV	377	2930	677
RPV	567	2982	426
DGR	554	3197	477
SPF	483	3219	566
PER	563	3315	489
LKL	330	3384	926
KNW1	700	3388	384
KNW2	726	3388	367
MUR	637	3439	440

Table 4 . Comparison between Vs30 from our measurement and that predicted by the CVM, and soil-rock classification of sites.

Site	Depth Averaging	Maximum, m/s	Minimum, m/s	Arithmetic Average, m/s	Slowness Average, m/s
Rock	Vs30	330	273	546	489
Soil	Vs30	863	637	383	350

Table 5. Statistical summary of Vs30 measurements at rock and soil sites

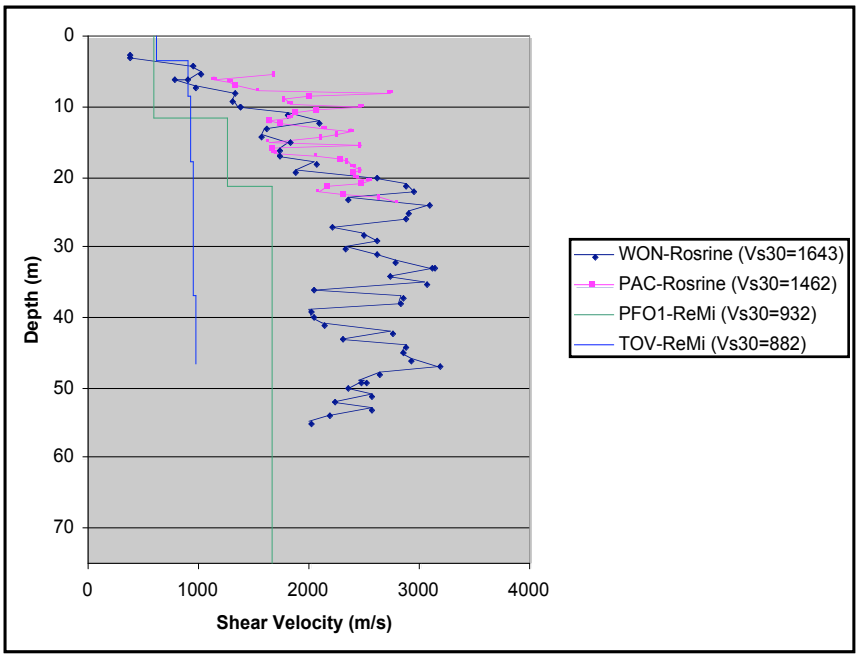

Figure 3. Comparison between high-Vs30 profiles obtained from Rosrine borehole logs and our refraction microtremor measurements. Note that PFO1, WON, PAC are in Cretaceous granite. TOV is in Tertiary volcanics. PFO1 values are within ±20% of Rosrine borehole measurements.

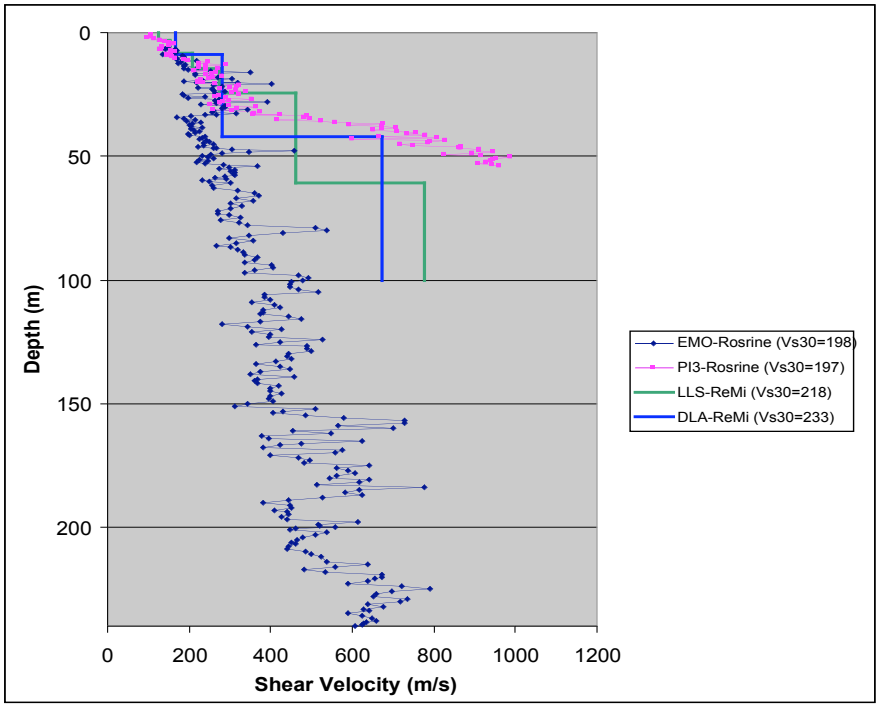

Figure 4. Comparison of between low-Vs30 Rosrine borehole logs and our nearby arrays in soil. Note that the Vs30 measurements have a standard deviation of just 17.3 m/s.

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Site name: AGO, Southern California
Lat/long: 34.146430/-118.766275
Average velocity to 30 m, m/s: 410
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 45 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	276.829
6.993	276.829
6.993	374.39
11.655	374.39
11.655	459.756
20.512	459.756
20.512	576.829
35.198	576.829
35.198	640.244
45.198	640.244

Site name: Barre Substation
Lat/Long: 33.810170/-117.981849 WGS84
Endpoint Lat/Long: 33.810173/-117.980909 WGS84
Endpoint Lat/Long: 33.810168/-117.982790 WGS84
Seismic Station Location Lat/Long: 33.80776/-117.98116 WGS84
Average velocity to 30 m, m/s: 238
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 63 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)
Depth(m) Vs(m/s)
0.0 201
14.25 201
14.25 286
40.125 286
40.125 609
75.0 609

Site name: Brunts Corner
Lat/Long: 33.013025/-115.220529 WGS84
Endpoint Lat/Long: 33.013696/-115.221099 WGS84
Endpoint Lat/Long: 33.012354/-115.219959 WGS84
Seismic Station Location Lat/Long: 33.01213/-115.21987 WGS84
Average velocity to 30 m, m/s: 273
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 178 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	218
5.0	218
5.0	288
38.0	288
38.0	614
100.0	614

Site name: Central Fire Station
Lat/Long: 34.105594/-117.283118 WGS84
Endpoint Lat/Long: 34.105594/-117.284112 WGS84
Endpoint Lat/Long: 34.105593/-117.282124 WGS84
Seismic Station Location Lat/Long: 34.10539/-117.28287 WGS84
Average velocity to 30 m, m/s: 321
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 220 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	235
9.5	235
9.5	384
62.0	384
62.0	762
100.0	762

Site name: CLT, Southern California
Lat/long: 34.093060/-117.316360
Average velocity to 30 m, m/s: 306
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	196.341
6.061	196.341
6.061	239.702
14.453	239.702
14.453	434.824
23.776	434.824
23.776	543.225
43.822	543.225
43.822	735.637
80.186	735.637
80.186	873.848
90.186	873.848

Site name: Cottonwood/Eagles
Lat/Long: 33.708810/-115.802335 WGS84
Endpoint Lat/Long: 33.709600/-115802260 WGS84
Endpoint Lat/Long: 33.708020/-115802410 WGS84
Seismic Station Location Lat/Long: 33.7096/-115.80223 WGS84
Average velocity to 30 m, m/s: 828
Date: 13/11/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 158 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	357
5.5	357
5.5	951
17.625	951
17.625	1488
50.0	1488

Site name: CPP, Southern California
Lat/long: 34.059520/-117.808700
Average velocity to 30 m, m/s: 279
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	174.39
3.963	174.39
3.963	237.805
9.557	237.805
9.557	318.293
16.317	318.293
16.317	340.244
33.1	340.244
33.1	498.78
100	498.78

Site name: CRN, Southern California
Lat/long: 33.876030/-117.560305
Average velocity to 30 m, m/s: 340
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 70 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	311.333
21.54	311.333
21.54	405.556
24.777	405.556
24.777	468.667
70.536	468.667

Site name: CSMIP 1646
Lat/Long: 33.741370/-115.819355 WGS84
Endpoint Lat/Long: 33.740360/-115.819400 WGS84
Endpoint Lat/Long: 33.742380/-115.819310 WGS84
Seismic Station Location Lat/Long: 33.742/-115.8193 WGS84
Average velocity to 30 m, m/s: 869
Date: 13/11/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 61 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	596
8.25	596
8.25	596
14.75	596
14.75	1523
50.0	1523

Site name: DEC, Southern California
Lat/long: 34.253410/-118.332795
Average velocity to 30 m, m/s: 452
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 52 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	391.463
12.354	391.463
12.354	440.244
17.949	440.244
17.949	460.569
24.709	460.569
24.709	680.081
41.492	680.081
41.492	1110.976
51.492	1110.976

Site name: Devers
Lat/Long: 33.935446/-116.580155 WGS84
Endpoint Lat/Long: 33.934621/-116.580154 WGS84
Endpoint Lat/Long: 33.936271/-116580156 WGS84
Seismic Station Location Lat/Long: 33.93597/-116.57794
Average velocity to 30 m, m/s: 503
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 140 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	310
12.2	310
12.2	690
16.4	690
16.4	928
40.0	928

Site name: Domenigoni Reservoir
Lat/Long: 33.649820/-117.010038 WGS84
Endpoint Lat/Long: 33.649543/-117.010967 WGS84
Endpoint Lat/Long: 33.650097/-117.009110 WGS84
Seismic Station Location Lat/Long: 33.65001/-117.00947 WGS84
Average velocity to 30 m, m/s: 555
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 18 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	405
11.5	405
11.5	717
82.5	717
82.5	717
100.0	717

Site name: DJJ, Southern California
Lat/long: 34.103990/-118.454270
Average velocity to 30 m, m/s: 337
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	274.39
2.564	274.39
2.564	298.78
6.993	298.78
6.993	320.732
15.618	320.732
15.618	376.829
32.401	376.829
32.401	489.024
100	489.024

Site name: Del Amo
Lat/Long: 33.847151/-118.097333 WGS84
Endpoint Lat/Long: 33.847176/-118.096346 WGS84
Endpoint Lat/Long: 33.847125/-118.098321 WGS84
Seismic Station Location Lat/Long: 33.84822/-118.09624 WGS84
Average velocity to 30 m, m/s: 234
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 97 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	167
9.0	167
9.0	281
42.0	281
42.0	673
100.0	673

Site name: FMP, Southern California
Lat/long: 33.712115/-118.292425
Average velocity to 30 m, m/s: 351
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 52 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	235.366
4.662	235.366
4.662	337.805
10.256	337.805
10.256	397.967
17.016	397.967
17.016	401.22
33.8	401.22
33.8	613.415
100	613.415

Site name: Fontana
Lat/Long: 34.099423/-117.438918 WGS84
Endpoint Lat/Long: 34.099424/-117.437927 WGS84
Endpoint Lat/Long: 34.099422/117.439909 WGS84
Seismic Station Location Lat/Long: 34.09957/-117.43876 WGS84
Average velocity to 30 m, m/s: 511
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 48 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	373
5.0	373
5.0	472
19.5	472
19.5	710
50.0	710

Site name: Fullerton
Lat/Long: 33.871495/-117.923212 WGS84
Endpoint Lat/Long: 33.871480/-117.924196 WGS84
Endpoint Lat/Long: 33.871510/-117.922228 WGS84
Seismic Station Location Lat/Long: 33.87170/-117.92251 WGS84
Average velocity to 30 m, m/s: 309
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 77 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	190
7.0	190
7.0	323
24.15	323
24.15	721
70.0	721

Site name: GR2, Southern California
Lat/long: 34.123490/-118.296260
Average velocity to 30 m, m/s: 417
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 46 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	274.39
4.662	274.39
4.662	337.805
10.256	337.805
10.256	342.683
18.881	342.683
18.881	807.724
35.664	807.724
35.664	1064.634
45.664	1064.634

Site name: GSA, Southern California
Lat/long: 34.136590/-118.127810
Average velocity to 30 m, m/s: 338
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 75 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	258.672
3.263	258.672
3.263	288.482
9.79	288.482
9.79	339.973
16.317	339.973
16.317	383.333
28.205	383.333
28.205	494.444
64.569	494.444
64.569	857.588
74.569	857.588

Site name: HLL, Southern California
Lat/long: 34.174290/-118.359570
Average velocity to 30 m, m/s: 304
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 62 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	198.78
4.662	198.78
4.662	264.634
11.888	264.634
11.888	367.073
28.205	367.073
28.205	445.122
53.613	445.122
53.613	486.585
100	486.585

Site name: Highland
Lat/Long: 34.121371/-117.219406 WGS84
Endpoint Lat/Long: 34.121370/-117.218409 WGS84
Endpoint Lat/Long: 34.121373/-117.220404 WGS84
Seismic Station Location Lat/Long: 34.12128/-117.21897 WGS84
Average velocity to 30 m, m/s: 348
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 56 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	294
17.5	294
17.5	464
47.0	464
47.0	1212
100.0	1212

Site name: JTNP_Line1
Lat/Long: 33.642900/-115.802000 WGS84
Seismic Station Location Lat/Long: 33.6429/-115.802 WGS84
Average velocity to 30 m, m/s: 518
Date: 19/09/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 66 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	356
9.0	356
9.0	641
64.5	641
64.5	1230
100.0	1230

Site name: JTNP_Line2
Lat/Long: 33.654100/-115.802000 WGS84
Seismic Station Location Lat/Long: 33.6541/-115.802 WGS84
Average velocity to 30 m, m/s: 484
Date: 19/09/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 110 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	326
9.0	326
9.0	607
52.0	607
52.0	1110
100.0	1110

Site name: JTNP_Line3
Lat/Long: 33.669000/-115.802000 WGS84
Seismic Station Location Lat/Long: 33.6690/-115.802 WGS84
Average velocity to 30 m, m/s: 434
Date: 19/09/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 95 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	323
9.0	323
9.0	507
41.5	507
41.5	829
100.0	829

Site name: JTNP_Line4
Lat/Long: 33.682600/-115.802000 WGS84
Seismic Station Location Lat/Long: 33.6826/-115.802 WGS84
Average velocity to 30 m, m/s: 389
Date: 19/09/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 135 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	256
5.625	256
5.625	386
19.875	386
19.875	545
50.625	545
50.625	844
75.0	844

Site name: JTNP_Line5
Lat/Long: 33.692500/-115.802000 WGS84
Seismic Station Location Lat/Long: 33.6925/-115.802 WGS84
Average velocity to 30 m, m/s: 364
Date: 19/09/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 105 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	232
7.5	232
7.5	448
38.0	448
38.0	711
100.0	711

Site name: Kinemetrics
Lat/Long: 34.150453/-118.101712 WGS84
Endpoint Lat/Long: 34.149819/-118.101721 WGS84
Endpoint Lat/Long: 34.151087/-118.101704 WGS84
Seismic Station Location Lat/Long: 34.15037/-118.10156 WGS84
Average velocity to 30 m, m/s: 395
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 150 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	283
12.0	283
12.0	531
47.0	531
47.0	764
118.0	764
118.0	1835
200.0	1835

Site name: Keenwild, California
Lat/long: 33.7141/-116.7119
Average velocity to 10 m, m/s: 461
Average velocity to 30 m, m/s: 700
Date: 19/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 85 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	460.959
12.5	460.959
12.5	1069.178
16.898	1069.178
16.898	1123.973
85	1123.973

Site name: Keenwild, California
Lat/long: 33.7141/-116.7119
Average velocity to 10 m, m/s: 480
Average velocity to 30 m, m/s: 726
Date: 19/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 60 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	455.479
8.858	455.479
8.858	817.123
13.194	817.123
13.194	1014.384
113.194	1014.384

Site name: LAF, Southern California
Lat/long: 33.869959/-118.333781
Average velocity to 30 m, m/s: 281
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	165.556
6.696	165.556
6.696	447.778
20.696	447.778
20.696	230
26.786	230
26.786	372.222
126.786	372.222

Site name: LBW2, Southern California
Lat/long: 33.798396/-118.088072
Average velocity to 30 m, m/s: 279
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 71 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	112.873
3.263	112.873
3.263	292.818
8.275	292.818
8.275	338.347
14.802	338.347
14.802	344.851
24.476	344.851
24.476	379.539
60.84	379.539
60.84	472.764
70.84	472.764

Site name: LCG, Southern California
Lat/long: 33.999925/-118.377360
Average velocity to 30 m, m/s: 332
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	208.266
3.03	208.266
3.03	251.626
10.023	251.626
10.023	403.388
16.783	403.388
16.783	416.396
29.604	416.396
29.604	438.076
65.968	438.076
65.968	461.924
100	461.924

Site name: LFP, Southern California
Lat/long: 34.305370/-118.481260
Average velocity to 30 m, m/s: 486
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	306.098
4.662	306.098
4.662	432.927
10.256	432.927
10.256	523.171
18.881	523.171
18.881	564.634
35.664	564.634
35.664	589.024
100	589.024

Site name: LGB, Southern California
Lat/long: 33.974950/-118.149100
Average velocity to 30 m, m/s: 353
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	236.992
3.497	236.992
3.497	304.743
6.993	304.743
6.993	350.813
14.452	350.813
14.452	377.913
27.273	377.913
27.273	643.496
63.637	643.496
63.637	849.458
100	849.458

Site name: LGU, Southern California
Lat/long: 34.109200/-119.065480
Average velocity to 30 m, m/s: 565
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	371.951
3.963	371.951
3.963	466.26
10.723	466.26
10.723	638.618
19.114	638.618
19.114	726.423
44.522	726.423
44.522	1178.455
100	1178.455

Site name: LKL, Southern California
Lat/long: 34.616400/-117.824910
Average velocity to 30 m, m/s: 331
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 46 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	213.415
4.662	213.415
4.662	281.707
10.256	281.707
10.256	391.463
18.881	391.463
18.881	410.976
35.664	410.976
35.664	615.854
45.664	615.854

Site name: LLS, Southern California
Lat/long: 33.686866/-117.942895
Average velocity to 30 m, m/s: 220
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	123.713
3.263	123.713
3.263	151.897
8.275	151.897
8.275	208.266
14.802	208.266
14.802	275.474
24.476	275.474
24.476	461.924
60.84	461.924
60.84	778.455
100	778.455

Site name: LTP, Southern California
Lat/long: 33.879131/-118.175901
Average velocity to 30 m, m/s: 259
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 68 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	134.553
1.981	134.553
1.981	162.195
4.779	162.195
4.779	267.886
11.305	267.886
11.305	274.39
20.979	274.39
20.979	362.195
57.343	362.195
57.343	467.886
67.343	467.886

Site name: Mirage
Lat/Long: 33.816549/-116.367703 WGS84
Endpoint Lat/Long: 33.816553/-116.366710 WGS84
Endpoint Lat/Long: 33.816546/-116.368696 WGS84
Seismic Station Location Lat/Long: 33.81841/-116.36874 WGS84
Average velocity to 30 m, m/s: 277
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 45 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	234
10.0	234
10.0	305
34.5	305
34.5	748
200.0	748

Site name: Mira Catalina School
Lat/Long: 33.739979/-118.336101 WGS84
Endpoint Lat/Long: 33.739443/-118.335755 WGS84
Endpoint Lat/Long: 33.740516/-118.336447 WGS84
Seismic Station Location Lat/Long: 33.74030/-118.33517 WGS84
Average velocity to 30 m, m/s: 367
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 130 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	248
6.5	248
6.5	416
30.0	416
30.0	1183
50.0	1183

Site name: MLS, Southern California
Lat/long: 34.005258/-117.558689
Average velocity to 30 m, m/s: 337
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	230.488
2.331	230.488
2.331	262.195
6.527	262.195
6.527	342.683
11.422	342.683
11.422	365.447
21.096	365.447
21.096	396.341
47.786	396.341
47.786	869.512
100	869.512

Site name: MOP, Southern California
Lat/long: 34.281490/-118.900930
Average velocity to 30 m, m/s: 247
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	184.959
4.662	184.959
4.662	228.862
10.023	228.862
10.023	248.374
24.709	248.374
24.709	370.325
50.117	370.325
50.117	464.634
60.117	464.634

Site name: Murrieta
Lat/Long: 33.600610/-117.195373 WGS84
Endpoint Lat/Long: 33.6000099/-117.195571 WGS84
Endpoint Lat/Long: 33.601121/-117.195175 WGS84
Seismic Station Location Lat/Long: 33.59999/-117.19543 WGS84
Average velocity to 30 m, m/s: 637
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SOS and Nevada Seismological Lab
Type of measurements: Remi
Depth of measurements: 330 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	318
9.0	318
9.0	931
25.0	931
25.0	2379
107.0	2379
107.0	1697
150.0	1697
150.0	2286
200.0	2286

Site name: Mount Wilson Obsv
Lat/Long: 34.223226/-118.062558 WGS84
Endpoint Lat/Long: 34.223803/-118.062530 WGS84
Endpoint Lat/Long: 34.222649/-118.062586 WGS84
Seismic Station Location Lat/Long: 34.22362/-118.05832 WGS84
Average velocity to 30 m, m/s: 561
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 40 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	191
4.0	191
4.0	483
12.25	483
12.25	1121
50.0	1121

Site name: Northridge
Lat/Long: 34.229389/-118.558011 WGS84
Endpoint Lat/Long: 34.230217/-118.558033 WGS84
Endpoint Lat/Long: 34.228562/-118.557988 WGS84
Seismic Station Location Lat/Long: 34.22869/-118.55829 WGS84
Average velocity to 30 m, m/s: 315
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 350 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	154.6
5.0	154.6
5.0	297.2
22.5	297.2
22.5	1477.2
68.5	1477.2
68.5	224
77.5	224
77.5	995.2
100.0	995.2

Site name: OGC, Southern California
Lat/long: 33.787950,-117.842940
Average velocity to 30 m, m/s: 373
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 67 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	352.439
10.256	352.439
10.256	371.951
21.678	371.951
21.678	401.22
40.326	401.22
40.326	432.927
57.11	432.927
57.11	628.049
67.11	628.049

Site name: OLI, Southern California
Lat/long: 33.945265/-117.922520
Average velocity to 30 m, m/s: 313
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 62 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	164.634
4.196	164.634
4.196	284.146
10.023	284.146
10.023	376.829
23.31	376.829
23.31	445.122
40.093	445.122
40.093	684.146
100	684.146

Site name: Orocopias
Lat/Long: 33.630795/-115.809585 WGS84
Endpoint Lat/Long: 33.631480/-115.808120 WGS84
Endpoint Lat/Long: 33.630110/-115.811050 WGS84
Seismic Station Location Lat/Long: 33.6308/-115.8082 WGS84
Average velocity to 30 m, m/s: 797
Date: 13/11/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 300 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	604
13.5	604
13.5	1067
134.25	1067
134.25	1547
150.0	1547

Site name: OSI, Southern California
Lat/long: 34.612750/-118.724900
Average velocity to 30 m, m/s: 424
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 63 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	232.927
7.226	232.927
7.226	334.553
12.587	334.553
12.587	659.756
27.273	659.756
27.273	1255.962
52.681	1255.962
52.681	1770.867
62.681	1770.867

Site name: PAS, Southern California
Lat/long: 34.148295/-118.171140
Average velocity to 30 m, m/s: 638
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 75 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	158.401
1.981	158.401
1.981	483.604
4.779	483.604
4.779	625.881
11.305	625.881
11.305	876.558
20.979	876.558
20.979	1181.436
57.343	1181.436
57.343	2075.745
100	2075.745

Site name: Pasadena Art Center, College Of Design
Lat/Long: 34.171925/-118.185611 WGS84
Endpoint Lat/Long: 34.172438/-118.185604 WGS84
Endpoint Lat/Long: 34.171413/-118.185617 WGS84
Seismic Station Location Lat/Long: 34.17141/-118.18523 WGS84
Average velocity to 30 m, m/s: 813
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 80 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	280
3.25	280
3.25	374
7.0	374
7.0	1482
25.0	1482

Site name: PDE, Southern California
Lat/long: 34.442500/-118.581260
Average velocity to 30 m, m/s: 259
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	183.333
4.895	183.333
4.895	189.837
11.888	189.837
11.888	267.886
21.212	267.886
21.212	476.016
31.002	476.016
31.002	697.154
100	697.154

Site name: PDR, Southern California
Lat/long: 33.962865,-118.436610
Average velocity to 30 m, m/s: 322
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	258.672
3.497	258.672
3.497	283.062
10.723	283.062
10.723	312.873
20.746	312.873
20.746	412.06
33.567	412.06
33.567	613.686
69.931	613.686
69.931	628.862
100	628.862

Site name: PDU, Southern California
Lat/long: 34.121385/-117.637785
Average velocity to 30 m, m/s: 503
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 58 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	467.073
3.73	467.073
3.73	471.951
13.52	471.951
13.52	532.927
30.769	532.927
30.769	835.366
47.552	835.366
47.552	842.683
57.552	842.683

Site name: Lake Perris
Lat/Long: 33.861898/-117.205621 WGS84
Endpoint Lat/Long: 33.862666/-117.205988 WGS84
Endpoint Lat/Long: 33.861129/-117.205254 WGS84
Seismic Station Location Lat/Long: 33.86164/-117.20529 WGS84
Average velocity to 30 m, m/s: 563
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 60 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)
Depth(m) Vs(m/s)
0.0 315
9.75 315
9.75 796.5
26.65 796.5
26.65 1927.2
100.0 1927.2

Site name: Pinon Flat Observatory, California
Lat/long: 33.6117/-116.4594
Average velocity to 10 m, m/s: 598
Average velocity to 30 m, m/s: 932
Date: 20/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 75 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	597.945
11.422	597.945
11.422	1260.046
21.445	1260.046
21.445	1671.005
75	1671.005

Site name: Pinon Flat Observatory, California
Lat/long: 33.6117/-116.4594
Average velocity to 10 m, m/s: 420
Average velocity to 30 m, m/s: 676
Date: 20/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 50 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	419.863
11.422	419.863
11.422	899.315
13.878	899.315
13.878	1118.493
50	1118.493

Site name: Puddingstone Reservoir
Lat/Long: 34.092710/-117.805590 WGS84
Endpoint Lat/Long: 34.092071/-117.805594 WGS84
Endpoint Lat/Long: 34.093348/-117.805586 WGS84
Seismic Station Location Lat/Long: 34.09181/-117.80709 WGS84
Average velocity to 30 m, m/s: 772
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 130 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	411
4.5	411
4.5	784
19.0	784
19.0	936
26.5	936
26.5	1967
38.0	1967
38.0	907
63.0	907
63.0	1065
96.5	1065
96.5	1426
150.0	1426

Site name: QUG, Southern California
Lat/long: 34.395765/-118.497830
Average velocity to 30 m, m/s: 443
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	384.146
8.625	384.146
8.625	406.098
18.415	406.098
18.415	542.683
35.664	542.683
35.664	557.317
52.448	557.317
52.448	579.268
100	579.268

Site name: Red Mountain, California
Lat/long: 33.6300/-116.8478
Average velocity to 10 m, m/s: 413
Average velocity to 30 m, m/s: 662
Date: 18/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 65 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	413.014
11.122	413.014
11.122	899.315
22.357	899.315
22.357	1301.142
65	1301.142

Site name: Red Mountain, California
Lat/long: 33.6300/-116.8478
Average velocity to 10 m, m/s: 397
Average velocity to 30 m, m/s: 610
Date: 18/12/2003 (dd/mm/yyyy)
Performed by: Aasha Pancha & Chris Lopez
Type of measurements: ReMi
Depth of measurements: 60 m
Function stepped (y or n): y
Posted by: Karalyn Heath(07/07/2005)

Depth(m)	Vs(m/s)
0	392.466
9.79	392.466
9.79	782.877
12.821	782.877
12.821	844.521
60	844.521

Site name: RIN, Southern California
Lat/long: 34.282230/-118.478910
Average velocity to 30 m, m/s: 333
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 47 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	192.276
3.03	192.276
3.03	246.477
8.392	246.477
8.392	375.203
23.077	375.203
23.077	497.154
34.266	497.154
34.266	978.184
44.266	978.184

Site name: RIO, Southern California
Lat/long: 34.105645/-117.980700
Average velocity to 30 m, m/s: 474
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	250
3.963	250
3.963	489.024
7.459	489.024
7.459	557.317
24.709	557.317
24.709	559.756
41.492	559.756
41.492	606.098
100	606.098

Site name: RPV, Southern California
Lat/long: 33.743835/-118.403465
Average velocity to 30 m, m/s: 570
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	472.764
8.858	472.764
8.858	517.48
18.415	517.48
18.415	732.927
29.138	732.927
29.138	810.163
45.921	810.163
45.921	854.878
100	854.878

Site name: RSS, Southern California
Lat/long: 33.978127/-117.327090
Average velocity to 30 m, m/s: 399
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	272.222
3.963	272.222
3.963	342.683
9.79	342.683
9.79	383.333
16.317	383.333
16.317	456.504
25.991	456.504
25.991	516.125
62.355	516.125
62.355	581.165
72.355	581.165

Site name: RUS, Southern California
Lat/long: 34.051525/-118.079830
Average velocity to 30 m, m/s: 301
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 57 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	198.78
7.925	198.78
7.925	310.976
13.287	310.976
13.287	389.024
30.536	389.024
30.536	442.683
47.319	442.683
47.319	593.902
57.319	593.902

Site name: RVR, Southern California
Lat/long: 33.993415/-117.374285
Average velocity to 30 m, m/s: 640
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	141.057
2.564	141.057
2.564	419.919
6.993	419.919
6.993	863.821
15.618	863.821
15.618	1671.951
32.401	1671.951
32.401	1706.098
100	1706.098

Site name: SDD, Southern California
Lat/long: 33.552980/-117.661700
Average velocity to 30 m, m/s: 412
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	261.382
3.497	261.382
3.497	489.024
12.587	489.024
12.587	436.992
24.242	436.992
24.242	404.472
37.063	404.472
37.063	544.309
73.427	544.309
73.427	836.992
100	836.992

Site name: SES, Southern California
Lat/long: 34.437090/-119.137860
Average velocity to 30 m, m/s: 446
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 80 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	334.553
3.497	334.553
3.497	461.924
10.256	461.924
10.256	502.575
20.979	502.575
20.979	434.824
33.8	434.824
33.8	597.425
70.163	597.425
70.163	857.588
80.163	857.588

Site name: SMS, Southern California
Lat/long: 34.014810/-118.456285
Average velocity to 30 m, m/s: 378
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 78 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	255.962
2.331	255.962
2.331	296.612
5.827	296.612
5.827	369.783
15.851	369.783
15.851	437.534
28.672	437.534
28.672	543.225
65.036	543.225
65.036	784.417
75.036	784.417

Site name: SPF, Southern California
Lat/long: 34.059930/-118.645970
Average velocity to 30 m, m/s: 484
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	328.049
3.497	328.049
3.497	415.854
8.625	415.854
8.625	498.78
20.28	498.78
20.28	615.854
33.1	615.854
33.1	815.854
69.464	815.854
69.464	1909.079
100	1909.079

Site name: SRN, Southern California
Lat/long: 33.827810/-117.789515
Average velocity to 30 m, m/s: 307
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 46 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	213.415
3.73	213.415
3.73	240.244
10.956	240.244
10.956	296.341
19.58	296.341
19.58	479.268
36.364	479.268
36.364	515.854
46.364	515.854

Site name: STC, Southern California
Lat/long: 34.303275/-119.184995
Average velocity to 30 m, m/s: 326
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	208.537
4.196	208.537
4.196	301.22
8.625	301.22
8.625	337.805
17.249	337.805
17.249	398.78
34.033	398.78
34.033	679.268
100	679.268

Site name: STG, Southern California
Lat/long: 33.664100/-117.769992
Average velocity to 30 m, m/s: 279
Date: 11/01/2005 (dd/mm/yyyy)
Performed by: Don Pei, Jeff Hogue, Nevada Seismological Lab.
Type of measurements: ReMi
Depth of measurements: 52 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	267.073
8.625	267.073
8.625	276.829
17.016	276.829
17.016	286.585
25.641	286.585
25.641	293.902
42.424	293.902
42.424	584.146
52.424	584.146

Site name: STS, Southern California
Lat/long: 33.791017/-118.193110
Average velocity to 30 m, m/s: 246
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	162.737
3.03	162.737
3.03	169.241
8.042	169.241
8.042	223.171
14.569	223.171
14.569	286.314
24.242	286.314
24.242	490.108
60.606	490.108
60.606	745.935
100	745.935

Site name: SVD, Southern California
Lat/long: 34.110251/-117.098956
Average velocity to 30 m, m/s: 510
Date: 27/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 74 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	367.073
6.294	367.073
6.294	383.333
11.305	383.333
11.305	525.61
17.832	525.61
17.832	651.626
27.506	651.626
27.506	1310.163
63.87	1310.163
63.87	1472.764
73.87	1472.764

Site name: Thermal Airport
Lat/Long: 33.635978/-116.164013 WGS84
Endpoint Lat/Long: 33.636805/-116.163991 WGS84
Endpoint Lat/Long: 33.635152/-116.164035 WGS84
Seismic Station Location Lat/Long: 33.63495/-116.16402 WGS84
Average velocity to 30 m, m/s: 301
Date: 10/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 130 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	178
7.0	178
7.0	379
51.5	379
51.5	567
100.0	567

Site name: TOV, Southern California
Lat/long: 34.156690/-118.821300
Average velocity to 30 m, m/s: 884
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	619.106
3.497	619.106
3.497	903.659
8.625	903.659
8.625	923.984
17.949	923.984
17.949	957.859
36.83	957.859
36.83	984.959
46.83	984.959

Site name: USC, Southern California
Lat/long: 34.018595/-118.285730
Average velocity to 30 m, m/s: 350
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	204.472
3.263	204.472
3.263	321.003
6.527	321.003
6.527	369.783
13.054	369.783
13.054	380.623
25.875	380.623
25.875	475.474
62.239	475.474
62.239	654.336
100	654.336

Site name: Victorville
Lat/Long: 34.559779/-117.329987 WGS84
Endpoint Lat/Long: 34.558952/-117.329987 WGS84
Endpoint Lat/Long: 34.560605/-117.329987 WGS84
Seismic Station Location Lat/Long: 34.56065/-117.32960 WGS84
Average velocity to 30 m, m/s: 377
Date: 17/12/07(dd/mm/yy)
Performed by: Optim SDS and Nevada Seismological Lab
Type of measurements: ReMi
Depth of measurements: 215 m
Function stepped (y or n): yes
Posted by: Mahesh Singh Dhar and Mayo Thompson (04/01/08)

Depth(m)	Vs(m/s)
0.0	207
5.25	207
5.25	456
47.625	456
47.625	1208
60.0	1208

Site name: WLT, Southern California
Lat/long: 34.009150/-117.950875
Average velocity to 30 m, m/s: 265
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 80 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	249.187
3.497	249.187
3.497	258.672
6.993	258.672
6.993	264.363
18.648	264.363
18.648	273.848
31.469	273.848
31.469	406.64
67.833	406.64
67.833	647.561
77.833	647.561

Site name: WSS, Southern California
Lat/long: 34.170680/-118.648960
Average velocity to 30 m, m/s: 324
Date: 12/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 100 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	131.301
3.03	131.301
3.03	239.702
8.392	239.702
8.392	415.854
23.077	415.854
23.077	558.13
48.485	558.13
48.485	1215.312
100	1215.312

Site name: WTT, Southern California
Lat/long: 33.949020/-118.255640
Average velocity to 30 m, m/s: 266
Date: 24/10/2005 (dd/mm/yyyy)
Performed by: S. Pullammanappallil, Don Pei, Optim Inc.
Type of measurements: ReMi
Depth of measurements: 72 m
Function stepped (y or n): yes
Posted by: John Louie 16/04/2006 (dd/mm/yyyy)

Depth(m)	Vs(m/s)
0	161.111
3.263	161.111
3.263	188.211
10.256	188.211
10.256	266.802
17.016	266.802
17.016	416.396
29.837	416.396
29.837	532.385
66.201	532.385
66.201	814.228
76.201	814.228