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Major oxide, trace element, and glass chemistry of Columbia River basalt samples collected between 1971 and 1977

By

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This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

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In this report we are making available all chemical analyses of whole rocks and selected glasses for samples of Columbia River Basalt that we collected between 1971 and 1977 during reconnaissance geologic mapping of the Columbia Plateau. In addition, data for selected samples collected by W.H. Taubeneck (Oregon State University) and the late Richard Clem (Whitman College) are included. Samples were analyzed in the laboratories of the U.S. Geological Survey (all whole-rock major-oxide and some trace element analyses), the Smithsonian Institution (all glass analyses), and the University of Oregon (some trace-element analyses). Ellen Thurnau prepared the initial computer tabulation of the data on the U.S. Geological Survey's Honeywell MULTICS system. Kevin Black is responsible for completion of the data base as presented in Tables 1-3. Stratigraphic nomenclature follows revised terminology given in Swanson and others (1979).

Chemical classification is based on major oxide analyses for samples from single stratigraphic units using the methods of Wright and Hamilton (1978). Identifications of chemical types are made using expanded polygons (cf. Wright and Hamilton, 1978, fig. 3 and discussion) using only samples for which analyses were in hand at the end of 1976. The error values used in the expansion are the standard error of the data set. Table 3 shows the analyses used to define chemical types. Some samples, marked with an asterisk (*), were not used as they apparently represent differentiated, altered, or otherwise aberrant samples within a chemical type. Chemical identifications enclosed by quotation marks (e.g., 'ROZA') in Tables 1 and 2

mark samples for which the analysis falls outside of at least one polygon for the chemical type listed. A notation is made in the comment line as to which oxide(s) is aberrant. The chemical composition of a fresh sample not fitting any defined chemical type is listed as unclassified (UNC in Tables 1 and 2). These samples form the basis for definition of new chemical types.

A listing of the tables and explanatory notes follows. Tables 1 and 2 give information separately for flows and dikes respectively. Chemical analyses used to define chemical types (Table 3) are taken from flow analyses only.

Tables 1a, 2a. Geographic location, stratigraphic position, and information related to chemical identifications are given for flows (1a) and dikes (1b).

Tables 1b, 2b. Major oxide analyses of flows (1b) and dikes (2b).

Tables 1c, 2c. Trace element analyses of selected flows (1c) and dikes (2c) as determined by Instrumental Neutron Activation Analysis (INAA). Samples followed by F (e.g., 71-54 F) were analyzed by J.S. Fruchter at the University of Oregon. Samples followed by R (e.g., 71-54 R) were analyzed by L.J. Schwarz under the direction of project leader J.J. Rowe in the U.S. Geological Survey laboratory in Reston, Virginia. Chemical types (C.T.) are taken from Tables 1a, 2a.

Tables 1d, 2d. Major oxide analyses of glasses. Dike glasses (2d) represent rapidly quenched selvages. Flow glasses (1d) may represent pumice, welded spatter, pahoehoe surfaces, and rarely basalt selvages. Analyses were done by Gary R. Byerly and Tim O'Hearn on the electron microprobe at the Dept. of Mineral Sciences, Smithsonian Institution, using methods given by Byerly and others (1977). Chemical type (C.T.)

is assigned from the known stratigraphic position of the sample and/or from similarity of composition to other glasses associated with analysed whole-rock samples of known chemical type.

Table 3. Listing of samples used to define chemical types. Each chemical type is defined from samples in a single mappable stratigraphic unit. Samples preceded by an asterisk (*) are aberrant and are excluded from the calculation of average composition for the chemical type. Two chemical types, FS INC and GR INC, are represented by average compositions of different flows in the Frenchman Springs and Grande Ronde stratigraphic units respectively. Sample numbers to the right of each analysis (e.g., FS 9, GRGF13N2) are coded designations of these averages and thus are not listed in Tables 1 and 2.

EXPLANATORY NOTES FOR THE ABBREVIATIONS AND TERMS GIVEN IN TABLE 1a AND TABLE 2a

S A M P L E N U M B E R

DSTW denotes samples collected by D.A. Swanson, T.L. Wright, R.T. Helz, and G.R. Byerly and numbered serially within the year of collection (e.g., 74-205); C-, samples collected by the late Richard Clem; WT-, samples collected by W.H. Taubeneck.

L O C A T I O N

State	W = Washington, O = Oregon, I = Idaho
County	As labelled
Quadrangle	U.S. Geological Survey 7 1/2' series unless otherwise indicated (e.g., Mesa 15')
Section	Location given to nearest 16th section in most cases (e.g., NW/SW12 = northwest 1/4 of southwest 1/4 of section 12; NW/13 = northwest 1/4 of section 13)
Township (T)	Referred to Willamette Baseline in Washington and Oregon and Boise Baseline in Idaho
Range (R)	Referred to Willamette Meridian in Washington and Oregon and Boise Meridian in Idaho

S T R A T I G R A P H Y

All stratigraphic names are defined in Swanson and others (1979)

Formation (FM)	Abbreviations as follows: SM = Saddle Mountains WP = Wanapum GR = Grande Ronde IM = Imnaha PG = Picture Gorge
Member	Abbreviations as follows: L Mon = Lower Monumental Ice H = Ice Harbor Buford = Buford El Mt = Elephant Mountain Pomona = Pomona Esquat = Esquatzel W Rdg = Weissenfels Ridge Asotin = Asotin W Cr = Wilbur Creek Um = Umatilla Pr Rp = Priest Rapids Roza = Roza Fr Sp = Frenchman Springs Eck Mt = Eckler Mountain
Flow	Local name given where appropriate

C H E M I S T R Y

Method of Analysis	RR = U.S. Geological Survey rock analysis laboratory, Reston, Virginia, except RR-1,2; rapid rock methods under the direction of L. Shapiro and F. Brown XRF = U.S. Geological Survey rock analysis laboratory, Menlo Park, California; X-ray fluorescence methods under the direction of B. Fabbi, J. Christie, and V. Mossotti. WET = U.S. Geological Survey rock analysis laboratory, Denver, Colorado; wet chemical methods under the direction of D. Norton. D-1 = U.S. Geological Survey rock analysis laboratory, Denver, Colorado; qualitative XRF data done under the direction of J. Wahlberg. Partial chemical analyses designated by element(s). (e.g. Ti-, TiK-, K-)

RR-0	Job 10744	Analysis of 8 samples used as standards Analyst: Floyd Brown
RR-1	Job F-246	Analyses using rapid rock methods done in the U.S. Geological Survey rock analysis laboratory, Flagstaff, Arizona Analyst: D. Emmons
RR-2	Job F-250	Analyses using rapid rock methods done in the U.S. Geological Survey rock analysis laboratory, Flagstaff, Arizona Analyst: D. Emmons
RR-3	Job 10879	Analysts: P. Elmore, H. Smith, R. Moore, J. Kelsey, J. Glenn
RR-4	Job 10883	Analysts: P. Elmore, H. Smith, R. Moore, J. Kelsey, J. Glenn
RR-5	Job 11024	Analysts: P. Elmore, H. Smith, J. Kelsey, J. Glenn
RR-6	Job 11055	Analysts: S. Botts, L. Artis
RR-7	Job 11218	Analysts: S. Botts, H. Smith
RR-7a	Job 11407	Analyst: P. Elmore
RR-8	Job 11438	Analyst: P. Elmore

RR-9	Job 11439	Analyst: H. Kirschenbaum
RR-10	Job 11630	Analyst: P. Elmore
RR-11	Job 11495	Analyst: S. Botts
RR-13	Job 11613	Analyst: H. Smith
RR-14	Job 11615	Analyst: L. Artis
RR-15	Job AA95	Note: Analyses given are averages of 4 replicates of each of 3 samples. Compare with XRF-3 Analyst: F. Brown
RR-16	Job AD14	Analyst: H. Smith
RR-17	Job AE18	Analyst: F. Brown
RR-18	Job 11136	Analysts: H. Smith, L. Artis
RR-21	Job AH69	Analyst: F. Brown
RR-22	Job AJ91	Analyst: F. Brown
RR-23	Job AE19	Analyst: F. Brown
RR-24	Job AM80	Analysts: F. Brown, Z. Hamlin
RR-25	Job AM26	Analyst: F. Brown
RR-26	Job AS29	Analysts: Z. Hamlin, F. Brown
XRF-1	Job M2519	Analysts: L. Espos, H. Elsheimer
XRF-2	Job JF18	Analyst: L. Espos

XRF-3	Job JF15	Note: Analyses given are averages of 4 replicates of each of 3 samples. Compare with RR-15 Analyst: L. Espos
XRF-4	Job JH04	Analyst: L. Espos
XRF-6	Job JH99	Analyst: L. Espos
XRF-7	Job JK87	Analyst: L. Espos
XRF-8	Job JK86	Analyst: L. Espos
XRF-9	Job JR14	Analyst: M. Villarreal
XRF-10	Job PN95	Analyst: L. Espos
XRF-11	Job JW61	Analysts: Bi-Shia King, M. Villarreal
WET-0	Job 1088	Analyst: G. Riddle
WET-1	Job 1183	Analyst: E. Engleman, D. Norton
WET-2	Job 1106	Analyst: E. Brandt
PARTIAL ANALYSES		Note: Chemical type identifications are based on stratigraphic information in addition to the analyzed oxide(s)
K-1	Job AS31	Analysts: Z. Hamlin, F. Brown
TiK-1	Job JW72	Analysts: B. King, M. Villarreal
Ti-1	Job JS92	Analysts: B. King, M. Villarreal
Ti-2	Job JW82	Analysts: H. Elsheimer, M. Villarreal

Ti-3 Job AS27 Analyst: Z. Hamlin, F. Brown

Ti-4 Job AS28 Analyst: F. Brown

D-1 Job PI70 Analyst: J. Wahlberg
Note: Analyses are incomplete and qualitative and are treated as partial analyses. The data are not included in Tables 1b, 2b.

Chemical Type (CT) Abbreviations keyed to stratigraphic position as follows:

L MON = Lower Monumental Member

GOOSE = Ice Harbor Member
Goose Island Flows

INDIAN = Ice Harbor Member
Indian Memorial Flow

MARTIN = Ice Harbor Member
Martindale Flows

BASIN = Ice Harbor Member
Basin City Flows

BUFORD = Buford Member

ELEPHANT = Elephant Mountain Member

POMONA = Pomona Member

ESQUAT = Esquatzel Member

SLIP = Weissenfels Ridge Member
Slippery Creek Flow

LEW ORCH = Weissenfels Ridge Member
Lewiston Orchards Flow

ASOTIN = Asotin Member

WILBUR = Wilbur Member

UMATILLA = Umatilla Member

LOLO INC
ROSALIA = Priest Rapids Member = upper flows / lower flows
ROZA = Roza Member

FS INC = Frenchman Springs Member

SHUMAKER = Eckler Mountain Member
Shumaker Creek Flow

DODGE = Eckler Mountain Member
Dodge Flows

ROBIN = Eckler Mountain Member
Robinette Mountain Flow

GR INC = Grande Ronde Basalt undivided

UNC = unclassified; chemistry does not fit any defined chemical type within Yakima Basalt Subgroup.

blank = chemistry corresponds to basalt other than Yakima basalt

Glass	yes = glass analysis available; for samples where only glass has been analyzed, The chemical type is based on stratigraphic position and/or comparison with glass analyses from samples of known chemical type.

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Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
71-3	O	Wallowa	Flora	NE/NE2	5N	44E	SM	Buford		RR-3	BUFORD	
	From quarry, 4020'. Buford flow of Walker (1973).											
71-4	O	Wallowa	Flora	SW/SW26	6N	44E	SM	Um		RR-1	UMATILLA	
	Flow under sediments under 71-3. Roadcut, 3480'.											
71-5	O	Wallowa	Flora	NE/NE26	6N	44E	GR	Eck Mt	Dodge	RR-1	"DODGE"	
	Second flow below soil zone below 71-4. Roadcut, 3280'. Fractionated chemistry.											
71-6	O	Wallowa	Flora	NW/SE14	6N	44E	GR			RR-4	GR INC	
	At Washington-Oregon State line. Roadcut, 2230'.											
71-7	O	Wallowa	Troy	SE/SE30	6N	43E	SM	El Mt	Wenaha	RR-3	ELEPHANT	
	Spectacular cliff-forming Wenaha flow of Walker (1973).											
71-10	O	Union	Medical Springs	SW/SE33	5S	41E	SM			RR-4	UNC	
	Platy "andesite" flow at Frazier lookout.											
71-11	O	Wallowa	Elk Mountain	SW4	2N	45E	GR			RR-4	GR INC	
	Roberts Butte: plateau capping shield, 4020'.											
71-14	O	Wallowa	Elk Mountain	SW/NW4	1N	45E	GR			RR-4	GR INC	yes
	Elk Mountain lookout: plateau capping shield.											
71-15	W	Asotin	Asotin	NW/NE28	10N	46E	SM	Asotin		RR-7	ASOTIN	
	Asotin Grade: flow above flow with pillowed base.											
71-17	W	Asotin	Asotin	NE/SE5	10N	46E	SM	El Mt		RR-4	ELEPHANT	yes
	Intracanyon flow. Upper flow at Swallow Rock.											
71-23	W	Whitman	La Crosse 15'	NE/NE29	17N	40E	WP	Roza		RR-3	"ROZA"	yes
	Altered pumice from roadcut E of Winona, 1520'.											
71-24	W	Whitman	La Crosse 15'	NE/NE29	17N	40E	WP	Roza		RR-3	"ROZA"	yes
	Dikelet in pumice: altered. Same roadcut as 71-23.											
71-25	W	Whitman	La Crosse 15'	NW/SE10	17N	39E	WP	Roza		RR-3	"ROZA"	
	Welded spatter from natural outcrop NW of Winona. Altered chemistry.											
71-27A	I	Idaho	White Bird	NW/SW20	29N	2E	GR		John's Creek	RR-2	GR INC	
	Roadcut at 4010', new White Bird grade.											
71-28A	I	Idaho	White Bird	NW/NE30	29N	2E	GR		Center Creek	RR-2	GR INC	
	Roadcut at 3640', new White Bird grade.											
71-29	I	Idaho	White Bird	NE/NE36	29N	1E	IM			RR-2	UNC	
	Roadcut at 2930', new White Bird grade.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
71-30	I	Idaho	White Bird	SW30	29N	2E	GR		Grave Creek	RR-2	GR INC	
	Roadcut 3180', new White Bird grade.											
71-31	I	Idaho	Moughmer Point	SW/SW18	30N	1E	IM		Rock Creek	RR-0	UNC	
	Standard sample. Type locality, large roadcut, 1580'.											
71-31A	I	Idaho	Moughmer Point	SW/SW18	30N	1E	IM		Rock Creek	WET-0	UNC	
	Same as 71-31.											
71-32A	I	Idaho	Fenn	SW/SW8	30N	1E	GR		Grave Creek	RR-2	GR INC	
	Roadcut 0.2 mi. from mouth of Grave Creek.											
71-33	I	Idaho	Fenn	NE/NW8	30N	1E	GR			RR-2	GR INC	
	Roadcut 1.0 mi. from mouth of Grave Creek.											
71-34	I	Idaho	Fenn	NE/SW5	30N	1E	GR		Center Creek	RR-2	"GR INC"	
	Na20 high. Roadcut 1.3 mi. from mouth of Grave Creek.											
71-35	I	Idaho	Fenn	SW/NE32	31N	1E	GR		Johns Creek	RR-2	"GR INC"	
	Na20 high. Roadcut 3.0 mi. from mouth of Grave Creek.											
71-36	I	Nez Perce	Lewiston Orchards N	SE/NW8	35N	5W	SM	W Rdg	Lewiston Orchards	RR-7	LEW ORCH	
	Thain Rd. Above interbed. Roadcut, 1250'.											
71-37	I	Nez Perce	Lewiston Orchards N	NW/NW8	35N	5W	SM	Asotin		RR-7	ASOTIN	
	Below interbed under 71-36. Roadcut, 1200'.											
71-38	I	Nez Perce	Sweetwater	NE/NE2	34N	4W	SM	Asotin		RR-4	ASOTIN	
	Equals 70-B-245 (Brock and Grolier, 1973). Roadcut, 2330'.											
71-39	I	Nez Perce	Sweetwater	SW/NE10	34N	4W	SM	W Cr		RR-7	WILBUR	
	Highest flow in section. Overlies interbed. Gully N of end of road, 2350'.											
71-40	I	Nez Perce	Sweetwater	SE/NW10	34N	4W	SM	Pr Rp		RR-2	LOLO INC	
	Below interbed under 71-39. Along road, 2200'.											
71-41	I	Nez Perce	Lapwai	SW/SW7	36N	3W	IM		Rock Creek	RR-4	UNC	
	Equals 70-B-217 (Brock and Grolier, 1973); roadcut on Highway 3 near mouth of Potlatch River.											
71-42	I	Clearwater	Ahsahka 15'	NE/SW22	37N	1W	WP	Pr Rp	Lolo Creek	RR-0	LOLO INC	
	Standard sample. Roadcut 2 mi S of Cavendish.											
71-42A	I	Clearwater	Ahsahka 15'	NE/SW22	37N	1W	WP	Pr Rp	Lolo Creek	WET-0	LOLO INC	
	Same as 71-42.											
71-45	I	Nez Perce	Kendrick 15'	NE/SW32	39N	3W	WP	Pr Rp				yes
	Glass only. Collected at site of Brock and Grolier (1973, Table 1b) 70-B-216											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
71-46	I	Nez Perce	Kendrick 15'	NW/NE4	36N	3W	GR			RR-2	GR INC	
	Equals 70-B-262 (Brock and Grolier, 1973). Roadcut, E side of mouth of Cottonwood Creek.											
71-48	I	Idaho	Kooskia	NE/NW28	33N	4E	SM	Asotin		RR-7	ASOTIN	
	Large columns above roadcut exposing interbed, 2770'.											
71-52	I	Lewis	Fletcher	NW19	34N	1E	SM?			RR-7	DODGE	
	Highest flow in section.											
71-54	W	Garfield	Alpowa Ridge	NE/NW15	11N	43E	WP	Roza		RR-3	ROZA	
	Flow with painted letter "E", US 12. Roadcut, 2670'.											
71-54r	W	Garfield	Alpowa Ridge	NE/NW15	11N	43E	WP	Roza		XRF-1	ROZA	
	Same sample as 71-54.											
71-55	W	Garfield	Alpowa Ridge	SW/SW11	11N	43E	GR			RR-3	GR INC	
	Flow with painted letter "F", US 12, underlies 71-54. Roadcut, 2460'.											
71-56	W	Garfield	Alpowa Ridge	NE/SE7	11N	43E	GR			RR-3	GR INC	
	Large cut at curve, US 12, 2370'.											
71-57	W	Garfield	Pomeroy	NW/NW16	11N	42E	WP	Eck Mt	Dodge	RR-1	DODGE	
	Benjamin Gulch section. Under 71-60, 2520'.											
71-58	W	Garfield	Pomeroy	SW/SW8	11N	42E	WP	Fr Sp		RR-1	"FS INC"	
	Benjamin Gulch section. Under 72-52. Equals 72-53. Na2O high, 2270'.											
71-59	W	Garfield	Pomeroy	SE/SW8	11N	42E	WP	Fr Sp		RR-1	FS INC	
	Benjamin Gulch section. Under 72-51, 2350'.											
71-60	W	Garfield	Pomeroy	NW/NW16	11N	42E	WP	Fr Sp		RR-1	FS INC	
	Benjamin Gulch section. Under 72-57. Equals 72-49, 2570'.											
71-61	W	Garfield	Rose Springs	NE8	8N	42E	GR			D-1	GR INC	
	Highest of three prominent cliff-forming flows beneath viewpoint just beyond Teal Spring on road N-814.											
71-64	W	Columbia	Zumwalt	SW/SE12	11N	40E	GR			RR-11	"GR INC"	
	Marengo Grade section. Under 72-69. Fractionated/altered chemistry. Compare with 71-65, 1670'.											
71-65	W	Garfield	Hay 15'	SE/SW23	12N	40E	GR			RR-4	GR INC	
	Small quarry above US 12, 1400'.											
71-66	W	Garfield	Hay 15'	SW/NE16	12N	40E	WP	Eck Mt		RR-4	DODGE	
	Type locality of Dodge flows. Large roadcut, Highway 127, 1500'.											
71-67	W	Garfield	Hay 15'	NW/NW15	12N	40E	WP	Fr Sp		RR-4	UNC	
	Unusual low "FeO", high SiO2, TiO2 chemistry. 2 or 3 flows above 71-66, 1620'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
71-68	W	Franklin	Starbuck 15'	NE/SE25	14N	36E	WP	Fr Sp		RR-3	FS INC	
	Palouse Falls section. Under Roza, over 72-319. Locality 11 (Bingham and Walters,1965), 1910'.											
71-69	W	Franklin	Haas 15'	NW/SE28	14N	36E	WP	Pr Rp		RR-3	LOLO INC	
	Locality 10 (Bingham and Walters,1965). Top of low hill, S side of road, 1320'.											
71-70	W	Whitman	Starbuck 15'	SE/NW34	15N	37E	WP	Fr Sp		RR-3	FS INC	
	Roadcut, 1080'.											
71-72	W	Whitman	Colton	NW/SE26	13N	44E	SM	Um		RR-1	UMATILLA	
	Yakawawa section. Upper flow, 2625'. Roadcut.											
71-73	W	Whitman	Colton	SE/SW26	13N	44E	SM	?		RR-1	UNC	
	Yakawawa section. Under sediments under 71-72. "Andesite", 2630'. Ditch along road.											
71-74	W	Whitman	Colton	SE/SW26	13N	44E	WP	Pr Rp		RR-1	LOLO INC	
	Yakawawa section. Under 71-73, 2500'. Colonnade exposed in creek bed below road.											
71-75	W	Whitman	Colton	SW/SW26	13N	44E	WP	Roza		RR-1	ROZA	
	Yakawawa section. Under 71-74, 2360'. NE side of Yakawawa Canyon.											
71-76	W	Whitman	Colton	SW/SW26	13N	44E	GR			RR-1	GR INC	
	Yakawawa section. Under 71-75, 2330'.											
71-77	W	Whitman	Colton	SW/SW26	13N	44E	GR			RR-1	GR INC	
	Yakawawa section. Under 71-76, 2230'.Prominent cliff 15' above creek bottom.											
71-78	W	Whitman	Bishop	SW/SW26	13N	44E	GR			RR-1	GR INC	
	Yakawawa section. Under 71-77. ,2160'.Falls of Yakawawa Canyon.											
71-79	W	Spokane	Spokane NW	NW27	25N	42E	WP	Pr Rp		RR-7	ROSALIA	
	Roadcut On Geiger Blvd. (Griggs, 1976, table 4, Sample no. 9).											
71-80	W	Adams	Sprague Lake	NW/SW21	21N	38E	SM		Sprague Lake	RR-11	UNC	
	Upper flow, over saprolite and sediments, just outside rest area, NE end of Sprague Lake. Flow related to dike 72-219.											
71-81	W	Adams	Sprague Lake	NW/SW21	21N	38E	WP	Pr Rp		RR-11	LOLO INC	
	Under 71-80,in cuts along I-90.											
71-82	W	Adams	Corfu 15'	NW/NE16	16N	28E	WP	Pr Rp		RR-3	LOLO INC	
	Where road crosses small scarp,730'.											
71-83	W	Adams	Corfu 15'	SW/NW12	16N	28E	WP	Pr Rp		RR-3	ROSALIA	
	Under 71-82.Roadcut,780'.											
71-84	W	Adams	Othello 15'	NW/NW21	16N	29E	SM	W Cr	Warden	RR-4	WILBUR	yes
	Equals 70-B-188 (Brock and Grolier, 1973). Intracanyon remnant.Roadcut.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
71-85	W	Grant	Evergreen Ridge	NE/NE28	18N	23E	WP	Roza		RR-3	ROZA	
	Roadcut, E. end of Frenchman Coulee.											
71-87	W	Franklin	Eltopia 15'	NW/NW23	11N	30E	SM	El Mt		RR-3	ELEPHANT	
	Equals 70-B-184 (Brock and Grolier, 1973). Flow intruded by dike 71-86.											
71-88	W	Franklin	Eltopia 15'	SW/NE28	11N	30E	SM	Ice H	Martindale	RR-3	MARTIN	
	Crest of low hill along dirt road.											
71-89	W	Franklin	Eltopia 15'	NE/NE11	11N	30E	SM	El Mt		RR-4	ELEPHANT	
	Ridgecrest, 680'-700'.											
71-90	W	Franklin	Mesa 15'	NW/NW25	13N	30E	SM	Esquat		RR-4	ESQUAT	
	Equals 70-B-199 (Brock and Grolier, 1973). Upper ledge on NW side of Esquatzel coulee.											
71-93	W	Franklin	Mesa 15'	SW/SE2	14N	29E	WP	Pr Rp		RR-11	LOLO INC	
	N. end of lake, W. side of siphon.											
71-94	W	Franklin	Frischknecht	NE/NE9	13N	31E	WP	Pr Rp		RR-17	LOLO INC	
	Under 71-95 and above Roza. Natural outcrop, near locations 1 and 2 (Bingham and Walters, 1965).											
71-95	W	Franklin	Frischknecht	NE/NE9	13N	31E	SM	El Mt		RR-17	ELEPHANT	
	Flow above 71-94.											
71-96	W	Franklin	Sulphur Lake	SE/NW7	13N	33E	WP	Pr Rp		RR-3	LOLO INC	
	Flow over Roza. Roadcut just W of curve at milepost 14, Highway 260.											
71-97	W	Franklin	Sulphur Lake	NW/NE11	13N	33E	WP	Fr Sp		RR-3	FS INC	
	Flow with oxidized top under Roza. , 1130'. Roadcut.											
71-98	W	Franklin	Sulphur Lake	SE/SE2	13N	33E	WP	Fr Sp		RR-3	FS INC	
	Flow under 71-97. , 1055'. Roadcut 200' W of milepost 21.											
71-99	W	Franklin	Kahlotus	SW/SW1	13N	33E	WP	Fr Sp		RR-3	FS INC	
	Flow under 71-98. , 990'. Lowest roadcut, 200' E of milepost 21.											
71-100	W	Franklin	Lower Monumental Dam	SE/SW9	13N	34E	WP	Fr Sp		RR-2	FS INC	
	Devil's Canyon section; equals 72-139. Under 72-138. , 920'.											
71-101	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E	SM	El Mt		RR-2	ELEPHANT	
	Talus below intracanyon flow, Devil's Canyon.											
71-102	W	Franklin	Lower Monumental Dam	SE/SW27	13N	34E	WP	Fr Sp		RR-1	FS INC	
	Devil's Canyon section. Flow under 72-141. , 680'. Small mesa, E. of road.											
71-103	W	Franklin	Lower Monumental Dam	NW/SW34	13N	34E	GR			RR-1	GR INC	
	Devil's Canyon section. Uppermost flow of Grande Ronde basalt. Under 72-142. Roadcut, 550'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
71-104	W	Franklin	Levey SW	SW/SE29	10N	31E	SM	Ice H	Goose Island	RR-0	GOOSE	
	Equals 70-B-183 (Brock and Grolier, 1973). Standard sample.Quarry.											
71-104A	W	Franklin	Levey SW	SW/SE29	10N	31E	SM	Ice H	Goose Island	WET-0	GOOSE	
	Same as 71-104.											
71-105	W	Yakima	Pomona	SE/NW9	14N	19E	WP	Roza		RR-0	ROZA	
	Standard sample. S entrance to tunnel on old Canyon Road.											
71-105A	W	Yakima	Pomona	SE/NW9	14N	19E	WP	Roza		WET-0	ROZA	
	Same as 71-105.											
71-106	W	Yakima	Pomona	NE/NE17	14N	19E	SM	Pomona		RR-0	POMONA	
	Standard sample. Type locality.Roadcut,E side of Canyon Road.											
71-106A	W	Yakima	Pomona	NE/NE17	14N	19E	SM	Pomona		WET-0	POMONA	
	Same as 71-106.											
71-107	W	Yakima	Hembre Mt.	SW/SW33	10N	20E	SM	El Mt		RR-0	ELEPHANT	
	Standard sample. Small quarry 50 m.E of Highway 97.											
71-107A	W	Yakima	Hembre Mt.	SW/SW33	10N	20E	SM	El Mt		WET-0	ELEPHANT	
	Same as 71-107.											
71-108	W	Walla Walla	Humorist	SE/SW24	9N	31E	SM	Ice H	Martindale	RR-1	MARTIN	
	Overlies bedded cinder and spatter. 0.5 miles S of Ice Harbor Dam.											
71-109	W	Walla Walla	Humorist	SE/NW24	9N	31E	SM	El Mt		RR-1	ELEPHANT	
	Under cinders under 71-108, 150 yds S of Ice Harbor Dam.											
71-111	W	Walla Walla	Humorist	SW/SW23	9N	31E	SM	El Mt		RR-1	ELEPHANT	
	Under 71-110. 200 yds.W of 71-110.											
71-112	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Goose Island	RR-1	"GOOSE"	
	Flow fed by dike 71-113. Below Tiger Trig.FeO high,SiO2 low.											
71-114	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Martindale	RR-0	MARTIN	
	Standard sample. Under 71-112. Cut by dike 71-113.											
71-114A	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Martindale	WET-0	MARTIN	
	Same as 71-114.											
71-115	W	Franklin	Levey SE	SE/SE7	9N	32E	SM	Pomona		RR-1	POMONA	yes
	Under 71-116. RR-1 cut 1 mi. SW of Levey.											
71-116	W	Franklin	Levey SE	SW/NE18	9N	32E	SM	El Mt		RR-1	ELEPHANT	
	Cut by dike 71-117. RR cut 1.5 mi. SW of Levey.											

Table 1a. Sample information for DSIW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
71-119	W	Franklin	Levey SE	NW/NE9	9N	32E	WP	Fr Sp		RR-4	FS INC	
	20' above RR-4 cut at end of Jeep road to light.											
71-120	W	Franklin	Levey SE	NW/NE9	9N	32E	WP	Fr Sp		RR-4	FS INC	
	Under 71-119.											
71-121	W	Franklin	Eltopia 15'	NE/SE22	11N	30E	SM	Ice H	Basin City	RR-2	'BASIN'	
	Flow capping two mesas W of canal and 2.5 mi S of Eltopia. Al203 low.											
71-122	W	Franklin	Levey SE	NW/SW8	9N	32E	SM	El Mt		RR-2	ELEPHANT	
	Upper flow just off road. ~620'.											
71-123	W	Franklin	Levey SE	SE/SE34	10N	32E	WP	Fr Sp		RR-7	FS INC	
	East of Dalton Lake.											
71-124	W	Franklin	Levey SE	SW/SE27	10N	32E	SM	El Mt		RR-4	ELEPHANT	
	Uppermost flow.											
71-125	W	Benton	Umatilla	SE/SE 4	5N	28E	SM	Um		RR-0	UMATILLA	
	Type locality equals 70-B-180 (Brock and Grolier, 1973). Standard sample. RR cut.											
71-125A	W	Benton	Umatilla	SE/SE 4	5N	28E	SM	Um		WET-0	UMATILLA	
	Same as 71-125.											
71-127	W	Benton	Prosser	SW/NE20	8N	24E	SM	Pomona		RR-4	POMONA	
	Under sediments in gully at Ward Gap. ~1470'.											
71-128	W	Benton	Prosser	SE/NE20	8N	24E	SM	Pomona		RR-4	POMONA	
	Steeply dips toward Ward Gap. Site of 70-B-179 (Brock and Grolier, 1973).											
71-129	W	Yakima	Logy Creek NE	NW34	8N	18E	WP	Roza				yes
	Glass only. collected at site of Brock and Grolier (1973, Table 1B) 70-B-12.											
71-135	O	Grant	Picture Gorge 15'	SE/NE18	12S	26E	PG			RR-4	UNC	
	Picture Gorge type section. Second flow from base. 70-B-139 (Brock and Grolier, 1973).											
71-137	O	Grant	Kimberley 15'	NE/SW 3	9S	26E	PG			RR-4	UNC	
	Portuguese Creek Road. ~3040'. Cut by phyric dike.											
71-138	O	Grant	Kimberley 15'	NE/NE35	8S	26E	PG			RR-4	UNC	
	Road to Ant Hill. ~3950'.											
71-139	O	Grant	Kimberley 15'	NW/SW13	8S	26E	PG			RR-4	UNC	
	Upper flow capping Ant Hill.											
71-140	O	Grant	Kimberley 15'	SE/NW18	8S	26E	PG?			RR-4	GR INC	
	Upper flow, Tamarack Mt. lookout.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
71-141	O	Wheeler	Kinzua 15'	SE/NE18	9S	23E	PG			RR-4	UNC	
	Lowest flow in Service Creek. Prominent platy jointing. Roadcut, ~1760'.											
71-142	O	Wheeler	Buckhorn Canyon	NE/NE27	6S	20E	GR			RR-2	"GR INC"	
	Na20 high. Top of hill, 3750', SW of Butte Creek road.											
71-143	O	Wheeler	Buckhorn Canyon	NE/SE15	6S	20E	GR			RR-2	GR INC	
	Butte Creek section. Under 72-334. ~2270'. Large columns, N side of Butte Creek.											
71-144	O	Wheeler	Buckhorn Canyon	NW/NE15	6S	20E	GR			RR-2	GR INC	
	Butte Creek section. Under sediments under 71-146. Above 71-143.											
71-146	O	Wheeler	Buckhorn Canyon	NW/NE15	6S	20E	GR		Buckhorn	RR-2	UNC	
	Butte Creek section. Prineville chemical type (Uppuluri, 1975). Over 71-144. Complex cooling unit, N valley wall.											
71-147	O	Wheeler	Buckhorn Canyon	SW/SE10	6S	20E	GR			RR-2	GR INC	
	Butte Creek section. Upper exposed flow along road.											
71-148	O	Wheeler	Buckhorn Canyon	NE/SE7	6S	20E	GR			RR-2	GR INC	
	Butte Creek section. Same flow as 71-143. Overlies tuffaceous sediments in road.											
71-149	O	Wheeler	Chimney Springs	SE/SE12	6S	19E	PG		Butte Creek	RR-2	UNC	
	Butte Creek section. Under 71-148. Equals 72-139. Spectacular horizontal columner jointing.											
71-150	O	Wheeler	Chimney Springs	NE/NW10	6S	19E	PG	.		RR-2	GR INC	
	Butte Creek Section. Phyric flow under 72-338. Equals 72-337. Roadcut S of Butte Creek.											
71-151	O	Wheeler	Chimney Springs	NW/NE9	6S	19E	PG			RR-2	UNC	
	Butte Creek section. Under 72-336. Organ pipe colonnade, S wall of valley.											
71-152	O	Wasco	Antelope 15'	SW/SW20	7S	17E	GR			RR-4	GR INC	
	Overlies John Day Fm. on top of Antelope Grade S of Shaniko. Quarry.											
72-20	W	Garfield	Almota	NE/SE1	13N	42E	WP	Roza				yes
	Glass only. Spatter between two Roza flow units, roadcut. Low Na20.											
72-21	W	Garfield	Almota	NW/NE1	13N	42E	WP	Fr Sp		RR-6	FS INC	yes
	Casey Creek. Flow under Roza. Roadcut, 1950'.											
72-22	W	Garfield	Almota	NW/NW1	13N	42E	GR			RR-6	GR INC	
	Casey Creek. Under 72-185. Roadcut, 1830'.											
72-26	W	Whitman	Silcott	SW/SW15	11N	45E	GR			RR-7	GR INC	
	Phyric flow, Lewiston monocline. Roadcut in flatiron dipping 50 degrees.											
72-30	W	Whitman	Ewartsville	SW/NW10	13N	44E	WP	Pr Rp		RR-6	LOLO INC	
	Flow below saprolite below 72-31. Small roadcut below quarry.											

Table 1a. Sample information for DSIW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-31	W	Whitman	Ewartsville	SW/NW10	13N	44E	SM	Asotin		RR-6	ASOTIN	
	Above saprolite on 72-30. In small quarry.											
72-33	W	Whitman	Ewartsville	NE/SW6	14N	44E	WP	Pr Rp		RR-6	LOLO INC	
	Roadcut.											
72-36	W	Whitman	Almota	NW/NW12	14N	42E	GR					yes
	Glass only. Welded spatter below base of flow at curve in road.											
72-39	W	Whitman	Hay 15'	NE/NW21	14N	40E	WP	Pr Rp		RR-5	LOLO INC	
	Overlies 1.5' silicic tuff over Roza. Small quarry W of Highway 127 S of curve.											
72-40A	W	Asotin	Clarkston	NE/NE23	11N	45E	SM	Pomona		RR-5	POMONA	
	Intracanyon flow. W of Clarkston, roadcut along U.S. 12.											
72-41	W	Asotin	Silcott	NE/NW22	11N	45E	GR			RR-11	GR INC	
	Uppermost flow in section cut by 72-40A, 1220'.											
72-42	W	Garfield	Alpowa Ridge	SW/SE11	11N	43E	GR			RR-6	GR INC	
	Flow with painted letter "I". Roadcut along U.S. 12, 2320'. Under 72-43.											
72-43	W	Garfield	Alpowa Ridge	NE/NW14	11N	43E	GR			RR-6	GR INC	
	Flow with painted letter "H". Roadcut along U.S. 12, 2350'. Under 72-44.											
72-44	W	Garfield	Alpowa Ridge	SW/SW11	11N	43E	GR			RR-6	GR INC	
	Flow with painted letter "G". Roadcut along U.S. 12 ,2380'. Under 71-55.											
72-45	W	Garfield	Alpowa Ridge	SW/NE13	11N	42E	GR			RR-6	"GR INC"	
	Rickman Gulch,roadcut,2650'.P205 high,probably bad analysis.											
72-47	W	Garfield	Pomeroy	SE/SW22	11N	42E	WP	Roza		RR-7	ROZA	
	Rickman Gulch,roadcut,3000'.											
72-48	W	Garfield	Pomeroy	SE/NW16	11N	42E	WP	Fr Sp		RR-6	FS INC	
	Benjamin Gulch section. Under sediments under Roza. Roadcut,2660'.											
72-49	W	Garfield	Pomeroy	NW/NW16	11N	42E	WP	Fr Sp		RR-6	FS INC	
	Benjamin Gulch section. Equals 71-60. Under 72-57. Roadcut,2570'.											
72-50	W	Garfield	Pomeroy	SE/SE8	11N	42E	WP	Eck Mt	Dodge	RR-6	DODGE	
	Benjamin Gulch section. Under 71-57. Roadcut,2490'.											
72-51	W	Garfield	Pomeroy	SE/SE8	11N	42E	GR			RR-6	GR INC	
	Benjamin Gulch section. Under 72-50. Roadcut,2440'.											
72-52	W	Garfield	Pomeroy	SE/SW8	11N	42E	WP	Eck Mt	Dodge	RR-6	DODGE	
	Benjamin Gulch section. Under 71-59. Roadcut, ,2320'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-53	W	Garfield	Pomeroy	SW/SW8	11N	42E	WP		Fr Sp	RR-6		"FS INC"
	Benjamin Gulch section. Under 72-52. Equals 71-58. P205 high. Roadcut, ,2270'.											
72-54	W	Garfield	Pomeroy	SW/SW8	11N	42E	WP		Fr Sp	RR-6		FS INC
	Benjamin Gulch section. Under 72-53. Roadcut,2230'.											
72-55	W	Garfield	Pomeroy	NW/NW8	11N	42E	WP		Fr Sp	RR-6		FS INC
	Benjamin Gulch section. Under 72-54. Outcrop along creek, ,2070'.											
72-56	W	Garfield	Pomeroy	SW/SW5	11N	42E	WP		Fr Sp	RR-6		FS INC
	Benjamin Gulch section. Probably equivalent to 72-54. Roadcut,2060'.											
72-57	W	Garfield	Pomeroy	NW16	11N	42E	WP		Fr Sp	RR-6		FS INC
	Benjamin Gulch section. Under 72-48. Roadcut,2630'.											
72-59	W	Garfield	Zumwalt	SE/SE15	11N	41E	GR			RR-6		GR INC
	1940', cut along Tatman Mt. road.											
72-60	W	Columbia	Zumwalt	NE/NE12	11N	40E	WP		Roza	RR-7		ROZA
	Marengo Grade section. Upper flow. Roadcut,2170'.											
72-61	W	Columbia	Zumwalt	SE/NE12	11N	40E	WP		Fr Sp	RR-6		FS INC
	Marengo Grade section. Under 72-60. Roadcut,2130'.											
72-62	W	Columbia	Zumwalt	SE/NE12	11N	40E	WP		Fr Sp	RR-6		FS INC
	Marengo Grade section. Under 72-61. Roadcut,2100'.											
72-63	W	Columbia	Zumwalt	SE/NE12	11N	40E	WP		Fr Sp	RR-6		FS INC
	Marengo Grade section. Under 72-62. Roadcut,2090'.											
72-64	W	Columbia	Zumwalt	SE/NE12	11N	40E	WP		Fr Sp	RR-6		FS INC
	Marengo Grade section. Under 72-63. Roadcut below spring,2030'. Much thicker than higher flows.											
72-65	W	Columbia	Zumwalt	NW/SE12	11N	40E	WP	Eck Mt	Dodge	RR-6		DODGE
	Marengo Grade section. Under 72-64. Outcrop on hill,above grusy roadcut,1950'. Coarse-grain,phyric.											
72-66	W	Columbia	Zumwalt	NW/SE12	11N	40E	GR			RR-6		GR INC
	Marengo Grade section. Under 72-65. Roadcut,1920'.											
72-67	W	Columbia	Zumwalt	SW/NE12	11N	40E	GR			RR-6		GR INC
	Marengo Grade section. Under 72-66. Roadcut,1910'. Overlies oxidized vesicular zone.											
72-68	W	Columbia	Zumwalt	NW/SE12	11N	40E	GR			RR-6		GR INC
	Marengo Grade section. Under 72-67. Roadcut,1835'.											
72-69	W	Columbia	Zumwalt	SW/SE12	11N	40E	GR			RR-6		GR INC
	Marengo Grade section. Under 72-68. Roadcut at Switchback,1710'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FMI	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-70	W	Columbia	Zumwalt	SW/SE12	11N	40E	GR			RR-6	GR INC	
Marengo Grade section. Under 71-64. Roadcut,1600'. Lowest flow exposed along road.												
72-71	W	Garfield	Hay 15'	SW/NW16	12N	40E	GR			RR-6	GR INC	
Under 71-66. Roadcut,1340'.												
72-72A	W	Garfield	Hay 15'	SW/NW16	12N	40E	WP	Fr Sp		RR-6	UNC	
Thin flow units above 71-66. Unusual low "FeO", high SiO2, TiO2 chemistry. Roadcut,1570'.												
72-72D	W	Garfield	Hay 15'	SW/NW16	12N	40E	WP	Fr Sp		RR-6	UNC	
Auto intrusive dikelet cutting 72-72A; similar chemistry. Under 71-67.												
72-73	W	Garfield	Hay 15'	SE/NE14	12N	40E	WP	Fr Sp		RR-7	UNC	
Under Roza (72-74); similar chemistry. Culvert along road,1880'.												
72-74	W	Garfield	Penewawa 15'	SE/SW13	12N	40E	WP	Roza		RR-11	ROZA	
Roadcut,crest of low rise,2000'.												
72-75	W	Columbia	Turner	SE/SW18	11N	40E	WP	Roza		RR-7	ROZA	
Roadcut along gulley, 2000'.												
72-76	W	Columbia	Turner	SE/SW18	11N	40E	WP	Fr Sp		RR-6	FS INC	
In gully under 72-75, 1980'.												
72-77	W	Columbia	Turner	SE/SW18	11N	40E	WP	Fr Sp		RR-6	FS INC	
In gully under 72-76, 1940'.												
72-78	W	Columbia	Turner	SE/SW18	11N	40E	WP	Fr Sp		RR-6	FS INC	
In gully under 72-77, 1870'.												
72-79	W	Columbia	Turner	SW/SW18	11N	40E	WP	Fr Sp		RR-6	FS INC	
In gully under 72-78, 1805'.												
72-80	W	Columbia	Turner	SW/SW18	11N	40E	WP	Fr Sp		RR-6	"FS INC"	
In gully under 72-79. High CaO, 1800'.												
72-81	W	Columbia	Turner	NE/SE24	11N	40E	WP	Fr Sp		D-1	FS INC	
Roadcut, 2280', along Willow Creek E of Turner.												
72-82	W	Columbia	Turner	NE/NW13	11N	40E	GR			RR-6	GR INC	
Marengo Grade section. Under 72-70. Roadcut,1510',S side of Tucannon River.												
72-83	W	Columbia	Hopkins Ridge	NE/SW3	10N	41E	WP	Eck Mt	Dodge	RR-6	DODGE	
Blind Grade,roadcut,2860'.												
72-84	W	Columbia	Hay 15'	NE-SW18	12N	39E	WP	Roza		RR-7	ROZA	
Private Road section. Upper flow. Outcrop on hill slope W of road,1600'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-85	W	Columbia	Hay 15'	SE/NW1	12N	38E	WP	Fr Sp		RR-6	FS INC	
	Private Road section. Bed of small creek along road,1580'. Under 72-84.											
72-86	W	Columbia	Hay 15'	SE/NW1	12N	38E	WP	Fr Sp		RR-6	FS INC	
	Private Road section. Under 72-85. ,1570'.											
72-87	W	Columbia	Starbuck 15'	SW/NW1	12N	38E	WP	Fr Sp		RR-6	FS INC	
	Private Road section. Under 72-86. Creek bed,1530'.											
72-88	W	Columbia	Starbuck 15'	NE/SE2	12N	38E	GR			RR-6	GR INC	
	Private Road section. Under 73-108. Creek bed,1330'.											
72-89	W	Columbia	Starbuck 15'	NW/NW11	12N	38E	GR			RR-6	GR INC	
	Private Road section. Under 72-88. Creek bed,1230'.											
72-90	W	Columbia	Starbuck 15'	NE/SE27	13N	38E	SM	Pomona		RR-5	POMONA	
	Intracanyon flow. ,850'.											
72-91	W	Garfield	Hay 15'	SW/SE18	12N	40E	WP	Fr Sp		RR-6	FS INC	
	Roadcut,1610'.											
72-92	W	Garfield	Hay 15'	CENTER18	12N	40E	WP	Fr Sp		RR-6	"FS INC"	
	Under 72-91. Over Dodge flow (not collected). Roadcut,1510'.CaO low.											
72-93	W	Garfield	Hay 15'	SW/NE18	12N	40E	GR			RR-6	GR INC	
	Under Dodge flow. Just E of road,1450'.											
72-94	W	Columbia	Cahill Mountain	NE/SW4	10N	40E	WP	Fr Sp		RR-11	"FS INC"	
	K2O low. Roadcut,2680'.											
72-95	W	Columbia	Cahill Mountain	NW/SE4	10N	40E	WP	Roza		RR-11	ROZA	
	Over 72-94. Roadcut,2720'.											
72-96	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	GR			RR-6	GR INC	
	N. Patit Creek section. Under 72-97. Hillslope,4200'.											
72-97	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	GR			RR-6	GR INC	
	N. Patit Creek section. Under 72-98. Hillslope,4280'.											
72-98	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	WP	Eck Mt	Dodge	RR-6	DODGE	
	N. Patit Creek section. Under 72-99. Hillslope,4430'.											
72-99	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	WP	Eck Mt	Dodge	RR-6	DODGE	
	N. Patit Creek section. Under 72-100. Hillslope,4480'.											
72-100	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	WP	Fr Sp		RR-6	FS INC	
	N. Patit Creek section. Under 72-101. Hillslope,4500'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-101	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	WP	Fr Sp		RR-6	FS INC	
	N. Patit Creek section. Under 72-102. Hillslope,4530'.											
72-102	W	Columbia	Hopkins Ridge	NE/NW9	9N	41E	WP	Roza		RR-7	ROZA	
	N. Patit Creek section. Uppermost flow. Hillslope,4570'.											
72-103	W	Columbia	Eckler Mountain	NW/NE23	9N	40E	GR			D-1	GR INC	
	Flow along Kendall Skyline road, 4410'.											
72-104	W	Columbia	Cahill Mountain	NE/SW3	10N	40E	WP	Eck Mt	Robinette Mountain	RR-6	ROBIN	
	Curve in road near creek,2860'.											
72-105	W	Columbia	Cahill Mountain	NE/NE23	9N	40E	WP	Eck Mt	Dodge	RR-5	DODGE	
	Patrick Grade section. Uppermost flow. Outcrop in road,4470'.											
72-106	W	Columbia	Cahill Mountain	NW/NW24	9N	40E	GR			RR-6	GR INC	
	Patrick Grade section. Under 72-105. Roadcut,4440'.											
72-107	W	Columbia	Cahill Mountain	NW/NW24	9N	40E	GR			RR-6	GR INC	
	Patrick Grade section. Under 72-106. Roadcut,4370'.											
72-108	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			RR-6	GR INC	
	Patrick Grade section. Under 74-48. Roadcut,4270'. Thick flow.											
72-109	W	Columbia	Eckler Mountain	NW/NE26	9N	40E	WP	Eck Mt	Dodge	RR-11	DODGE	
	Patrick Grade section. Over 75-224. Roadcut,4580'.											
72-110	W	Columbia	Godman Spring	NE/SE10	7N	40E	WP	Fr Sp		RR-6	FS INC	
	Godman Trig section. Upper flow. Over 73-215. ,5870'. At trig. station.											
72-112	W	Columbia	Starbuck 15'	SE/SE9	12N	38E	GR			RR-6	GR INC	
	Roadcut,950'.											
72-113	W	Columbia	Huntsville	SW/NE29	10N	38E	WP	Fr Sp		RR-11	FS INC	
	Roadcut,1770'.											
72-114	W	Columbia	Huntsville	SW/NE29	10N	38E	WP	Fr Sp		RR-11	FS INC	
	Over 72-113. ,1800'.											
72-115	W	Columbia	Waitsburg	NE/SE3	10N	37E	WP	Roza		RR-11	ROZA	
	Roadcut,1780'.											
72-116	W	Columbia	Waitsburg	SW/NE3	10N	37E	WP	Roza		RR-11	ROZA	
	Over 72-116. Hillslope,1880'.											
72-117	W	Columbia	Waitsburg NW	SW/SW10	11N	37E	WP	Fr Sp		RR-11	"FS INC"	
	Low MgO . Roadcut,1700'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-118	W	Columbia	Waitsburg NW	NW/SE9	11N	37E	WP	Fr Sp		RR-11	FS INC	
	Under 72-117. Roadcut, 1580'.											
72-119	W	Columbia	Waitsburg NW	NW/NE8	11N	37E	WP	Fr Sp		RR-11	FS INC	
	Under 72-118. Creekbed, 1520'.											
72-120	W	Columbia	Robinette Mountain	SE/NW22	9N	39E	WP	Eck Mt	Robinette Mountain	RR-6	ROBIN	
	Roadcut directly beneath power line, 2860'.											
72-121	W	Columbia	Godman Spring	SE/SE7	7N	40E	GR			RR-6	GR INC	
	Touchet Corral. Roadcut, 4320'.											
72-126	W	Columbia	Waitsburg	NW/SW10	10N	37E	WP	Roza		RR-11	ROZA	
	Creek bed, 1815'. Upper of two similar flows.											
72-127	W	Columbia	Waitsburg NW	NE/NE5	10N	37E	WP	Fr Sp		RR-11	UNC	
	Unclassified low FeO, high SiO2, TiO2 chemistry. Along road, 1840'.											
72-132	W	Franklin	Kahlotus	NE/NE8	13N	34E	WP	Pr Rp		RR-6	LOLO INC	
	Devils Canyon section. Uppermost flow. Roadcut, elevation approx. 1300'.											
72-133	W	Franklin	Kahlotus	SE/SE5	13N	34E	WP	Roza		RR-7	ROZA	
	Devils Canyon section. Under 72-132. Roadcut, elevation approx. 1180'.											
72-133F	W	Franklin	Kahlotus	SE/SE5	13N	34E	WP	Roza		XRF-1	ROZA	
	Same flow and location as 72-133.											
72-133A	W	Franklin	Kahlotus	SW/SW4	13N	34E	WP	Roza		RR-7	ROZA	
	Devils Canyon section. Under 72-133. Hillslope, elevation approx. 1100'.											
72-134	W	Franklin	Kahlotus	SE/SW4	13N	34E	WP	Fr Sp		RR-6	FS INC	
	Devils Canyon section. Under 72-133A. Roadcut, elevation approx. 1060'.											
72-135	W	Franklin	Kahlotus	SW/SE4	13N	34E	WP	Fr Sp		RR-6	"FS INC"	
	Devils Canyon section. Under 72-134. CaO, K2O low; P2O5 high. Roadcut, elevation approx. 1010'.											
72-136	W	Franklin	Kahlotus	NE/SW9	13N	34E	WP	Fr Sp		RR-6	FS INC	
	Devils Canyon section. Under 72-135. Roadcut, elevation approx. 980'.											
72-137	W	Franklin	Lower Monumental Dam	NE/SW9	13N	34E	WP	Fr Sp		RR-6	FS INC	
	Devils Canyon section. Under 72-136. Pinches out down section. Roadcut, elevation approx. 970'.											
72-138	W	Franklin	Lower Monumental Dam	NE/SW9	13N	34E	WP	Fr Sp		RR-6	FS INC	
	Devils Canyon section. Under 72-137. Roadcut, elevation approx. 960'.											
72-139	W	Franklin	Lower Monumental Dam	SE/SW9	13N	34E	WP	Fr Sp		RR-6	"FS INC"	
	Devils Canyon section. Under 72-138. Roadcut, elevation approx. 930'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-140	W	Franklin	Lower Monumental Dam	SW/NE16	13N	34E	WP	Fr Sp		RR-6		"FS INC"
	Devils Canyon section. Under 72-139. Phyric. Roadcut, elevation approx. 905'. SiO2 low.											
72-140A	W	Franklin	Lower Monumental Dam	SE/NE21	13N	34E	WP	Fr Sp		RR-6		FS INC
	Devils Canyon section. Same flow as 72-140. Phyric. Roadcut, elevation approx. 890'.											
72-141	W	Franklin	Lower Monumental Dam	NW/NW27	13N	34E	WP	Fr Sp		RR-6		FS INC
	Devils Canyon section. Probably same flow as 72-140, 140A. Phyric. Roadcut, elevation approx. 760'.											
72-142	W	Franklin	Lower Monumental Dam	NW/SW34	13N	34E	WP	Fr Sp		RR-6		FS INC
	Devils Canyon section. Under 71-102. Phyric. Roadcut, elevation approx. 580'.											
72-143A	W	Franklin	Lower Monumental Dam	NW/SW22	13N	34E	SM	Pomona		RR-5		POMONA
	Intracanyon flow. Devils Canyon. Quarry. Elevation=780'.											
72-144	W	Franklin	Lower Monumental Dam	NW/SW22	13N	34E	SM	El Mt		RR-5		ELEPHANT
	Intracanyon flow. Devils Canyon. Younger than 72-143A. ,990'.											
72-145	W	Walla Walla	Lower Monumental Dam	NW/SE3	12N	34E	SM	L Mon		RR-6		"LM"
	Overlies Gravel S of Lower Monumental Dam. Low SiO2, high "FeO". Type locality. Roadcut, 710'.											
72-145F	W	Walla Walla	Lower Monumental Dam	NW/SE3	12N	34E	SM	L Mon		XRF-1		LM
	Same flow and location as 72-145.											
72-146	W	Asotin	Weissenfels Ridge	CENTER 5	8N	46E	SM	Buford		XRF-7		BUFORD
	Overlies vitric tuff in roadcut.											
72-147	W	Asotin	Weissenfels Ridge	CENTER 5	8N	46E	SM	W Rdg	Slippery Creek	XRF-7		SLIP
	Under vitric tuff under 72-146 in roadcut.											
72-149	W	Asotin	Mountain View	NW/SW1	7N	44E	WP	Roza		RR-17		"ROZA"
	Platy flow that forms Anatone Butte. Na2O high. Roadcut at cattle guard.											
72-150	W	Asotin	Mountain View	NW/SW1	7N	44E	WP	Roza		RR-7		ROZA
	Under 72-149. Hillslope, 4760'.											
72-150F	W	Asotin	Mountain View	NW/SW1	7N	44E	WP	Roza		XRF-1		ROZA
	Same flow and location as 72-150.											
72-151	W	Asotin	Anatone Butte	NW/SW1	7N	44E	GR			RR-7		GR INC
	Under 72-150. Hillslope, 4760'.											
72-152	W	Asotin	Mountain View	NW/SW4	7N	44E	WP	Eck Mt	Shumaker Creek	RR-11		SHUMAKER
	Over sediments, W of Anatone Butte. Roadcut .3 mi W of Hostetler Spring.											
72-154	W	Garfield	Peola	SE/SE13	10N	42E	WP	Eck Mt	Dodge	RR-10		DODGE
	Hillslope just E of Kimble Rd, 3640'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-155	W	Asotin	Stember Creek	NE/SE35	11N	44E	WP	Pr Rp	Lolo	RR-5	LOLO INC	
Crest of Flerchinger Ridge. Over Roza (not collected). ,2150'.												
72-156	W	Asotin	Potter Hill	SE/SE8	10N	44E	GR			RR-11	GR INC	
Flerchinger Ridge. Under Roza. 4 mi SW of 72-155, 2650'.												
72-158	W	Asotin	Potter Hill	SW/NW21	10N	44E	WP	Pr Rp	Lolo	RR-6	LOLO INC	
Pleasant Ridge. Roadcut,2900'.												
72-159A	W	Asotin	Potter Hill	NW/NW30	10N	44E	WP	Roza		RR-7	ROZA	
Vent, Potter Hill. Glassy, flow-banded flow. Quarry.												
72-159B	W	Asotin	Potter Hill	NW/NW30	10N	44E	WP	Roza		RR-7	"ROZA"	
Vent, Potter Hill. Auto-intrusive dike cutting 72-159A. Altered rock. Roadcut 100 m S of 72-159A.												
72-160	W	Garfield	Pomeroy	SE/NE32	12N	42E	WP	Roza		RR-7	ROZA	
Pomeroy quarry,2160'.												
72-161	W	Garfield	Pomeroy	SE/NE32	12N	42E	WP	Roza		RR-7	ROZA	
Over 72-160. Associated with vent material. ,2200'.												
72-162	W	Garfield	Pomeroy	SE/NE32	12N	42E	WP	Fr Sp		RR-7	FS INC	
Under 72-160. Roadcut,2060'.												
72-163	W	Garfield	Pomeroy	SE/NE32	12N	42E	SM	Um		RR-6	UMATILLA	
Over 72-161. Roadcut,2250'.Upper flow in section.												
72-166	W	Garfield	Peola	NW/SE7	9N	44E	GR			D-1	GR INC	
Ridge N of Lick Creek.												
72-167	W	Asotin	Pinkham Butte	NW/SW35	8N	43E	WP	Eck Mt	Dodge	RR-7	DODGE	
Over red clay, 1 mi NW of Wenatchee Guard Station at junction to Cold Spring. Along road,5440'.												
72-168	W	Asotin	Saddle Butte	NE/NE2	7N	43E	WP	Eck Mt	Shumaker Creek	RR-5	SHUMAKER	
Wenatchee Guard Station. Over Dodge flow. Top of hill,5490'.												
72-169	W	Asotin	Mountain View	NW/NW20	7N	44E	WP	Roza		RR-7	ROZA	
Steeply dipping sequence on Sawtooth Ridge. ,3670',roadcut just above switchback. Overlies Dodge(not analyzed).												
72-169F	W	Asotin	Mountain View	NW/NW20	7N	44E	WP	Roza		XRF-1	ROZA	
Same locality and flow as 72-169.												
72-170	W	Asotin	Mountain View	NW/NW20	7N	44E	WP	Eck Mt		RR-7	UNC	
Under 72-169. Unusual Chemistry: FeO too low, K2O too high for SHUMAKER. Exposed in trench.												
72-171	W	Asotin	Mountain View	SW/SW20	7N	44E	SM	Buford		RR-6	"BUFORD"	
SiO2 low, FeO high . Cliff N of road,3260'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-172	W	Asotin	Fields Spring	SW/SE21	7N	45E	SM	Um		RR-11	"UMATILLA"	
	Low MgO fractionated chemistry. Puffer trig. station,4271'.											
72-173	W	Garfield	Stember Creek	NE/NE26	12N	43E	WP	Pr Rp		RR-6	"LOLO INC"	
	Over woody sediments over Roza. Untypically low MgO chemistry. Lowell Grade Road. Roadcut,2540'.											
72-174	W	Garfield	Stember Creek	SE/SE27	12N	44E	SM	Um		RR-6	UMATILLA	
	Clayton Gulch. Small gully E of road,2630'.											
72-175	W	Garfield	Stember Creek	SE/SE27	12N	44E	SM	Um		RR-6	UMATILLA	
	Clayton Gulch. Under 72-174. Small gully E of road,2620'.											
72-176	W	Garfield	Stember Creek	SE/SE27	12N	44E	WP	Pr Rp		RR-6	"LOLO INC"	
	Clayton Gulch. Under 72-175. SiO2 low. Small gully E of road,2610'.											
72-177	W	Garfield	Stember Creek	SE/SE27	12N	44E	WP	Pr Rp		RR-6	LOLO INC	
	Clayton Gulch. Under 72-176. Plagioclase-phyric. Small gully E of road,2600'.											
72-178	W	Garfield	Stember Creek	NW/SW35	12N	44E	WP	Pr Rp		RR-6	LOLO INC	
	Over Roza. Possibly same flow as 72-173. Hillslope E of road,2560'.											
72-180	W	Garfield	Stember Creek	NE/NW11	11N	44E	WP	Pr Rp		RR-6	LOLO INC	
	Probably over 72-178. Roadcut,2525'.											
72-181	W	Whitman	Bishop	SW/SW31	13N	44E	GR			RR-11	GR INC	
	Thick, viscous-appearing, flow-banded flow. Roadcut,2270'.											
72-182	W	Garfield	Kirby	NW/SW15	13N	43E	WP	Pr Rp		RR-11	LOLO INC	
	Quarry in uppermost flow in section,2330'. Site of old tramway.											
72-185	W	Garfield	Almota	NE/NW1	13N	42E	WP	Fr Sp		RR-6	FS INC	
	Casey Creek. Under Roza. ,1920'. Roadcut.											
72-186	W	Garfield	Almota	NE/NE2	13N	42E	GR			RR-6	GR INC	
	Casey Creek. Under 72-22. ,1700'. Roadcut.											
72-187	W	Garfield	Almota	NE/NE2	13N	42E	GR			RR-6	GR INC	
	Casey Creek. ,1685'. Roadcut. Under 72-186.											
72-188	W	Garfield	Almota	NE/NE2	13N	42E	GR			RR-6	GR INC	
	Roadcut. Under 72-187, 1675'.											
72-189	W	Garfield	Almota	NE/NE2	13N	42E	GR			RR-6	GR INC	
	Roadcut. Under 72-188, 1660'.											
72-190	W	Garfield	Almota	NE/NE2	13N	42E	GR			RR-6	GR INC	
	Roadcut. Under 72-189, 1650'.											

Table 1a. Sample information for DSIW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-191	W	Garfield	Almota	SW/SE35	14N	42E	GR			RR-6	GR INC	
	Casey Creek. Separated from 72-190 by several thin flows. Cut by dike 819671, 1550'. Roadcut.											
72-201	W	Whitman	Colfax South	NW/NW27	16N	44E	WP	Pr Rp		RR-11	LOLO INC	
	Roadcut, 2330'.											
72-202	W	Whitman	Albion	NW/SW25	16N	44E	WP	Pr Rp		RR-11	LOLO INC	
	Roadcut, ,2380'.											
72-203	W	Whitman	Colfax South	SW/SE33	16N	44E	WP	Pr Rp		RR-11	LOLO INC	
	Quarry near railroad tracks.											
72-204	W	Whitman	Albion	SW/NW25	15N	44E	WP	Pr Rp		RR-11	LOLO INC	
	Ditch at road intersection, 2360'.											
72-205	W	Whitman	Pullman	NW/NE6	14N	45E	WP	Pr Rp		RR-11	LOLO INC	
	Over 7 feet of sediments. Cut in road along Palouse River.											
72-206	W	Whitman	Pullman	NW/NW5	14N	45E	WP	Pr Rp		RR-11	"LOLO INC"	
	Over vesicular zone, State Street in Pullman. Na2O low, 2380'.											
72-207	W	Whitman	Pullman	NE/NE6	14N	45E	WP	Pr Rp		RR-11	LOLO INC	
	Pullman, roadcut at base of hill on Colfax Road. ,2350'.											
72-208	W	Whitman	Pullman	NE/NW6	14N	45E	WP	Pr Rp		RR-11	LOLO INC	
	Quarry. Over 72-207. ,2470'. Upper flow in section.											
72-209	W	Whitman	Ewartsville	NE/NW9	14N	44E	SM	W Cr		RR-7	WILBUR	
	Roadcut along Wilbur Creek, 2240'.											
72-210	W	Whitman	Ewartsville	SE/NE36	15N	43E	WP	Pr Rp		RR-11	LOLO INC	
	Quarry, Union Center. Upper flow. ,2240'.											
72-211	W	Whitman	Ewartsville	SE/NE36	15N	43E	WP	Pr Rp		RR-11	LOLO INC	
	Quarry, Union Center. Lower flow. ,2220'.											
72-212	W	Whitman	Pullman	NW/SE2	14N	44E	SM	W Cr		RR-7	WILBUR	
	Small quarry, 2520'.											
72-213	W	Whitman	Ewartsville	NE16	14N	44E	SM	W Cr		RR-7	WILBUR	
	Probably under 72-212. Roadcut, 2490'.											
72-214	W	Whitman	Ewartsville	NW/SW3	13N	44E	WP	Pr Rp		RR-11	LOLO INC	
	Roadcut, 2420'. One hundred feet below 72-30.											
72-216	W	Whitman	Colton	SW/SE26	13N	44E	WP	Pr Rp		RR-7	"LOLO INC"	
	Yakawawa section. Over 71-74, under 71-73. Gully. TiO2 high.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-220	W	Whitman	Pullman	NE/NE8	14N	45E	WP	Pr Rp		RR-11	LOLO INC	
	Flow cut by dike 72-219. Roadcut.											
72-221	W	Whitman	Moscow West	SW/SW14	14N	45E	WP	Pr Rp		RR-11	LOLO INC	
	Roadcut,2450'.											
72-222	I	Nez Perce	Clarkston	NW/NW12	36N	6W	SM	W Cr		RR-7	WILBUR	
	Roadcut,2600'.											
72-223	W	Whitman	Clarkston	NE/SE33	12N	46E	SM	W Cr		RR-7	WILBUR	
	Junction of U.S. 95 and 195, lower flow. Roadcut.											
72-224	W	Whitman	Clarkston	NE/SE33	12N	46E	SM	W Cr		RR-7	WILBUR	
	Junction of U.S. 95 and 195, upper flow. Roadcut.											
72-225	I	Nez Perce	Clarkston	NW/SE18	36N	5W	WP	Pr Rp		RR-7	LOLO INC	
	Lewiston Grade. Under approx. 15' sediments. Roadcut.											
72-226	I	Nez Perce	Clarkston	NW/SE18	36N	5W	WP	Pr Rp		RR-11	LOLO INC	
	Under 72-225; vesicular flow units between. Roadcut,2370'.											
72-227	I	Nez Perce	Clarkston	SW/SW18	36N	5W	WP	Pr Rp		RR-11	LOLO INC	yes
	Probably flow under 72-226. Over approx. 20' sediments and saprolite. Roadcut,2290'.											
72-228	I	Nez Perce	Clarkston	SW/SW18	36N	5W	GR			RR-11	GR INC	
	Under sediments under 72-227. Hillslope below road,2270'.											
72-229	W	Whitman	Uniontown	NE/SE2	12N	45E	SM	W Cr		RR-7	WILBUR	
	Hillside,2730',1.5 miles S of Colton.											
72-231	W	Whitman	Ewartsville	SE/SW36	14N	43E	SM	Um		RR-7	"UMATILLA"	
	Fractionated composition. Gully,2410'.											
72-234	W	Whitman	Almota	NW/NE31	15N	43E	SM	Um		RR-11	UMATILLA	
	Roadcut,1980'.											
72-235	W	Whitman	La Crosse 15'	NE/NE29	17N	40E	WP	Roza		RR-7	ROZA	
	Flow in vent area. Same roadcut as 71-23, 71-24.											
72-236	W	Whitman	Texas Lake	NW/SW1	18N	39E	WP	Fr Sp		RR-11	FS INC	
	Under Roza. Along Rock Creek at S end of bridge. ,1640'.											
72-237	W	Whitman	Texas Lake	NW/SW29	19N	40E	WP	Pr Rp		RR-11	ROSALIA	
	Over Roza S of Lamont. ,1830'.											
72-238	W	Adams	Palm Lake	NE/SE7	20N	38E	WP	Pr Rp		D-1	ROSALIA	
	Upper flow in roadcut on Highway 10.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-239	W	Franklin	Connell	NE/NW33	15N	32E	WP	Pr Rp		D-1	LOLO INC	
	Roadcut along Highway 395 S of junction to Othello, 1215'.											
72-240	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	El Mt		RR-7	ELEPHANT	
	Section W of Ice Harbor Dam. Lowest flow. East limb of syncline below Tiger trig. Roadcut.											
72-241	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	El Mt		RR-7	ELEPHANT	
	Over 72-240, same location.											
72-242	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	El Mt		RR-7	"ELEPHANT"	
	Over 72-241, same location. Under sediments under 71-114, much lower FeO than ELEPHANT chemical type											
72-243	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Martindale	RR-7	UNC	
	Over 2' of clay and ash, over 71-114. Fractionated(?) Martindale. Quarry.											
72-247	W	Franklin	Levey SE	SW/NW18	9N	32E	SM	Ice H	Indian Memorial	RR-7	INDIAN	
	On hill above RR-7 cut in which 71-116 was collected.											
72-248	W	Franklin	Levey SW	SE/NW22	9N	31E	SM	Ice H	Goose Island	RR-7	GOOSE	
	N. side of gulch, 450'.											
72-249	W	Franklin	Levey SW	NW/NW32	10N	31E	SM	Ice H	Goose Island	RR-7	GOOSE	
	Probably equivalent to 71-104. Outcrop 0.5 miles WSW of 71-104, 530'.											
72-250	W	Franklin	Levey SW	SE/SE17	10N	31E	SM	Ice H	Basin City	RR-7	BASIN	
	Low mesa underlain by 72-251. Plagioclase-phyric. Along NE side of road, 560'.											
72-251	W	Franklin	Levey SW	SE/SE17	10N	31E	SM	El Mt		RR-7	ELEPHANT	
	Flow under 72-250 with tumuli on surface. Small outcrop SW of road, 570'.											
72-252	W	Franklin	Levey SW	NE/NE19	10N	31E	SM	Ice H	Goose Island	RR-7	UNC	
	Fractionated(?) Goose Island. Across coulee from 72-251.											
72-256	W	Franklin	Eltopia 15'	SE/SW23	11N	30E	SM	El Mt		RR-7	ELEPHANT	
	Lowest flow in sequence of thin flows dipping ENE. Middle of field, 660'.											
72-259	W	Franklin	Eltopia 15'	NE/SW23	11N	30E	SM	Ice H	Basin City			yes
	Glass only. Palagonitized spatter from blocks on top of flow.											
72-260	W	Franklin	Eltopia 15'	SW/SE23	11N	30E	SM	Esquat		RR-7	ESQUAT	
	Lone rock 20'x15'x7' in middle of field, destroyed by blasting since collection. , 640'.											
72-262	W	Franklin	Eltopia 15'	NW/SW27	11N	30E	SM	Ice H	Martindale	RR-7	MARTIN	
	Just E of highway 395. Ledge dipping SW, 640'.											
72-263	W	Franklin	Eltopia 15'	SE/SW22	11N	30E	SM	Ice H	Martindale	RR-7	MARTIN	
	Under or equivalent to 72-262. Curve in highway 395. , 660'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-264	W	Franklin	Mesa 15'	SE/SE14	13N	29E	SM	Ice H	Basin City	RR-7	BASIN	
	Phyric rock forming elongate outcrops. South of small lake. ,740'.											
72-265	W	Franklin	Mesa 15'	SE/SE14	13N	29E	SM	El Mt		RR-7	ELEPHANT	
	Crops out along NE edge of 72-264. ,740'.											
72-266	W	Franklin	Mesa 15'	NE/NE14	13N	29E	SM	El Mt		RR-7	ELEPHANT	
	"Squeeze ups" concentric to mesa N of small lake. Steep inward dips.,730'.											
72-267	W	Garfield	Pomeroy	NE/NE31	12N	42E	SM	Um		RR-7	UMATILLA	
	Over Roza, Pomeroy Hill Road. Probably equivalent to 72-163.,2270'.											
72-268	W	Garfield	Pomeroy	NW/NW32	12N	42E	SM	Um		RR-7	UMATILLA	
	Over 72-267. Pomeroy Hill Road,2310'.											
72-269	W	Garfield	Rose Springs	NW/NW33	10N	42E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Scoggins Ridge. ,4240'.											
72-270	W	Garfield	Rose Springs	NW/SW7	9N	42E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Abels Ridge. Cliff at ,4900' near Abels trig.											
72-271	W	Garfield	Pinkham Butte	NW/NE33	8N	43E	GR			RR-7	GR INC	
	Under 72-272, 1/2 mi. E of Wickiup Spring, 5900'.											
72-272	W	Garfield	Pinkham Butte	NW/NE33	8N	43E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Under red soil under 72-273, about 5900'.Thin plagioclase-phyric flows.											
72-273	W	Garfield	Pinkham Butte	NW/NE33	8N	43E	WP	Eck Mt	Shumaker Creek	RR-7	SHUMAKER	
	Flow above red soil above 72-272, about 5900'.											
72-274	W	Asotin	Saddle Butte	SW/NW32	7N	43E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Roadcut in plagioclase-phyric flow,4180'											
72-275	W	Asotin	Saddle Butte	SE/NE31	7N	43E	WP	Eck Mt	Dodge	RR-7	'DODGE'	
	Roadcut in plagioclase-phyric,grusy flow,4010'. Fractionated chemistry.											
72-276	W	Garfield	Diamond Peak	NE/NE3	6N	42E	SM	El Mt	Wenaha	RR-7	ELEPHANT	
	Roadcut,4260'.											
72-279	W	Asotin	Saddle Butte	SE/NW31	7N	43E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Roadcut,4090'. Plagioclase-phyric.											
72-280	W	Garfield	Stentz Spring	SW/NE5	8N	42E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Roadcut,5600'. Plagioclase-phyric.											
72-281	W	Garfield	Rose Springs	SE/NE11	9N	42E	WP	Eck Mt	Dodge	RR-7	DODGE	
	Roadcut on Iron Springs Road, 4740'. Plagioclase-phyric.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-282	W	Whitman	Hay 15'	NW/SW28	14N	40E	WP		Fr Sp	XRF-7	FS INC	
	Lowest Frenchman Springs flow N of Central Ferry. Roadcut along highway 127,1200'.											
72-283	W	Whitman	Hay 15'	NW/SW28	14N	40E	WP		Fr Sp	XRF-7	"FS INC"	
	Over 72-282. Higher MgO than FS INC chemical type. Roadcut,1210'.											
72-284	W	Whitman	Hay 15'	SW/NW28	14N	40E	WP		Fr Sp	XRF-7	FS INC	
	Over 72-283, flow units between. Quarry,1280'.											
72-285	W	Whitman	Colfax North	NW/SE29	17N	44E	WP		Pr Rp	RR-11	LOLO INC	
	Roadcut,2280'.											
72-286	W	Whitman	Palouse	SE/NW6	16N	46E	WP		Pr Rp	RR-7	UNC	
	Block in deposit of bedded spatter,E side of town of Palouse.											
72-287	W	Whitman	Palouse	SE/NW6	16N	46E	WP		Pr Rp	RR-7	LOLO INC	
	Blocks in quarry across road from 72-286. Probably from flow filling crater in pyroclastic cone.											
72-288	W	Whitman	Wilcox	NE/NW25	16N	42E	SM		W Cr	RR-11	WILBUR	
	Creek bank along Highway 295 near crossing of Union Flat Creek, 2150'.											
72-291	W	Whitman	Endicott 15'	NE/NE30	15N	42E	WP		Fr Sp	XRF-7	FS INC	
	Directly under Roza,1490'.											
72-292	W	Whitman	Penawawa 15'	SE/SE11	14N	40E	GR			RR-7	GR INC	
	Horton Grade section. Under 72-293, over 73-355. ,980'. Roadcut.											
72-293	W	Whitman	Penawawa 15'	NW/SE11	14N	40E	GR			RR-7	GR INC	
	Horton Grade section. Under 72-294. ,1070'. Roadcut.											
72-294	W	Whitman	Penawawa 15'	NW/SE11	14N	40E	WP		Fr Sp	RR-7	FS INC	yes
	Horton Grade section. Under 72-295. ,1140'. Roadcut with pillows.											
72-295	W	Whitman	Penawawa 15'	NW/SE11	14N	40E	WP		Fr Sp	RR-7	FS INC	
	Horton Grade section. Under 72-296. ,1220'. Roadcut.											
72-296	W	Whitman	Penawawa 15'	NW/SE11	14N	40E	WP		Fr Sp	RR-7	FS INC	
	Horton Grade section. Under 72-297. ,1260'. Roadcut.											
72-297	W	Whitman	Penawawa 15'	NW/SE11	14N	40E	WP		Fr Sp	RR-7	FS INC	
	Horton Grade section. Under 72-298. ,1335'. Roadcut.											
72-298	W	Whitman	Hay 15'	SW/NE11	14N	40E	WP		Roza	RR-7	ROZA	
	Horton Grade section. Under 72-299. ,1520'. Roadcut.											
72-299	W	Whitman	Hay 15'	NW/NE11	14N	40E	WP		Pr Rp	RR-7	"LOLO INC"	
	Horton Grade section. Uppermost flow. ,1605'. Gully along side of field.Low Al2O3.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
72-300	W	Whitman	Endicott 15'	NE/NE17	15N	41E	SM	Um		RR-7	UMATILLA	
	Small quarry N of highway 295.											
72-302	W	Whitman	Endicott 15'	NW/NW17	17N	42E	WP	Pr Rp		RR-11	LOLO INC	
	Natural outcrop overlooking Palouse River, 1980'.											
72-303	W	Whitman	Endicott 15'	NW/SW2	17N	41E	GR			RR-11	GR INC	
	Under PPC at base of Roza. N end of Matlock Bridge, 1630'.											
72-304	W	Whitman	Endicott 15'	NW/SW2	17N	41E	GR			RR-11	GR INC	
	Under 72-304. ,1610'.											
72-305	W	Whitman	St. John	SW/SE19	19N	42E	WP	Roza		RR-7	ROZA	
	Roadcut along Cottonwood Creek.											
72-305XRF	W	Whitman	St. John	SW/SE19	19N	42E	WP	Roza		XRF-1	ROZA	
	Same locality and flow as 72-305.											
72-306	W	Whitman	Ewan	NE/NE30	19N	41E	WP	Roza		RR-7	ROZA	
	Roadcut along Cottonwood Creek, under 6" sediments.											
72-307	W	Whitman	Ewan	NE/NE30	19N	41E	WP	Roza		RR-7	ROZA	
	Under 72-306, same roadcut.											
72-309	W	Whitman	Texas Lake	NW/SE9	18N	40E	WP	Pr Rp				yes
	Glass only. Pillows in Scabland S of Rock Creek.											
72-310	W	Whitman	Rock Lake	SW/NE14	19N	40E	WP	Pr Rp		RR-7	ROSALIA	
	Over Roza. Just W of S end of Rock Lake. Roadcut, 1850'.											
72-311	W	Whitman	Pine City	NW/SW12	20N	41E	GR			RR-7	GR INC	
	Roadcut along road into Hole in the Ground, 2030'.											
72-312	W	Whitman	Thornton	SW/NE28	19N	43E	WP	Pr Rp		RR-11	ROSALIA	
	Roadcut in Thornton, 2320'.											
72-313	W	Whitman	Rosalia	NE/NE22	20N	43E	WP	Pr Rp		RR-7	ROSALIA	
	Higher of two olivine-bearing flows in this area. Railroad cut, 2290'.											
72-314	W	Whitman	Malden	SW/NW23	20N	42E	WP	Pr Rp		RR-11	ROSALIA	
	1 mi. SW of Malden. Roadcut in foreset-bedded lava delta.											
72-316	W	Whitman	Cheney 15'	SE/NE21	21N	41E	WP	Pr Rp		RR-11	ROSALIA	
	Uppermost olivine-bearing flow. Roadcut on Rock Lake Road, 2200'.											
72-317	W	Whitman	Cheney 15'	NE/NE1	21N	41E	WP	Pr Rp		RR-11	ROSALIA	
	Over 5' sediments over flow like 72-311. Roadcut, ,2120'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
72-318	W	Whitman	Cheney 15'	SW/SW30	21N	42E	WP	Pr Rp		RR-7	ROSALIA	
Cliff,2100-2130',E side of Bonnie Lake. Above bench-forming flow.												
72-319	W	Franklin	Starbuck 15'	NE/NW30	14N	37E	WP	Fr Sp		RR-7	"FS INC"	
Palouse Falls section. Under 71-68. High Na20. Hillslope,1040'. Plagioclase-phyric.												
72-320	W	Franklin	Starbuck 15'	SW/SE19	14N	37E	WP	Fr Sp		RR-7	FS INC	
Palouse Falls section. Under 72-319. Railroad cut.												
72-321	W	Franklin	Starbuck 15'	SE/SW30	14N	37E	WP	Fr Sp		RR-7	FS INC	
Palouse Falls section. Under 1-3' of ash under 72-320 just upstream from Palouse Falls. ,760'.												
72-322	W	Franklin	Starbuck 15'	SE/SW30	14N	37E	GR			RR-7	GR INC	
Palouse Falls section. Under 72-321. ,700'.												
72-323	W	Franklin	Starbuck 15'	SE/SW30	14N	37E	GR			RR-7	GR INC	
Palouse Falls section. Under 72-322. ,660'.												
72-324	W	Franklin	Haas 15'	SE/NE20	13N	35E	SM	Pomona		RR-7	"POMONA"	
Lower intracanyon flow. High TiO2, low Al2O3. just W of mouth of Skookum Canyon. ,700'.												
72-325	W	Franklin	Haas 15'	NW/NE20	13N	35E	SM	El Mt		RR-7	ELEPHANT	
Upper intracanyon flow. Hillslope,1120'. Above 72-324.												
72-327	W	Whitman	Tekoa	SW/NW24	19N	45E	WP	Pr Rp		RR-11	ROSALIA	
Over deeply weathered flow.Roadcut,2570'.												
72-328	W	Whitman	Oakesdale	NW/SW17	19N	45E	WP	Pr Rp		RR-11	ROSALIA	
Probably under 72-327. Quarry,2425'.												
72-329	W	Whitman	Rosalia	SE/SE8	20N	44E	WP	Pr Rp		RR-11	ROSALIA	
Possibly equivalent to 72-313. Roadcut,2400'.												
72-330	W	Whitman	Rosalia	NW/NE26	20N	43E	WP	Pr Rp		RR-7	ROSALIA	
Pillowed base over 2' of clay. Under 72-329. Roadcut on highway 271,2250'.												
72-334	O	Wheeler	Buckhorn Canyon	NE/SE7	6S	20E	PG			RR-7	GR INC	
Butte Creek section. Over 71-148, under 20-30' sediments.												
72-335	O	Wheeler	Buckhorn Canyon	NE/SE7	6S	20E	GR			RR-7	GR INC	
Butte Creek section. Under 71-144 and over sediments above 72-334.												
72-336	O	Wheeler	Chimney Springs	NW/NE9	6S	20E	PG			RR-7	UNC	
Butte Creek section. Between 71-150 and 71-151. North slope of Butte Creek Canyon.												
72-338	O	Wheeler	Chimney Springs	NW/NE9	6S	20E	PG			RR-7	UNC	
Butte Creek section. Under sediments under 71-149.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	LOCATION	FMI	STRATIGRAPHY MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
HUNTZ	W	Kittitas	Beverly	SW/SE20	15N	23E		SM	Asotin	Huntzinger	RR-4	UNC	
	Type locality of Huntzinger flow.												
73-11	W	Franklin	Lower Monumental Dam	NE/SE21	13N	34E		SM			RR-7a	"FS INC"	
	Oldest intracanyon flow, east side of Devils Canyon. TiO2 low.												
73-15	W	Benton	Umatilla	SW/SE4	5N	28E		SM	Um	Sillusi	RR-7a	UMATILLA	
	Roadcut near viewpoint, site of McDougall's (1976) CR-37.												
73-17	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM			RR-8	"FS INC"	
	Devils Canyon intracanyon flows; 1. oldest, CaO low. RR-8 cut, W side of Devils Canyon.												
73-18	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	Pomona		RR-8	POMONA	
	Devils Canyon intracanyon flows; 3. Younger than 73-17 and 73-19. Railroad cut, W side of Devils Canyon.												
73-18F	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	Pomona		XRF-1	POMONA	
	Same sample as 73-18.												
73-19	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	Esquat		RR-8	ESQUAT	yes
	Devils Canyon intracanyon flows; 2. Younger than 73-17. Hillslope above railroad cut, W side of Devils Canyon.												
73-20	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	El Mt		RR-8	ELEPHANT	yes
	Devils Canyon intracanyon flows; 4. Younger than 73-18 and 73-19. Top of cliff above railroad cut, 1060'.												
73-20F	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	El Mt		XRF-1	ELEPHANT	
	Same sample as 73-20.												
73-22	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	Esquat		RR-8	ESQUAT	
	Devils Canyon intracanyon flows; 2. younger than 73-17. Equivalent to 72-19. From pillowed zone.												
73-22F	W	Franklin	Lower Monumental Dam	SE/SE21	13N	34E		SM	Esquat		XRF-1	ESQUAT	
	Same sample as 73-22.												
73-30	W	Franklin	Elwood	NW/NE1	11N	33E		GR			RR-11	GR INC	
	Lowest flow below Abe Trig. Near water level.												
73-31	W	Franklin	Elwood	NW/NE1	11N	33E		GR			RR-11	GR INC	
	Over 73-30. Abandoned railroad cut.												
73-32	W	Franklin	Elwood	NW/NE1	11N	33E		WP	Fr Sp		XRF-7	FS INC	
	Over 73-31. Hillside, 560'.												
73-33	W	Franklin	Snake River	NW/NE1	11N	33E		WP	Fr Sp		XRF-7	"FS INC"	
	Over 73-32. railroad cut, 610'. Higher MgO than FS INC chemical type.												
73-34	W	Franklin	Snake River	NW/NE1	11N	33E		WP	Fr Sp	Sheffler	XRF-7	FS INC	
	Over 73-33. Flow fed by dike 73-29. Hillside, 700'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-36	W	Franklin	Levey NE	SW/SE6	11N	32E	SM	El Mt		RR-11	"ELEPHANT"	
	Intracanyon flow, palagonite at base. Roadcut on Blackman Ridge Road, 870'. Much lower 'FeO' than ELEPHANT chemical type.											
73-37	W	Franklin	Levey NE	NE/SE35	12N	32E	SM	El Mt		RR-11	"ELEPHANT"	yes
	Glassy selvage on pillows. Na2O low; fractionated chemistry. Overlies eroded Fr Sp basalt flow, 980'. Quarry NE of road.											
73-38	W	Franklin	Burr Canyon	NW/NE20	12N	33E	SM	El Mt		RR-11	ELEPHANT	
	Gully along Essenprise Road, 1150'.											
73-39	W	Franklin	Burr Canyon	NW/SE15	12N	33E	WP	Pr Rp		RR-11	"LOLO INC"	
	TiO2 high. Roadcut.											
73-40	W	Franklin	Levey NE	SE/SE10	11N	32E	WP	Fr Sp		RR-11	"FS INC"	
	K2O low. Hillside N of road, 860'.											
73-41	W	Franklin	Rye Grass Coulee	NE/SE34	12N	31E	SM	Pomona		XRF-7	POMONA	
	Hillside in Smith Canyon, 820'.											
73-42	W	Franklin	Snake River	SW/SW14	11N	33E	WP	Pr Rp		RR-11	LOLO INC	
	Section opposite Sheffler. Uppermost flow. , 1100'. Outcrop in farm road.											
73-43	W	Franklin	Snake River	SW/NW23	11N	33E	WP	Roza		RR-11	ROZA	
	Section opposite Sheffler. Under 73-42. , 1040'.											
73-44	W	Franklin	Snake River	SE/NW23	11N	33E	WP	Fr Sp		RR-11	FS INC	
	Section opposite Sheffler. Under 73-43. , 950'.											
73-45	W	Franklin	Snake River	SE/NW23	11N	33E	WP	Fr Sp		RR-11	FS INC	
	Section opposite Sheffler. Under 73-44. , 930'.											
73-46	W	Franklin	Snake River	NE/SE23	11N	33E	WP	Fr Sp		RR-11	"FS INC"	
	Section opposite Sheffler. Under 73-45. P2O5 low. , 860'.											
73-47	W	Franklin	Snake River	SW/NE23	11N	33E	WP	Fr Sp		RR-11	FS INC	
	Section opposite Sheffler. Under 73-46. , 730'.											
73-48	W	Franklin	Snake River	SE/NE23	11N	33E	WP	Fr Sp		RR-11	FS INC	
	Section opposite Sheffler. Under 73-47. , 630'.											
73-49	W	Franklin	Snake River	SE/NE23	11N	33E	WP	Fr Sp		RR-11	"FS INC"	
	Section opposite Sheffler. Under 73-48. Lower MgO than FS INC chemical type. , 580'.											
73-50	W	Franklin	Snake River	SE/NE23	11N	33E	WP	Fr Sp		RR-11	"FS INC"	
	Section opposite Sheffler. Under 73-49. Higher MgO than FS INC chemical type. , 530'.											
73-51	W	Franklin	Snake River	SW/SE27	11N	33E	WP	Fr Sp		XRF-7	"FS INC"	
	Probably same flow as 73-50. Higher MgO than FS INC chemical type. RR cut, 520'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FMI	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-52	W	Franklin	Snake River	NW/NE34	11N	33E	GR			RR-11	GR INC	
	Under 73-51, 460'.											
73-54	W	Franklin	Levey SE	NE/SW13	10N	32E	WP	Fr Sp		XRF-7	FS INC	
	Railroad cut. Large, platy, columns.											
73-56	W	Franklin	Levey SE	NW/SW14	10N	32E	SM	El Mt		RR-11	ELEPHANT	
	Upper flow on Klundt Road, 810'.											
73-57	W	Franklin	Levey SE	NE/SE5	9N	32E	SM	Pomona		RR-10	"POMONA"	yes
	Glass from peperite at top of flow. Fractionated chemistry. Above Railroad cut about 1 mile NE of levey.											
73-58	W	Walla Walla	Levey SE	SE/SE8	9N	32E	SM	Pomona		RR-10	POMONA	
	Railroad cut opposite Levey Park.											
73-61	W	Walla Walla	Levey SE	SE/SE3	9N	32E	WP	Fr Sp		RR-11	FS INC	
	Quarry. Large columns.											
73-63	W	Walla Walla	Levey SE	SE/SE3	9N	32E	WP	Fr Sp		XRF-7	"FS INC"	
	Thin aa flow, possibly in small shield volcano. K20 is too high. Railroad cut below 73-61.											
73-64	W	Walla Walla	Page	NE/NW31	10N	33E	WP	Fr Sp		RR-11	"FS INC"	
	Na20, CaO low. Upper flow S of Page, 770'.											
73-65	W	Walla Walla	Elwood	NE/NE12	11N	33E	GR			RR-11	GR INC	
	Exposed just above lake level, 430'.											
73-66	W	Walla Walla	Elwood	NE/NE12	11N	33E	GR			RR-11	GR INC	
	Over 73-65, 450'. Railroad cut.											
73-67	W	Walla Walla	Snake River	NW/NW13	11N	33E	WP	Eck Mt	Dodge	RR-11	"DODGE"	
	Over 73-66. K20 low. ,475'. Railroad cut. Plagioclase-phyric.											
73-68	W	Walla Walla	Snake River	NW/NW13	11N	33E	WP	Fr Sp		RR-11	FS INC	
	Over 73-67. ,550'. Above Railroad cut.											
73-70	W	Walla Walla	Haas 15'	SW/SE19	13N	35E	SM	L Mon		RR-11	"LM"	
	Intracanyon flow. Prominant mesa at Magallon. High Al203, low CaO.											
73-71	W	Franklin	Levey NE	SW/SE1	11N	31E	SM	Pomona		XRF-7	"POMONA"	
	Al203 too high. Roadcut, 820'. Associated with vitric tuff.											
73-72	W	Franklin	Mesa 15'	SW/NW25	13N	30E	SM	Esquat		RR-11	"ESQUAT"	
	Intracanyon flow. Probably equivalent to or under 71-90. Fractionated chemistry. Roadcut in Mesa.											
73-73	W	Franklin	Frischknecht	SW/SE4	13N	31E	WP	Pr Rp		RR-11	LOLO INC	
	Along tributary to Esquatzel Coulee SE of T Lake, 950'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-74	W	Franklin	Frischknecht	SW/SE4	13N	31E	SM	El Mt		RR-11	ELEPHANT	
	Over eroded top of 73-73. ,960'.											
73-80	W	Franklin	Mesa East	NW/NW27	13N	31E	SM	Pomona		XRF-7	"POMONA"	
	High Al2O3. Small outcrop,edge of Old Maid Coulee,920'.											
73-81	W	Walla Walla	Zangar Junction	SE/NW23	7N	32E	SM	Um		RR-11	UMATILLA	
	Highest flow on hillside at Reese,670'.											
73-82	W	Walla Walla	Zangar Junction	SW/SW12	7N	32E	SM	Ice H	Indian Memorial	RR-11	INDIAN	
	Over 73-83. Roadcut,760'.											
73-83	W	Walla Walla	Zangar Junction	NW/NW13	7N	32E	SM	Um		RR-11	UMATILLA	
	Roadcut,700'.											
73-84	W	Walla Walla	Zangar Junction	SW/NE12	7N	32E	SM	El Mt		RR-11	ELEPHANT	
	Over weathered flow top and tuff. Roadcut,780'.											
73-85	W	Benton	Wallula	NW/NE5	6N	31E	SM	Ice H	Martindale	RR-9	MARTIN	yes
	Overlies imbricated Gravel. Top of cliff,1130'.											
73-89	W	Franklin	Levey SE	SW/SE26	10N	32E	WP	Fr Sp		RR-11	FS INC	
	Railroad cut just S of Emma lake. Above 73-90.											
73-90	W	Franklin	Levey SE	SW/SE26	10N	32E	WP	Fr Sp		RR-11	FS INC	
	Under 73-89. Same railroad cut.											
73-91	W	Franklin	Levey SE	NW/SW24	10N	32E	WP	Fr Sp		RR-11	FS INC	
	Under 73-90. RR-11 cut just N of Emma Lake. Tiered.											
73-95	W	Walla Walla	Lowden	NE/SW18	7N	34E	SM	Ice H	Indian Memorial			yes
	Glass only. Small quarry in Woodward Canyon,560'.											
73-96	W	Walla Walla	Haas 15'	NW/NE25	13N	36E	SM			RR-11	FS INC	
	Intracanyon flow. Quarry.											
73-97	W	Walla Walla	Haas 15'	SE/NE21	13N	36E	GR			RR-11	GR INC	
	Railroad cut. Flow with thick breccia.											
73-98	W	Walla Walla	Haas 15'	NE/SE21	13N	36E	GR			RR-11	GR INC	
	Over 73-97. Railroad cut.											
73-99	W	Walla Walla	Haas 15'	SW/SW22	13N	36E	WP	Fr Sp		RR-11	FS INC	
	Over 73-98. Plagioclase-phyric. Railroad cut.											
73-100	W	Walla Walla	Haas 15'	SW/SW22	13N	36E	WP	Fr Sp		RR-11	FS INC	
	Over 73-99. Railroad cut. Thick flow.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-101	W	Walla Walla	Haas 15'	NW/NW26	13N	36E	SM	L Mon		RR-8	"LM"	
	Intracanyon flow over imbricated gravel. Na20 too high. Railroad cut just E of mouth of Fields Gulch.											
73-101F	W	Walla Walla	Haas 15'	NW/NW26	13N	36E	SM	L Mon		XRF-1	LM	
	Same sample as 73-101.											
73-102	W	Walla Walla	Haas 15'	NW/NW26	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Railroad cut just E of 73-101. "Big Bad John" painted on cut.											
73-103	W	Columbia	Dayton	NE/SE19	10N	39E	GR			XRF-4	GR INC	
	Tiered flow from roadcut adjacent to large Quarry.											
73-104	W	Columbia	Starbuck 15'	NE/NE4	12N	37E	GR			RR-11	GR INC	
	Palouse Falls section. Under 72-323. Railroad cut, 550'.											
73-106	W	Columbia	Starbuck 15'	SE/NW2	12N	37E	SM	Pomona		RR-11	"POMONA"	
	Fractionated chemistry. Roadcut,820'. Below sediments.											
73-107	W	Columbia	Starbuck 15'	SE/NW2	12N	37E	GR			RR-11	GR INC	yes
	Roadcut at start of curve;overlain by pillows of Lower Monumental Member. ,about 830'.											
73-108	W	Columbia	Starbuck 15'	NE/SE2	12N	38E	WP	Fr Sp		RR-11	UNC	
	Private road section. Over 72-88. Unusual low FeO, high CaO chemistry.Streambed along road,1360'. Pillowed base.											
73-111	W	Garfield	Pomeroy	SE/SE8	11N	42E	GR			RR-11	GR INC	
	Benjamin Gulch section. Between 71-59 and 72-51. ,2380'. Roadcut.											
73-112	W	Franklin	Burr Canyon	NE/NW22	12N	33E	WP	Pr Rp		XRF-7	LOLO INC	
	Gully on NW side of Pasco-Kahlotus Road, 1170'.											
73-113	W	Franklin	Burr Canyon	NE/NW22	12N	33E	SM	El Mt		RR-11	"ELEPHANT"	
	Flow with pillowed base over eroded flow 73-112. Gully on NW side of road,1170'.Fractionated chemistry.											
73-114	W	Walla Walla	Humorist	SW/NE27	9N	31E	SM	Ice H	Goose Island	RR-9	GOOSE	
	Small outcrop in sandy area,480'.											
73-115	W	Walla Walla	Humorist	SW/SE23	9N	31E	SM	Ice H	Martindale	RR-9	MARTIN	
	Lower of two flows,abandoned quarry SW of Pernt Trig, 450'.											
73-116	W	Walla Walla	Humorist	SW/SE23	9N	31E	SM	Ice H	Martindale	RR-9	MARTIN	
	Over 3"-2' of sideromelane tuff over 73-115. Same quarry.											
73-117	W	Walla Walla	Humorist	NW/SE23	9N	31E	SM	Ice H	Martindale	RR-9	MARTIN	
	Over eroded columns of Elephant Mountain Member. Small outcrop,460'.											
73-122	W	Walla Walla	Slater	NW/NE25	9N	31E	SM	Ice H	Indian Memorial	RR-8	INDIAN	
	Upper flow S of Indian Memorial. Railroad cut, 540'. Above thin tuff.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-125	W	Franklin	Levey SE	SW/NW18	9N	32E	SM	Ice H	Indian Memorial	RR-9	INDIAN	
	Same flow as 72-247, same locality. On hill above Railroad cut, 530'.											
73-129	W	Franklin	Humorist	NE/SE21	9N	32E	SM	Ice H	Martindale	RR-9	MARTIN	
	Flow below palagonite, Railroad cut, 430'.											
73-130	W	Franklin	Humorist	SW/SW21	9N	32E	SM	Ice H	Martindale	RR-9	MARTIN	
	Probably over palagonite over 73-129. Roadcut, 390'.											
73-132	W	Franklin	Levey SW	NE/NW32	10N	31E	SM	Ice H	Goose Island	RR-8	"GOOSE"	
	Between 71-104 and 72-249. High SiO2, low FeO. Side of shallow gully, 530'.											
73-134	W	Franklin	Levey SW	NW/NW20	10N	31E	SM	Ice H	Basin City	RR-9	BASIN	
	Cliff-forming flow at falls, 530'.											
73-135	W	Franklin	Levey SW	NE/NE19	10N	31E	SM	Ice H	Goose Island	RR-9	"GOOSE"	
	Over 73-134. High SiO2, low FeO like 73-132. Wall of ditch above falls, 560'.											
73-136	W	Franklin	Levey SW	NE/NW19	10N	31E				RR-8	UNC	
	Coarse, diktytaxitic, plagioclase-rich inclusion in vent material NE of canal, 560'.											
73-140	W	Franklin	Levey SW	NE/NW16	10N	31E	SM	Ice H	Basin City	RR-9	BASIN	
	Small outcrop surrounded by sand, 660'.											
73-142	W	Franklin	Eltopia 15'	NE/NW34	11N	30E	SM	Ice H	Martindale	RR-9	"MARTIN"	
	Na2O too high. Along small canal, W of main canal, 650'.											
73-144	W	Franklin	Eltopia 15'	NE/NE23	11N	30E	SM	Ice H	Basin City	RR-8	BASIN	
	Small outcrop of flow in shallow graben or channel, SE of sand pit, 660'.											
73-145	W	Franklin	Eltopia 15'	SW/SE23	11N	30E	SM	Esquat		RR-9	ESQUAT	
	Re-collection of 72-260 at same location.											
73-146	W	Franklin	Eltopia 15'	NW/NW25	11N	30E	SM	Ice H	Basin City	RR-8	"BASIN"	
	Fractionated chemistry. Small ledges cut by dike 73-147. , 660'.											
73-151	W	Franklin	Eltopia 15'	NW/SW25	11N	30E	SM	Esquat		RR-8	ESQUAT	
	Isolated outcrop with horizontal columns. 18'x24' across, surrounded by sand. , 690'.											
73-152	W	Franklin	Eltopia 15'	NW/NW25	11N	30E	SM	Esquat		RR-8	ESQUAT	
	Isolated outcrop along sandy gully. 10'x20' across, 620'.											
73-154	W	Franklin	Eltopia 15'	NE/NW3	11N	30E	SM	Ice H	Basin City	RR-8	BASIN	
	Flow capping vent area, mesa E of Langford Road, 800'.											
73-157	W	Franklin	Mesa 15'	NE/NW20	12N	30E	SM	Ice H	Basin City	RR-8	"BASIN"	
	Na2O too high. Outcrop along canal, 785'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
		LOCATION					STRATIGRAPHY			CHEMISTRY		
73-158	W	Franklin	Mesa 15'	SW/SE20	12N	30E	SM	Ice H	Goose Island	RR-9	GOOSE	
Small outcrop between dirt road and lake, just inside section 20. ,740'.												
73-159	W	Franklin	Mesa 15'	NE/SW20	12N	30E	SM	Ice H	Goose Island	RR-8	'GOOSE'	
Small outcrop just N of largest lake in S half of section 20, 780'. Altered chemistry.												
73-160	W	Franklin	Mesa 15'	NW/NE20	12N	30E	SM	El Mt		RR-9	ELEPHANT	
Along canal SW of 73-157. ,780'.												
73-162	W	Franklin	Mesa 15'	SECT 3	13N	29E	SM	Ice H	Basin City			yes
Glass only. Chilled base of phyric flow E of Bailie Ranch.												
73-166	W	Grant	Beverly	SE/NE15	15N	23E	WP	Pr Rp		RR-9	LOLO INC	
Sentinel Gap section. Flow above Roza. Cliff on hillside, 980'.												
73-167	W	Grant	Beverly	SE/NE15	15N	23E	WP	Pr Rp		RR-9	LOLO INC	
Over 73-166. Cliff, 1040'.												
73-168	W	Franklin	Mesa 15'	NW/SE11	14N	29E	SM			RR-9	GR INC	
Possibly equals 70-B-193 (Brock and Grolier, 1973). Collected at lake level where siphon crosses NW end of lake.												
73-169	W	Adams	Lind SW	SW/SE20	15N	33E	WP	Pr Rp		RR-11	LOLO INC	
Over 2' sediments over Roza. Quarry, 1360'.												
73-212	W	Columbia	Godman Spring	NE/SE10	7N	40E	GR			RR-10	GR INC	
Roadcut, 5780'.												
73-215	W	Columbia	Godman Spring	NE/SE10	7N	40E	GR			RR-13	GR INC	
Godman trig section. Under 72-110. ,5840'.												
73-216	W	Columbia	Godman Spring	NE/SE10	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-215, 5770'.												
73-217	W	Columbia	Godman Spring	NE/SE10	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-216, 5680'. Cliff-forming flow with oxidized top.												
73-218	W	Columbia	Godman Spring	NE/SE10	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-217, 5640'.												
73-219	W	Columbia	Godman Spring	SW/SW11	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-218, 5550'.												
73-220	W	Columbia	Godman Spring	SW/SW11	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-219, 5500'.												
73-221	W	Columbia	Godman Spring	SW/SW11	7N	40E	GR			RR-13	GR INC	
Godman Trig section, under 73-220, 5470'.												

Table 1a. Sample information for DSIW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-222	W	Columbia	Godman Spring	SW/SW11	7N	40E	GR			RR-13	GR INC	
	Godman Trig section, under 73-221, 5370'.											
73-232	W	Columbia	Eckler Mountain	NW/NE32	8N	40E	WP	Eck Mt	Robinette Mountain	RR-13	ROBIN	
	Chase Mountain section. Upper flow. ,5460'. Overlies red vesicular zone. Roadcut.											
73-233	W	Columbia	Eckler Mountain	NE/NW32	8N	40E	GR			RR-13	GR INC	
	Chase Mountain section. Under 73-233. ,5420'. Roadcut.											
73-234	W	Columbia	Eckler Mountain	NW/SW32	8N	40E	GR			RR-13	GR INC	
	Chase Mountain section. ,5330'. Roadcut.											
73-235	W	Columbia	Eckler Mountain	NE/SW32	8N	40E	GR			RR-13	GR INC	
	Chase Mountain section. ,5340'. Red top, cliff-forming. Ledge on hillside SE of curve in road.											
73-237	W	Columbia	Deadman	SE/SE10	7N	39E	GR			D-1	GR INC	
	Griffin Peak, uppermost flow, 5600'.											
73-238	W	Columbia	Deadman	SE/SE10	7N	39E	GR			D-1	GR INC	
	Griffin Peak, below 73-237, 5520'.											
73-239	W	Columbia	Deadman	NE/NE15	7N	39E	GR			D-1	GR INC	
	Griffin Peak, below 73-238.											
73-242	O	Umatilla	Big Meadows	SW/NW21	6N	38E	GR			RR-10	GR INC	
	Flow intruded by dike 73-240. Roadcut, 2320'.											
73-243	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section. Uppermost flow at head of trail into Mill Creek basin, 6240'.											
73-244	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-243, 6170'.											
73-245	W	Columbia	Deadman Peak	NW/NE8	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-244, 6130'.											
73-246	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-245, 6070'. Trail follows this flow for long distance.											
73-247	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-246, 6040'.											
73-248	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-247, 5970'.											
73-249	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-248, 5890'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-250	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-249, 5860'.											
73-251	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-250, 5780'.											
73-252	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-251, 5680'.											
73-253	W	Columbia	Deadman Peak	NW/NE3	6N	39E	GR			RR-13	GR INC	
	Table Rock section, under 73-252, 5650'.											
73-261	W	Columbia	Cahill Mt.	NE/SW4	9N	40E	WP	Fr Sp		RR-13	FS INC	
	Pioneer Park section. Flow below Roza. ,3455'.											
73-262	W	Columbia	Cahill Mt.	NE/SW4	9N	40E	WP	Fr Sp		RR-13	FS INC	
	Pioneer Park section. Under 73-261. ,3390'.											
73-263	W	Columbia	Cahill Mt.	NE/SW4	9N	40E	WP	Fr Sp		RR-13	"FS INC"	
	Pioneer Park section. TiO2 high. ,3280'. Could be same flow as 73-262.											
73-264	W	Columbia	Cahill Mt.	NW/SW4	9N	40E	WP	Eck Mt	Robinette Mountain	RR-13	ROBIN	
	Pioneer Park section. ,3225'. Prominent cliff-former.											
73-265	W	Columbia	Cahill Mt.	NW/SW4	9N	40E	GR			RR-13	GR INC	
	Pioneer Park section. ,3160'. Red top.											
73-266	W	Columbia	Cahill Mt.	NW/SW4	9N	40E	GR			RR-13	GR INC	
	Pioneer Park section. ,3080'.											
73-271	W	Columbia	Robinette Mountain	NW/NE26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Upper flow at road level, 4850'.											
73-272	W	Columbia	Robinette Mountain	NW/NE26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Under 73-271, 4820'.											
73-273	W	Columbia	Robinette Mountain	NW/NE26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Under 73-272, 4715'.											
73-274	W	Columbia	Robinette Mountain	NW/NE26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Under 73-273, 4620'.											
73-275	W	Columbia	Robinette Mountain	NW/NE26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Under 73-274, 4590'.											
73-276	W	Columbia	Robinette Mountain	NE/NW26	8N	39E	GR			RR-13	GR INC	
	Hill 4864 Newby Mountain section. Under 73-275, 4530'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-277	W	Columbia	Robinette Mountain	NE/NW26	8N	39E	GR			RR-13	GR	INC
	Hill 4864 Newby Mountain section. Under 73-276, 4440'.											
73-278	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	WP	Fr Sp		RR-13		UNC
	Pettyjohn Summit section. Uppermost flow. Unusual low FeO, high SiO2, TiO2 chemistry.,3030'.											
73-279	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	WP	Fr Sp		RR-13	FS	INC
	Pettyjohn Summit section. Under 73-278. Plagioclase-phyric. One of two thin flows, 3000'.											
73-280	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	WP	Eck Mt	Robinette Mountain	RR-13		ROBIN
	Pettyjohn Summit section. Under 73-279. ,2925'.											
73-281	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	GR			RR-13	GR	INC
	Pettyjohn Summit section. Under 73-280. ,2790'.											
73-282	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	GR			RR-13	GR	INC
	Pettyjohn Summit section. Under 73-281. ,2730'.											
73-283	W	Columbia	Robinette Mountain	NW/NE32	9N	39E	GR			RR-13	GR	INC
	Pettyjohn Summit section. Under 73-282. ,2670'.											
73-284	W	Columbia	Coppei	NE/NW33	8N	38E	GR			RR-10	GR	INC
	Lowest flow,2190'.											
73-285	W	Columbia	Coppei	NE/SW32	8N	38E	WP	Eck Mt	Dodge	D-1		DODGE
	Phyric flow, upper Dry Creek overlying red zone, 2330'.											
73-286	W	Columbia	Coppei	NW/SW32	8N	38E	GR			D-1	GR	INC
	Aphyric flow under 73-285, 2280'.											
73-287	W	Columbia	Kooskooskie	NW/NE9	7N	38E	GR			RR-10	GR	INC
	Lowest exposed flow on upthrown side of possible fault. Bed of N Fork Dry Creek, 2490'.											
73-288	W	Columbia	Kooskooskie	Ctr NW9	7N	38E	GR			RR-10	GR	INC
	Lowest exposed flow on downthrown side of possible fault. ,2400'.											
73-289	W	Columbia	Kooskooskie	NE/NW18	7N	38E	GR			RR-10	GR	INC
	Lowest exposed flow on upthrown side of possible fault. Along Dry Creek, 2070'.											
73-290	W	Columbia	Kooskooskie	NE/NE13	7N	37E	WP	Fr Sp		RR-10	FS	INC
	Next to lowest exposed flow on downthrown side of possible fault. Plagioclase-phyric. Along Dry Creek,2030'.											
73-293	W	Columbia	Deadman Peak	SW/NE19	7N	39E	GR			RR-10	GR	INC
	Lowest exposed flow at end of road,3720'.Probably stratigraphically lower than 73-313.											
73-294	W	Columbia	Deadman Peak	NE/SW18	8N	39E	WP	Fr Sp		RR-13	FS	INC
	Green Fork Section. Uppermost flow. ,4600'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-295	W	Columbia	Deadman Peak	NE/SW18	8N	39E	WP	Fr Sp		RR-13	FS INC	
	Green Fork section. Under 73-294. ,4550'.											
73-296	W	Columbia	Deadman Peak	NE/SW18	8N	39E	WP	Eck Mt	Dodge	RR-13	DODGE	
	Green Fork section. Under 73-295. ,4500'. plagioclase-phyric.											
73-297	W	Columbia	Deadman Peak	NE/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-296. ,4410'. Red weathered top.											
73-298	W	Columbia	Deadman Peak	SE/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-297. ,4380'.											
73-299	W	Columbia	Deadman Peak	SE/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-298. ,4370'.											
73-300	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-299. ,4350'.											
73-301	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-300. ,4335'.											
73-302	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-301. ,4305'.											
73-303	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-302. ,4240'.											
73-304	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-303. ,4170'.											
73-305	W	Columbia	Deadman Peak	SW/SE18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-304. ,4140'.											
73-306	W	Columbia	Deadman Peak	SE/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-305. ,4090'.											
73-307	W	Columbia	Deadman Peak	SE/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-306. ,4040'. Flowing spring in this flow.											
73-308	W	Columbia	Deadman Peak	SW/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-307. ,3930'.											
73-309	W	Columbia	Deadman Peak	SW/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-308. ,3850'.											
73-310	W	Columbia	Deadman Peak	SW/SW18	8N	39E	GR			RR-13	GR INC	
	Green Fork section. Under 73-309. ,3810'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-311	W	Walla Walla	Deadman Peak	SE/SE13	8N	38E	GR			RR-13	GR INC	
Green Fork section. Under 73-310. ,3720'. Thick breccia in upper part.												
73-312	W	Walla Walla	Deadman Peak	SE/SE13	8N	38E	GR			RR-13	GR INC	
Green Fork section. Under 73-311. ,3640'.												
73-313	W	Walla Walla	Deadman Peak	SE/SE13	8N	38E	GR			RR-13	GR INC	
Green Fork section. Under 73-312. ,3540'. Probably stratigraphically higher than 73-293.												
73-314	W	Columbia	Robinette Mountain	SW/NE19	8N	39E	WP	Fr Sp		RR-13	"FS INC"	
Section E of Jasper Mountain Road. Upper flow. Na20 high, 3420'.												
73-315	W	Columbia	Robinette Mountain	SW/NE19	8N	39E	WP	Eck Mt	Dodge	RR-10	DODGE	
Section E of Jasper Mountain Road. Under 73-314, 3370'. Plagioclase-phyric.												
73-316	W	Columbia	Robinette Mountain	SW/NE19	8N	39E	GR			RR-10	GR INC	
Section E of Jasper Mountain Road. Under 73-315, 3335'.												
73-317	W	Columbia	Robinette Mountain	SW/NE19	8N	39E	GR			RR-13	GR INC	
Section E of Jasper Mountain Road. Under 73-316, 3310'.												
73-318	W	Columbia	Robinette Mountain	SE/NE7	8N	39E	WP	Fr Sp		RR-13	FS INC	
Upper Pettyjohn section. Upper flow. Over Robinette Mountain flow (not sampled). ,3360'.												
73-319	W	Columbia	Robinette Mountain	SW/NW8	8N	39E	GR			RR-13	GR INC	
Upper Pettyjohn section. Flow under Robinette Mountain flow. ,3160'. Thick flow with complex top.												
73-320	W	Columbia	Robinette Mountain	SW/NW8	8N	39E	GR			RR-13	GR INC	
Upper Pettyjohn section. Two flows under 73-319. ,3100'.												
73-321	W	Columbia	Robinette Mountain	SW/NW8	8N	39E	GR			RR-13	GR INC	
Upper Pettyjohn section. Under 73-320. ,3040'.												
73-322	W	Columbia	Dayton	SW/SW34	10N	39E	WP	Eck Mt	Robinette Mountain	RR-17	ROBIN	
Dayton city dump. ,3020'.												
73-323	W	Columbia	Dayton	SW/SW18	10N	39E	WP	Fr Sp		RR-10	FS INC	
Quarry along road.												
73-324	W	Columbia	Robinette Mountain	NW/NW20	9N	39E	GR			RR-10	GR INC	
Roadcut, 2340'.												
73-325	W	Columbia	Robinette Mountain	NW/NW20	9N	39E	WP	Fr Sp		RR-17	FS INC	
Roadcut at curve in main highway, 1400'. Above saprolite and sediments. Plagioclase-phyric.												
73-326	W	Columbia	Robinette Mountain	NW/NW20	9N	39E	GR			RR-17	GR INC	
Under 73-325 at same location.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-328	W	Columbia	Starbuck 15'	SE/NW1	12N	37E	GR			RR-15	GR INC	
	Under 72-104. Roadcut, about 600'.											
73-328F	W	Columbia	Starbuck 15'	SE/NW1	12N	37E	GR			XRF-3	GR INC	
	Same sample as 73-328.											
73-329	W	Columbia	Starbuck 15'	NW/NW6	12N	38E	GR			XRF-2	GR INC	
	Under 73-328. Red top. Roadcut, about 600'.											
73-330	W	Columbia	Starbuck 15'	NW/NW6	12N	38E	GR			XRF-2	GR INC	
	Under 73-329 at same location.											
73-331	W	Columbia	Starbuck 15'	NW/NE32	13N	38E	GR			XRF-2	GR INC	
	Under 73-330. Abundant log casts in base of flow. Below breccia. Roadcut.											
73-332	W	Columbia	Starbuck 15'	NE/NW32	13N	38E	GR			XRF-2	GR INC	
	Under 73-331. Roadcut in thin flow.											
73-333	W	Columbia	Hay 15'	SE/SW24	13N	38E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Above railroad, 850'.											
73-334	W	Whitman	Hay 15'	SE/SE19	13N	39E	GR			XRF-2	GR INC	
	Spectacular platy flow. Railroad cut.											
73-335	W	Whitman	Hay 15'	SE/SW19	13N	39E	GR			XRF-2	GR INC	
	Brecciated top of flow filled in with red tuff. Railroad cut.											
73-336	W	Columbia	Hopkins Ridge	SW/SE19	10N	41E	WP	Fr Sp		D-1	FS INC	
	Flow under Roza on upper Starveout Ridge, 3420'.											
73-337	W	Columbia	Hopkins Ridge	NE/SW19	10N	41E	WP	Eck Mt	Dodge	D-1	DODGE	
	Phyric flow, 3140'.											
73-338	W	Whitman	Cahill Mt.	NW/SE27	10N	40E	WP	Eck Mt	Robinette Mountain	RR-17	ROBIN	
	Cougar Canyon, 3110'. Overlies red weathered flow top.											
73-339	W	Whitman	Starbuck 15'	NE/SE30	13N	38E	SM	L Mon		XRF-1	"LM"	
	Intracanyon flow. Low FeO. Outcrop above road, 830'.											
73-340	W	Whitman	Hay 15'	NW/SE20	13N	39E	GR			XRF-2	GR INC	
	Platy flow in railroad cut.											
73-341	W	Whitman	Hay 15'	SW/NE23	13N	39E	GR			XRF-2	GR INC	
	Platy flow in railroad cut.											
73-342	W	Whitman	Hay 15'	NE/SW23	13N	39E	GR			XRF-2	GR INC	
	Under 73-341, as tuff-filled breccia at top. Railroad cut.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FMI	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-343	W	Garfield	Hay 15'	NW/SW27	13N	40E	GR			RR-10	GR INC	
Quarry.												
73-345	W	Garfield	Hay 15'	NW/SW15	13N	40E	SM	L Mon		XRF-1	LM	
Intracanyon flow. Hillside above Meadow Creek, 820'.												
73-346	W	Garfield	Hay 15'	NW/SE9	13N	40E	GR			XRF-2	GR INC	
Platy flow with abundant chlorophaeite. Upper flow in roadcut at S end of bridge, 710'.												
73-347	W	Garfield	Hay 15'	NW/SE9	13N	40E	GR			XRF-2	GR INC	
Under 73-346 in same roadcut, on downthrown side of fault.												
73-348	W	Garfield	Hay 15'	SW/NW2	13N	40E	SM	Pomona		XRF-1	POMONA	
Intracanyon flow. Roadcut. Upper flow, columnar against 73-349.												
73-349	W	Garfield	Hay 15'	SW/NW2	13N	40E	SM			XRF-1	UNC	
Older than 73-348. Intracanyon flow. Roadcut. Some large plagioclase phenocrysts.												
73-351	W	Columbia	Cahill Mountain	SW/SW24	10N	40E	WP	Eck Mt	Dodge	D-1	DODGE	
Phyric flow near point where it pinches out on Starveout Ridge, 3085'.												
73-352	W	Columbia	Cahill Mountain	SE/NE23	10N	40E	WP	Eck Mt	Dodge	D-1	DODGE	
Phyric flow above saprolite on Starveout Ridge, 2960'.												
73-355	W	Whitman	Penawawa 15'	NW/NW13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Under 72-292. Roadcut, 935'.												
73-356	W	Whitman	Penawawa 15'	NW/NW13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Under 73-355. Roadcut, 905.												
73-357	W	Whitman	Penawawa 15'	NW/NE13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Under flow units (unsampled) and probably under 73-356 (projected). Hillside E of road, 885'.												
73-358	W	Whitman	Penawawa 15'	NW/NE13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Under 73-357. ,865'. Hillside E of road.												
73-359	W	Whitman	Penawawa 15'	NW/NE13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Thick, platy flow. ,730'. hillside E of road, under 73-358.												
73-360	W	Whitman	Penawawa 15'	SW/NE13	14N	40E	GR			XRF-2	GR INC	
Horton Grade section. Under 73-359. Breccia top is in-filled with tuff. ,660'. Roadcut.												
73-361	W	Whitman	Penawawa 15'	NW/NW18	14N	41E	SM	L Mon		XRF-1	LM	
Intracanyon flow. Hillside above road, 880'.												
73-362	W	Whitman	Penawawa 15'	NW/NE18	14N	41E	SM	L Mon		XRF-1	LM	
Intracanyon flow. Hillside above road, 860'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-363	W	Whitman	Penawawa 15'	SE/SW8	14N	41E	GR			XRF-2	GR INC	
	Roadcut, flow below 72-38.											
73-364	W	Whitman	Penawawa 15'	NW/NW2	14N	41E	WP	Fr Sp		RR-10	FS INC	
	Overlies weathered flow on Luft Grade. Roadcut, 1200'.											
73-365A	W	Garfield	Hay 15'	NW/NE24	13N	39E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Hillside N of mouth of New York Gulch, 840'.											
73-366	W	Garfield	Hay 15'	SE/SE13	13N	39E	SM			XRF-1	UNC	
	Intracanyon flow. Hillside N of mouth of New York Gulch, 930'. Plagioclase-phyric.											
73-367	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Lowest flow. , 740'. steep hillside.											
73-368	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			RR-15	GR INC	
	New York Bar section. Over 73-367. , 800'.											
73-368f	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-3	GR INC	
	Same sample as 73-368.											
73-369	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-368. , 875'.											
73-370	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-369. , 890'.											
73-371	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-370. , 905'.											
73-372	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-371. , 925'.											
73-373	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-372. , 980'.											
73-374	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-373. , 1055'.											
73-375	W	Garfield	Hay 15'	NW/NE18	13N	40E	GR			XRF-2	GR INC	
	New York Bar section. Over 73-374, under 74-220. , 1110'.											
73-376	W	Garfield	Hay 15'	NW/SE18	13N	40E	WP	Eck Mt	Dodge	XRF-2	DODGE	
	New York Bar section. Over 74-219. , 1270'. Plagioclase-phyric. Above road.											
73-377	W	Garfield	Hay 15'	NW/SE18	13N	40E	WP	Fr Sp		RR-15	"FS INC"	
	New York Bar section. Over 73-376. High P205. , 1320'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
73-377F	W	Garfield	Hay 15'	NW/SE18	13N	40E	WP	Fr Sp		XRF-3	"FS INC"	
	Same sample as 73-377. MgO higher than FS INC chemical type.											
73-378	W	Whitman	Endicott 15'	SE/SW30	15N	42E	WP	Fr Sp		RR-10	FS INC	
	Over saprolite in gully, 1360'.											
73-379	W	Whitman	Penawawa 15'	NE/SE12	14N	41E	WP	Fr Sp		RR-10	FS INC	
	Hillside on E side of gully, N of road, 1380'. Long Hollow.											
73-380	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-2	GR INC	
	Lower Long Hollow section. Equals 74-226. ,845'. Abandoned quarry N end of road.											
73-381	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-2	GR INC	
	Lower Long Hollow section. Platy flow under 74-225. ,710'. Second flow below 73-380, same quarry.											
73-382	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-2	GR INC	
	Lower Long Hollow section. Under 73-381, same quarry. Tuff in breccia top. ,685'.											
73-383	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-2	GR INC	
	Lower Long Hollow section. Under 73-382. Lowest flow, 665'. Railroad cut S of quarry.											
74-5	W	Grant	Steamboat Rock SW	NW/SW33	27N	29E	GR			RR-17	GR INC	
	Flow above W side Banks Lake. Cut by dike 74-4.											
74-11	W	Yakima	Foundation Ridge	SW/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-25. ,4560'. Flow DR 2 of Swanson (1967, 1978).											
74-12	W	Yakima	Foundation Ridge	SW/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-11. ,4630'. Flow DR 3.											
74-13	W	Yakima	Foundation Ridge	SW/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-12. ,4730'. Flow DR 4.											
74-14	W	Yakima	Foundation Ridge	SW/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-13. ,4970'. Flow DR 5.											
74-15	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-14. ,5140'. Flow DR 6.											
74-16	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-15. ,5180'. Flow DR 7.											
74-17	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-16. ,5350'. Flow DR 8.											
74-18	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR INC	
	Divide Ridge section. Over 74-17. ,5460'. Flow DR 9.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
74-19	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-18. ,5520'. Flow DR 10.												
74-20	W	Yakima	Foundation Ridge	SE/SW15	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-19. ,5610'. Flow DR 11. Probably same flow as 74-19.												
74-21	W	Yakima	Foundation Ridge	NW/NW22	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-20. ,5770'. Flow DR 12. Section offset up dip.												
74-22	W	Yakima	Foundation Ridge	NW/NW22	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-21. ,5960'. Flow DR 13.												
74-23	W	Yakima	Foundation Ridge	NW/SW22	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-22. ,6070'. Flow DR 14.												
74-24	W	Yakima	Foundation Ridge	SE/SE21	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Over 74-23. Highest flow,probably same as 74-23. ,6380'. Flow DR 15.												
74-25	W	Yakima	Foundation Ridge	SW/SW15	13N	14E	GR			RR-17	GR	INC
Divide Ridge section. Under 74-11. Lowest flow. ,4510'. Flow DR 1.												
74-43	O	Wallowa	Flora	SW/NW25	6N	44E	GR			D-1	GR	INC
Flow under 2-3 flow units under 71-5. Buford Creek Grade.												
74-44	O	Wallowa	Flora	SW/NW25	6N	44E	GR			D-1	GR	INC
Flow under 74-43. Buford Creek Grade.												
74-48	W	Columbia	Cahill Mt.	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 72-107, over 72-108. ,4360'. Roadcut.												
74-49	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 72-108. ,4270'. Roadcut.												
74-50	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 74-49. ,4230'. Roadcut.												
74-51	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 74-50. ,4200'. Roadcut.												
74-52	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 74-51. ,4160'. Roadcut.												
74-53	W	Columbia	Eckler Mountain	NW/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 74-52. ,4090'. Roadcut.												
74-54	W	Columbia	Panjab Creek	NE/NW24	9N	40E	GR			XRF-6	GR	INC
Patrick Grade section. Under 74-53. ,4010'. Roadcut.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-55	W	Columbia	Panjab Creek	NE/NW24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-54. ,3970'. Roadcut.											
74-56	W	Columbia	Panjab Creek	NE/NW24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-55. ,3930'. Roadcut.											
74-57	W	Columbia	Panjab Creek	NE/NW24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-56. ,3890'. Roadcut.											
74-58	W	Columbia	Panjab Creek	SW/NE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-57. ,3840'. Roadcut.											
74-59	W	Columbia	Panjab Creek	SW/NE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-58. ,3800'. Roadcut.											
74-60	W	Columbia	Panjab Creek	SW/NE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-59. ,3750'. Roadcut.											
74-61	W	Columbia	Panjab Creek	SW/NE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-60. ,3730'. Roadcut.											
74-62	W	Columbia	Panjab Creek	SE/NE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-61. ,3690'. Roadcut.											
74-63	W	Columbia	Panjab Creek	NE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-62. ,3620'. Roadcut.											
74-64	W	Columbia	Panjab Creek	SE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-63. ,3500'. Roadcut.											
74-65	W	Columbia	Panjab Creek	SE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-64. ,3430'. Roadcut.											
74-66	W	Columbia	Panjab Creek	SE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-65. ,3350'. Roadcut.											
74-67	W	Columbia	Panjab Creek	NE/NE25	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-66. ,3320'. Roadcut.											
74-68	W	Columbia	Panjab Creek	SE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-67. ,3270'. Roadcut.											
74-69	W	Columbia	Panjab Creek	SE/SE24	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-68. ,3245'. Roadcut.											
74-70	W	Columbia	Panjab Creek	NW/NE25	9N	40E	GR			XRF-6	GR	INC
	Patrick Grade section. Under 74-69. ,3180'. Roadcut.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-90	W	Franklin	Haas 15'	NW/NW19	13N	36E	SM	El Mt		XRF-6	ELEPHANT	
	Intracanyon flow. Cliff above river. Coarsely columnar against eroded Pomona., 840'.											
74-205	W	Columbia	Starbuck 15'	SE/NW2	12N	37E	WP	Fr Sp		XRF-7	FS INC	yes
	Pillowed base over saprolite, over 73-107. Roadcut. ,860'.											
74-206	W	Whitman	Starbuck 15'	NE/SW22	13N	38E	WP	Fr Sp		XRF-4	"FS INC"	
	Little Goose section. Higher MgO than defined FS INC chemical type, 1190'. Upper flow on hillside above railroad cuts.											
74-207	W	Whitman	Starbuck 15'	SE/SW22	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-206. ,1150'. Hillside.											
74-208	W	Whitman	Starbuck 15'	SE/SW22	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-207. ,1015'. Hillside.											
74-209	W	Whitman	Starbuck 15'	SE/SW22	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-208. ,950'. Hillside.											
74-210	W	Whitman	Starbuck 15'	SE/SW22	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-209. ,805'. Hillside.											
74-211	W	Whitman	Starbuck 15'	NE/NW27	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-210. ,745'. Hillside.											
74-212	W	Whitman	Starbuck 15'	NE/NW27	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-211. ,705'. Hillside.											
74-213	W	Whitman	Starbuck 15'	NE/NW27	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-212, 655'. Railroad cut.											
74-214	W	Whitman	Starbuck 15'	NE/NW27	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-213, 630'. Below railroad cut.											
74-215	W	Whitman	Starbuck 15'	NE/NW27	13N	38E	GR			XRF-4	GR INC	
	Little Goose section. Under 74-214, 560'. Lowest flow above river.											
74-218	W	Columbia	Hay 15'	NE/NE24	13N	39E	SM	Esquat		XRF-6	ESQUAT	
	Intracanyon flow adjacent to 73-375. Hillside,830'.											
74-219	W	Garfield	Hay 15'	NE/SE18	13N	40E	GR			XRF-6	GR INC	
	New York Bar section. Under 73-376. ,1250'.S side of hill 1408.											
74-220	W	Garfield	Hay 15'	NE/SE18	13N	40E	GR			XRF-6	GR INC	
	New York Bar section. Under 74-219,over 73-375. ,1200'.											
74-225	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR INC	
	Lower Long Hollow section. Over 73-381, 835'. Thick red top. Hillside above railroad.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
74-226	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-225. ,895'.												
74-227	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-226. ,975'.												
74-228	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-227. ,1010'.												
74-229	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-228. ,1035'.												
74-230	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-229. ,1070'.												
74-231	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR	INC
Lower Long Hollow section. Over 74-230,below 74-266. ,1120'.												
74-236	W	Whitman	Penawawa 15'	SE/SE19	14N	42E	GR			XRF-4	GR	INC
Swift Bar partial section. Lowest flow at railroad tracks. ,660'.												
74-237	W	Whitman	Penawawa 15'	SE/SE19	14N	42E	GR			XRF-4	GR	INC
Swift Bar partial section. Over 74-236. Hillside above railroad, 770'.												
74-238	W	Whitman	Penawawa 15'	SE/SE19	14N	42E	GR			XRF-4	GR	INC
Swift Bar partial section. Over 74-237. ,875'.												
74-239	W	Whitman	Penawawa 15'	SE/SE19	14N	42E	GR			XRF-6	GR	INC
Swift Bar partial section. Over 74-238. ,960'.												
74-241	W	Garfield	Penawawa 15'	NE/NE27	14N	42E	SM	Pomona		XRF-6	UNC	
Intracanyon flow over Gravel. Very high MgO (8.7). POMONA-like chemistry. Easternmost of two remnants,hillside,900'.												
74-243	W	Garfield	Almota	SW/SE23	14N	42E	SM	L Mon		XRF-4	LM	
Intracanyon flow. Hillside above road,820'.												
74-244	W	Whitman	Almota	NW/NE13	14N	42E	GR			XRF-4	GR	INC
Almota-Schultz Bar section. Lowest flow, exposed behind grain elevators at Almota Port. Under 74-245, 650'.												
74-245	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
Almota-Schultz Bar section. Over 74-244, 660'. Railroad cut.												
74-246	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
Almota-Schultz Bar section. Over 74-245, 700'. Red top,overlain by tuff. Railroad cut.												
74-247	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
Almota-Schultz Bar section. Over 74-246, 730'. Hillside above railroad cut.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-248	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-247, 810'.											
74-249	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-248, 890'.											
74-250	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-249, 930'.											
74-251	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-250. ,990'.											
74-252	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-251. ,1030'.											
74-253	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-252. ,1070'.											
74-254	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-253. ,1120'.											
74-255	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-254. ,1210'.											
74-256	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-255. ,1265'.											
74-257	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-256. ,1290'.											
74-258	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-257. ,1310'.											
74-259	W	Whitman	Penawawa 15'	NW/NW23	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-258. ,1370'.											
74-260	W	Whitman	Penawawa 15'	SE/SE15	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-259. ,1500'.											
74-261	W	Whitman	Penawawa 15'	SE/SE15	14N	42E	GR			XRF-4	GR	INC
	Almota-Schultz Bar section. Over 74-260. ,1535'. Saprolite above.											
74-262	W	Whitman	Penawawa 15'	SE/SE15	14N	42E	WP	Fr Sp		XRF-4	FS	INC
	Almota-Schultz Bar section. Over 74-261. ,1570'.											
74-263	W	Whitman	Penawawa 15'	SE/SE15	14N	42E	WP	Fr Sp		XRF-4	FS	INC
	Almota-Schultz Bar section. Over 74-262. ,1625'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-264	W	Whitman	Penawawa 15'	SE/SE15	14N	42E	WP	Roza		XRF-4	ROZA	
	Almota-Schultz Bar section. Over 74-263. ,1650'. Extends to top of exposure,at elevation of 1740'.											
74-266	W	Whitman	Penawawa 15'	NW/NW15	14N	41E	GR			XRF-4	GR INC	
	Lower Long Hollow section. Over 74-231. ,1200'.											
74-268	W	Whitman	Silcott	SW/NW32	12N	45E	SM	W Cr		XRF-4	WILBUR	
	Toe section. Uppermost flow. ,2795'. Trig. station on this flow.											
74-269	W	Whitman	Silcott	SW/NW32	12N	45E	WP	Pr Rp		XRF-4	"LOLO INC"	
	Toe section. Under 74-268. ,2720'.Al203 low.											
74-270	W	Whitman	Silcott	SW/NW32	12N	45E	WP	Pr Rp		XRF-4	"LOLO INC"	
	Toe section. Under 74-269. Over 30' saprolite. ,2680'.Al203 low.											
74-271	W	Whitman	Silcott	SE/NE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under saprolite. ,2500'.											
74-272	W	Whitman	Silcott	SE/NE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-271. ,2405'.											
74-273	W	Whitman	Silcott	SE/NE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-272. ,2355'.											
74-274	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-273. ,2250'.											
74-275	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-274. ,2215'.											
74-276	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-275. ,2180'.											
74-277	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-276. ,2120'.											
74-278	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-277. ,2060'.											
74-279	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-278. ,2010'.											
74-280	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-279. ,1930'.											
74-281	W	Whitman	Silcott	NE/SE31	12N	45E	GR			XRF-4	GR INC	
	Toe section. Under 74-280. ,1840'. Prominent ledge-former.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-282	W	Whitman	Silcott	SW/SE31	12N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-281. ,1710'.											
74-283	W	Whitman	Silcott	SW/SE31	12N	45 E	GR			XRF-4	GR	INC
	Toe section. Under 74-282. ,1635'.											
74-284	W	Whitman	Silcott	SW/SE31	12N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-283. ,1540'.											
74-285	W	Whitman	Silcott	NE/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-284. ,1450'.											
74-286	W	Whitman	Silcott	NW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-285. ,1370'.											
74-287	W	Whitman	Silcott	NW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-286. ,1265'.											
74-288	W	Whitman	Silcott	NW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-287. ,1200'.											
74-289	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-288. ,1160'.											
74-290	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-289. ,1100'.											
74-291	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-290. ,1065'.											
74-292	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-291. ,1000'.											
74-293	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-292. ,940'.											
74-294	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-293. ,840'.											
74-295	W	Whitman	Silcott	SW/NW6	11N	45E	GR			XRF-4	GR	INC
	Toe section. Under 74-294. ,765'.											
74-296	W	Whitman	Silcott	NE/NE1	11N	44E	GR			XRF-4	GR	INC
	Toe section. Under 74-295. ,730'. Roadcut.											
74-297	W	Asotin	Silcott	SE/SW20	11N	45E	SM	L Mon		XRF-6	LM	
	Intracanyon flow. Cliff behind building at Silcott,810'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
74-298	W	Asotin	Silcott	NE/NE22	11N	45E	SM	El Mt		XRF-6	ELEPHANT	
Intracanyon flow. ,1400'. Steep hillside.												
74-299	W	Asotin	Silcott	NE/NE22	11N	45E	SM	El Mt		XRF-6	ELEPHANT	
Intracanyon flow. Over 74-298. ,1430'.												
74-301	W	Asotin	Silcott	SW/SE22	11N	45E	WP	Pr Rp				yes
Glass only. Pillowed base of flow forming ledge at 1250'												
74-303	W	Asotin	Silcott	NW/NW2	10N	45E	SM	El Mt				yes
Glass only. PPC on top(?) of flow.												
74-304	W	Asotin	Clarkston	SW/SE19	11N	46E	SM	L Mon		XRF-6	LM	
Intracanyon flow. Forms bluff with house on top,800'.												
74-305	W	Asotin	Asotin	SE/SE5	10N	46E	SM	Pomona		XRF-6	POMONA	
Intracanyon flow. Under Swallow Rock (71-17). Now below water level,725'.												
74-308	W	Asotin	Asotin	SW/NE8	10N	46E	WP	Pr Rp		XRF-6	LOLO INC	yes
Low bench 1 mi SSW of Swallow Rock. Roadcut,850'.												
74-309	W	Asotin	Asotin	SW/NE8	10N	46E	SM	L Mon		XRF-6	LM	
Intracanyon flow with pillowed base. Small bluff 250 m N of 74-308. ,900'. Across gully N of houses shown on map.												
74-310	W	Asotin	Capt. John Rapids	SW/NW19	9N	47E	SM	El Mt		XRF-6	ELEPHANT	
Intracanyon flow. Locality A of Lupher and Warren (1942). Brow of ridge,2130'.												
74-311	W	Asotin	Capt. John Rapids	NE/NW25	9N	46E	SM	Asotin		XRF-4	ASOTIN	yes
Over thick zone of clay. Cut in Jeep road,2540'. Forms upper cliff along ridge crest.												
74-312	W	Asotin	Capt. John Rapids	NW/NW24	9N	46E	SM	W Rdg	Lewiston Orchards	XRF-4	"LEW ORCH"	
Over basaltic sand and conglomerate over flow like 74-311. Low FeO, high CaO. Roadcut, 2480'.												
74-313	W	Asotin	Lewiston Orchards S	NW/SW13	9N	46E	SM			XRF-4	UNC	yes
Over saprolite. Roadcut, 2170'. Flow probably fed by dike 72-219.												
74-314	W	Asotin	Lewiston Orchards S	SE/NE14	9N	46E	GR			XRF-6	GR INC	
Under saprolite. Under 74-313. Roadcut,2080'.												
74-317	W	Asotin	Lewiston Orchards S	NW/SW1	9N	46E	SM	El Mt		XRF-6	ELEPHANT	
Intracanyon flow. Locality C of lupher and Warren (1942). Along ridge,1790'.												
74-320	W	Asotin	Lewiston OrchardsS	SW/NW1	9N	46E	SM			XRF-6	UNC	
Intracanyon flow over Gravel. Plagioclase-phyric. Cliff,1300'. Cut by Pomona.												
74-322	W	Asotin	Asotin	NW/NE2	9N	46E	WP	Pr Rp		XRF-6	LOLO INC	yes
Cut by Pomona,hillside on W side of Tenmile Creek. ,1600'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
74-323	W	Asotin	Asotin	NW/NE2	9N	46E	SM	Pomona		XRF-6	POMONA	
	Intracanyon flow. Hillside on W side of Tenmile Creek, ~1750'.											
74-324	W	Asotin	Asotin	NW/NE2	9N	46E	SM	El Mt		XRF-6	ELEPHANT	
	Intracanyon flow younger than 73-323, on same hillside. ~1780'.											
74-325	W	Asotin	Asotin	NW/NE2	9N	46E	SM	El Mt				yes
	Glass only. Pillows associated with 74-324.											
74-327	W	Asotin	Silcott	NW/NW7	11N	45E	SM	Pomona		XRF-6	POMONA	
	Intracanyon flow. Northernmost remnant, hillside above river, 1650'.											
74-328	W	Asotin	Silcott	NE/SW7	11N	45E	SM	El Mt		XRF-6	ELEPHANT	
	Intracanyon remnant. Southernmost remnant, hillside above river, 2100'.											
74-329	W	Garfield	Silcott	NE/SE24	11N	44E	SM	Pomona		XRF-6	POMONA	
	Intracanyon remnant. Largest remnant N of Alpowa Creek. Overlies Gravel in deep paleocanyon. ~1800'.											
74-332	W	Garfield	Silcott	NW/SE24	11N	44E	SM	El Mt		XRF-6	"ELEPHANT"	
	Intracanyon flow. Low FeO. Pillowed base over eroded Pomona, N of Alpowa Creek, 2250'.											
74-333	I	Nez Perce	Asotin	SW/SW25	35N	6W	SM			XRF-6	UNC	
	Intracanyon flow. Cut by Pomona. Roadcut, now probably under water. ~760'.											
74-334	I	Nez Perce	Asotin	SW/SW25	35N	6W	SM	Pomona		XRF-6	POMONA	
	Intracanyon flow younger than 74-333. Same location. Spectacular columns.											
75-1	W	Adams	Lind	SW/SE25	17N	33E	SM	Asotin		RR-24	ASOTIN	
	Roadcut in curve on Wahl Road, 1670'.											
75-3	W	Whitman	Cheney 15'	SE/NE4	21N	41E	WP	Pr Rp		D-1	ROSALIA	
	'Sag Flowout' structure, W shore of Badger Lake.											
75-7	W	Lincoln	Sullivan Lake	NE/SW14	22N	32E	WP	Fr Sp		RR-17	"FS INC"	
	Under Roza, high Na2O. Along road to Delzer Falls, 1500'.											
75-8	W	Lincoln	Pacific Lake	NE/NE31	23N	33E	WP	Pr Rp		RR-17	ROSALIA	
	Over Roza. Along road, 1880'.											
75-9	W	Whitman	Bishop	SW/NW35	13N	44E	SM			XRF-8	UNC	
	Section opposite Kelly Bar. Second flow from top. Aphyric float above, 2560'.											
75-10	W	Whitman	Bishop	NW/SW35	13N	44E	WP	Roza		XRF-8	ROZA	
	Section opposite Kelly Bar. Under 75-9, over saprolite and red clay. ~2400'.											
75-11	W	Whitman	Bishop	NW/SW35	13N	44E	GR			XRF-8	GR INC	
	Section opposite Kelly Bar. Under saprolite. ~2340'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-12	W	Whitman	Bishop	NW/SW35	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-11. ,2250'.											
75-13	W	Whitman	Bishop	NW/SW35	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-12. ,2190'.											
75-14	W	Whitman	Bishop	SW/SW35	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-13. ,2050'. Thick,hackly.											
75-15	W	Whitman	Bishop	SE/SE34	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-14. ,1850'.											
75-16	W	Whitman	Bishop	SE/SE34	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-15. ,1810'.											
75-17	W	Whitman	Bishop	SE/SE34	13N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-16. ,1770'.											
75-18	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-17. ,1690'.											
75-19	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-18. ,1580'.											
75-20	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-19. ,1480'.											
75-21	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-20. ,1410'.											
75-22	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-21. ,1380'.											
75-23	W	Whitman	Bishop	NE/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-22. ,1310'.											
75-24	W	Whitman	Bishop	NW/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-23. ,1220'.											
75-25	W	Whitman	Bishop	NW/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-24. ,1120'.											
75-26	W	Whitman	Bishop	NW/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-25. ,970'.											
75-27	W	Whitman	Bishop	NW/NE2	12N	44E	GR			XRF-8	GR	INC
	Section opposite Kelly Bar. Under 75-26. ,870'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
		LOCATION					STRATIGRAPHY			CHEMISTRY		
75-28	W	Whitman	Bishop	SW/NE2	12N	44E	GR			XRF-8	GR INC	
Section opposite Kelly Bar. Under 75-27, 780'. Lowest flow.												
75-29	W	Walla Walla	Lower Monumental Dam	NW/SE3	12N	34E	SM	L Mon		XRF-7	"LM"	
Intracanyon flow, glassy base-altered chemistry. Type locality, same as for 72-145.												
75-35	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Goose Island	WET-1	GOOSE	
Equals 71-112. Same location.												
75-36	W	Walla Walla	Slater	NW/NE25	9N	31E	SM	Ice H	Indian.Memorial	WET-1	INDIAN	
Equals 73-122. Same location.												
75-38	W	Walla Walla	Levey SE	SW/SE17	9N	32E	SM	Ice H	Indian Memorial	RR-16	INDIAN	
Low hill in field, above Gar trig N of Harbor Drive. ,655'.												
75-44	W	Franklin	Levey SW	NW/NW27	10N	31E	SM	El Mt		RR-16	ELEPHANT	
Float, possibly flood related, on hillside N of road. ,610'.												
75-46	W	Franklin	Levey SW	SE/SE17	10N	31E	SM	Ice H	Basin City	WET-1	BASIN	
Equals 72-250. Same location.												
75-51B	W	Franklin	Eltopia 15'	SW/SW24	11N	30E	SM	Ice H	Basin City	RR-16	BASIN	
Vent area. Low hill, 640'.												
75-51C	W	Franklin	Eltopia 15'	SW/SW24	11N	30E	SM	Ice H	Basin City	RR-16	BASIN	
Same location as 75-51B.												
75-56	W	Franklin	Mesa 15'	SE/NE20	12N	30E	SM	El Mt		RR-16	ELEPHANT	
Small outcrop on hillside SE of bend in canal, 780'.												
75-57	W	Franklin	Mesa 15'	SE/NE20	12N	30E	SM	El Mt		RR-16	ELEPHANT	
Small outcrop just SE of canal and WSW of 75-57. ,770'.												
75-58	W	Franklin	Mesa 15'	NE/SE20	12N	30E	SM	El Mt		RR-16	ELEPHANT	
Next to contact with phyric rock, small outcrop SE of road. ,770'.												
75-59	W	Franklin	Mesa 15'	NW/SE20	12N	30E	SM	Ice H	Basin City	RR-16	BASIN	
Phyric flow, just E of road. ,770'.												
75-60	W	Franklin	Mesa 15'	SE/SE20	12N	30E	SM	El Mt		RR-16	ELEPHANT	
Small outcrop just N of intersection. ,780'.												
75-62	W	Franklin	Mesa 15'	NW/NW28	12N	30E	SM	El Mt		RR-16	ELEPHANT	
Low ledge SW of phyric body. ,780'.												
75-66	W	Franklin	Mesa 15'	SW/NE20	12N	30E	SM	Ice H	Basin City	RR-16	BASIN	
Phyric body, near Eastern margin. ,800'.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FMI	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
		LOCATION					STRATIGRAPHY			CHEMISTRY		
75-67	W	Franklin	Mesa 15'	SW/NE20	12N	30E	SM	Ice H	Basin City	RR-16	BASIN	
	Same body as 75-66 but near center.,800'.											
75-72	W	Benton	Badger Mt.	SW/NE14	8N	28E	SM	Ice H	Martindale	RR-16	MARTIN	
	Quarry W of Clodfelter Road.											
75-74	W	Whitman	Thorn Hollow	NW/NE22	3N	35E	WP	Fr Sp		D-1	FS INC	
	Flow S of Athena,2650'.											
75-75	W	Whitman	Almota	SE/SE27	14N	43E	WP	Pr Rp		XRF-8	LOLO INC	
	Tramway section. Upper exposed flow. Float above. ,2280'.											
75-76	W	Whitman	Almota	NE/NE34	14N	43E	WP	Roza		XRF-8	ROZA	
	Tramway section. Over saprolite. ,2130'.											
75-77	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under saprolite. ,2020'.											
75-78	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-77. ,1940'.											
75-79	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-78. ,1880'.											
75-80	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-79. ,1800'.											
75-81	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-80. ,1710'.											
75-82	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-81. ,1650'.											
75-83	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-82. ,1590'.											
75-84	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-83. ,1560'.											
75-85	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-84. ,1540'.											
75-86	W	Whitman	Almota	NE/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-85. ,1530'.											
75-87	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
	Tramway section. Under 75-86. ,1480'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-88	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-87. ,1430'.												
75-89	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-88. ,1380'.												
75-90	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-89. ,1360'.												
75-91	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-90. ,1350'.												
75-92	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-91. ,1320'.												
75-93	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-92. ,1280'.												
75-94	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-93. ,1130'. Thick,hackly.												
75-95	W	Whitman	Almota	SW/NE34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-94. ,970'. Thick colonnade and rubbly top.												
75-96	W	Whitman	Almota	NE/SW34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-95. ,890'.												
75-97	W	Whitman	Almota	NE/SW34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-96. ,855'.												
75-98	W	Whitman	Almota	NE/SW34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 75-97, 820'.												
75-99	W	Whitman	Almota	NE/SW34	14N	43E	GR			XRF-8	GR INC	
Tramway section. Under 7-98. ,780'. Lowest flow in section.												
75-100	W	Garfield	Alpowa Ridge	SE/SE11	11N	43E	GR			XRF-7	GR INC	
Flow with painted letter J, US 12. Roadcut,2240'. Under 72-42.												
75-101	W	Garfield	Stember Creek	NW/NW13	11N	43E	GR			XRF-7	GR INC	
Flow with painted letter K, US 12. Roadcut,2010'. Under 75-100.												
75-102	W	Garfield	Stember Creek	SW/NE18	11N	44E	GR			XRF-7	GR INC	
Flow with painted letter L, US 12. Roadcut,1590'. Under 75-101.												
75-103	W	Garfield	Stember Creek	NE/NE32	12N	44E	SM	W Cr		D-1	WILBUR	
Flow overlying 1-2' tuff over poorly exposed flow top.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-104	W	Garfield	Stember Creek	NE/SW32	12N	44E	GR			RR-17	GR INC	yes
	Thick, platy flow, associated with welded spatter in Davis Canyon. Hillside outcrop.											
75-105	W	Garfield	Stember Creek	SE/NW32	12N	44E	WP	Pr Rp		D-1	LOLO INC	
	Flow overlying saprolite developed on 75-104.											
75-106	W	Garfield	Stember Creek	SE/NW32	12N	44E	SM	Um		D-1	UMATILLA	
	Flow overlying 5-10' of altered tuff over 75-105.											
75-107	W	Garfield	Bishop	SW/NW6	12N	44E	GR			RR-17	GR INC	
	Platy flow, associated with welded spatter, under saprolite, under Roza. Hillside above deep canyon, 2400'.											
75-109	I	Nez Perce	Lewiston Orchards N	SE/NW35	36N	5W	WP	Pr Rp		D-1	LOLO INC	
	Valley filling flow E of lewiston along S side of Clearwater River, 800'.											
75-110	I	Nez Perce	Lewiston Orchards N	NW/NW32	36N	5W	SM	L Mon		XRF-7	LM	
	Equals 70-B-265 (Brock and Grolier, 1973). Roadcut at highway junction. , 750'.											
75-111	I	Nez Perce	Lewiston Orchards N	SE/SE29	36N	5W	WP	Pr Rp				yes
	Glass only. Pillows E of 75-110.											
75-112	I	Nez Perce	Lewiston Orchards N	NW/NE35	36N	5W	WP	Pr Rp		D-1	LOLO INC	
	Valley filling flow E of Lewiston along N side of Clearwater River.											
75-116	I	Nez Perce	Clarkston	NW/SW18	36N	5W	SM	W Rdg	Lewiston Orchards	RR-17	LEW ORCH	
	Highest flow in Lewiston Grade, in roadcut opposite Vista Restaurant, 2650'.											
75-117	W	Asotin	Asotin	SW/NW21	10N	46E	SM	L Mon		XRF-7	LM	
	Intracanyon flow over Gravel. Just upslope from highway, 1040'.											
75-118	W	Asotin	Asotin	SW/SW21	10N	46E	WP	Pr Rp				yes
	Glass only. Asotin grade, 1310'.											
75-119	W	Asotin	Asotin	NW/SW25	10N	45E	SM	W Cr				yes
	Glass only. Cloverland grade 1660', over seds. low NA2O.											
75-121	W	Asotin	Silcott	SE/SE30	11N	45E	SM	L Mon		XRF-7	LM	
	Intracanyon flow. Outcrop E of road, 940'. Overlies Gravel.											
75-122	W	Asotin	Silcott	SW/NE31	11N	45E	SM	L Mon		XRF-7	"LM"	yes
	Intracanyon flow. Low Al2O3. Outcrop W of road, 1050'. Overlies Gravel.											
75-123	W	Asotin	Silcott	NE/SE36	11N	44E	WP	Pr Rp		RR-17	LOLO INC	
	Ledge in gully above road, 1620'. Overlies Roza.											
75-124	W	Asotin	Silcott	NE/SE36	11N	44E	WP	Pr Rp		RR-17	LOLO INC	yes
	Over 75-123, 1670'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
75-127	W	Asotin	Silcott		11N	45E	SM	Asotin		D-1	ASOTIN	
	Flow overlies 75-126, 1890'.											
75-128	W	Asotin	Silcott	SW/NW36	11N	44E	SM	Um		D-1	UMATILLA	
	Large vesicular blocks at Alpowa trig station, 2168'.											
75-129	W	Asotin	Potter Hill	NW/SE10	10N	44E	GR			RR-17	GR INC	
	Thick, platy flow, associated with vent complex. Cliff N of creek, 2200'.											
75-130	W	Asotin	Rockpile Creek	SE/NW8	10N	45E	SM	El Mt		D-1	ELEPHANT	
	Lower of two flows in small quarry along Highway 128.											
75-131	W	Asotin	Rockpile Creek	SE/NW8	10N	45E	SM	El Mt		D-1	ELEPHANT	
	Flow over 75-130.											
75-132	W	Asotin	Rockpile Creek		10N	45E	GR			D-1	GR INC	
	Hopwood Section. Asotin Creek just opposite Headgate County Park, 1380'.											
75-133	W	Asotin	Rockpile Creek		10N	45E	WP	Roza		D-1	ROZA	
	Hopwood Section over 75-132, 1420'.											
75-134	W	Asotin	Rockpile Creek	SW/NW20	10N	45E	WP	Pr Rp		RR-17	LOLO INC	
	Hopwood Section. Ledge in gully above county park, 1560'.											
75-134A	W	Asotin	Rockpile Creek	SW/NW20	10N	45E	WP	Pr Rp		RR-17	LOLO INC	
	Hopwood Section. Over 75-134, 1530'.											
75-134B	W	Asotin	Rockpile Creek	SW/NW20	10N	45E	WP	Pr Rp		RR-17	"LOLO INC"	
	Hopwood Section. Over 75-134A. High Na20. , 1560'.											
75-140	W	Asotin	Potter Hill	NE22	10N	44E	WP	Pr Rp				yes
	Glass only. Pillows .5 mi E of the Gooseneck.											
75-141	W	Asotin	Rockpile Creek	SE/SE19	10N	45E	GR			D-1	GR INC	
	Hopewell Section, flow below 75-132, 1480'.											
75-142	W	Asotin	Rockpile Creek	SE/SE19	10N	45E	GR			D-1	GR INC	
	Flow below 75-141 along Asotin Creek.											
75-143	W	Asotin	Rockpile Creek	NW/NW30	10N	45E	GR			D-1	GR INC	
	Flow below 75-142, 1430'.											
75-145	W	Asotin	Potter Hill	SE/NE10	9N	44E	SM	Asotin		D-1	ASOTIN	
	Flow overlying sediments on Campbell Grade W of Cloverland, 2770'.											
75-146	W	Asotin	Potter Hill	SE/NE10	9N	44E	SM	Um		D-1	UMATILLA	
	Flow below 75-145, 2720'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-147	W	Asotin	Potter Hill	SE/NE10	9N	44E	SM	Um		D-1	UMATILLA	
	Flow below 75-146, 2690'.											
75-148	I	Clearwater	Elk River	35	40N	2E	WP	Pr Rp		D-1	LOLO INC	
	Flow with horizontal columns S of Elk River. S slope of lake.											
75-149	I	Clearwater	Elk Creek Falls	22	38N	2E	GR			D-1	GR INC	
	Quarry at road intersection to Big Island.											
75-160	W	Asotin	Harlow Ridge	SW/SW15	8N	44E	GR			RR-17	GR INC	
	Roadcut, 3770'. Overlies red top, cut by Roza dike.											
75-162	W	Asotin	Harlow Ridge	NW/SW14	8N	44E	SM	El Mt		RR-17	ELEPHANT	
	Intracanyon flow near head of George Creek. , 3590'. Overlies basaltic sand, in deep paleocanyon.											
75-163	W	Asotin	Harlow Ridge	NW/SW11	8N	44E	WP	Eck Mt	Dodge	D-1	DODGE	
	Flow below thin saprolite below Roza N of George Creek, 3660'.											
75-165	W	Asotin	Anatone	NW/SW1	8N	44E	SM	Asotin				yes
	Glass only. Borrow pit N of George Creek.											
75-166	W	Whitman	Colfax North				WP	Pr Rp		D-1	LOLO INC	
	Flow overlying saprolite and 20-25' of clayey sediments N of Colfax, 2260'.											
75-167	W	Whitman	Pullman	SW/SE26	14N	44E	SM	Asotin		D-1	ASOTIN	
	Flow with ophitic texture.											
75-169	W	Asotin	Colton	SW/SE28	13N	45E	SM		Asotin	D-1	ASOTIN	
	Quarry along Union Flat Creek one mile W of Colton.											
75-170	W	Whitman	Ewartsville	SW/SW4	14N	44E	WP	Pr Rp		D-1	LOLO INC	
	Flow under 72-209.											
75-173	W	Whitman	Wilcox	SW/SE21	15N	43E	SM	Um		D-1	UMATILLA	
	Roadcut, 2220'.											
75-174	W	Whitman	Colfax South	NW/NW25	15N	43E	SM	Asotin		D-1	ASOTIN	
	Roadcut, 2260'.											
75-175	W	Whitman	Colfax South	NW/SE24	15N	43E	SM	W Cr		D-1	WILBUR	
	Flow N of Union Center, 2320'.											
75-201	W	Garfield	Rose Springs	SE/SE2	9N	42E	WP	Fr Sp		XRF-10	FS INC	
	Flow overlying Dodge near Iron Springs Trig.											
75-207	W	Garfield	Stentz Spring	SW/NE5	8N	42E	WP	Eck Mt	Shumaker Creek	RR-21	SHUMAKER	
	Over 72-280. Roadcut, 5620'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-208	W	Garfield	Rose Springs	SW/NW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under Dodge. ,4360'. Roadcut.												
75-209	W	Garfield	Rose Springs	NW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-208. ,4310'. Roadcut.												
75-210	W	Garfield	Rose Springs	NW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-209. ,4280'. Roadcut.												
75-211	W	Garfield	Rose Springs	NW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-210. ,4260'. Roadcut.												
75-212	W	Garfield	Rose Springs	NW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-211. ,4220'. Roadcut.												
75-213	W	Garfield	Rose Springs	NW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-212. ,4200'. Roadcut.												
75-214	W	Garfield	Rose Springs	SW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-213. ,4180'. Roadcut.												
75-215	W	Garfield	Rose Springs	SW/SW2	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-214. ,4115'. Roadcut.												
75-216	W	Garfield	Rose Springs	NW/NW11	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-215. ,4020'. Roadcut.												
75-217	W	Garfield	Rose Springs	NW/NW11	9N	42E	GR			XRF-9	GR INC	
Pataha Creek section. Under 75-216. ,3980'. Roadcut. Lowest exposed flow.												
75-218	W	Columbia	Eckler Mountain	SW/SW27	9N	40E	GR			RR-21	GR INC	
Eckler Mountain partial section. Hillside,4070'.												
75-219	W	Columbia	Eckler Mountain	SW/SW27	9N	40E	GR			RR-21	GR INC	
Eckler Mountain partial section. Over 75-218. Hillside,4110'.												
75-220	W	Columbia	Eckler Mountain	SW/SW27	9N	40E	GR			RR-21	GR INC	
Eckler Mountain partial section. Over 75-219. Hillside,4150'.												
75-221	W	Columbia	Eckler Mountain	SW/NE27	9N	40E	GR			RR-21	GR INC	
Eckler Mountain partial section. Below Robinette Mountain flow. Separated laterally from 75-220. Below road,4460'.												
75-222	W	Columbia	Eckler Mountain	SW/NE27	9N	40E	WP	Eck Mt	Robinette Mountain	RR-21	ROBIN	
Eckler Mountain partial section. Over 75-221. Cliff just below road,4500'.												
75-223	W	Columbia	Eckler Mountain	SW/NE27	9N	40E	WP	Eck Mt	Dodge	RR-21	DODGE	
Eckler Mountain partial section. Over 75-222. Roadcut,4520'. Plagioclase-phyric,grusy.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-224	W	Columbia	Eckler Mountain	NW/NE26	9N	40E	WP	Eck Mt	Robinette Mountain	RR-21	ROBIN	
	Under 72-109. Just below road,4540'.											
75-225	W	Columbia	Eckler Mountain	SW/SE26	9N	40E	GR			RR-21	GR INC	
	Flow at Kendall trig. ,4590'.											
75-231	O	Wallowa	Peterson Ridge	SW/NE22	6N	37E	WP	Fr Sp		RR-21	FS INC	
	Top of Pikes Peak. ,3850'.											
76-1	W	Walla Walla	Touchet	NW16	7N	33E	WP	Fr Sp				yes
	Glass only. Vesicular flow top.											
76-3	W	Walla Walla	Touchet	SE34	8N	33E	SM	Ice H	Indian Memorial			yes
	Glass only. Base of thin phyric flow overlying weathered basalt on Johnson Rd,fractionated,low NA20.											
76-5	W	Walla Walla	Welland	SW11	8N	33E	SM	Ice H	Indian Memorial			yes
	Glass only. Base of phyric flow unit on Plucker Rd,775',fractionated.											
76-7	W	Walla Walla	Welland	NW/SE2	8N	33E	SM	Ice H	Martindale			yes
	Glass only. Pillows associated with columnar valley fill.											
76-8	W	Walla Walla	Rulo	SW/SW29	9N	34E	WP	Fr Sp				yes
	Glass only. Sparsely phyric.											
76-10	W	Walla Walla	Rulo	SW/SE24	8N	33E	WP	Fr Sp				yes
	Glass only. Dense glass within flow on Sims rd,750',low NA20.											
76-11	W	Walla Walla	Touchet	NE/SW2	7N	33E	WP	Fr Sp				yes
	Glass only. Phyric flow N of Touchet Rd.											
76-13	W	Walla Walla	Harsha	NW/NW17	9N	35E	WP	Fr Sp				yes
	Glass only. Vesicular top? of flow.											
76-14	W	Walla Walla	Eureka	NE/SE34	10N	34E	WP	Fr Sp				yes
	Glass only. Top of flow in quarry,low NA20.											
76-24	W	Walla Walla	Zangar Junction	NW/SW10	6N	32E	WP	Fr Sp				yes
	Glass only. Flow at 800',near bottom of Vansycle Canyon,low NA20.											
76-26	W	Walla Walla	Zangar Junction	SW/SE16	7N	32E	SM	Ice H	Martindale	RR-22	MARTIN	
	Capping flow N of Zangar Junction,710'. Top of hill E of road.											
76-27	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Umatilla				yes
	Glass only. Oxidized ropy upper surface of flow.											
76-28	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Martindale	RR-22	MARTIN	
	Capping flow,exposed in cliff for long distance. ,540'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
76-37	W	Walla Walla	Zangar Junction	NE/SE21	7N	32E	WP	Fr Sp				yes
	Glass only. Pillows near Lambdin Rd W of Vansycle Canyon,1420'.											
76-41	W	Walla Walla	Wallula	NE/NW13	6N	31E	SM	Umatilla				yes
	Glass only. Within flow,1540'.											
76-44	W	Benton	Wallula	SW/NE18	7N	31E	SM	El Mt		RR-22	ELEPHANT	
	Upper ledge along SW side of Goose Gap. ,680'.											
76-45	W	Walla Walla	Wallula	SW/NE18	7N	31E	SM	Pomona		Ti-1	POMONA	
	Flow with flat eroded top under 76-44. TiO2 = 1.59.											
76-48	W	Benton	Wallula	NE/NE18	7N	31E	SM	Um		RR-22	UMATILLA	
	Flow at Barron trig,980'.											
76-49	W	Benton	Wallula	NE/SW7	7N	31E	SM	Ice H	Indian Memorial	RR-22	INDIAN	
	East of N end of Goose Gap. Faulted against Frenchman Springs Basalt, 560'.											
76-50	W	Benton	Wallula	NW/SE17	7N	31E	SM	Pomona				yes
	Glass only. Peperite low on fold.											
76-51	W	Walla Walla	Wallula	SW/NW17	7N	31E	SM	El Mt		RR-22	ELEPHANT	
	Low ledge high on structure NE of Goose Gap,760'.											
76-52	W	Whitman	Benge 15'	NE/SW24	15N	38E	WP	Fr Sp				yes
	Glass only. Pillows in new roadcuts near Hooper,1130'.											
76-54	W	Adams	Benge 15'	SW/NW13	17N	36E	SM	W Cr				yes
	Glass only. Pillows in roadcut.											
76-56	W	Adams	Reiman SE	SW/NW36	19N	33E	WP	Roza				yes
	Glass only. Coarse spatter,some of it partly welded,in roadcut,low K2O,NA2O.											
76-57	W	Grant	Warden	SE/SE20	17N	30E	SM	W Cr				yes
	Glass only. Valley-filling flow S of Warden.											
76-58	W	Grant	Warden	NE/NE36	17N	29E	WP	Pr Rp				yes
	Glass only. Flow overlying vesicular Roza.											
76-59	W	Grant	Soda Lake	SE/SW26	17N	29E	WP	Pr Rp				yes
	Glass only. Ropy surfaces on flow above Roza.											
76-62	W	Adams	Soda Lake	NW/NW18	16N	29E	SM	El Mt		RR-22	ELEPHANT	
	Flow forming Deadman Bluff. Collected near base,910'.											
76-63	W	Adams	Corfu 15'	SE/NE11	16N	28E	WP	Pr Rp		RR-22	LOLO INC	
	Over 71-83. Ledge N of road. ,890'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
76-64	W	Adams	Corfu 15'	SE/NE11	16N	28E	SM	El Mt		RR-22	ELEPHANT	
	Over 76-63,same location. ,910'.											
76-65	W	Adams	Othello	NW/NW32	16N	29E	SM	W Cr				yes
	Glass only.Palagonitized tephra from rootless vent near Owl Lake.											
76-66	W	Adams	Othello	SE/NW29	16N	29E	SM	El Mt		RR-22	ELEPHANT	
	Lower of two flows forming cliff overlooking W side of ephemeral lake.											
76-67	W	Adams	Othello	SE/NW29	16N	29E	SM	El Mt		RR-22	ELEPHANT	
	Over 76-66. Same location. ,910'.											
76-68	W	Adams	Corfu 15'	NE/SW13	16N	28E	SM	El Mt		Ti-1	ELEPHANT	
	Upper edge along S side of Drumheller Channels, 840'. TiO2 = 3.33.											
76-69	W	Adams	Corfu 15'	SE/SW15	16N	28E	SM	El Mt		Ti-1	ELEPHANT	
	Upper ridge-forming flow one-fourth mile S of Hutchinson Lake. TiO2 = 3.31.											
76-70	W	Adams	Corfu 15'	SE/SW15	16N	28E	SM	El Mt		Ti-1	ELEPHANT	
	Flow under 76-69. TiO2 = 3.35.											
76-71	W	Adams	Corfu 15'	SE/SW15	16N	28E	SM	Pomona				yes
	Glass only. Peperite.											
76-74	W	Adams	Corfu 15'	SW/SW14	16N	28E	SM	Pomona		Ti-1	POMONA	
	Flow underlying the equivalent of 76-70 in eroded 'hole'. TiO2 = 1.51.											
76-75	W	Adams	Corfu 15'	SE/SE20	16N	28E	SM	El Mt				yes
	Glass only. Base of flow overlying seds overlying Pomona peperite.											
76-76	W	Adams	Corfu 15'	SE/SE20	16N	28E	SM	El Mt		RR-22	ELEPHANT	
	Upper colonnade above Pomona,possibly higher of two related flows. Cliff above Crab Creek. ,730'.											
76-77	W	Adams	Corfu 15'	SE/SE4	16N	28E	SM	El Mt				yes
	Glass only. Pillows along road just W of Crab Creek, 890'.											
76-78	W	Adams	Corfu 15'	SE/SW9	16N	28E	SM	El Mt				yes
	Glass only. Pillows above Pomona peperite.											
76-79	W	Adams	Corfu 15'	SE/SW9	16N	28E	SM	Pomona				yes
	Glass only. Ropy surfaces W of Crab Creek.											
76-80	W	Adams	Othello	NE/NE29	16N	29E	SM	El Mt				yes
	Glass only. Valley-filling flow N of Owl Lake.											
76-81	W	Adams	Othello	SW/SW29	16N	29E	SM	El Mt				yes
	Glass only. Base of columnar flow near N end of Owl Lake.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
76-82	W	Adams	Othello	SW/SW19	16N	29E	SM	El Mt		Ti-1	ELEPHANT	
Flows 76-82, 83, 84 show complicated jointing. Entablature S and E of road. TiO2 = 3.44.												
76-83	W	Adams	Othello	SW/SW19	16N	29E	SM	El Mt		Ti-1	ELEPHANT	
Colonnade SE of road, N of and at same elevation as 76-82. TiO2 = 3.32.												
76-84	W	Adams	Othello	SW/SW19	16N	29E	SM	El Mt		Ti-1	ELEPHANT	
Curving columns NW of road. TiO2 = 3.31.												
76-85	W	Franklin	Mesa 15'	SE/NE23	14N	29E	SM			RR-22	UNC	
Lowest flow at dam S of Eagle Lake. Exposed at lake level and in ditch below dam. Below Pomona.												
76-86	W	Franklin	Mesa 15'	SE/NE23	14N	29E	SM	Pomona				yes
Glass only. Peperite overlying colluvium, 810'.												
76-87	W	Franklin	Mesa 15'	SE/NE23	14N	29E	SM	El Mt		RR-22	ELEPHANT	
Pomona flow 76-86, separates 76-85 and 76-87. Lower of two cooling units above Pomona, 860'.												
76-88	W	Franklin	Mesa 15'	NE/SE11	14N	29E	SM					yes
Glass only. Breccia top on 73-168 in ditch between Scootenay and Eagle Lakes.												
76-89	W	Franklin	Mesa 15'	SW/SW2	14N	29E	SM	Pomona				yes
Glass only. Peperite W of Wahluke Siphon.												
76-90	W	Franklin	Mesa 15'	NE/SE27	14N	30E	SM	El Mt				yes
Glass only. Top of flow under 73-161 along Hendricks Rd.												
76-91	W	Franklin	Mesa 15'	NE/SE10	14N	30E	WP	Pr Rp		RR-22	LOLO INC	
Cliff above lake, 960'.												
76-92	W	Franklin	Mesa 15'	NE/SE10	14N	30E	WP	Pr Rp		RR-22	LOLO INC	
Coarser facies of 76-91. Same location, 980'.												
76-93	W	Franklin	Mesa 15'	SW/SE3	14N	30E	WP	Pr Rp		Ti-1	LOLO INC	
Flow with complex breccia top at dam across Potholes Canal N of Scootenay Reservoir. TiO2 = 3.03.												
76-94	W	Franklin	Mesa 15'	NW/SW10	14N	30E	SM			RR-22	GR INC	
Ledge above road, 1100'. Probably same flow as 76-85.												
76-204	W	Asotin	Saddle Butte	NW/NE2	6N	43E	SM	Um		TiK-1	UMATILLA	
Flow above Roza, 2600'. TiO2 = 2.45, K2O = 2.69.												
76-206	W	Garfield	Diamond Peak	SW/NW6	6N	42E	WP	Fr Sp		TiK-1	FS INC	
Flow above Dodge W of Crooked Creek. TiO2 = 2.86, K2O = 1.29.												
76-210	W	Asotin	Mountain View	SW/SE19	7N	44E	SM	El Mt	Wenaha	Ti-2	ELEPHANT	
Small quarry along road between Cougar and Medicine Creeks. TiO2 = 3.31.												

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
76-212	W	Asotin	Fields Spring	SE/NE10	7N	45E	SM	Buford				yes
	Glass only. Base of flow over seds, roadcut NE of Puffer Butte.											
76-213	W	Asotin	Fields Spring	SW/SW10	7N	45E	SM	W Rdg		RR-25	UNC	
	Columnar flow filling shallow channel. Roadcut 0.3 mi. toward Anatone from entrance to park. ,3870'.											
76-215	W	Asotin	Fields Spring	SW/SW10	7N	45E	SM	Umatilla				yes
	Glass only. Welded spatter, low NA20.											
76-217	W	Asotin	Field Spring	SE/SW8	7N	45E	SM	Buford		RR-25	BUFORD	
	Top of hill at curve in track road, 4010'.											
76-218	W	Asotin	Field Spring	NW/NW17	7N	45E	SM			RR-25	UNC	
	Light-colored 'andesite' flow along abandoned road, 3880'.											
76-219	W	Asotin	Field Spring	SE/SW12	7N	44E	WP	Eck Mt		TiK-1	SHUMAKER	
	Flow under Roza at S end of Deer Flat. TiO2 = 2.30, K20 = 2.13.											
76-220	W	Asotin	Field Spring	SW/SW1	7N	44E	WP	Eck Mt	Dodge	TiK-1	DODGE	
	Flow overlying saprolite E of Anatone Butte, 4630'. TiO2 = 1.10, K20 = 0.79.											
76-229	W	Asotin	Anatone	NW/NE35	8N	45E	SM	W Rdg	Anatone	RR-25	LOLO INC	
	Small quarry just S of Anatone. ,3630'. Anatone flows of Price(1977).											
76-230	W	Asotin	Anatone	SW/NE55	8N	45E	SM			TiK-1	UNC	
	Flow below saprolite just down road from 76-229. Chemistry like 76-213. TiO2 = 1.55, K20 = 0.26.											
76-231	W	Asotin	Fields Spring	SW/NE21	7N	45E	SM	Umatilla				yes
	Glass only. Welded Puffer Butte spatter, low NA20.											
76-232	W	Asotin	Black Butte	NE/NE6	7N	46E	SM	W Rdg	Anatone	RR-25	LOLO INC	
	Roadcut above Asotin flow, 3500'. Anatone flows of Price(1977).											
76-233	W	Asotin	Black Butte	SW/SW32	8N	46E	SM	W Rdg	Slippery Creek	RR-25	SLIP	
	Over 76-232. Outcrop along road, 3560'. Slippery Creek flow of Price(1977).											
76-234	W	Asotin	Captain John Rapids	SW/NE24	8N	46E	SM	Asotin				yes
	Glass only. Hyaloclastite on top of flow.											
76-235	W	Asotin	Capt. John Rapids	NW/SE24	8N	46E	SM	W Rdg	Anatone	RR-25	LOLO INC	
	Roadcut, 3570'. Beneath 5' of sediment below Slippery Creek flow. Anatone flows of Price(1977).											
76-239	W	Asotin	Weissenfels Ridge	SE/NW19	8N	46E	SM	W Rdg	Slippery Creek	RR-25	SLIP	
	Roadcut, 3290'. Slippery Creek flow of Price(1977).											
76-240	W	Asotin	Weissenfels Ridge	SE/NW19	8N	46E	SM	Buford		RR-25	BUFORD	
	Over thin sediments, over 76-239. Same location., 3330'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
76-242	W	Columbia	Oregon Butte	NW/NE4	6N	41E	GR			Ti-2	GR INC	
	Flow capping small butte with heliport S of Weller Butte. TiO2 = 1.84.											
76-243	W	Columbia	Oregon Butte	NW/NW33	7N	41E	GR			Ti-2	GR INC	
	Lowest magnetically normal flow just W of trail across saddle W of point 5177. TiO2 = 1.87.											
76-244	W	Columbia	Oregon Butte	NW/NW33	7N	41E	GR			Ti-2	GR INC	
	Flow over 76-243. TiO2 = 1.92.											
76-245	W	Columbia	Oregon Butte	NW/NW33	7N	41E	GR			Ti-2	GR INC	
	Flow over 76-244. TiO2 = 2.20.											
76-250	W	Columbia	Godman Spring	NE/NE9	6N	40E	GR			Ti-2	GR INC	
	Flow on top of Dexter Ridge overlying a thin weathered zone. TiO2 = 2.23.											
76-254	W	Asotin	Field Spring	SE/SE10	7N	45E	SM	Um		TiK-1	UMATILLA	
	Puffer Butte flow below saprolite and sediments W of Puffer Butte, 3640'. TiO2 = 2.43, K2O = 2.76.											
76-255	W	Asotin	Fields Spring	SE/SW20	7N	45E	SM	Buford		RR-24	BUFORD	
	Caps ridge SW of Puffer Butte. ,4005'.											
76-262	W	Nez Perce	Clarkston				SM	L Mon		Ti-2	LM	
	TiO2 = 2.80.Intracanyon flow at Lewiston city limits sign, E side of Snake River.											
76-263	O	Wallowa	Paradise	NW/NW26	6N	45E	GR			RR-24	GR INC	
	Rye Ridge Section. Thick columnar flow below Deer trig. ,3860'.											
76-264	O	Wallowa	Paradise	NW/NW26	6N	45E	GR			RR-24	GR INC	
	Rye Ridge Section. Coarsely columnar flow above 76-263. Overlain by sediments. ,3880'.											
76-265	O	Wallowa	Paradise	NW/NW26	6N	45E	SM	Um		RR-24	"UMATILLA"	
	Rye Ridge Section. Interbedded with sediments. Roadcut,4100'.SiO2 low.											
76-266	O	Wallowa	Paradise	NW/NW26	6N	45E	SM	Buford		RR-24	BUFORD	
	Rye Ridge Section. Ridge-capping flow above sediments. ,4200'.											
76-267	W	Asotin	Fields Spring	NW/NE15	6N	45E	SM	W Rdg				yes
	Glass only. Pillows or vent(?) material along Rye Ridge,3860'.											
76-268	W	Asotin	Black Butte	SW/SW12	6N	45E	GR			Ti-2	GR INC	
	Section below Black Butte, 3840'. TiO2 = 1.51.											
76-269	W	Asotin	Black Butte	SW/SW12	6N	45E	GR			Ti-2	GR INC	
	Section below Black Butte, over 76-268, 3870'. TiO2 = 1.47.											
76-273	W	Asotin	Black Butte	NE/SW12	6N	45E	SM	Buford		RR-24	BUFORD	
	Flow capping Black Butte. ,4120'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FMI	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
76-275	W	Asotin	Mountain View	NE/SW23	7N	44E	SM	Buford		Ti-2	BUFORD	
	Highest flow in section above Roza on Mallory Ridge. TiO2 = 2.04.											
76-276	W	Asotin	Mountain View	SW/SW14	7N	44E	SM	Um		TiK-1	UMATILLA	
	Flow directly above Roza on Mallory Ridge. TiO2 = 2.51, K2O = 2.96.											
76-277	W	Asotin	Mountain View	NW/NW14	7N	44E	SM	Buford		RR-24	BUFORD	
	Flow above sediments above Umatilla Member. Hillside, NE of road,4040'.											
77-201	O	Umatilla	Juniper	SE/NE13	5N	29E	SM	Um		K-1	UMATILLA	
	Roadcut,Highway 395,480'. K2O = 2.6.											
77-202	O	Umatilla	Juniper	SE/SE8	5N	30E	SM	Pomona		RR-26	"POMONA"	
	Flow above Umatilla,800'.Al203 low.											
77-203	O	Umatilla	Juniper	SE/NW25	5N	30E	WP	Fr Sp				yes
	Glass only. Farm road N of creek, Cold Spring Canyon.											
77-204	O	Umatilla	Juniper	NW/SE25	6N	31E	WP	Fr Sp		K-1	FS INC	
	Across gully from Lambdin Road,1250'. K2O = 1.3.											
77-205	O	Umatilla	Ring	SW/NW28	6N	32E	SM	Um		K-1	UMATILLA	
	Weathered flow just under loess,N of N fork of Juniper Canyon,1650'. K2O = 2.6.											
77-206	O	Umatilla	Adams	SW/NE23	4N	34E	SM	Um		RR-26	"UMATILLA"	
	Bottom of trench about 2 mi. W of Athena,1730'.P2O5 high.											
77-207	O	Umatilla	Athena	NW/SE35	5N	35E	SM	Um		K-1	UMATILLA	
	Uppermost flow in roadcuts about 4 mi S of Milton. Freewater,1630'. K2O = 2.4.											
77-209	O	Umatilla	Adams	NE/SW22	4N	34E	SM	Um		Ti-3	UMATILLA	
	Quarry W of road. TiO2 = 2.7.											
77-215	O	Umatilla	Peterson Ridge	NE/NE18	5N	37E	WP	Fr Sp		Ti-3	FS INC	
	Coarse-grained phyric flow,government mountain road,2950'. TiO2 = 2.9.											
77-216	O	Umatilla	Athena	SE/NE35	5N	35E	SM	Um		K-1	UMATILLA	
	Fine-grained entablature overlying or part of flow 77-207. K2O = 2.5.											
77-217	O	Umatilla	Athena	SE/NE16	4N	35E	SM	Um		RR-26	FS INC	
	Highest flow in roadcuts along Highway 11,1820'.											
77-218	O	Umatilla	Athena	SE/NE16	4N	35E	SM	Um		RR-26	"UMATILLA"	
	Flow overlying 5' of red saprolite and thin seds,1830'.CaO high.											
77-219	O	Umatilla	Adams	NE/NE11	3N	34E	SM	Um		RR-26	"UMATILLA"	
	Flow overlying red and blue clay over vesicular Frenchman Springs,1670'.P2O5 high.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
77-220	O	Umatilla	Adams	SE/SE28	3N	34E	WP?	Fr Sp?		RR-26	FS INC	
	Flow exposed only in pipeline ditch N of Umatilla River.											
77-222	O	Umatilla	Peterson Ridge	NE/SE15	5N	37E	WP	Fr Sp		Ti-3	FS INC	
	Top flow overlying thin red clay,phyric,3880'. TiO2 = 2.8.											
77-223	O	Umatilla	Peterson Ridge	NE/SE15	5N	37E	WP	Fr Sp		Ti-3	FS INC	
	Flow below red clay below 77-222,3860'. TiO2 = 3.1.											
77-224	O	Umatilla	Peterson Ridge	NE/SE15	5N	37E	GR			Ti-3	GR INC	
	Flow below 77-223,3650'. TiO2 = 1.7.											
77-226	O	Umatilla	Peterson Ridge	SE/SE22	6N	37E	WP	Fr Sp		Ti-3	FS INC	
	Phyric flow over saprolite,Pike's Peak,3380'. TiO2 = 3.0.											
77-227	O	Umatilla	Peterson Ridge	SE/SE22	6N	37E	GR			Ti-3	GR INC	
	Flow under saprolite under 77-226,3300'. TiO2 = 1.9.											
77-240	O	Umatilla	Stanfield SE	NE/NE20	4N	30E	SM	Um		K-1	UMATILLA	
	Quarry in new road across Despain Gulch,850'. K2O = 2.5.											
77-241	O	Umatilla	Stanfield SE	NE/NE6	3N	30E	WP	Fr Sp		K-1	FS INC	
	Quarry in Stage Gulch,upper exposed flow with complex breccia top. K2O = 1.3.											
77-248	O	Umatilla	Big Meadows	SW/SW22	5N	38E	GR					yes
	Glass only. Glassy pumice and spatter at 4580', near 77-247.											
77-252	O	Umatilla	Weston Mt	NE/NE2	4N	36E	SM	?		RR-26	UNC	
	Flow overlying 2-3 m saprolite and tuffaceous seds,2910'.											
77-253	O	Umatilla	Blalock Mt	SW/SE8	4N	37E	SM	?		RR-26	GR INC	
	Flow along Iincton Mountain Road over saprolite and altered vitric tuff,3630'.											
77-254	O	Umatilla	Blalock Mt	SW/SE8	4N	37E	GR			Ti-3	GR INC	
	Flow under saprolite under 77-254,3610'. TiO2 = 1.8.											
77-255	O	Umatilla	Blalock Mt	NE/SW16	4N	37E	SM	?		RR-26	UNC	
	Flow with basal glassy selvage over saprolite and seds,roadcut S of 77-253.											
77-256	O	Umatilla	Blalock Mt	SE/NW26	4N	37E	WP	Fr Sp		RR-26	"FS INC"	
	Flow over saprolite just N of Blue Mountain Camp.Na2O,K2O high.											
77-262	O	Umatilla	Athena	SE/SW24	4N	35E	GR?			Ti-3	GR INC	
	Flow above continuous clay zone up road,77-260,261. TiO2 = 1.8.											
77-263	O	Umatilla	Athena	SE/SW3	3N	35E	WP	Fr Sp				yes
	Glass only. Glassy rinds on oxidized pillows, 2130', just N of Wildhorse Creek.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	LOCATION: COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY: FM	MEMBER	FLOW	CHEMISTRY: METHOD	CHEM TYPE	GLASS
77-264	O	Umatilla	Athena	SE/SW3	3N	35E	GR			Ti-3	GR INC	
	Lower of 2 aphyric flows under 77-263,over red weathered zone,2080'. TiO2 = 1.8.											
77-270	O	Umatilla	Bone Spring	SE/SW15	6N	39E	GR					yes
	Glass only. Third flow below top of Milk Shakes, pahoehoe.											
77-271	O	Umatilla	Bone Springs	SE/SE15	6N	39E	GR	Fr Sp		Ti-3	GR INC	
	Upper flow at Milk Shakes trig. TiO2 = 1.8.											
77-272	O	Umatilla	Bone Springs	SW/SW6	5N	39E	WP	Fr Sp		Ti-3	FS INC	
	Hill 5758 N of Yellow Jacket Point,5758'. TiO2 = 3.1.											
77-273	O	Union	Elgin	SW/SW16	1N	39E	?			RR-26	UNC	
	Dense flow banded clasts in pumiceous slurry deposit,Pumpkin Ridge Rd,3180'.											
77-274	O	Union	Elgin	SW/NE19	1N	39E	SM			RR-26	UNC	
	Hornblende andesite above red zone above pumiceous seds,3240'.											
77-275	O	Union	Elgin	NW/SW20	1N	39E	SM			RR-26	UNC	
	Olivine-bearing basalt above pumiceous deposits,3270'.											
77-276	O	Union	Elgin	NW/NE20	1N	39E	SM			RR-26	GR INC	
	Outcrop along road up from 77-275.											
77-277	O	Union	Elgin	NW/NE7	1N	39E	WP	Eck Mt	Dodge	Ti-3	DODGE	
	Grusy flow over red zone,3410'. TiO2 = 1.3.											
77-278	O	Union	Elgin	NW/NE7	1N	39E	WP	Eck Mt	Shumaker Creek	RR-26	"SHUMAKER"	
	Flow over red saprolite over Dodge,3480'.MgO high.											
77-279	O	Umatilla	Tollgate	SE/SE34	4N	38E	GR			Ti-3	GR INC	
	Bald Mt section,loW flow unit under red clay along summit road on Bald Mt,5010'. TiO2 = 1.7.											
77-280	O	Umatilla	Tollgate	SE/SE34	4N	38E	GR			Ti-3	GR INC	
	Upper flow unit,see 77-279,5030'. TiO2 = 1.7.											
77-282	O	Umatilla	Tollgate	SW/SW35	4N	38E	WP	Fr Sp		Ti-3	FS INC	
	Bald Mt section,over 77-281,5090'. TiO2 = 3.1.											
77-283	O	Umatilla	Tollgate	NW/SW35	4N	38E	WP	Fr Sp		Ti-3	FS INC	
	Bald Mt section,over 77-282,5110'. TiO2 = 3.1.											
77-287	O	Umatilla	Bone Spring	SW/SW7	5N	39E	GR			Ti-3	GR INC	
	Flow weathered below horizon,below 77-288. TiO2 = 1.8.											
77-288	O	Umatilla	Bone Spring	SW/SW7	5N	39E	WP	Eck Mt	Dodge	Ti-3	DODGE	
	Course diktytaxitic flow over weathered zone over77-287. TiO2 = 1.4.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
77-289	O	Umatilla	Jubilee Lake	SW/NE17	4N	39E	WP	Fr Sp		Ti-3	FS INC	
	Roadcut S of Jubilee Lake,4900'. TiO2 = 3.2.											
77-293	O	Umatilla	Barnhart	SW/SW8	2N	31E	GR			Ti-3	GR INC	yes
	Lower of 2 tiered flows along Umatilla W of Barnhart. TiO2 = 2.1.											
77-295	O	Umatilla	Blalock Mt	NE/NW34	5N	37E	GR			Ti-3	GR INC	
	Flow under red weathered zone under 77-296,3880'. TiO2 = 1.7.											
77-296	O	Umatilla	Blalock Mt	NE/NW34	5N	37E	WP	Fr Sp		Ti-3	FS INC	
	Phyric flow over 77-295,3820'. TiO2 = 2.9.											
77-297	O	Umatilla	Blalock Mt	NW/NE12	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,low flow,3840'. TiO2 = 2.4.											
77-298	O	Umatilla	Blalock Mt	NW/NE12	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,over 77-297,3880'. TiO2 = 1.9.											
77-299	O	Umatilla	Blalock Mt	NW/NE12	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,over 77-298,3900'. TiO2 = 2.0.											
77-300	O	Umatilla	Blalock Mt	NW/NE12	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,over 77-299,3990'. TiO2 = 1.9.											
77-301	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,over 77-300,4020'. TiO2 = 1.9.											
77-302	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	GR			Ti-3	GR INC	
	Blalock Mt Section,over 77-301,4080'. TiO2 = 1.8.											
77-304	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	GR			Ti-3	FS INC	
	Blalock Mt Section,over 77-303,4150'. TiO2 = 3.1.											
77-305	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	GR			Ti-3	FS INC	
	Blalock Mt Section,over 77-304,4200'. TiO2 = 3.2.											
77-306	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	WP	Fr Sp		Ti-3	FS INC	
	Blalock Mt Section,over 77-305,4280'. TiO2 = 3.0.											
77-307	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	WP	Fr Sp		Ti-3	FS INC	
	Blalock Mt Section,over 77-306,4310'. TiO2 = 3.1.											
77-308	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	WP	Fr Sp		Ti-4	FS INC	
	Blalock Mt Section,over 77-307,4400'. TiO2 = 3.0.											
77-309	O	Umatilla	Blalock Mt	SW/SE1	4N	37E	WP	Fr Sp		Ti-4	FS INC	
	Blalock Mt Section,over 77-308,4430';uppermost flow. TiO2 = 3.1.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
77-310	O	Umatilla	Blalock Mt	NE/NW34	5N	37E	WP	Fr Sp		Ti-4	FS	INC
	Flow over 77-296,roadcut. TiO2 = 3.1.											
77-314	O	Umatilla	Blalock Mt	SW/NW23	4N	37E	GR			Ti-4	GR	INC
	Flow below red saprolite below 77-315,W of Elbow Cr,3950'. TiO2 = 1.7.											
77-316	O	Umatilla	Tollgate	SE/NW32	4N	38E	SM	Um		RR-26	UMATILLA	
	Large boulders above pumiceous tuff over deep saprolite,roadcut,just NW of Langdon Lake											
77-317	O	Umatilla	Tollgate	NE/NW30	4N	38E	GR			Ti-4	GR	INC
	McIntyre Section,loW flow,4780'. TiO2 = 2.0.											
77-318	O	Umatilla	Tollgate	NE/NW30	4N	38E	GR			Ti-4	GR	INC
	McIntyre Section,over 77-317,4840'. TiO2 = 1.6.											
77-319	O	Umatilla	Tollgate	NE/NW30	4N	38E	GR			Ti-4	GR	INC
	McIntyre Section,over 77-318,4880'. TiO2 = 1.8.											
77-320	O	Umatilla	Tollgate	NE/NW30	4N	38E	GR			Ti-4	GR	INC
	McIntyre Section,over 77-319,4910'. TiO2 = 1.7.											
77-322	O	Umatilla	Tollgate	NE/NW30	4N	38E	GR			Ti-4	FS	INC
	McIntyre Section,over 77-321,5070'. TiO2 = 3.1.											
77-323	O	Umatilla	Tollgate	NE/NW30	4N	38E	WP	Fr Sp		Ti-4	FS	INC
	McIntyre Section,over 77-322,5170',upper flow. TiO2 = 3.0.											
77-324	O	Umatilla	Tollgate	NE/NW30	4N	38E	SM?			RR-26	UNC	
	McIntyre Section,Float blocks above pebbles and over top of 77-323.											
77-325	O	Umatilla	Bingham Springs	NW/SE20	3N	37E	GR			Ti-4	GR	INC
	Upper flow at point 4112 on Bobsled Ridge,S of Bingham Springs. TiO2 = 2.1.											
77-326	O	Umatilla	Gibbon	SW/SW14	3N	36E	GR			Ti-4	GR	INC
	Wildhorse Mt Section,loW flow,3110'. TiO2 = 1.9.											
77-327	O	Umatilla	Gibbon	SW/SW14	3N	36E	GR			Ti-4	GR	INC
	Wildhorse Mt Section,over 77-326,3160'. TiO2 = 2.1.											
77-328	O	Umatilla	Gibbon	SW/SW14	3N	36E	GR			Ti-4	GR	INC
	Wildhorse Mt Section,over 77-327,3380'. TiO2 = 2.1.											
77-329	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR	INC
	Wildhorse Mt Section,over 77-328,3410'. TiO2 = 2.1.											
77-330	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR	INC
	Wildhorse Mt Section,over 77-329,3480'. TiO2 = 1.9.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
77-331	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR INC	
	Wildhorse Mt Section, over 77-330, 3510'. TiO2 = 1.8.											
77-332	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR INC	
	Wildhorse Mt Section, over 77-331, 3540'. TiO2 = 1.9.											
77-333	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR INC	
	Wildhorse Mt Section, over 77-332, 3560'. TiO2 = 1.9.											
77-334	O	Umatilla	Gibbon	NW/SW14	3N	36E	GR			Ti-4	GR INC	
	Wildhorse Mt Section, over 77-333, 3590'. TiO2 = 1.8.											
77-336	O	Umatilla	Gibbon	NW/SW14	3N	36E	SM	Um		RR-26	"UMATILLA"	
	Wildhorse Mt Section, 3650', uppermost flow. SiO2 low, CaO high.											
77-337	O	Umatilla	Thorn Hollow	SE/SW28	3N	35E	GR			Ti-4	GR INC	
	Flow with oxidized and weathered Breccia top, 2120'. TiO2 = 1.7.											
77-342	O	Umatilla	Thorn Hollow	NE/SE32	3N	35E	GR			RR-26	GR INC	
	Flow overlying breccia top, cut(?) by 77-341.											
C-2	W	Walla Walla	Haas 15'	NW/NW26	13N	36E	SM	L Mon		XRF-2	LM	
	Intracanyon flow. Same location as 73-101.											
C-5	W	Columbia	Starbuck 15'	NW/NW11	12N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Ledge below road, 760'-780'.											
C-9	W	Columbia	Starbuck 15'	NW/NW31	13N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Small mesa E of main road., 750'.											
C-10	W	Columbia	Starbuck 15'	NW/NW31	13N	36E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Small mesa slightly W of C-9. , 760'.											
C-16	W	Walla Walla	Haas 15'	NE/SE19	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Cliff S of road, 640'.											
C-17	W	Walla Walla	Haas 15'	SW/NW20	13N	36E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Cliff S of road, 690'.											
C-21	W	Franklin	Haas 15'	NW/NW23	13N	35E	SM	El Mt		XRF-1	ELEPHANT	
	Intracanyon flow. Ledge NW of road, 1180'.											
C-24	W	Franklin	Haas 15'	SW/SE18	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Cliff opposite Rifton(Ayer), 680'.											
C-26	W	Franklin	Haas 15'	NE/NW19	13N	36E	GR			XRF-1	GR INC	
	Railroad cut opposite Rifton, 500'. (now under water)											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
C-27	W	Franklin	Haas 15'	NE/NW19	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Cliff opposite Rifton,700'.											
C-28	W	Columbia	Starbuck 15'	NE/NE31	13N	38E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Quarry above road,about 800'.											
C-32	W	Garfield	Hay 15'	SW/SW35	14N	40E	GR			XRF-1	GR INC	
	Roadcut in flow in section cut by 73-348 and 349. ,650'.											
C-42	W	Franklin	Haas 15'	SW/NE13	13N	34E	SM	El Mt		XRF-1	ELEPHANT	
	Intracanyon flow. Along road just above creek junction,950'.											
C-43	W	Franklin	Haas 15'	NE/NW13	13N	34E	SM	Esquat		XRF-1	ESQUAT	
	Intracanyon flow. In western of two intersecting creeks,1040'.											
C-48	W	Franklin	Haas 15'	SW/NW16	13N	36E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Ledge along road down gulch,750'.											
C-50	W	Franklin	Haas 15'	SW/NE22	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Small outcrop on hillside,640'.											
C-54	W	Franklin	Haas 15'	NW/NE22	13N	36E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Ledge above C-50,720'.											
C-57	W	Franklin	Haas 15'	SE/SE16	13N	36E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Mesa,700'.											
C-77	W	Walla Walla	Starbuck 15'	NE/NE36	13N	36E	SM	Esquat		XRF-1	ESQUAT	
	Intracanyon flow. Prominent Knob,1000'.											
C-79	W	Columbia	Starbuck 15'	SE/NE31	13N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Cliff SW of main road,810'.											
C-109	W	Columbia	Starbuck 15'	NW/SE3	12N	37E	GR			XRF-1	GR INC	
	Cliff above road,750'.											
C-115	W	Columbia	Starbuck 15'	NW/NW11	12N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Cliff above road,800'.											
C-116	W	Columbia	Starbuck 15'	SW/NE3	12N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Cliff overlooking river W of road,800'.											
C-123	W	Columbia	Starbuck 15'	SW/NW2	12N	37E	SM	L Mon		XRF-1	LM	
	Intracanyon flow. Cliff in pillowed flow over 73-107,820'.											
C-137	W	Columbia	Starbuck 15'	SW/NE2	12N	37E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Cliff above road,840'.											

Table 1a. Sample information for DSTW- flows collected 1971-1977.

SAMPLE	LOCATION						STRATIGRAPHY			CHEMISTRY		
NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
C-150	W	Columbia	Starbuck 15'	SE/SE28	13N	38E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Poorly exposed ledge above road,890'.											
C-156	W	Columbia	Starbuck 15'	NW/SE27	13N	38E	SM	Esquat		XRF-1	ESQUAT	
	Intracanyon flow. Cut in abandoned bulldozer road,W side of canyon,790'.											
C-166	W	Garfield	Penawawa 15'	NW/SW16	14N	41E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Cliff above Rice Bar,800'.											
C-168	W	Garfield	Penawawa 15'	NW/NE22	14N	41E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Ledge on E side of deep gully,800'.											
C-171	W	Whitman	Penawawa 15'	SE/NW22	14N	42E	GR			XRF-1	GR INC	
	High Na2O,low TiO2											
C-177	W	Garfield	Penawawa 15'	NW/NW28	14N	42E	SM	Pomona		XRF-1	POMONA	
	Intracanyon flow. Columnar cliff,850'.											

Table 16

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	71-3	71-4	71-5	71-6	71-7	71-10	71-11	71-14	71-15	71-17	71-23	71-24	71-25
SIO2	53.40	52.60	52.10	54.70	49.80	66.20	55.40	54.70	50.80	50.60	49.50	51.00	49.10
AL203	14.10	14.20	14.80	13.70	12.80	15.90	13.80	13.70	16.00	12.90	12.60	14.50	13.50
FE203	2.30	2.80	3.30	5.80	0.68	2.30	4.00	6.30	1.70	2.00	6.80	5.30	11.10
FEO	9.10	9.93	6.35	6.80	14.20	1.60	8.20	6.10	7.70	12.60	6.80	7.20	4.70
MGO	4.60	2.50	5.40	3.50	4.40	1.60	3.10	3.00	7.90	3.90	3.00	3.30	2.20
CAO	8.10	6.20	9.50	6.40	8.30	4.60	6.30	6.20	10.60	8.00	6.20	8.50	6.00
NA2O	2.40	3.40	3.10	2.90	2.20	3.90	3.30	2.30	2.30	2.40	1.30	2.50	2.20
K2O	1.40	3.20	0.90	1.60	1.10	1.70	1.70	1.70	0.65	1.30	0.84	1.10	0.77
H2O	1.16	0.92	1.76	1.81	1.20	1.20	0.80	2.36	0.70	1.10	9.10	2.25	5.90
TIO2	2.00	2.62	1.55	2.00	3.60	0.55	2.10	2.10	1.50	3.40	2.70	3.00	3.00
P2O5	0.32	0.87	0.36	0.35	0.56	0.21	0.47	0.45	0.21	0.61	0.48	0.68	0.74
MNO	0.21	0.25	0.19	0.24	0.24	0.10	0.22	0.22	0.18	0.24	0.22	0.23	0.16
CO2	0.18	0.93	0.18	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
TOTAL	99.27	100.42	99.49	99.80	99.08	99.86	99.39	99.13	100.26	99.05	99.54	99.56	99.37

SAMPLE	71-27A	71-28A	71-29	71-30	71-31	71-31A	71-32A	71-33	71-34	71-35	71-36	71-37	71-38
SIO2	54.50	54.20	48.90	54.20	48.10	47.77	53.60	54.20	53.60	54.40	48.10	50.10	50.20
AL203	14.10	13.90	15.00	12.80	16.40	16.48	13.70	13.30	13.20	12.90	14.50	16.00	16.10
FE203	2.30	2.00	3.40	2.70	3.40	3.27	1.40	2.80	1.70	2.40	1.40	1.30	1.00
FEO	9.03	9.45	8.78	9.76	9.09	9.43	10.86	9.04	10.04	10.13	10.50	8.40	8.50
MGO	3.80	4.20	6.50	3.80	5.60	5.46	4.30	4.00	4.60	3.70	6.20	8.10	7.90
CAO	7.90	8.60	10.00	7.80	8.80	8.86	7.90	8.20	8.20	7.80	9.31	10.70	10.50
NA2O	3.20	3.20	2.90	3.00	3.30	3.23	3.20	3.00	3.80	3.70	2.30	2.30	2.10
K2O	1.70	1.50	0.40	1.80	0.80	0.83	1.60	1.40	1.40	1.50	0.55	0.54	0.54
H2O	0.68	0.87	1.77	1.35	1.10	1.41	0.83	0.88	0.81	0.90	0.79	0.86	0.83
TIO2	2.04	2.08	2.21	2.49	2.70	2.57	2.39	2.06	2.08	2.02	2.50	1.40	1.40
P2O5	0.34	0.31	0.26	0.36	0.36	0.32	0.34	0.30	0.31	0.36	0.56	0.21	0.17
MNO	0.21	0.20	0.20	0.20	0.17	0.19	0.20	0.18	0.20	0.21	0.27	0.18	0.19
CO2	0.14	0.06	0.09	0.09	0.02	0.02	0.09	0.08	0.12	0.08	0.04	0.02	0.00
TOTAL	99.94	100.57	100.41	100.35	99.84	99.84	100.41	99.44	100.06	100.10	97.02	100.11	99.43

SAMPLE	71-39	71-40	71-41	71-42	71-42A	71-46	71-48	71-52	71-54	71-54F	71-55	71-56	71-57
SIO2	53.50	49.00	49.40	49.50	49.16	54.40	50.30	51.50	50.60	50.20	53.20	53.40	49.90
AL203	14.40	13.70	16.10	14.00	13.90	12.40	16.10	15.20	13.60	13.22	14.50	15.30	14.20
FE203	2.10	3.10	1.80	1.50	1.80	1.70	1.10	2.40	3.90	4.22	2.30	2.10	5.80
FEO	8.90	10.44	10.00	12.10	12.22	10.12	8.80	9.00	10.00	9.93	9.20	7.20	4.90
MGO	4.40	5.00	5.60	5.40	5.30	4.40	8.10	6.00	4.30	4.57	5.00	6.10	6.00
CAO	8.40	9.50	9.00	8.70	9.03	8.60	10.70	9.60	7.90	8.27	8.50	9.90	10.30
NA2O	2.60	2.70	2.70	2.60	2.57	3.10	2.30	3.00	2.60	2.75	2.60	2.60	2.90
K2O	1.80	1.20	0.76	1.10	1.19	1.70	0.48	0.70	1.20	1.20	1.10	0.67	0.70
H2O	1.36	0.96	1.20	0.84	0.52	0.63	0.56	0.79	1.00	0.86	0.83	1.00	3.04
TIO2	1.90	3.11	2.10	3.20	3.29	2.09	1.50	1.40	3.00	3.03	1.70	1.20	1.44
P2O5	0.47	0.72	0.28	0.81	0.65	0.31	0.18	0.29	0.72	0.68	0.28	0.26	0.32
MNO	0.22	0.22	0.21	0.20	0.24	0.19	0.19	0.29	0.27	0.22	0.30	0.21	0.16
CO2	0.06	0.08	0.00	0.01	0.01	0.09	0.02	0.06	0.00	0.00	0.00	0.00	0.31
TOTAL	100.11	99.73	99.15	99.96	99.88	99.73	100.33	100.23	99.09	99.15	99.51	99.94	99.97

Table 1b. Major oxide analyses of OSTW- flows collected 1971-1977.

SAMPLE	71-58	71-59	71-60	71-64	71-65	71-66	71-67	71-68	71-69	71-70	71-72	71-73	71-74
SIO2	50.40	51.00	50.80	53.50	53.90	50.50	53.50	50.50	49.20	51.00	52.60	58.20	49.20
AL203	13.50	13.70	13.40	15.50	14.90	14.60	13.80	12.90	13.60	13.30	13.30	15.60	13.80
FE203	3.60	2.70	3.10	4.40	2.40	4.20	2.60	3.50	1.30	1.20	2.20	2.90	2.40
FEO	11.16	11.95	11.58	5.10	6.90	6.70	7.60	11.00	12.50	12.90	11.18	2.68	11.58
MGO	4.50	4.20	4.20	4.90	5.60	6.00	3.80	4.20	5.20	4.50	2.30	1.40	5.10
CAO	8.50	8.20	8.10	8.80	9.50	9.60	8.10	7.30	8.60	7.90	6.00	6.30	9.20
NA20	3.00	2.70	2.60	2.80	2.70	2.70	2.70	2.60	2.40	2.40	3.00	3.70	2.50
K20	1.30	1.40	1.50	0.79	0.73	0.71	1.40	1.20	1.10	1.30	2.90	3.30	1.30
H20	0.40	0.42	0.49	2.30	1.30	2.40	1.40	2.00	1.25	1.00	1.10	1.92	0.64
TIO2	3.16	3.02	3.02	1.10	1.20	1.40	3.20	3.00	3.20	2.90	2.63	2.86	3.18
P205	0.62	0.58	0.56	0.41	0.27	0.32	0.68	0.61	0.78	0.57	0.88	0.83	0.73
MNO	0.24	0.23	0.23	0.10	0.20	0.18	0.24	0.26	0.27	0.27	0.28	0.09	0.24
CO2	0.15	0.16	0.30	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.93	0.18	0.14
TOTAL	100.53	100.26	99.88	99.72	99.60	99.31	99.02	99.07	99.40	99.24	100.30	99.96	100.01

SAMPLE	71-75	71-76	71-77	71-78	71-79	71-80	71-81	71-82	71-83	71-84	71-85	71-87	71-88
SIO2	49.90	52.80	53.90	53.90	48.10	49.10	49.20	49.20	49.20	53.40	50.00	50.30	47.80
AL203	14.00	14.30	14.70	14.10	13.40	14.60	14.40	13.60	12.90	14.20	13.70	13.20	13.40
FE203	4.70	1.90	1.60	5.60	2.70	3.50	2.50	1.90	1.70	1.20	3.00	4.20	1.80
FEO	9.83	9.69	9.27	7.86	12.60	9.40	12.10	12.20	13.30	10.10	10.90	9.00	12.50
MGO	4.30	5.10	4.80	3.30	4.50	6.00	4.90	5.00	4.30	4.40	4.40	3.70	5.70
CAO	8.60	9.00	8.40	6.60	7.90	9.90	8.50	8.60	8.00	8.00	7.90	8.50	9.60
NA20	2.70	2.80	2.90	3.30	2.60	2.20	2.60	2.40	2.40	2.60	2.50	2.30	2.20
K20	1.10	1.40	1.30	1.80	1.10	0.41	1.10	1.10	1.30	1.70	1.10	1.00	0.71
H20	0.87	0.34	1.15	1.14	1.30	1.87	1.07	1.30	1.75	1.17	1.95	2.60	1.10
TIO2	2.99	1.77	1.68	2.25	3.30	2.40	3.00	3.20	3.40	1.80	3.00	3.40	3.20
P205	0.79	0.26	0.26	0.42	0.68	0.64	0.82	0.77	0.80	0.53	0.64	0.57	0.76
MNO	0.22	0.20	0.16	0.20	0.30	0.15	0.22	0.27	0.27	0.21	0.24	0.24	0.27
CO2	0.15	0.15	0.15	0.15	0.03	0.01	0.08	0.00	0.00	0.00	0.00	0.18	0.00
TOTAL	100.15	99.71	100.27	100.62	98.51	100.18	100.49	99.54	99.32	99.31	99.33	99.19	99.04

SAMPLE	71-89	71-90	71-93	71-94	71-95	71-96	71-97	71-98	71-99	71-100	71-101	71-102	71-103
SIO2	50.40	52.70	48.80	49.80	49.90	49.00	50.80	50.80	50.20	51.20	50.80	51.20	53.50
AL203	12.70	13.40	14.00	13.90	13.60	13.70	13.00	12.90	13.40	12.40	12.40	14.00	14.70
FE203	2.30	2.20	2.70	2.40	3.50	1.70	3.20	2.40	2.20	5.50	2.70	2.70	3.20
FEO	12.40	10.00	11.80	11.60	11.60	12.30	11.30	12.00	12.40	9.50	12.45	11.99	8.06
MGO	3.90	3.70	5.30	5.50	4.30	5.20	4.10	4.00	4.10	3.70	4.00	4.20	4.20
CAO	8.10	8.00	8.40	9.00	8.10	8.80	7.70	7.60	7.80	7.90	8.10	8.10	8.40
NA20	2.30	2.50	2.40	2.70	2.40	2.40	2.60	2.60	2.50	2.80	2.50	2.70	2.80
K20	1.10	1.60	1.00	1.39	1.10	1.10	1.30	1.30	1.20	1.30	1.30	1.50	1.20
H20	1.67	1.31	1.55	0.31	1.64	1.20	1.10	1.75	1.40	1.16	1.32	0.36	1.64
TIO2	3.40	2.70	3.20	3.20	3.40	3.20	3.10	3.00	3.00	3.03	3.52	2.97	1.74
P205	0.57	0.39	0.78	0.79	0.58	0.78	0.64	0.68	0.61	0.55	0.52	0.50	0.32
MNO	0.24	0.24	0.19	0.19	0.18	0.27	0.26	0.29	0.28	0.24	0.22	0.27	0.20
CO2	0.00	0.40	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.09	0.09	0.15	0.19
TOTAL	99.08	99.14	100.19	100.79	100.31	99.65	99.10	99.32	99.09	99.37	99.92	100.64	100.15

Table 1b. Major oxide analyses of OSIW- flows collected 1971-1977.

SAMPLE	71-104	71-104A	71-105	71-105A	71-106	71-106A	71-107	71-107A	71-108	71-109	71-111	71-112	71-114
SIO2	47.10	46.85	50.20	49.89	51.40	51.00	50.50	50.45	47.50	47.90	49.60	46.00	47.50
AL203	12.10	12.33	13.30	13.45	14.90	15.01	13.40	13.23	13.50	12.80	13.30	12.30	13.60
FE203	2.60	2.36	2.90	3.65	1.60	1.41	1.60	1.50	3.40	3.20	2.70	3.90	2.20
FEO	14.80	15.17	11.40	10.89	8.80	9.17	12.90	13.07	11.77	10.89	12.58	14.49	12.30
MGO	4.50	4.37	4.80	4.59	7.40	7.21	4.00	4.08	5.70	4.10	4.40	4.40	6.10
CAO	8.70	8.78	7.90	8.16	10.40	10.64	8.30	8.47	9.50	10.60	8.80	8.70	9.80
NA2O	2.30	2.40	2.80	2.73	2.20	2.38	2.60	2.48	2.40	2.30	2.40	2.40	2.30
K2O	1.20	1.33	1.20	1.24	0.67	0.67	1.30	1.40	0.90	1.20	1.50	1.40	0.89
H2O	1.00	0.67	1.71	1.22	0.91	0.55	1.17	0.73	1.00	1.40	0.63	0.57	0.87
TIO2	3.70	3.76	3.20	3.20	1.60	1.55	3.60	3.65	3.37	3.35	3.45	3.63	3.30
P2O5	1.50	1.48	0.72	0.56	0.22	0.19	0.61	0.54	0.74	0.47	0.50	1.51	0.78
MNO	0.27	0.29	0.19	0.22	0.16	0.18	0.20	0.23	0.22	0.34	0.23	0.33	0.20
CO2	0.02	0.03	0.02	0.02	0.01	0.01	0.02	0.03	0.16	1.84	0.16	0.34	0.10
TOTAL	99.79	99.82	100.34	99.82	100.27	99.97	100.20	99.86	100.16	100.39	100.25	99.97	99.94

SAMPLE	71-114A	71-115	71-116	71-119	71-120	71-121	71-122	71-123	71-124	71-125	71-125A	71-127	71-128
SIO2	47.63	51.10	49.00	51.00	51.00	48.10	50.30	51.30	50.60	53.00	52.76	51.00	51.30
AL203	13.66	15.20	14.60	12.90	13.10	12.20	12.50	13.30	12.90	13.60	13.66	14.40	14.50
FE203	1.99	1.70	2.50	1.80	3.90	2.70	3.80	2.30	4.30	7.70	7.51	2.00	3.20
FEO	12.45	9.33	12.76	12.40	10.40	12.93	11.30	11.70	10.20	5.40	5.77	8.50	7.30
MGO	5.95	7.20	4.40	4.10	3.90	5.80	4.20	4.10	3.60	2.80	2.67	6.40	5.90
CAO	10.05	10.60	8.60	7.80	7.70	9.50	8.60	7.60	8.00	6.00	6.05	10.40	10.50
NA2O	2.38	2.40	2.30	2.60	2.50	2.40	2.40	2.70	2.20	3.60	3.26	2.30	2.20
K2O	0.88	0.70	1.30	1.50	1.40	1.00	1.30	1.50	1.10	2.50	2.53	0.64	0.77
H2O	0.55	0.21	0.57	1.10	1.40	0.55	1.11	1.30	1.99	2.01	1.40	1.40	1.74
TIO2	3.26	1.63	3.38	3.10	3.00	3.59	3.31	2.90	3.40	2.80	2.82	1.60	1.60
P2O5	0.72	0.23	0.49	0.62	0.64	0.84	0.49	0.68	0.59	0.86	0.82	0.23	0.24
MNO	0.24	0.18	0.23	0.27	0.26	0.25	0.22	0.27	0.24	0.19	0.22	0.17	0.20
CO2	0.09	0.12	0.00	0.00	0.00	0.11	0.12	0.03	0.00	0.04	0.05	0.00	0.00
TOTAL	99.85	100.60	100.12	99.19	99.20	99.97	99.65	99.68	99.12	100.50	99.52	99.04	99.45

SAMPLE	71-135	71-137	71-138	71-139	71-140	71-141	71-142	71-143	71-144	71-146	71-147	71-148	71-149
SIO2	49.50	47.90	50.00	49.50	51.80	49.10	56.30	55.10	55.80	51.30	55.70	53.60	50.20
AL203	14.90	15.30	15.20	17.20	14.00	15.60	14.10	13.30	13.30	13.40	13.50	13.40	13.30
FE203	3.00	3.00	3.00	3.60	4.80	2.70	3.10	3.20	3.50	3.50	3.40	2.90	3.10
FEO	8.70	8.50	7.80	6.70	9.00	8.30	5.99	9.09	9.18	9.31	8.41	9.72	11.40
MGO	6.40	7.00	6.50	6.00	4.30	6.00	3.20	4.30	3.40	4.20	3.50	4.20	4.90
CAO	10.50	9.60	10.80	11.00	8.20	10.40	6.90	7.30	6.60	7.70	6.90	7.80	9.20
NA2O	2.60	2.60	2.80	2.60	2.80	2.70	3.70	3.20	3.30	3.30	3.20	3.20	2.90
K2O	0.60	0.53	0.51	0.49	0.97	0.70	2.40	1.50	2.00	2.20	1.80	1.30	1.10
H2O	1.53	2.27	1.20	0.87	0.75	1.50	1.49	0.50	0.65	0.79	1.10	0.55	0.59
TIO2	1.50	1.50	1.40	1.10	1.90	1.70	2.12	1.92	2.07	2.63	1.93	1.90	2.15
P2O5	0.24	0.24	0.20	0.15	0.35	0.31	0.36	0.31	0.33	1.28	0.33	0.31	0.32
MNO	0.24	0.20	0.21	0.19	0.26	0.21	0.14	0.19	0.19	0.24	0.18	0.24	0.26
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.06	0.06	0.05	0.39	0.06
TOTAL	99.71	98.64	99.62	99.40	99.13	99.22	99.88	100.02	100.38	99.91	100.00	99.51	99.48

Table 1b. Major oxide analyses of OSTW- flows collected 1971-1977.

SAMPLE	71-150	71-151	71-152	72-21	72-22	72-26	72-30	72-31	72-33	72-39	72-40A	72-41	72-42
SIO2	50.50	49.80	55.20	49.40	53.40	51.20	49.60	49.70	48.90	47.10	51.30	54.50	55.50
AL203	15.20	15.00	13.60	14.00	14.40	14.30	14.30	15.90	14.30	14.00	14.80	14.90	13.10
FE203	4.00	2.60	2.90	4.00	1.70	3.40	1.50	1.80	2.10	3.90	1.00	3.00	3.20
FEO	8.15	8.99	8.80	11.00	9.70	8.70	11.90	7.80	12.00	8.40	9.70	8.60	9.90
MGO	5.70	6.40	3.00	4.00	4.70	5.30	4.60	8.20	4.40	4.60	6.80	4.80	3.00
CAO	10.40	10.50	6.50	7.90	8.40	9.00	9.20	10.30	9.00	7.98	10.10	8.40	6.80
NA20	3.10	3.00	2.80	2.50	2.70	2.70	2.60	2.10	2.50	2.40	2.30	2.80	3.00
K20	0.50	0.50	1.70	1.20	1.20	0.94	1.20	0.10	1.00	0.73	0.56	1.00	1.70
H20	0.72	0.64	2.10	2.70	1.50	1.80	0.81	1.10	0.97	2.40	1.20	1.08	1.10
TIO2	1.52	1.51	1.90	3.00	1.80	2.30	3.20	1.40	3.20	2.90	1.70	1.80	2.60
P205	0.22	0.24	0.37	0.55	0.33	0.39	0.72	0.17	0.64	0.73	0.31	0.44	0.56
MNO	0.22	0.21	0.22	0.19	0.15	0.22	0.19	0.11	0.19	0.31	0.20	0.15	0.19
CO2	0.06	0.08	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.05	0.01	0.01
TOTAL	100.29	99.47	99.09	100.45	99.99	100.27	99.83	98.69	99.21	95.46	100.02	101.48	100.66

SAMPLE	72-43	72-44	72-45	72-47	72-48	72-49	72-50	72-51	72-52	72-53	72-54	72-55	72-56
SIO2	53.80	54.40	53.90	50.20	49.90	51.50	51.60	53.10	50.60	50.60	50.80	51.40	51.40
AL203	14.80	14.30	14.20	13.80	12.70	12.90	15.10	14.20	14.90	12.90	12.60	12.60	12.70
FE203	2.20	1.70	2.20	4.40	3.60	3.30	1.90	2.70	1.60	3.10	5.50	2.30	4.50
FEO	7.40	8.80	9.30	8.90	11.40	10.80	8.90	8.20	8.60	11.30	8.40	11.70	9.70
MGO	6.10	5.20	3.00	4.20	4.30	4.20	6.00	4.80	6.00	4.30	4.10	4.10	4.00
CAO	9.70	9.00	6.70	8.60	9.00	8.20	10.40	9.10	10.69	9.00	8.10	8.50	7.80
NA20	2.70	2.90	3.00	2.60	2.40	2.60	2.80	2.60	2.70	2.60	2.70	2.70	2.90
K20	0.70	1.20	1.90	1.30	1.20	1.40	0.70	1.00	0.70	1.30	1.20	1.20	1.50
H20	1.47	0.53	1.47	1.57	3.30	1.05	0.96	2.50	1.38	0.95	3.90	1.57	2.10
TIO2	1.20	1.90	2.50	3.20	3.20	3.20	1.50	1.80	1.40	3.30	2.90	3.20	3.00
P205	0.20	0.32	0.82	0.73	0.65	0.74	0.37	0.31	0.36	0.85	0.68	0.76	0.71
MNO	0.15	0.18	0.24	0.27	0.23	0.22	0.19	0.17	0.31	0.21	0.19	0.23	0.16
CO2	0.01	0.01	0.01	0.08	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01
TOTAL	100.43	100.44	99.24	99.85	100.89	100.13	100.43	100.49	99.25	100.42	101.08	100.28	100.48

SAMPLE	72-57	72-59	72-60	72-61	72-62	72-63	72-64	72-65	72-66	72-67	72-68	72-69	72-70
SIO2	51.30	53.00	50.40	51.10	49.70	50.60	51.10	51.10	54.70	54.90	52.80	52.70	49.80
AL203	12.60	14.80	13.80	12.90	12.40	12.60	12.70	14.80	14.30	14.60	14.30	13.90	14.10
FE203	3.20	2.10	3.10	4.40	7.30	6.90	2.90	4.10	2.10	2.80	2.00	1.90	5.00
FEO	11.20	7.70	11.30	9.60	7.20	7.60	11.20	7.00	8.40	7.60	9.20	9.10	6.40
MGO	3.90	5.90	4.50	4.00	3.90	3.90	4.10	6.00	4.20	4.20	5.40	4.70	5.70
CAO	7.90	9.80	8.40	7.90	8.20	7.90	8.30	10.30	8.80	8.40	9.10	8.40	9.60
NA20	2.80	2.70	2.70	2.80	2.50	2.60	2.70	2.80	2.90	2.80	3.00	2.90	2.60
K20	1.30	0.70	1.20	1.40	1.10	1.40	1.50	0.50	1.30	1.30	1.00	1.00	0.60
H20	2.10	1.40	0.82	2.00	4.40	2.60	1.31	1.85	1.51	1.46	1.20	2.00	3.60
TIO2	3.20	1.10	3.20	3.20	2.90	3.20	3.20	1.60	1.80	1.80	1.80	2.00	1.60
P205	0.71	0.28	0.73	0.68	0.67	0.77	0.76	0.38	0.36	0.36	0.30	0.32	0.31
MNO	0.19	0.14	0.28	0.20	0.16	0.18	0.21	0.19	0.20	0.19	0.19	0.19	0.16
CO2	0.02	0.02	0.02	0.06	0.01	0.01	0.03	0.07	0.05	0.01	0.06	0.02	0.03
TOTAL	100.42	99.64	100.45	100.14	100.44	100.26	100.01	100.69	100.62	100.42	100.35	99.13	99.50

Table 1b. Major oxide analyses of DSIW- flows collected 1971-1977.

SAMPLE	72-71	72-72A	72-72B	72-73	72-74	72-75	72-76	72-77	72-78	72-79	72-80	72-82	72-83
SIO2	52.80	54.10	52.80	51.80	50.80	50.20	50.60	50.50	51.40	51.30	49.20	56.00	50.60
AL203	14.20	14.40	13.60	14.20	14.50	13.60	12.70	12.50	12.70	13.20	13.40	13.80	14.60
FE203	3.70	4.00	3.20	7.80	3.90	3.40	3.90	5.80	3.60	2.90	3.80	3.00	4.60
FEO	7.50	5.60	6.90	3.40	10.30	11.00	10.50	8.90	10.60	10.90	9.60	6.50	6.00
MGO	5.20	3.20	3.40	4.20	3.90	4.50	4.30	4.00	4.30	4.30	4.00	3.40	5.70
CAO	8.70	8.40	9.40	8.70	8.40	8.40	8.10	8.10	8.20	8.10	9.10	6.90	9.80
NA20	2.80	2.90	3.10	2.80	2.80	2.80	2.80	2.60	2.60	2.90	2.80	3.00	2.60
K20	0.85	1.30	1.40	1.30	1.00	1.20	1.10	1.20	1.50	1.20	1.10	1.80	0.60
H20	1.69	2.38	2.40	1.50	1.63	0.99	2.60	3.30	1.34	1.60	3.20	1.66	3.20
TIO2	1.80	3.10	3.40	3.50	3.00	3.20	3.10	3.10	3.20	3.00	2.90	2.10	1.20
P205	0.30	0.72	0.82	0.73	0.36	0.67	0.67	0.66	0.75	0.67	0.63	0.39	0.30
MNO	0.19	0.17	0.15	0.25	0.22	0.32	0.23	0.15	0.21	0.19	0.30	0.18	0.12
CO2	0.03	0.02	0.01	0.04	0.08	0.03	0.08	0.01	0.01	0.03	0.22	0.01	0.08
TOTAL	99.76	100.29	100.58	100.22	100.89	100.31	100.68	100.82	100.41	100.29	100.25	98.74	99.40

SAMPLE	72-84	72-85	72-86	72-87	72-88	72-89	72-90	72-91	72-92	72-93	72-94	72-95	72-96
SIO2	50.20	51.00	50.50	51.50	54.40	53.10	51.50	50.90	51.40	54.50	50.30	51.00	52.80
AL203	13.60	13.00	12.70	12.70	14.30	14.20	15.00	12.80	13.10	14.40	13.60	14.20	13.70
FE203	3.30	4.70	6.50	4.90	2.10	5.50	1.40	3.90	2.50	2.80	5.70	3.80	3.60
FEO	11.00	10.00	8.20	9.20	9.00	6.60	8.90	10.90	11.60	8.40	8.60	10.60	8.40
MGO	4.50	3.80	4.00	3.90	4.40	4.90	6.70	4.10	3.90	4.40	3.40	3.90	4.20
CAO	8.30	8.00	8.30	7.70	8.20	8.50	10.30	7.70	7.00	8.30	7.70	7.80	7.40
NA20	2.70	2.90	2.50	2.70	2.90	2.70	2.30	2.80	2.70	2.90	2.60	2.80	2.70
K20	1.30	1.00	1.10	1.10	1.30	0.90	0.49	1.40	1.40	1.20	1.00	1.10	1.00
H20	0.92	2.00	2.90	3.40	1.32	1.71	1.20	1.62	1.34	1.86	3.70	1.25	2.40
TIO2	3.30	3.10	3.10	2.90	1.80	1.80	1.70	3.20	3.10	1.80	2.90	3.10	2.00
P205	0.71	0.72	0.67	0.64	0.42	0.33	0.27	0.79	0.68	0.37	0.65	0.45	0.33
MNO	0.28	0.18	0.19	0.23	0.18	0.17	0.19	0.24	0.21	0.18	0.16	0.21	0.18
CO2	0.02	0.01	0.01	0.08	0.05	0.02	0.05	0.08	0.05	0.08	0.03	0.01	0.00
TOTAL	100.13	100.41	100.67	100.95	100.37	100.43	100.00	100.43	98.98	101.19	100.34	100.22	98.71

SAMPLE	72-97	72-98	72-99	72-100	72-101	72-102	72-104	72-105	72-106	72-107	72-108	72-109	72-110
SIO2	54.00	50.60	49.80	49.60	51.00	51.00	49.40	51.40	53.60	54.50	53.20	51.80	50.40
AL203	14.50	14.60	14.20	12.60	12.50	13.70	16.90	16.10	14.20	13.50	14.10	15.50	13.60
FE203	3.30	5.00	4.80	6.00	6.00	3.50	2.10	3.10	5.10	4.90	3.10	4.20	6.20
FEO	7.20	5.90	6.00	8.10	8.00	10.80	8.20	7.20	6.10	6.40	9.10	6.80	8.40
MGO	5.00	6.20	5.60	3.90	4.00	4.50	8.00	5.70	3.60	3.40	4.60	5.20	4.20
CAO	8.60	10.00	10.50	7.40	7.50	8.10	10.30	10.10	7.30	7.00	7.80	9.50	8.50
NA20	2.90	2.80	2.90	2.50	2.70	2.80	2.20	3.00	3.20	3.20	2.80	3.00	2.60
K20	1.10	0.50	0.40	1.00	1.10	1.20	0.60	0.51	1.30	1.30	0.90	0.61	1.30
H20	1.47	3.30	4.40	5.20	3.50	0.85	0.91	1.30	2.80	2.80	1.43	2.30	1.50
TIO2	1.90	1.40	1.40	2.90	2.90	3.20	0.94	1.30	2.40	2.40	2.00	1.30	3.10
P205	0.33	0.36	0.39	0.68	0.66	0.69	0.15	0.26	0.59	0.56	0.32	0.48	0.56
MNO	0.17	0.13	0.22	0.22	0.18	0.27	0.14	0.20	0.14	0.20	0.20	0.13	0.17
CO2	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.01	0.01	0.01	0.02	0.02
TOTAL	100.47	100.79	100.61	100.10	100.04	100.64	99.85	100.22	100.34	100.17	99.56	100.84	100.55

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	72-112	72-113	72-114	72-115	72-116	72-117	72-118	72-119	72-120	72-121	72-126	72-127	72-132
SIO2	52.90	51.00	51.90	50.80	50.60	51.60	50.70	49.30	49.20	54.20	51.20	53.10	49.00
AL203	14.60	14.30	13.90	14.50	14.40	13.80	13.00	13.10	15.40	13.80	14.40	14.00	14.00
FE203	3.70	5.00	4.60	3.20	3.40	4.30	3.80	8.50	3.20	4.70	2.90	6.20	1.60
FEO	7.90	8.10	9.10	11.10	10.60	8.70	9.80	6.10	6.70	7.80	11.20	5.40	12.10
MGO	4.40	3.60	4.10	4.40	4.30	3.10	3.90	4.00	8.00	3.70	4.10	3.10	5.20
CAO	8.40	8.30	7.70	8.10	8.30	7.92	7.60	8.40	10.90	6.50	8.20	7.60	9.00
NA20	2.50	2.60	2.80	2.70	2.70	2.80	2.80	2.50	2.30	2.80	2.50	2.60	2.50
K20	1.20	1.00	1.20	1.10	1.10	1.40	1.20	1.40	0.20	1.50	1.40	1.30	1.10
H20	1.90	3.10	1.23	1.41	1.19	1.96	2.70	2.60	1.76	2.90	1.30	3.70	1.09
TIO2	1.90	2.70	3.20	2.90	3.00	3.00	2.80	2.80	0.89	2.10	2.90	3.30	3.10
P205	0.26	0.71	0.71	0.74	0.72	0.74	0.70	0.76	0.18	0.33	0.78	0.73	0.82
MNO	0.15	0.14	0.20	0.18	0.18	0.21	0.17	0.18	0.12	0.13	0.22	0.10	0.19
CO2	0.08	0.08	0.02	0.01	0.01	0.05	0.03	0.08	0.01	0.01	0.02	0.01	0.07
TOTAL	99.89	100.63	100.66	101.14	100.50	99.58	99.20	99.72	98.86	100.47	101.12	101.14	99.77

SAMPLE	72-133	72-133F	72-133A	72-134	72-135	72-136	72-137	72-138	72-139	72-140	72-140A	72-141	72-142
SIO2	50.30	50.04	50.00	50.90	51.30	51.90	50.20	50.60	48.80	49.20	49.60	49.10	51.40
AL203	14.70	14.34	13.80	13.20	13.10	13.20	14.00	14.10	14.20	14.20	14.00	14.20	13.00
FE203	4.20	3.80	3.50	3.60	2.60	3.30	4.00	2.60	6.40	8.80	4.40	8.20	4.30
FEO	9.20	9.40	10.40	10.90	11.70	10.50	9.20	10.70	8.20	6.40	10.10	6.00	10.00
MGO	4.00	4.22	4.70	4.00	3.70	3.70	4.20	4.30	4.00	3.70	4.30	4.00	4.30
CAO	8.30	8.34	8.40	7.30	7.10	7.30	7.80	8.10	8.00	7.80	8.00	7.70	7.80
NA20	2.80	2.57	2.70	2.70	2.70	2.90	2.40	2.50	2.40	2.50	2.50	2.60	2.70
K20	1.20	1.13	1.20	1.30	1.70	1.30	1.30	1.30	1.20	1.10	1.00	1.10	1.10
H20	2.00	2.13	1.60	2.20	1.88	2.10	3.70	2.50	3.20	2.80	2.80	2.40	2.00
TIO2	2.90	2.73	3.00	3.10	3.10	3.00	3.00	3.00	3.10	3.10	2.90	3.00	3.00
P205	0.64	0.60	0.66	0.77	0.83	0.82	0.51	0.49	0.62	0.59	0.60	0.64	0.58
MNO	0.21	0.18	0.26	0.22	0.23	0.21	0.15	0.16	0.15	0.16	0.20	0.16	0.19
CO2	0.05	0.00	0.03	0.01	0.01	0.03	0.01	0.01	0.05	0.02	0.01	0.01	0.01
TOTAL	100.50	99.48	100.25	100.20	99.95	100.26	100.47	100.36	100.32	100.37	100.41	99.11	100.38

SAMPLE	72-143A	72-144	72-145	72-145F	72-146	72-147	72-149	72-150	72-150F	72-151	72-152	72-154	72-155
SIO2	51.30	50.40	49.50	49.92	54.02	51.61	51.30	50.40	50.24	53.10	53.00	51.60	49.40
AL203	14.80	13.90	14.20	13.55	14.73	14.44	13.90	13.60	13.18	14.80	13.90	15.70	14.40
FE203	1.10	1.40	3.60	2.60	11.47	12.82	7.30	4.00	3.67	3.10	3.10	3.50	3.40
FEO	9.40	13.30	11.30	11.06	0.00	0.00	6.00	9.40	9.72	6.40	10.60	6.80	9.30
MGO	6.80	4.20	4.80	4.95	4.81	5.58	4.00	4.00	4.17	5.90	2.80	5.20	4.80
CAO	10.20	8.00	8.50	8.46	8.76	9.52	8.20	8.40	8.38	9.70	6.40	9.50	9.10
NA20	2.20	2.50	2.70	2.90	2.83	2.76	3.20	2.50	2.48	2.60	3.00	3.20	2.40
K20	0.62	1.20	1.40	1.40	1.30	0.85	1.30	1.40	1.41	0.78	2.00	0.70	1.00
H20	1.60	1.51	0.90	0.44	0.80	0.69	1.59	2.09	2.16	1.60	1.22	1.20	1.85
TIO2	1.60	3.30	2.90	2.86	2.04	2.42	3.10	3.30	3.15	1.20	2.40	1.40	3.00
P205	0.26	0.60	0.58	0.61	0.28	0.43	0.75	0.73	0.71	0.29	0.86	0.40	0.79
MNO	0.19	0.23	0.19	0.21	0.17	0.19	0.18	0.24	0.19	0.20	0.37	0.22	0.24
CO2	0.05	0.05	0.03	0.00	0.00	0.00	0.01	0.02	0.00	0.03	0.01	0.03	0.05
TOTAL	100.12	100.59	100.60	98.96	101.21	101.31	100.83	100.08	99.46	99.70	99.66	99.45	99.73

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	72-156	72-158	72-159A	72-159B	72-160	72-161	72-162	72-163	72-167	72-168	72-169	72-169F	72-170
SIO2	54.60	49.20	50.70	51.60	49.70	49.50	50.10	54.00	51.50	53.40	50.00	49.32	54.40
AL203	14.90	14.40	13.70	13.90	13.50	13.80	13.20	14.30	14.70	13.50	13.80	13.24	14.10
FE203	3.70	4.50	4.60	6.00	6.20	5.40	4.30	2.60	3.50	3.20	5.80	5.64	6.30
FEO	7.30	8.10	9.70	6.40	7.90	8.20	9.80	9.90	7.60	10.20	7.40	7.60	4.80
MGO	4.90	4.40	4.10	4.20	4.20	4.70	4.40	2.70	5.50	2.70	4.10	4.01	2.50
CAO	8.40	9.32	8.20	8.50	8.20	8.10	8.20	6.00	9.20	6.40	8.70	8.56	6.40
NA20	2.60	2.30	2.80	2.80	2.60	2.60	2.50	3.00	3.00	3.10	2.60	2.51	3.00
K20	1.10	0.90	1.30	1.20	1.20	1.20	1.10	2.30	0.78	1.60	1.30	1.28	2.20
H20	1.62	2.70	0.79	1.40	2.10	2.50	2.50	1.92	2.10	2.30	1.89	1.95	2.30
TIO2	1.80	3.20	3.20	3.30	3.10	3.00	3.00	2.70	1.50	2.30	3.30	3.17	2.70
P205	0.42	0.62	0.70	0.73	0.70	0.64	0.59	0.81	0.44	0.94	0.70	0.69	0.97
MNO	0.15	0.16	0.28	0.27	0.26	0.28	0.33	0.16	0.23	0.35	0.40	0.31	0.27
CO2	0.01	0.01	0.05	0.01	0.02	0.05	0.04	0.03	0.06	0.10	0.03	0.00	0.02
TOTAL	101.50	99.81	100.12	100.21	99.68	99.97	100.06	100.42	100.11	100.09	100.02	98.28	99.96

SAMPLE	72-171	72-172	72-173	72-174	72-175	72-176	72-177	72-178	72-180	72-181	72-182	72-185	72-186
SIO2	52.10	52.00	49.80	53.30	53.20	47.50	50.00	49.00	48.30	53.00	51.00	50.00	52.50
AL203	14.40	14.80	14.50	14.10	14.20	14.30	14.30	14.20	14.20	14.70	14.70	14.10	14.30
FE203	3.80	9.60	4.70	3.30	3.20	4.30	2.10	2.20	2.30	4.20	1.80	4.40	1.90
FEO	8.20	4.70	8.10	8.30	9.00	9.80	11.20	11.30	11.60	7.30	11.80	9.70	10.50
MGO	4.50	1.80	3.90	2.40	2.50	5.20	5.40	5.50	5.60	4.60	5.50	4.10	4.50
CAO	8.30	4.90	9.40	5.80	6.00	9.50	8.90	8.90	8.80	8.40	8.40	7.80	8.10
NA20	2.30	3.10	2.40	3.10	3.20	2.50	2.40	2.30	2.50	2.60	2.50	2.60	2.70
K20	1.30	2.50	1.20	2.50	2.40	0.70	1.10	1.00	1.00	1.10	1.00	1.10	1.20
H20	1.68	2.70	2.60	1.90	1.70	2.30	1.00	1.30	1.10	0.96	1.38	2.60	1.20
TIO2	1.90	2.80	3.20	2.60	2.70	3.30	3.10	3.00	3.10	1.80	2.90	2.90	2.10
P205	0.26	0.88	0.83	0.80	0.71	0.78	0.65	0.65	0.64	0.48	0.78	0.48	0.44
MNO	0.16	0.12	0.15	0.15	0.16	0.18	0.19	0.17	0.19	0.17	0.18	0.17	0.17
CO2	0.02	0.01	0.08	0.01	0.04	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.04
TOTAL	98.92	99.91	100.86	98.76	99.01	100.37	100.35	99.53	99.34	99.33	101.96	99.97	99.65

SAMPLE	72-187	72-188	72-189	72-190	72-191	72-201	72-202	72-203	72-204	72-205	72-206	72-207	72-208
SIO2	54.80	55.30	55.20	53.10	54.10	48.90	49.20	50.50	49.70	50.70	49.50	50.10	49.40
AL203	14.40	14.40	14.10	14.10	14.10	14.30	14.50	14.00	14.80	14.40	14.60	14.50	14.50
FE203	3.60	4.30	4.70	6.40	4.00	3.20	1.80	2.00	2.40	4.20	3.40	3.30	1.90
FEO	6.90	6.50	7.20	6.20	8.80	10.90	12.00	12.80	11.40	9.40	11.20	9.50	12.20
MGO	3.40	3.50	3.30	3.20	3.50	5.40	5.40	5.00	5.20	4.40	4.80	5.10	5.40
CAO	6.90	6.80	6.80	6.40	6.90	8.40	8.70	8.40	8.70	8.40	8.70	8.90	8.80
NA20	2.70	2.80	2.80	2.50	3.10	2.40	2.20	2.40	2.60	2.60	2.10	2.60	2.50
K20	1.90	1.70	1.80	1.60	1.60	0.87	0.79	1.00	0.85	0.98	0.86	0.97	1.10
H20	1.77	2.20	2.30	3.30	1.20	1.78	0.96	1.22	1.20	1.62	1.25	1.59	1.02
TIO2	1.90	1.90	1.90	2.20	2.40	3.00	3.00	3.20	3.10	3.10	3.20	3.10	3.10
P205	0.29	0.31	0.31	0.36	0.38	0.82	0.87	0.77	0.72	0.80	0.83	0.79	0.78
MNO	0.12	0.13	0.17	0.24	0.18	0.19	0.21	0.20	0.18	0.16	0.20	0.16	0.19
CO2	0.01	0.02	0.02	0.01	0.01	0.02	0.07	0.02	0.01	0.02	0.02	0.01	0.01
TOTAL	98.69	99.86	100.60	99.61	100.27	100.18	99.70	101.51	100.86	100.78	100.66	100.62	100.90

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	72-209	72-210	72-211	72-212	72-213	72-214	72-216	72-220	72-221	72-222	72-223	72-224	72-225
SIO2	54.10	49.50	49.20	53.60	53.20	49.70	49.10	49.70	50.00	52.80	54.10	53.40	49.80
AL203	14.60	14.40	14.30	14.40	14.10	14.60	14.10	14.60	14.60	14.40	13.60	14.50	14.50
FE203	2.30	3.10	3.10	1.70	2.30	1.70	2.20	1.50	1.20	3.00	1.80	1.40	2.20
FEO	8.40	11.20	11.00	8.80	8.90	12.00	11.50	11.80	12.40	8.60	9.40	9.60	10.50
MGO	4.60	4.80	5.10	4.20	4.50	5.00	5.30	5.60	5.00	4.50	4.40	4.50	5.40
CAO	8.40	8.40	8.70	8.18	8.50	9.00	8.90	8.70	9.00	8.00	8.20	8.50	9.20
NA20	2.80	2.60	2.60	2.70	2.60	2.60	2.50	2.60	2.50	2.60	2.60	2.70	2.70
K20	1.70	0.91	0.91	1.70	1.70	1.00	1.10	1.00	0.99	1.70	1.80	1.80	0.95
H20	0.59	1.43	1.60	1.20	1.58	0.76	1.43	0.97	0.86	1.37	1.32	1.10	1.20
TIO2	1.90	3.30	2.90	2.24	1.90	3.10	3.40	2.80	3.00	1.90	1.90	1.90	3.10
P205	0.53	0.83	0.72	0.59	0.51	0.86	0.77	0.82	0.83	0.56	0.59	0.51	0.76
MNO	0.19	0.18	0.18	0.20	0.25	0.18	0.28	0.18	0.18	0.23	0.23	0.23	0.24
CO2	0.09	0.01	0.02	0.04	0.01	0.05	0.02	0.01	0.02	0.02	0.15	0.02	0.04
TOTAL	100.20	100.66	100.33	99.55	100.05	100.55	100.60	100.28	100.58	99.68	100.09	100.16	100.59

SAMPLE	72-226	72-227	72-228	72-229	72-231	72-234	72-235	72-236	72-237	72-240	72-241	72-242	72-243
SIO2	49.60	49.70	53.50	53.60	50.60	52.50	50.10	51.00	50.20	50.10	50.30	49.70	47.50
AL203	14.60	14.20	15.20	14.40	13.30	13.60	14.10	14.50	13.50	13.40	13.70	13.30	13.50
FE203	1.30	4.30	4.60	1.60	3.10	3.40	1.70	3.10	2.80	2.50	2.40	3.00	5.00
FEO	11.80	10.80	6.90	9.30	11.20	10.10	12.40	10.20	12.40	12.20	12.00	9.80	7.80
MGO	5.00	4.80	4.70	4.60	2.00	2.60	4.70	3.80	4.10	4.20	4.40	4.00	4.60
CAO	8.70	8.50	8.10	8.06	5.80	5.90	8.20	8.10	7.80	8.10	8.20	8.67	9.76
NA20	2.60	2.60	2.70	2.70	3.30	2.90	2.70	2.70	2.70	2.40	2.30	2.40	2.40
K20	1.00	1.00	1.10	1.80	2.50	2.60	1.20	1.50	1.10	1.30	1.40	1.20	0.82
H20	0.46	1.03	2.20	1.20	0.89	1.50	1.10	1.22	1.18	1.63	1.63	2.09	2.50
TIO2	3.20	3.20	1.40	1.90	2.60	2.70	3.00	3.30	3.60	3.60	3.60	3.60	3.50
P205	0.83	0.82	0.43	0.53	0.47	0.88	0.70	0.82	0.79	0.59	0.62	0.59	0.85
MNO	0.16	0.22	0.14	0.20	0.40	0.23	0.29	0.16	0.21	0.27	0.25	0.25	0.27
CO2	0.01	0.01	0.04	0.04	0.05	0.07	0.02	0.02	0.02	0.05	0.08	0.04	0.04
TOTAL	99.26	101.18	101.01	99.93	96.21	98.98	100.21	100.42	100.40	100.34	100.88	98.64	98.54

SAMPLE	72-247	72-248	72-249	72-250	72-251	72-252	72-256	72-260	72-262	72-263	72-264	72-265	72-266
SIO2	48.10	47.10	46.60	46.60	50.10	45.20	50.00	53.80	48.20	47.80	46.70	49.70	50.00
AL203	13.40	12.20	12.20	13.40	13.40	13.40	13.00	13.80	13.10	13.50	13.40	13.20	13.10
FE203	2.70	3.60	5.60	2.20	5.40	7.20	5.70	4.00	3.00	1.40	4.00	7.90	7.30
FEO	11.70	14.40	11.60	13.10	8.90	10.20	9.70	9.00	11.41	13.10	11.60	7.50	7.50
MGO	5.30	4.30	4.40	6.10	3.80	3.80	4.20	3.70	5.30	6.00	6.00	4.20	4.00
CAO	9.00	8.50	8.60	9.60	8.70	8.70	7.80	7.40	9.80	9.90	9.70	8.40	7.80
NA20	2.40	2.40	2.30	2.40	2.50	2.40	2.50	2.70	2.40	2.40	2.40	2.60	2.30
K20	1.00	1.30	1.10	0.80	1.00	1.00	1.20	1.60	0.72	0.75	0.85	1.30	1.20
H20	2.07	1.20	1.40	0.82	2.30	1.98	2.40	1.79	2.20	1.37	0.99	0.85	2.50
TIO2	3.40	3.80	3.80	3.70	3.50	3.70	3.50	2.70	3.30	3.30	3.80	3.60	3.60
P205	0.90	1.70	1.70	0.92	0.58	1.70	0.56	0.33	0.62	0.58	0.74	0.61	0.64
MNO	0.27	0.35	0.34	0.29	0.18	0.34	0.18	0.15	0.18	0.18	0.20	0.18	0.24
CO2	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
TOTAL	100.26	100.88	99.67	99.94	100.37	99.63	100.75	100.99	100.24	100.29	100.39	100.05	100.19

Table 10. Major oxide analyses of OSIW- flows collected 1971-1977.

SAMPLE	72-267	72-268	72-269	72-270	72-271	72-272	72-273	72-274	72-275	72-276	72-279	72-280	72-281
SIO2	53.60	53.30	50.60	51.30	57.20	51.30	53.60	51.00	53.00	50.50	52.10	50.40	50.70
AL203	13.60	13.70	15.70	15.60	13.60	14.90	13.40	14.70	15.70	13.30	14.90	16.00	15.00
FE203	3.30	5.60	4.10	3.40	2.70	3.10	3.80	3.80	5.70	4.70	3.70	3.50	4.00
FEO	9.70	7.20	6.70	7.20	7.20	7.80	9.60	7.50	3.10	9.50	7.10	7.20	6.70
MGO	2.80	2.60	6.00	5.60	3.30	5.40	3.00	6.00	4.10	4.00	5.10	6.10	6.00
CAO	6.00	6.10	10.40	10.60	6.80	10.00	6.20	9.80	9.20	8.10	10.20	10.70	9.70
NA2O	3.40	3.40	3.00	3.00	3.00	3.00	3.40	2.90	3.20	2.50	3.00	3.00	2.80
K2O	2.60	2.90	0.50	0.65	2.20	0.80	1.90	0.77	0.87	1.30	0.85	0.48	0.67
H2O	1.44	1.34	1.28	1.19	1.99	1.73	1.47	1.21	3.20	1.50	1.13	0.77	1.80
TIO2	2.80	2.60	1.40	1.50	2.20	1.60	2.50	1.50	1.50	3.80	1.70	1.50	1.50
P2O5	0.91	0.97	0.31	0.33	0.34	0.37	0.85	0.32	0.42	0.54	0.39	0.31	0.31
MNO	0.18	0.16	0.20	0.22	0.16	0.15	0.16	0.22	0.15	0.06	0.08	0.15	0.17
CO2	0.03	0.08	0.01	0.04	0.02	0.01	0.03	0.01	0.01	0.02	0.01	0.01	0.05
TOTAL	100.36	99.95	100.20	100.63	100.71	100.16	99.91	99.73	100.15	99.82	100.26	100.12	99.40

SAMPLE	72-282	72-283	72-284	72-285	72-286	72-287	72-288	72-290	72-291	72-292	72-293	72-294	72-295
SIO2	50.32	49.78	50.22	49.90	50.50	49.00	52.70	52.80	49.18	52.50	53.00	51.40	50.80
AL203	13.69	13.58	13.59	14.50	15.10	13.90	14.20	13.70	13.32	13.80	14.00	13.50	13.30
FE203	15.47	14.97	15.75	3.50	3.70	1.80	6.80	2.60	15.94	4.60	3.10	4.00	3.90
FEO	0.00	0.00	0.00	11.90	7.20	12.00	4.77	9.00	0.00	7.70	8.60	9.70	10.20
MGO	4.40	4.54	4.32	4.90	3.50	5.30	4.10	4.60	4.22	4.80	5.00	4.30	4.20
CAO	7.98	8.38	7.99	8.40	10.30	8.80	7.90	8.50	8.18	8.50	8.60	8.20	8.10
NA2O	2.81	2.75	2.75	2.60	3.10	2.60	2.50	2.30	2.65	2.90	2.70	2.70	2.80
K2O	1.29	1.16	1.54	0.96	1.10	1.10	1.60	1.00	1.15	0.87	1.00	1.20	1.20
H2O	1.47	2.46	0.86	0.97	1.11	0.69	1.90	2.60	2.71	1.80	1.56	1.24	2.20
TIO2	2.72	2.80	2.99	2.90	3.60	3.20	1.90	3.40	2.96	2.00	1.80	2.80	2.80
P2O5	0.60	0.53	0.62	0.74	0.79	0.78	0.66	0.82	0.53	0.45	0.29	0.61	0.54
MNO	0.20	0.19	0.21	0.18	0.12	0.15	0.18	0.17	0.21	0.20	0.18	0.16	0.20
CO2	0.00	0.00	0.00	0.06	0.02	0.04	0.02	0.05	0.00	0.01	0.01	0.02	0.01
TOTAL	100.95	101.14	100.84	101.51	100.14	99.36	99.23	101.54	101.05	100.13	99.84	99.83	100.25

SAMPLE	72-296	72-297	72-298	72-299	72-300	72-302	72-303	72-304	72-305	72-305F	72-306	72-307	72-310
SIO2	51.10	50.70	49.60	48.00	53.00	49.60	53.00	53.00	50.20	49.94	49.60	50.60	48.80
AL203	13.20	13.00	13.60	12.70	13.20	14.30	14.90	13.60	13.60	13.22	13.00	13.50	13.10
FE203	2.80	4.10	2.50	4.50	2.70	4.80	3.20	1.30	3.80	3.25	5.60	3.00	3.90
FEO	11.80	10.60	12.30	9.40	10.60	9.60	7.60	10.20	10.00	10.36	8.60	11.40	11.30
MGO	4.20	4.00	4.20	5.00	2.80	4.60	4.60	5.60	4.30	4.64	3.70	4.40	4.20
CAO	8.10	8.00	8.40	9.20	6.20	8.60	8.60	8.20	8.60	8.57	8.30	8.60	8.50
NA2O	2.80	2.80	2.60	2.50	3.30	2.50	2.60	2.80	2.70	2.42	2.80	2.70	2.70
K2O	1.50	1.20	1.20	0.92	2.80	0.90	0.82	1.10	1.20	1.15	1.00	1.20	1.20
H2O	1.22	1.80	1.47	2.80	1.06	2.19	2.20	0.70	1.30	1.60	2.20	1.30	1.18
TIO2	3.10	3.10	3.10	3.30	2.90	3.20	1.90	1.80	3.20	3.01	3.20	3.20	3.60
P2O5	0.64	0.62	0.62	0.83	0.91	0.80	0.40	0.45	0.67	0.63	0.68	0.78	0.77
MNO	0.18	0.18	0.18	0.18	0.22	0.16	0.15	0.17	0.18	0.20	0.17	0.18	0.22
CO2	0.01	0.01	0.02	0.02	0.04	0.02	0.02	0.01	0.01	0.00	0.01	0.01	0.01
TOTAL	100.65	100.11	99.79	99.35	99.73	101.27	99.99	98.93	99.76	98.99	98.86	100.87	99.48

Table 1b. Major oxide analyses of OSTW- flows collected 1971-1977.

SAMPLE	72-311	72-312	72-313	72-314	72-316	72-317	72-318	72-319	72-320	72-321	72-322	72-323	72-324
SIO2	53.70	49.40	49.30	49.20	49.30	50.30	49.40	51.60	51.00	50.70	53.80	53.00	51.60
AL203	14.60	13.50	13.00	13.90	13.70	13.70	12.80	13.30	13.30	13.20	14.00	14.00	14.00
FE203	2.20	1.80	3.10	1.20	3.60	3.70	3.30	5.10	4.00	3.90	3.30	3.30	2.10
FEO	8.20	12.80	12.00	13.60	12.10	11.40	12.20	9.00	10.40	10.60	8.30	8.60	8.80
MGO	4.80	3.90	4.60	4.40	4.10	4.10	4.10	3.80	4.40	4.30	4.50	5.20	6.80
CAO	9.20	7.90	8.90	8.30	9.30	7.60	8.40	7.60	8.00	7.70	8.00	9.10	10.40
NA20	2.80	2.60	2.70	2.60	2.60	2.70	2.70	3.00	2.60	2.60	2.60	2.80	2.40
K20	1.20	1.10	1.20	1.20	1.10	1.20	1.40	1.30	1.20	1.20	1.40	1.20	0.67
H20	0.78	2.10	1.27	0.80	1.82	1.69	1.08	1.80	0.83	2.01	1.96	1.43	0.98
TIO2	1.80	3.40	3.60	3.50	3.60	3.40	3.60	2.90	3.00	3.00	1.90	1.80	1.80
P205	0.30	0.83	0.84	0.76	0.77	0.82	0.89	0.55	0.60	0.56	0.36	0.29	0.25
MNO	0.17	0.21	0.20	0.22	0.19	0.19	0.22	0.20	0.20	0.21	0.15	0.17	0.15
CO2	0.01	0.02	0.01	0.06	0.01	0.02	0.01	0.04	0.01	0.02	0.01	0.01	0.01
TOTAL	99.76	99.56	100.72	99.74	101.19	100.82	100.10	100.19	99.54	100.00	100.28	100.90	99.96

SAMPLE	72-325	72-327	72-328	72-329	72-330	72-334	72-335	72-336	72-338	HUNTZ	73-11	73-15	73-17
SIO2	50.60	48.90	49.20	49.70	49.50	51.40	55.20	51.10	48.90	51.50	51.10	53.10	51.50
AL203	12.60	14.30	13.30	13.70	13.20	13.80	13.40	13.60	15.00	15.10	13.90	13.80	13.50
FE203	2.10	5.50	2.80	4.10	4.40	3.60	2.40	4.40	4.70	0.86	1.20	6.40	1.60
FEO	13.10	10.20	11.60	10.90	10.20	9.80	9.80	9.90	6.00	9.40	12.50	6.20	12.00
MGO	4.40	4.10	4.10	3.90	4.50	5.00	3.60	4.90	7.00	6.40	4.30	2.50	4.20
CAO	8.60	8.20	8.10	7.60	8.80	9.10	7.40	9.10	11.30	9.20	7.70	6.00	7.20
NA20	2.60	2.40	2.60	2.60	2.80	2.80	3.10	2.80	2.40	2.30	2.80	3.30	2.50
K20	1.40	0.92	1.00	1.10	1.20	0.92	2.00	0.87	0.27	1.20	1.60	2.50	1.60
H20	0.93	1.65	2.10	2.60	1.68	1.29	0.98	0.80	2.80	1.00	1.59	2.73	1.84
TIO2	3.50	3.30	3.60	3.40	3.60	2.00	2.40	2.20	1.30	1.60	2.60	2.40	3.00
P205	0.58	0.77	0.80	0.90	0.84	0.29	0.37	0.36	0.14	0.33	0.41	0.88	0.59
MNO	0.18	0.17	0.20	0.19	0.20	0.20	0.16	0.20	0.18	0.20	0.20	0.16	0.22
CO2	0.01	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.02
TOTAL	100.60	100.42	99.43	100.60	100.93	100.21	100.82	100.24	100.00	99.09	99.91	99.98	99.77

SAMPLE	73-18	73-18F	73-19	73-20	73-20F	73-22	73-22F	73-30	73-31	73-32	73-33	73-34	73-36
SIO2	50.80	51.11	52.80	50.60	50.62	52.80	52.71	54.20	55.20	49.24	49.32	49.79	51.10
AL203	14.60	14.44	13.20	13.50	12.94	13.50	13.37	15.00	14.80	13.32	13.14	13.25	13.60
FE203	2.00	1.68	2.10	1.60	1.71	2.60	2.81	2.20	3.40	16.27	15.43	15.67	3.70
FEO	8.60	8.95	10.70	12.60	12.72	10.20	10.21	8.40	7.60	0.00	0.00	0.00	9.20
MGO	6.90	6.61	4.00	4.40	4.39	3.70	3.53	4.20	4.40	4.36	4.53	4.06	3.60
CAO	10.00	10.40	7.00	7.80	8.53	7.20	7.64	8.10	7.90	8.01	8.29	8.03	7.90
NA20	2.10	2.26	2.50	2.20	2.43	2.70	2.59	2.60	2.80	2.58	2.67	2.57	2.40
K20	0.74	0.64	1.80	1.20	1.19	1.70	1.68	1.20	1.30	1.10	1.09	1.35	0.84
H20	1.77	1.37	1.36	1.70	1.29	1.79	1.23	1.91	1.62	1.73	2.44	1.74	3.00
TIO2	1.60	1.58	3.00	3.30	3.23	3.00	2.97	1.90	1.90	3.01	2.98	2.92	3.50
P205	0.28	0.27	0.46	0.58	0.54	0.45	0.43	0.45	0.52	0.56	0.50	0.71	0.64
MNO	0.20	0.17	0.20	0.23	0.20	0.20	0.18	0.16	0.14	0.22	0.22	0.21	0.15
CO2	0.01	0.00	0.01	0.03	0.00	0.04	0.00	0.05	0.01	0.00	0.00	0.00	0.04
TOTAL	99.60	99.48	99.13	99.74	99.79	99.88	99.35	100.37	101.59	100.40	100.61	100.30	99.67

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	73-37	73-38	73-39	73-40	73-41	73-42	73-43	73-44	73-45	73-46	73-47	73-48	73-49
SIO2	52.00	50.00	48.50	50.00	50.43	49.40	50.40	50.20	50.40	51.20	50.80	50.90	49.40
AL203	13.60	13.60	14.10	13.70	14.81	13.60	14.20	13.50	13.70	13.20	13.80	14.30	14.40
FE203	3.00	3.60	4.10	7.80	11.72	6.90	2.90	4.60	4.20	2.60	3.80	5.20	9.50
FEO	10.60	11.50	10.50	6.40	0.00	8.30	10.60	9.60	10.00	11.70	11.20	9.50	5.40
MGO	3.30	4.00	4.90	3.50	6.66	4.60	4.20	3.80	3.80	3.90	4.20	4.00	3.20
CAO	7.90	8.00	8.60	7.50	10.76	8.80	8.50	7.40	7.50	7.30	7.90	7.50	7.40
NA2O	1.90	2.30	2.50	2.80	2.28	2.50	2.60	2.50	2.40	2.60	2.50	2.40	2.50
K2O	1.00	1.20	0.90	0.91	0.58	0.90	1.10	1.30	1.20	1.50	1.20	1.20	1.10
H2O	2.18	2.20	1.49	3.80	1.51	2.05	2.00	2.80	2.50	1.63	1.52	2.00	4.50
TIO2	3.60	3.40	3.40	3.10	1.52	3.10	2.90	3.00	3.00	3.10	2.80	2.70	3.00
P2O5	0.50	0.56	0.76	0.50	0.22	0.75	0.57	0.46	0.39	0.30	0.64	0.71	0.68
MNO	0.18	0.16	0.21	0.15	0.17	0.16	0.17	0.17	0.17	0.20	0.18	0.17	0.15
CO2	0.01	0.01	0.05	0.04	0.00	0.05	0.02	0.02	0.01	0.03	0.02	0.01	0.02
TOTAL	99.77	100.53	100.01	100.20	100.66	101.11	100.16	99.35	99.27	99.26	100.56	100.59	101.25

SAMPLE	73-50	73-51	73-52	73-54	73-56	73-57	73-58	73-61	73-63	73-64	73-65	73-66	73-67
SIO2	48.40	49.38	54.40	49.59	51.40	52.10	51.60	50.80	51.66	52.40	52.80	53.80	49.90
AL203	13.20	13.26	15.00	13.55	13.80	14.40	14.40	13.80	13.78	13.60	14.50	14.90	15.80
FE203	6.40	15.94	2.10	15.83	1.50	2.30	1.10	2.60	14.28	5.90	8.00	3.80	6.80
FEO	8.40	0.00	8.60	0.00	12.60	8.00	9.00	12.40	0.00	9.00	4.10	7.65	5.00
MGO	4.20	4.48	4.20	4.13	4.00	5.70	6.80	3.90	3.77	3.50	4.50	4.10	5.40
CAO	7.50	8.06	7.80	7.89	7.80	10.50	10.60	7.90	7.95	7.50	8.30	7.90	9.00
NA2O	2.30	2.83	2.60	2.74	2.40	2.30	2.40	2.40	2.78	2.50	2.70	2.70	2.60
K2O	0.90	1.13	1.40	1.21	1.20	0.78	0.88	1.20	1.71	1.30	0.83	1.20	0.32
H2O	4.90	1.73	1.55	2.05	1.14	1.61	0.76	1.19	0.87	2.12	2.40	1.92	4.30
TIO2	2.80	3.00	1.70	3.01	3.50	1.60	1.60	3.30	2.81	2.90	1.70	1.70	1.20
P2O5	0.64	0.52	0.20	0.57	0.60	0.32	0.27	0.56	0.68	0.69	0.36	0.36	0.33
MNO	0.19	0.24	0.15	0.19	0.17	0.19	0.19	0.16	0.21	0.18	0.13	0.18	0.09
CO2	0.02	0.00	0.01	0.00	0.02	0.04	0.03	0.02	0.00	0.08	0.01	0.05	0.02
TOTAL	99.85	100.57	99.71	100.76	100.13	99.84	99.63	100.23	100.50	101.67	100.33	100.26	100.76

SAMPLE	73-68	73-70	73-71	73-72	73-73	73-74	73-80	73-81	73-82	73-83	73-84	73-85	73-89
SIO2	50.70	49.40	49.13	52.40	49.20	50.10	49.23	54.00	49.20	54.40	47.90	48.10	51.60
AL203	13.50	14.10	14.51	13.70	14.40	13.40	14.58	13.90	13.50	13.80	13.70	13.70	13.50
FE203	4.20	5.00	10.41	3.60	1.30	1.40	10.49	1.80	4.10	1.20	6.60	2.10	2.90
FEO	10.40	10.10	0.00	10.70	12.00	12.70	0.00	10.20	9.90	11.00	7.40	12.20	11.70
MGO	4.00	4.60	6.22	3.40	5.00	4.10	6.27	3.10	5.40	3.10	4.20	5.70	3.80
CAO	7.40	7.90	13.43	7.20	8.40	7.40	12.82	6.20	8.40	6.00	8.30	9.90	7.30
NA2O	2.80	2.60	2.29	2.70	2.50	2.40	2.36	2.80	2.50	3.00	2.20	2.40	2.80
K2O	1.10	1.30	0.60	1.70	1.10	1.20	0.67	2.50	1.00	2.40	0.76	0.42	1.40
H2O	2.20	1.30	0.96	1.30	0.88	1.56	0.93	1.62	2.00	1.22	3.30	1.41	0.82
TIO2	3.00	2.90	1.48	3.10	3.20	3.60	1.57	3.10	3.50	3.00	3.40	3.20	2.90
P2O5	0.63	0.61	0.22	0.46	0.77	0.65	0.23	0.79	0.79	0.84	0.74	0.70	0.67
MNO	0.19	0.18	0.18	0.17	0.19	0.18	0.19	0.16	0.15	0.19	0.19	0.18	0.20
CO2	0.03	0.05	2.80	0.04	0.02	0.01	2.40	0.01	0.03	0.02	0.01	0.03	0.01
TOTAL	100.15	100.04	102.23	100.47	98.96	98.70	101.74	100.18	100.47	100.17	98.70	100.04	99.60

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	73-90	73-91	73-96	73-97	73-98	73-99	73-100	73-101	73-101F	73-102	73-103	73-104	73-106
SIO2	51.00	50.60	48.60	53.00	53.50	51.10	50.90	49.54	49.54	51.95	54.70	54.00	51.20
AL203	12.90	13.90	14.30	14.10	14.60	13.70	13.70	13.62	13.62	14.72	14.02	13.80	14.10
FE203	4.80	2.10	3.60	3.80	2.00	3.40	1.40	4.41	4.41	1.08	11.79	1.30	4.90
FEO	10.20	11.80	10.70	6.80	9.00	10.60	12.00	9.33	9.33	9.17	0.00	10.00	7.80
MGO	3.90	4.50	4.50	5.00	4.20	4.00	4.10	4.81	4.81	7.24	4.44	4.20	5.70
CAO	7.40	7.60	7.80	8.70	7.80	7.80	7.60	8.43	8.43	10.84	8.13	8.00	10.60
NA20	2.50	2.60	2.60	2.70	2.60	2.70	2.60	3.25	2.78	2.47	2.99	2.70	1.90
K20	1.30	1.20	1.20	1.10	1.30	1.00	1.30	1.37	1.37	0.68	1.51	1.30	0.54
H20	2.80	1.63	2.18	2.30	1.88	1.98	1.38	1.97	1.97	0.28	0.92	1.36	1.16
TIO2	2.90	2.80	3.00	1.90	1.90	3.10	3.00	2.81	2.81	1.59	1.79	2.20	1.80
P205	0.60	0.62	0.65	0.35	0.45	0.41	0.53	0.66	0.66	0.27	0.42	0.32	0.28
MNO	0.17	0.17	0.18	0.15	0.16	0.18	0.21	0.21	0.21	0.17	0.20	0.16	0.14
CO2	0.01	0.02	0.03	0.01	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.01	0.03
TOTAL	100.48	99.54	99.34	99.91	99.40	100.03	98.74	100.41	99.94	100.46	100.91	99.35	100.15

SAMPLE	73-107	73-108	73-111	73-112	73-113	73-114	73-115	73-116	73-117	73-122	73-125	73-129	73-130
SIO2	54.90	50.70	53.90	48.49	53.00	46.40	47.40	48.00	47.30	48.10	48.40	48.30	47.60
AL203	14.70	14.10	15.00	14.02	13.50	12.20	13.40	13.90	13.50	13.70	13.40	13.90	13.70
FE203	3.70	3.70	3.40	14.94	4.30	2.50	2.70	2.40	3.40	2.60	2.00	2.70	3.40
FEO	7.30	7.20	7.80	0.00	9.40	14.40	11.40	11.80	11.10	11.40	11.60	11.00	10.60
MGO	4.20	3.60	4.70	5.35	3.30	4.40	5.60	5.80	5.80	5.40	5.20	6.00	5.90
CAO	8.10	10.30	8.20	9.32	8.40	8.40	9.30	9.40	9.50	8.60	8.90	9.50	9.40
NA20	2.80	2.60	2.70	2.67	2.20	2.30	2.50	2.40	2.40	2.30	2.60	2.60	2.30
K20	1.20	1.30	1.10	0.96	0.85	1.10	0.64	0.68	0.60	1.10	0.95	0.65	0.55
H20	1.27	2.70	0.70	1.23	2.00	1.45	1.51	1.24	1.30	2.00	1.60	0.85	2.20
TIO2	1.80	2.80	1.90	2.99	3.50	3.80	3.30	3.10	3.20	3.30	3.40	3.20	3.10
P205	0.40	0.52	0.32	0.74	0.53	1.30	0.76	0.63	0.68	0.85	0.76	0.72	0.66
MNO	0.14	0.18	0.15	0.23	0.16	0.24	0.18	0.18	0.18	0.24	0.19	0.18	0.18
CO2	0.07	0.01	0.02	0.00	0.06	0.02	0.01	0.01	0.04	0.03	0.03	0.03	0.06
TOTAL	100.58	99.71	99.89	100.94	101.20	98.51	98.70	99.54	99.00	99.62	99.03	99.63	99.65

SAMPLE	73-132	73-134	73-135	73-136	73-140	73-142	73-144	73-145	73-146	73-151	73-152	73-154	73-157
SIO2	46.80	47.30	46.90	50.60	45.50	48.00	46.50	53.60	46.30	52.80	52.40	46.00	46.20
AL203	12.30	13.50	12.60	15.40	13.50	14.20	13.70	13.00	14.00	13.80	13.80	13.40	13.50
FE203	6.90	2.90	7.70	13.00	6.30	5.80	3.40	2.90	4.60	2.60	3.20	3.50	3.00
FEO	9.20	12.00	8.40	1.00	9.30	8.10	11.00	9.80	9.40	10.00	9.10	11.40	11.90
MGO	4.20	5.90	4.30	3.20	5.80	5.70	6.30	4.10	5.50	3.90	4.10	6.20	6.00
CAO	8.60	9.30	8.70	8.20	9.38	9.70	9.20	7.50	9.73	7.20	7.60	9.86	9.00
NA20	2.20	2.40	2.50	1.50	2.30	2.90	2.10	2.70	2.00	2.50	2.40	2.30	3.20
K20	1.20	0.78	0.88	0.83	0.50	0.50	0.68	1.50	0.69	1.60	1.50	0.73	0.74
H20	2.20	1.11	1.87	0.88	1.55	1.13	1.80	1.69	2.10	1.99	2.20	1.10	1.80
TIO2	3.50	3.60	3.80	3.60	3.60	3.00	3.40	2.70	3.40	2.80	2.60	3.50	3.50
P205	1.60	0.89	1.20	0.75	0.83	0.55	0.89	0.39	0.89	0.44	0.41	0.92	0.95
MNO	0.33	0.19	0.26	0.18	0.21	0.18	0.25	0.15	0.22	0.20	0.20	0.25	0.25
CO2	0.10	0.02	0.03	0.02	0.05	0.04	0.08	0.07	0.05	0.08	0.02	0.05	0.04
TOTAL	99.13	99.89	99.14	99.16	98.82	99.80	99.30	100.10	98.88	99.91	99.53	99.21	100.08

Table 1b. Major oxide analyses of OSIW- flows collected 1971-1977.

SAMPLE	73-158	73-159	73-160	73-166	73-167	73-168	73-169	73-212	73-215	73-216	73-217	73-218	73-219
SIO2	45.00	46.90	48.70	50.10	47.90	51.40	49.80	54.10	55.30	55.30	53.50	53.40	53.90
AL203	12.30	11.90	13.30	13.50	13.00	14.80	14.20	14.30	15.20	13.60	14.90	14.20	14.40
FE203	9.60	8.40	4.20	3.30	3.60	2.90	3.60	3.60	2.20	4.60	2.10	3.40	4.20
FEO	8.00	7.40	9.10	11.70	11.00	8.30	10.20	6.70	7.20	6.90	9.40	7.90	7.20
MGO	4.00	3.50	3.70	4.40	5.30	5.40	5.00	4.20	4.30	3.50	4.70	4.50	4.50
CAO	8.40	7.00	8.38	7.70	8.40	8.60	8.40	8.70	8.20	7.40	8.40	9.33	8.70
NA2O	2.50	2.60	2.70	2.80	2.50	2.50	2.70	3.00	2.80	3.00	2.70	2.60	2.90
K2O	0.88	0.92	0.88	1.10	1.00	1.20	1.20	1.40	1.40	1.70	0.84	1.10	0.94
H2O	3.20	5.30	3.13	1.70	1.95	2.56	1.40	1.81	1.40	1.40	1.30	1.50	1.80
TIO2	3.50	3.20	3.40	3.20	3.10	1.70	3.20	1.60	1.80	2.30	2.10	1.70	2.00
P2O5	1.20	1.70	0.48	0.72	0.72	0.41	0.81	0.40	0.41	0.51	0.34	0.32	0.34
MNO	0.25	0.24	0.16	0.20	0.20	0.12	0.19	0.19	0.14	0.16	0.16	0.16	0.15
CO2	0.08	0.02	0.05	0.03	0.02	0.03	0.01	0.02	0.01	0.04	0.03	0.05	0.03
TOTAL	98.91	99.08	98.18	100.45	98.69	99.92	100.71	100.02	100.66	100.41	100.47	100.16	101.06

SAMPLE	73-220	73-221	73-222	73-232	73-233	73-234	73-235	73-242	73-243	73-244	73-245	73-246	73-247
SIO2	54.70	52.30	54.80	49.80	53.70	53.00	52.20	54.10	54.70	54.20	53.50	52.40	52.50
AL203	14.00	14.50	14.00	16.70	14.30	14.00	13.90	13.40	14.40	14.60	14.10	14.10	13.80
FE203	3.80	4.50	2.50	2.00	3.50	5.40	6.10	4.30	2.90	2.10	4.50	5.40	4.60
FEO	9.00	8.40	9.30	8.00	7.80	7.60	6.70	8.00	8.20	9.00	7.40	6.40	7.60
MGO	4.00	4.40	3.50	7.90	4.70	3.80	4.50	3.70	4.40	4.70	4.40	4.60	4.80
CAO	8.00	8.70	7.60	10.80	8.30	7.24	8.70	6.70	8.50	8.20	8.10	8.60	8.40
NA2O	3.10	2.60	3.20	2.50	2.70	3.10	2.70	3.30	2.60	2.70	2.50	2.80	2.40
K2O	1.40	1.00	1.90	0.26	1.30	1.30	0.70	1.80	1.40	1.10	1.40	1.20	1.00
H2O	0.68	2.30	0.75	0.88	1.80	1.80	3.50	1.70	1.60	1.50	2.20	3.30	3.00
TIO2	2.00	2.00	2.30	1.00	1.80	2.10	1.80	2.10	1.70	1.80	1.80	1.80	1.90
P2O5	0.36	0.38	0.41	0.21	0.37	0.41	0.28	0.48	0.37	0.34	0.38	0.26	0.28
MNO	0.17	0.16	0.15	0.16	0.15	0.19	0.23	0.20	0.15	0.16	0.15	0.14	0.15
CO2	0.02	0.04	0.02	0.01	0.01	0.10	0.02	0.01	0.02	0.03	0.01	0.02	0.01
TOTAL	101.23	101.28	100.43	100.22	100.43	100.04	101.33	99.79	100.94	100.43	100.44	101.02	100.44

SAMPLE	73-248	73-249	73-250	73-251	73-252	73-253	73-261	73-262	73-263	73-264	73-265	73-266	73-271
SIO2	53.50	56.20	52.50	53.00	55.50	52.50	50.40	51.10	52.70	49.60	54.10	52.60	53.30
AL203	14.10	13.80	13.90	13.90	13.60	13.90	13.20	13.10	13.50	17.50	14.10	14.00	13.30
FE203	4.00	3.10	2.70	2.30	3.40	6.30	5.00	2.60	6.00	3.10	3.40	4.00	4.40
FEO	8.30	8.20	9.40	9.90	8.90	5.70	9.30	12.10	7.40	6.20	7.80	7.30	8.50
MGO	4.50	3.30	4.50	4.70	3.90	4.80	3.70	4.20	3.90	6.90	4.20	5.00	3.70
CAO	8.40	6.90	8.50	8.40	6.50	8.70	7.60	7.90	8.20	11.20	8.50	8.80	7.40
NA2O	2.80	2.90	2.80	2.90	3.00	2.60	2.70	2.90	2.70	2.60	2.70	2.70	3.20
K2O	1.00	1.90	1.10	1.00	1.50	0.88	1.00	1.20	1.40	0.35	1.50	1.00	1.50
H2O	2.60	1.40	1.80	0.92	1.50	2.40	3.40	0.64	0.77	0.97	1.67	2.10	1.70
TIO2	1.70	2.20	1.80	2.00	2.10	1.70	2.80	3.10	3.50	1.00	1.80	1.70	2.30
P2O5	0.34	0.42	0.40	0.40	0.35	0.33	0.59	0.64	0.70	0.20	0.40	0.30	0.51
MNO	0.15	0.16	0.16	0.17	0.14	0.18	0.17	0.20	0.16	0.14	0.15	0.15	0.17
CO2	0.01	0.01	0.06	0.02	0.03	0.02	0.02	0.03	0.02	0.01	0.08	0.03	0.02
TOTAL	101.40	100.49	99.62	99.61	100.42	100.01	99.88	99.71	100.95	99.77	100.40	99.68	100.00

Table 1b. Major oxide analyses of OSIW- flows collected 1971-1977.

SAMPLE	73-272	73-273	73-274	73-275	73-276	73-277	73-278	73-279	73-280	73-281	73-282	73-283	73-284
SIO2	53.50	52.90	56.40	52.40	51.40	54.90	51.40	50.10	48.30	52.90	52.40	52.10	53.40
AL203	13.30	13.60	14.20	13.40	13.40	13.30	13.10	13.60	17.50	13.30	14.00	13.60	14.00
FE203	4.00	2.70	2.60	3.00	3.20	2.70	3.60	5.90	2.80	3.00	3.30	2.60	2.40
FEO	9.40	9.00	7.60	9.20	9.00	8.90	8.20	8.00	7.00	9.60	7.60	9.20	9.00
MGO	3.70	4.60	3.40	4.80	4.80	3.60	4.20	4.00	7.40	3.80	5.00	5.00	4.60
CAO	7.30	8.30	6.90	8.34	8.20	6.90	8.40	7.70	10.90	7.30	8.80	8.50	8.50
NA20	3.10	2.60	3.00	2.60	3.00	3.00	2.80	2.60	2.50	3.20	2.70	2.70	2.90
K20	1.20	1.10	1.90	1.00	1.68	1.90	1.40	1.00	0.17	1.30	0.91	0.70	1.20
H20	1.70	1.60	1.43	2.20	1.60	1.00	1.48	3.10	1.10	1.70	1.90	2.10	1.10
TIO2	2.30	1.90	2.20	1.80	1.80	2.10	3.40	2.60	1.10	2.20	1.80	1.70	1.90
P205	0.46	0.33	0.41	0.37	0.37	0.34	0.65	0.53	0.21	0.44	0.28	0.28	0.34
MNO	0.18	0.16	0.16	0.18	0.17	0.15	0.19	0.16	0.15	0.18	0.16	0.16	0.21
CO2	0.01	0.02	0.03	0.05	0.03	0.02	0.04	0.04	0.03	0.02	0.02	0.06	0.02
TOTAL	100.15	98.81	100.23	99.34	98.65	98.81	98.86	99.33	99.16	98.94	98.87	98.70	99.57

SAMPLE	73-287	73-288	73-289	73-290	73-293	73-294	73-295	73-296	73-297	73-298	73-299	73-300	73-301
SIO2	53.60	53.30	52.70	50.80	54.40	50.10	50.60	50.50	50.40	52.40	53.50	53.00	51.10
AL203	13.70	13.70	13.70	13.30	13.50	12.60	13.30	15.10	14.10	13.50	14.20	14.40	13.60
FE203	2.00	2.50	3.30	3.10	2.20	3.90	2.60	3.60	5.30	4.40	3.10	1.60	3.40
FEO	9.80	9.10	8.60	10.30	10.00	10.50	11.90	7.00	6.70	7.50	7.20	8.30	8.60
MGO	4.40	4.60	5.00	4.30	3.60	4.20	4.20	5.80	4.60	4.40	4.40	4.70	5.00
CAO	8.70	8.70	8.70	8.30	7.20	7.90	7.90	9.40	8.20	8.00	8.40	8.40	8.40
NA20	2.80	2.60	3.10	2.70	2.80	2.70	2.60	3.00	2.50	2.80	2.90	2.90	3.00
K20	1.20	1.20	1.10	1.30	2.20	1.10	1.40	0.61	0.59	1.10	1.20	1.50	0.79
H20	1.20	1.30	1.30	1.66	0.91	1.70	1.10	2.20	4.10	2.10	1.94	1.31	2.50
TIO2	1.80	1.80	1.70	2.70	2.30	3.10	3.10	1.40	1.70	1.80	1.80	1.90	1.90
P205	0.35	0.34	0.32	0.58	0.43	0.58	0.61	0.35	0.31	0.37	0.38	0.38	0.30
MNO	0.22	0.22	0.21	0.24	0.21	0.18	0.20	0.15	0.14	0.15	0.14	0.16	0.17
CO2	0.01	0.01	0.04	0.06	0.01	0.03	0.01	0.05	0.02	0.02	0.02	0.01	0.03
TOTAL	99.78	99.37	99.77	99.34	99.76	98.59	99.52	99.16	98.66	98.54	99.18	98.56	98.79

SAMPLE	73-302	73-303	73-304	73-305	73-306	73-307	73-308	73-309	73-310	73-311	73-312	73-313	73-314
SIO2	50.50	53.80	53.30	55.40	52.40	50.90	52.40	50.10	54.90	50.10	53.80	53.00	50.10
AL203	13.70	14.00	13.70	13.40	13.80	13.60	13.80	14.40	12.50	14.20	13.30	13.60	12.80
FE203	4.40	2.50	2.20	2.30	3.80	4.40	3.20	4.50	2.40	5.20	4.40	4.80	3.90
FEO	7.40	9.00	10.40	9.10	7.80	7.50	9.00	6.60	8.20	6.70	7.80	7.40	10.60
MGO	4.80	4.80	4.70	3.80	4.90	5.00	4.80	5.90	4.00	5.60	3.60	4.00	4.40
CAO	8.80	8.30	8.20	7.10	8.70	9.10	8.00	9.90	7.80	10.80	6.60	6.90	7.90
NA20	2.70	2.90	2.90	3.00	2.80	3.20	3.10	2.90	3.10	2.70	3.00	2.90	3.00
K20	0.75	1.10	1.00	1.70	0.82	1.00	0.92	0.38	2.00	0.48	1.40	1.50	1.20
H20	3.60	0.95	0.83	1.10	2.10	2.20	1.70	2.40	1.20	2.60	2.35	2.50	0.94
TIO2	1.80	2.00	2.10	2.10	1.80	1.80	1.90	1.40	2.20	1.50	2.00	2.00	3.20
P205	0.28	0.31	0.33	0.40	0.37	0.36	0.35	0.29	0.36	0.28	0.37	0.38	0.63
MNO	0.15	0.17	0.17	0.17	0.16	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.19
CO2	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.01	0.05	0.02	0.03
TOTAL	98.90	99.84	99.85	99.59	99.47	99.23	99.35	98.94	98.84	100.32	98.82	99.15	98.89

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	73-315	73-316	73-317	73-318	73-319	73-320	73-321	73-322	73-323	73-324	73-325	73-326	73-328
SIO2	51.20	54.10	54.40	50.10	53.10	53.30	53.50	48.20	50.60	53.80	51.90	53.80	51.70
AL203	15.00	14.20	14.30	12.50	14.80	13.50	14.50	16.60	13.00	14.10	14.00	14.20	14.20
FE203	2.50	3.30	4.10	2.40	2.10	3.10	2.60	2.20	2.80	2.20	2.10	4.20	4.00
FEO	7.70	7.40	7.60	11.70	8.30	9.80	7.30	8.00	11.00	8.50	11.40	7.20	7.10
MGO	6.10	4.50	4.50	4.40	4.80	3.70	5.00	8.10	4.00	4.60	4.30	4.60	5.20
CAO	10.00	8.20	8.50	7.90	8.80	7.60	9.00	10.80	8.30	8.60	8.20	8.20	8.70
NA2O	2.90	2.70	2.80	2.90	3.00	3.40	2.80	2.60	2.90	2.90	2.80	2.80	2.70
K2O	0.77	1.50	1.60	1.40	1.20	1.30	1.00	0.22	1.60	1.50	1.30	0.93	0.77
H2O	1.30	1.68	1.22	1.35	1.40	1.60	2.40	0.59	1.25	1.36	1.12	2.50	2.30
TIO2	1.40	1.60	1.80	3.20	1.80	2.20	1.90	1.00	2.80	1.60	2.90	1.80	1.60
P2O5	0.37	0.37	0.39	0.64	0.37	0.48	0.29	0.18	0.67	0.37	0.62	0.33	0.42
MNO	0.20	0.19	0.16	0.19	0.15	0.18	0.14	0.14	0.25	0.21	0.17	0.14	0.20
CO2	0.04	0.01	0.01	0.04	0.01	0.01	0.04	0.01	0.08	0.08	0.06	0.03	0.05
TOTAL	99.48	99.75	101.38	98.72	99.83	100.17	100.47	98.64	99.25	99.82	100.87	100.73	98.94

SAMPLE	73-328F	73-329	73-330	73-331	73-332	73-333	73-334	73-335	73-338	73-339	73-340	73-341	73-342
SIO2	51.60	50.88	54.21	54.21	55.81	50.45	53.36	55.45	49.70	50.29	54.58	53.37	53.99
AL203	14.22	14.56	13.43	13.23	13.80	13.92	12.98	13.76	16.20	13.89	13.28	13.05	13.36
FE203	12.63	5.50	5.70	4.90	2.60	2.58	3.70	2.60	4.00	3.50	2.80	3.00	3.40
FEO	0.00	5.95	6.69	7.10	7.81	11.16	9.49	7.98	6.50	9.87	9.62	10.06	8.18
MGO	5.70	4.98	3.88	3.54	3.58	5.15	3.52	3.74	7.90	5.03	3.46	3.65	3.61
CAO	9.54	9.46	7.10	6.92	7.22	8.52	6.91	7.29	10.80	8.53	6.70	6.81	7.05
NA2O	2.69	2.91	2.72	2.88	3.10	2.85	3.27	2.96	2.30	2.69	3.41	3.31	3.01
K2O	0.75	0.75	1.65	1.75	2.00	1.53	1.66	2.00	0.15	1.50	1.71	1.64	1.77
H2O	0.00	3.20	2.80	2.60	1.54	0.63	1.70	1.70	0.76	1.13	1.60	1.62	1.90
TIO2	1.54	1.54	1.90	1.93	1.98	2.88	2.35	1.90	1.00	2.83	2.27	2.36	2.00
P2O5	0.28	0.29	0.31	0.34	0.35	0.68	0.42	0.31	0.17	0.69	0.42	0.42	0.35
MNO	0.21	0.17	0.18	0.20	0.20	0.21	0.20	0.19	0.14	0.20	0.19	0.20	0.19
CO2	0.00	0.05	0.01	0.03	0.04	0.00	0.02	0.04	0.01	0.00	0.03	0.08	0.03
TOTAL	99.16	100.24	100.58	99.63	100.03	100.56	99.58	99.92	99.63	100.15	100.07	99.57	98.84

SAMPLE	73-343	73-345	73-346	73-347	73-348	73-349	73-355	73-356	73-357	73-358	73-359	73-360	73-361
SIO2	53.40	50.02	53.33	54.59	51.28	51.52	52.28	50.73	53.47	54.60	54.43	52.65	49.28
AL203	14.20	13.76	12.98	13.28	14.64	12.97	14.92	14.02	13.02	13.60	13.59	14.35	13.70
FE203	1.60	2.35	2.80	2.20	1.67	2.18	3.00	4.50	5.00	2.80	4.00	3.30	3.64
FEO	9.50	11.24	10.31	9.60	9.01	11.89	6.35	7.23	6.98	8.18	7.63	7.55	10.16
MGO	5.20	5.01	3.54	3.74	6.98	4.05	5.92	5.49	3.63	3.67	3.63	4.80	4.81
CAO	9.00	8.50	6.96	7.13	10.62	7.75	9.99	9.67	7.08	7.28	6.89	8.84	8.53
NA2O	2.90	2.68	3.18	3.09	2.35	2.72	2.84	2.85	2.72	2.93	3.16	2.81	2.59
K2O	1.20	1.53	1.64	1.91	0.55	1.57	0.62	0.66	1.78	1.97	1.64	1.19	1.42
H2O	0.75	0.79	1.21	0.85	1.10	1.44	2.30	2.50	2.80	1.58	1.70	2.40	1.41
TIO2	1.70	2.86	2.34	2.06	1.59	3.21	1.07	1.50	1.85	1.92	1.90	1.54	2.87
P2O5	0.31	0.68	0.42	0.31	0.26	0.42	0.26	0.29	0.32	0.33	0.34	0.28	0.69
MNO	0.21	0.21	0.20	0.19	0.17	0.19	0.16	0.18	0.19	0.18	0.17	0.17	0.21
CO2	0.08	0.00	0.04	0.03	0.00	0.00	0.03	0.02	0.02	0.03	0.02	0.03	0.00
TOTAL	100.05	99.63	98.95	98.98	100.22	99.91	99.74	99.64	98.86	99.07	99.10	99.91	99.31

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	73-362	73-363	73-364	73-365A	73-366	73-367	73-368	73-368F	73-369	73-370	73-371	73-372	73-373
SIO2	49.72	53.33	51.40	51.45	51.69	54.25	55.80	55.36	54.59	55.01	53.59	51.50	52.19
AL203	13.58	13.45	13.30	14.42	13.09	13.06	13.70	13.56	13.54	13.76	13.62	14.66	13.47
FE203	3.25	2.40	2.30	1.56	2.44	4.20	3.00	12.99	2.80	2.90	6.60	4.50	3.50
FEO	10.58	9.69	10.70	9.04	11.36	7.50	8.40	0.00	8.15	7.75	5.53	6.92	8.49
MGO	4.89	3.70	4.20	6.97	4.08	3.59	3.40	3.64	3.62	3.67	3.54	5.19	4.84
CAO	8.60	7.43	8.40	10.44	7.82	7.11	6.00	6.54	7.10	7.14	7.10	9.35	8.69
NA20	2.86	3.11	2.90	2.28	2.69	2.82	3.10	3.14	2.95	2.93	2.84	2.93	2.70
K20	1.43	1.78	1.40	0.59	1.62	1.89	1.45	1.73	2.07	2.11	1.74	0.85	1.23
H20	1.41	-1.43	1.00	1.68	1.09	1.60	1.30	0.00	3.15	1.18	1.82	2.10	1.60
TIO2	2.94	2.06	3.00	1.60	3.20	2.06	2.00	1.99	1.89	2.00	1.90	1.56	1.95
P205	0.64	0.38	0.66	0.24	0.39	0.31	0.56	0.37	0.35	0.34	0.34	0.29	0.32
MNO	0.21	0.19	0.24	0.17	0.18	0.20	0.17	0.19	0.19	0.20	0.18	0.17	0.21
CO2	0.00	0.02	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.02	0.02	0.02	0.05
TOTAL	100.11	96.11	99.51	100.44	99.65	98.60	98.90	99.51	100.41	99.01	98.82	100.04	99.24

SAMPLE	73-374	73-375	73-376	73-377	73-377F	73-378	73-379	73-380	73-381	73-382	73-383	74-5	74-11
SIO2	51.99	52.38	50.33	50.80	50.64	51.10	50.90	51.90	53.14	54.65	53.76	51.80	55.00
AL203	13.74	13.73	14.53	13.25	12.91	13.30	13.30	14.03	13.75	13.75	13.45	14.40	14.10
FE203	3.60	4.30	3.60	2.10	15.77	2.90	2.60	3.70	3.60	3.20	4.70	2.60	2.10
FEO	8.24	7.23	7.23	11.90	0.00	10.00	11.00	7.27	8.15	7.13	6.08	9.30	8.50
MGO	4.89	5.07	6.39	4.30	4.64	4.30	4.10	5.14	3.71	3.67	3.32	4.90	4.80
CAO	8.75	8.75	10.08	7.60	8.28	8.70	7.80	8.79	7.24	7.43	6.91	8.40	8.00
NA20	2.88	2.83	2.89	2.50	2.39	2.90	2.60	2.79	3.16	3.00	3.02	2.80	3.20
K20	0.87	1.01	0.66	1.30	1.58	1.50	1.50	1.14	1.56	1.99	1.93	1.10	1.10
H20	2.30	2.10	2.40	1.10	0.00	1.20	1.47	2.40	1.80	1.10	2.08	1.02	1.96
TIO2	1.73	1.56	1.34	3.15	2.93	3.10	2.90	1.60	2.02	2.09	2.28	1.90	1.70
P205	0.29	0.31	0.34	0.87	0.56	0.68	0.68	0.27	0.38	0.42	0.52	0.35	0.28
MNO	0.21	0.21	0.17	0.21	0.22	0.26	0.24	0.16	0.20	0.21	0.17	0.16	0.15
CO2	0.07	0.02	0.03	0.02	0.00	0.07	0.02	0.05	0.06	0.02	0.03	0.03	0.08
TOTAL	99.56	99.50	99.99	99.10	99.92	100.01	99.11	99.24	98.77	98.66	98.25	98.76	100.97

SAMPLE	74-12	74-13	74-14	74-15	74-16	74-17	74-18	74-19	74-20	74-21	74-22	74-23	74-24
SIO2	55.00	56.70	53.90	54.60	56.60	56.50	56.70	57.30	56.30	55.60	53.00	53.20	53.70
AL203	13.70	14.10	14.00	14.00	13.70	13.80	13.80	14.50	14.20	13.80	14.60	13.90	14.30
FE203	1.70	0.45	2.40	2.10	2.30	2.10	2.20	2.00	1.80	2.20	2.30	2.70	2.40
FEO	9.20	8.90	10.60	10.10	9.10	9.40	8.60	6.80	7.50	9.40	9.70	9.10	8.70
MGO	4.50	3.60	3.60	3.30	3.40	3.30	3.40	3.80	4.00	3.50	4.50	4.90	5.10
CAO	7.80	6.70	7.20	7.20	6.80	6.80	6.80	7.10	7.40	6.60	7.90	8.10	8.90
NA20	3.10	3.40	3.20	3.00	3.10	3.20	3.50	3.20	3.30	3.40	3.00	3.10	2.90
K20	1.20	1.50	1.60	1.70	2.00	2.00	2.10	2.00	1.70	1.70	1.30	1.10	1.10
H20	1.65	1.42	1.50	1.69	1.50	1.42	1.52	1.59	1.18	0.83	1.13	1.58	1.31
TIO2	1.70	1.90	2.40	2.10	2.10	2.00	2.00	2.00	2.00	2.10	2.00	1.80	1.80
P205	0.32	0.32	0.41	0.43	0.36	0.35	0.33	0.36	0.37	0.36	0.36	0.35	0.31
MNO	0.15	0.14	0.17	0.16	0.15	0.15	0.15	0.15	0.16	0.15	0.17	0.16	0.16
CO2	0.06	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
TOTAL	100.08	99.19	100.99	100.89	101.12	101.03	101.11	100.81	99.92	99.65	99.97	100.00	100.69

Table 1b. Major oxide analyses of OSTW- flows collected 1971-1977.

SAMPLE	74-25	74-48	74-49	74-50	74-51	74-52	74-53	74-54	74-55	74-56	74-57	74-58	74-59
SIO2	54.70	52.29	53.07	52.53	54.02	55.54	56.97	53.78	54.38	52.29	54.01	54.02	53.13
AL2O3	14.00	14.51	14.33	13.95	13.73	13.83	14.05	13.88	13.97	14.49	13.88	14.13	13.75
FE2O3	2.00	12.01	12.57	13.00	13.48	11.99	10.04	13.37	12.18	11.08	12.95	13.61	13.76
FEO	9.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.60	4.81	4.81	4.73	3.13	3.27	3.32	3.72	3.77	5.16	3.74	3.58	3.68
CAO	7.80	9.18	8.75	8.89	6.73	6.94	7.05	7.36	7.41	9.45	7.57	7.08	7.19
NA2O	3.20	2.94	2.89	2.78	2.91	3.25	3.17	3.16	3.02	2.86	3.18	3.16	3.35
K2O	1.00	0.85	1.10	1.17	1.73	1.59	2.17	1.73	1.88	1.04	1.67	1.88	1.50
H2O	1.86	2.88	1.36	1.56	2.70	1.90	1.12	1.16	0.98	2.10	0.98	0.54	1.00
TIO2	1.90	1.69	1.78	1.78	2.05	2.02	1.93	2.04	2.12	1.63	2.09	2.10	2.21
P2O5	0.28	0.24	0.25	0.25	0.33	0.32	0.30	0.33	0.36	0.25	0.33	0.35	0.40
MNO	0.16	0.18	0.19	0.20	0.18	0.17	0.18	0.19	0.20	0.18	0.18	0.19	0.19
CO2	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.81	101.58	101.10	100.84	100.99	100.82	100.30	100.72	100.27	100.53	100.58	100.64	100.16

SAMPLE	74-60	74-61	74-62	74-63	74-64	74-65	74-66	74-67	74-68	74-69	74-70	74-90	74-205
SIO2	53.31	53.38	52.79	56.11	54.71	53.46	54.93	52.80	53.44	52.29	53.75	49.66	51.03
AL2O3	13.92	14.05	13.76	14.11	13.91	13.75	13.79	14.19	14.34	14.78	14.30	13.04	14.07
FE2O3	12.77	12.89	14.09	10.80	13.09	13.77	12.66	12.33	12.14	13.45	12.43	16.78	14.19
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	3.81	3.77	3.61	3.33	2.84	3.43	3.54	4.90	4.88	4.63	4.42	4.34	4.21
CAO	7.70	7.66	6.78	6.89	6.53	6.93	7.07	8.52	8.55	7.74	7.90	8.34	8.55
NA2O	2.94	2.97	3.22	3.06	3.43	3.03	2.95	2.76	3.04	3.02	2.88	2.65	2.66
K2O	1.72	1.73	1.68	2.32	1.75	1.67	2.01	1.04	1.06	0.80	1.59	1.23	1.21
H2O	1.70	1.14	1.35	1.50	0.86	1.14	1.02	1.72	1.34	1.60	1.70	0.80	1.76
TIO2	2.12	2.12	2.39	2.22	2.27	2.08	2.11	1.61	1.66	1.77	1.76	3.40	2.83
P2O5	0.40	0.39	0.42	0.42	0.46	0.32	0.36	0.23	0.24	0.28	0.31	0.55	0.58
MNO	0.19	0.19	0.18	0.19	0.16	0.17	0.20	0.18	0.19	0.19	0.19	0.21	0.20
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.58	100.29	100.27	100.95	100.01	99.75	100.64	100.28	100.88	100.55	101.23	101.00	101.29

SAMPLE	74-206	74-207	74-208	74-209	74-210	74-211	74-212	74-213	74-214	74-215	74-218	74-219	74-220
SIO2	50.04	53.38	52.98	53.68	50.09	54.64	53.70	55.03	55.48	55.39	52.41	51.30	53.47
AL2O3	13.35	14.08	14.14	13.85	14.08	13.88	13.62	13.96	13.74	13.92	13.89	14.02	14.26
FE2O3	15.57	12.32	12.62	12.46	13.10	12.63	13.03	12.26	12.12	11.95	13.79	12.53	12.03
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.60	4.70	5.42	4.65	5.77	3.81	3.66	3.61	3.57	3.68	3.81	5.25	4.82
CAO	8.35	8.46	9.05	8.76	9.69	7.15	6.95	7.07	6.98	7.05	7.86	9.08	8.66
NA2O	2.80	2.77	2.88	2.98	3.05	3.18	2.92	3.04	2.97	2.98	2.82	2.70	2.95
K2O	1.43	1.61	1.16	1.36	0.79	1.90	1.89	2.12	2.04	2.17	1.78	0.90	1.32
H2O	1.28	1.06	0.38	0.81	1.74	0.95	2.19	1.17	0.95	1.08	1.64	2.70	1.02
TIO2	2.85	1.76	1.77	1.93	1.66	1.87	1.89	1.93	2.29	1.86	2.59	1.69	1.79
P2O5	0.59	0.34	0.26	0.31	0.29	0.32	0.33	0.35	0.42	0.32	0.36	0.24	0.34
MNO	0.24	0.19	0.21	0.21	0.20	0.20	0.17	0.21	0.21	0.18	0.19	0.19	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	101.10	100.67	100.87	101.00	100.46	100.53	100.35	100.75	100.77	100.58	101.14	100.60	100.85

Table 1b. Major oxide analyses of OSIW- flows collected 1971-1977.

SAMPLE	74-225	74-226	74-227	74-228	74-229	74-230	74-231	74-236	74-237	74-238	74-239	74-241	74-243
SIO2	53.50	51.97	51.46	54.38	55.37	55.12	52.37	54.92	53.38	54.88	53.40	47.47	49.32
AL203	13.83	14.05	13.88	13.37	13.93	13.89	14.55	13.60	13.44	13.26	13.53	16.13	14.25
FE203	12.55	12.29	12.25	13.49	12.17	12.50	10.56	12.33	14.16	13.10	12.46	12.43	15.03
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.27	5.30	5.70	3.43	3.55	3.70	6.08	3.28	3.76	3.13	4.33	8.69	4.86
CAO	7.79	8.46	9.50	6.87	6.99	7.14	9.60	6.82	7.15	6.63	7.96	11.06	8.54
NA20	3.05	2.95	2.72	3.04	2.97	3.10	2.81	2.85	3.06	2.98	2.96	2.35	2.78
K20	1.74	1.19	0.94	2.05	2.17	1.85	0.84	2.22	1.65	2.34	1.34	0.30	1.50
H20	1.70	2.01	2.32	0.96	1.23	0.76	1.81	1.50	1.38	0.83	1.97	0.68	1.04
TIO2	1.81	1.65	1.60	2.27	1.94	1.90	1.16	2.21	2.46	2.27	1.78	1.72	2.80
P205	0.29	0.28	0.25	0.40	0.35	0.33	0.28	0.43	0.43	0.50	0.27	0.30	0.65
MNO	0.18	0.17	0.19	0.20	0.18	0.19	0.18	0.20	0.20	0.19	0.20	0.18	0.21
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.71	100.32	100.81	100.46	100.85	100.48	100.24	100.36	101.07	100.11	100.20	101.31	100.98

SAMPLE	74-244	74-245	74-246	74-247	74-248	74-249	74-250	74-251	74-252	74-253	74-254	74-255	74-256
SIO2	53.50	52.38	53.13	54.91	53.44	55.05	53.52	53.56	54.53	53.96	53.23	52.46	53.51
AL203	13.83	13.16	13.44	13.78	13.56	13.39	13.24	13.30	13.83	13.59	14.27	14.35	14.07
FE203	12.24	14.07	13.37	12.39	13.98	12.51	13.75	12.51	12.34	12.97	12.43	11.47	12.43
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.94	4.01	4.50	3.42	3.84	3.19	3.69	4.44	4.15	4.04	5.08	5.13	4.72
CAO	7.97	7.59	8.04	6.28	7.26	6.66	7.29	7.21	7.54	7.57	8.85	9.51	8.52
NA20	3.21	3.09	2.90	3.24	3.30	2.92	3.04	3.07	3.01	2.61	2.78	2.83	2.95
K20	1.14	1.28	1.40	1.86	1.71	2.35	1.65	1.46	1.44	1.65	1.18	1.04	1.37
H20	2.13	2.10	1.80	1.83	0.76	1.08	1.38	2.68	1.68	1.93	0.98	1.95	0.92
TIO2	1.67	2.19	1.96	2.18	2.48	2.26	2.10	1.81	1.85	1.92	1.72	1.62	1.74
P205	0.24	0.40	0.31	0.40	0.44	0.52	0.37	0.28	0.28	0.29	0.26	0.24	0.31
MNO	0.16	0.21	0.20	0.17	0.22	0.23	0.21	0.17	0.20	0.18	0.20	0.19	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	101.03	100.48	101.05	100.46	100.99	100.16	100.24	100.49	100.85	100.71	100.98	100.79	100.73

SAMPLE	74-257	74-258	74-259	74-260	74-261	74-262	74-263	74-264	74-266	74-268	74-269	74-270	74-271
SIO2	53.19	53.40	55.66	52.94	53.81	50.56	49.70	50.32	53.13	53.29	49.59	48.99	52.40
AL203	13.83	14.31	13.31	14.05	14.31	12.71	12.85	13.03	13.67	13.93	13.17	13.17	13.89
FE203	11.97	11.20	12.01	12.92	11.29	15.93	15.74	15.85	13.57	12.32	15.19	15.06	11.88
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.52	4.39	3.37	4.96	4.92	4.20	4.22	4.31	4.61	4.54	5.12	5.22	5.28
CAO	8.57	9.56	6.94	8.73	8.91	8.12	8.28	8.44	8.25	8.29	9.11	9.17	9.32
NA20	2.81	2.90	2.95	2.70	2.83	2.76	2.71	2.73	3.07	2.73	2.77	2.52	2.75
K20	1.29	1.41	2.12	1.10	1.26	1.46	1.35	1.29	1.22	1.84	1.26	1.38	1.02
H20	2.24	1.11	1.25	1.28	1.15	1.09	2.40	1.17	0.66	1.05	0.74	0.72	1.91
TIO2	1.73	1.73	2.24	1.79	1.78	2.97	2.97	3.07	1.97	1.85	3.17	3.18	1.69
P205	0.30	0.31	0.40	0.30	0.31	0.61	0.59	0.69	0.46	0.56	0.94	0.82	0.29
MNO	0.18	0.22	0.20	0.20	0.20	0.23	0.22	0.22	0.22	0.18	0.23	0.23	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.63	100.54	100.45	100.97	100.77	100.64	101.03	101.12	100.83	100.58	101.29	100.46	100.62

Table 1b. Major oxide analyses of DSIW- flows collected 1971-1977.

SAMPLE	74-272	74-273	74-274	74-275	74-276	74-277	74-278	74-279	74-280	74-281	74-282	74-283	74-284
SIO2	52.69	53.91	52.96	53.62	54.67	54.57	54.83	53.72	52.58	52.92	53.22	52.80	53.25
AL2O3	13.93	13.20	13.29	13.31	13.34	13.61	13.41	13.50	13.19	14.08	13.79	13.79	13.84
FE2O3	11.92	13.43	14.05	13.36	12.49	12.84	13.06	13.16	14.22	12.28	13.73	12.34	13.63
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	5.26	3.74	3.86	3.30	3.52	3.44	3.47	4.42	4.04	5.08	4.22	4.90	4.37
CAO	9.06	7.31	7.10	6.76	7.05	6.95	7.02	7.89	7.80	8.66	7.79	8.68	7.61
NA2O	2.65	2.97	3.18	3.01	3.17	3.15	3.13	3.14	3.29	3.14	3.09	2.87	3.22
K2O	1.17	1.70	1.73	1.94	2.01	1.92	2.08	1.17	1.41	1.02	1.52	1.10	1.36
H2O	1.60	1.44	1.67	2.14	0.95	1.02	0.95	1.40	1.33	1.19	0.77	2.19	0.92
TIO2	1.69	2.26	2.42	2.23	2.32	2.16	2.22	2.03	2.24	1.65	1.93	1.66	1.98
P2O5	0.29	0.49	0.45	0.44	0.48	0.43	0.41	0.34	0.45	0.25	0.40	0.29	0.38
MNO	0.18	0.20	0.20	0.23	0.20	0.20	0.20	0.21	0.22	0.19	0.21	0.17	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.44	100.65	100.91	100.34	100.20	100.29	100.78	100.98	100.77	100.46	100.67	100.79	100.75

SAMPLE	74-285	74-286	74-287	74-288	74-289	74-290	74-291	74-292	74-293	74-294	74-295	74-296	74-297
SIO2	53.71	54.00	54.53	53.24	52.66	54.64	56.02	55.73	53.44	53.88	54.75	52.67	49.19
AL2O3	14.26	14.17	13.59	13.65	13.62	13.74	13.34	13.31	13.29	13.38	13.75	13.36	14.18
FE2O3	12.31	12.07	13.15	13.58	13.46	12.66	12.40	12.98	13.95	14.03	12.35	13.09	15.14
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.65	4.86	3.71	3.97	3.96	4.03	3.12	3.27	3.73	3.57	3.88	4.27	4.88
CAO	8.46	8.43	7.11	7.36	7.66	7.62	6.63	6.77	7.12	7.03	7.35	8.10	8.53
NA2O	2.77	3.06	3.38	3.44	2.96	3.08	3.05	3.04	3.09	3.41	3.03	2.77	2.70
K2O	1.32	1.36	1.55	1.40	1.53	1.55	2.07	1.91	1.50	1.56	1.58	1.40	1.49
H2O	1.11	0.90	1.07	1.56	1.66	0.59	0.99	0.95	1.38	1.28	0.76	1.97	0.64
TIO2	1.69	1.68	2.01	1.94	2.01	1.99	2.12	2.06	2.11	2.24	1.96	2.09	2.78
P2O5	0.27	0.29	0.33	0.32	0.35	0.30	0.32	0.30	0.36	0.43	0.30	0.33	0.64
MNO	0.19	0.19	0.18	0.22	0.19	0.20	0.18	0.19	0.22	0.20	0.19	0.19	0.21
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.74	101.01	100.61	100.68	100.06	100.40	100.24	100.51	100.19	101.01	99.90	100.24	100.38

SAMPLE	74-298	74-299	74-304	74-305	74-308	74-309	74-310	74-311	74-312	74-313	74-314	74-317	74-320
SIO2	50.03	49.26	48.86	50.36	48.36	48.81	50.04	48.77	47.01	48.83	52.14	49.79	50.63
AL2O3	13.16	12.96	14.08	14.54	13.70	14.06	13.25	15.86	14.02	14.00	14.06	13.09	13.53
FE2O3	16.13	16.48	15.21	11.95	14.82	15.27	16.18	10.66	10.97	14.42	11.71	16.19	15.34
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.28	3.92	4.89	6.65	4.82	5.04	4.30	8.20	6.10	5.75	5.18	4.23	4.11
CAO	8.29	8.33	8.48	10.59	9.27	8.46	8.26	11.29	14.58	9.32	10.22	8.30	7.71
NA2O	2.52	2.36	2.85	2.45	2.43	2.74	2.60	2.06	2.23	2.51	2.86	2.48	2.88
K2O	1.37	1.23	1.43	0.64	1.04	1.45	1.31	0.41	0.45	1.08	1.04	1.29	1.65
H2O	1.02	2.86	1.80	1.52	2.72	1.20	1.40	1.63	1.18	1.26	0.99	1.74	1.72
TIO2	3.43	3.40	2.80	1.60	3.02	2.77	3.40	1.37	2.25	2.86	1.61	3.35	3.09
P2O5	0.57	0.55	0.65	0.22	0.75	0.65	0.56	0.16	0.59	0.74	0.27	0.54	0.39
MNO	0.21	0.20	0.21	0.18	0.21	0.21	0.21	0.16	0.26	0.21	0.30	0.21	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	3.54	0.34	1.24	0.00	0.00
TOTAL	101.01	101.55	101.26	100.70	101.14	100.66	101.51	101.13	103.18	101.32	101.62	101.21	101.24

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	74-322	74-323	74-324	74-327	74-328	74-329	74-332	74-333	74-334	75-1	75-7	75-8	75-9
SIO2	48.85	50.77	49.99	50.68	49.80	50.98	52.14	50.72	51.14	50.00	50.80	49.20	51.01
AL203	13.98	14.72	13.09	14.75	13.20	14.97	13.58	13.65	14.78	15.60	13.90	13.40	15.42
FE203	13.85	11.60	16.15	11.82	16.65	11.53	12.34	15.25	11.93	2.20	4.40	4.50	10.61
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.60	9.80	10.50	0.00
MGO	5.16	6.86	4.28	7.06	4.22	7.02	4.25	4.12	6.97	8.30	4.50	4.30	3.92
CAO	9.42	10.79	8.37	10.78	8.17	10.78	8.78	7.81	10.56	11.10	7.80	8.30	10.36
NA20	2.74	2.48	2.62	2.37	2.50	2.40	2.62	2.76	2.50	2.40	3.10	2.70	3.09
K20	1.14	0.68	1.29	0.56	1.31	0.68	1.51	1.65	0.69	0.43	1.20	1.00	1.24
H20	1.86	0.98	1.18	1.62	0.98	0.50	1.62	1.74	0.96	0.87	1.94	2.15	0.66
TIO2	3.02	1.60	3.40	1.53	3.40	1.57	3.51	3.14	1.57	1.50	2.80	3.40	3.33
P205	0.79	0.23	0.56	0.20	0.56	0.21	0.57	0.35	0.20	0.20	0.57	0.80	0.76
MNO	0.20	0.18	0.21	0.18	0.20	0.17	0.20	0.19	0.18	0.12	0.18	0.20	0.17
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.00
TOTAL	101.01	100.89	101.14	101.55	100.99	100.81	101.12	101.38	101.48	100.34	101.02	100.47	100.57

SAMPLE	75-10	75-11	75-12	75-13	75-14	75-15	75-16	75-17	75-18	75-19	75-20	75-21	75-22
SIO2	49.08	52.25	52.60	53.37	54.62	52.30	52.91	52.84	53.43	53.14	53.05	54.04	52.70
AL203	14.00	14.36	14.51	13.91	14.04	13.73	14.20	14.46	14.20	14.08	13.73	14.61	14.27
FE203	15.49	12.41	11.92	14.01	13.15	14.10	12.06	11.88	12.17	12.64	13.19	11.04	12.38
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.52	5.20	5.21	3.74	3.35	4.09	5.04	4.89	4.43	4.13	3.85	4.64	4.53
CAO	8.60	9.02	9.08	7.07	6.68	7.63	8.59	8.59	8.05	7.94	7.59	8.44	8.19
NA20	2.88	2.92	2.97	3.12	2.97	3.05	2.88	2.85	2.92	3.05	3.01	3.07	2.79
K20	1.09	1.06	1.10	1.67	1.96	1.48	1.23	1.09	1.52	1.36	1.68	1.17	1.12
H20	0.98	0.75	0.71	0.77	1.29	0.87	1.30	1.71	0.95	0.79	1.07	0.86	2.24
TIO2	2.93	1.74	1.66	2.22	2.30	2.19	1.61	1.64	1.75	1.90	2.13	1.70	1.64
P205	0.57	0.24	0.23	0.44	0.44	0.41	0.22	0.22	0.30	0.33	0.39	0.28	0.24
MNO	0.21	0.20	0.19	0.20	0.18	0.22	0.18	0.18	0.20	0.20	0.20	0.19	0.18
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.35	100.15	100.18	100.52	100.98	100.07	100.22	100.35	99.92	99.56	99.89	100.04	100.28

SAMPLE	75-23	75-24	75-25	75-26	75-27	75-28	75-29	75-35	75-36	75-38	75-44	75-46	75-51B
SIO2	55.32	53.57	54.08	53.38	55.12	53.23	51.19	46.79	48.27	48.60	48.60	46.59	46.50
AL203	14.11	14.03	14.22	14.23	13.88	14.30	13.32	12.21	13.24	14.10	14.00	13.19	13.70
FE203	11.94	12.93	12.49	12.61	13.03	12.58	14.05	2.45	3.17	3.60	5.80	2.42	5.90
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.08	11.74	11.20	7.90	13.25	9.20
MGO	3.76	4.22	3.85	4.15	3.00	4.09	4.89	4.37	5.26	5.20	4.10	5.91	5.30
CAO	7.40	7.80	7.46	7.66	6.42	7.52	8.85	8.79	9.27	8.90	8.40	9.73	9.60
NA20	3.25	3.25	2.89	3.06	3.19	3.01	2.73	2.51	2.47	2.50	2.30	2.32	2.10
K20	1.56	1.27	1.75	1.49	1.83	1.40	0.96	1.23	0.93	1.00	0.95	0.81	0.66
H20	0.99	0.92	1.00	0.92	1.31	1.62	1.06	0.56	0.91	1.80	2.40	0.48	2.71
TIO2	1.95	1.90	1.93	1.89	2.08	1.94	2.76	3.75	3.44	3.30	3.30	3.76	3.30
P205	0.31	0.27	0.28	0.28	0.31	0.31	0.35	1.68	0.81	0.83	0.57	0.88	0.84
MNO	0.19	0.20	0.18	0.19	0.18	0.18	0.19	0.28	0.23	0.21	0.20	0.25	0.21
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.01	0.06	0.06	0.08
TOTAL	100.78	100.36	100.13	99.86	100.35	100.18	100.35	99.75	99.76	101.25	98.58	99.65	100.10

Table 1b. Major oxide analyses of DSIW- flows collected 1971-1977.

SAMPLE	75-51C	75-56	75-57	75-58	75-59	75-60	75-62	75-66	75-67	75-72	75-75	75-76	75-77
SIO2	45.70	49.40	49.00	49.40	46.00	49.40	49.40	46.90	46.30	47.70	48.75	48.14	53.19
AL203	13.80	13.40	13.50	13.70	13.60	13.90	14.30	13.30	13.80	14.10	13.91	14.06	14.58
FE203	6.10	5.60	5.40	5.50	11.10	5.90	6.50	4.90	4.90	4.20	15.35	16.21	12.35
FEO	9.10	9.40	10.00	9.30	4.80	9.40	8.80	10.90	11.10	10.40	0.00	0.00	0.00
MGO	5.40	3.90	4.10	4.10	5.70	4.40	4.30	5.80	5.90	5.60	5.57	4.45	5.08
CAO	10.10	8.60	8.00	8.57	9.40	8.60	8.60	9.00	9.50	9.60	9.00	8.60	8.75
NA2O	2.10	2.30	2.70	2.40	2.10	2.10	2.60	2.30	2.30	2.30	2.68	2.67	2.75
K2O	0.45	0.98	1.10	0.89	0.87	0.96	1.00	0.74	0.68	0.65	1.09	1.13	1.30
H2O	3.50	3.10	3.10	3.20	2.04	1.92	1.59	1.88	1.40	2.10	0.73	1.53	0.60
TIO2	3.30	3.40	3.30	3.30	3.60	3.50	3.50	3.50	3.50	3.00	3.01	2.84	1.70
P2O5	0.86	0.57	0.54	0.54	0.95	0.66	0.59	1.10	0.90	0.76	0.76	0.54	0.27
MNO	0.21	0.19	0.18	0.18	0.22	0.22	0.21	0.22	0.21	0.22	0.22	0.25	0.20
CO2	0.08	0.08	0.02	0.05	0.07	0.08	0.04	0.02	0.04	0.08	0.00	0.00	0.00
TOTAL	100.70	100.92	100.94	101.13	100.45	101.04	101.43	100.56	100.53	100.71	101.07	100.42	100.77

SAMPLE	75-78	75-79	75-80	75-81	75-82	75-83	75-84	75-85	75-86	75-87	75-88	75-89	75-90
SIO2	54.67	52.14	52.20	53.22	53.16	53.77	53.26	52.69	54.20	52.48	53.42	52.83	53.08
AL203	13.70	14.69	14.52	13.82	14.06	13.85	13.97	13.92	13.95	13.85	14.10	13.82	13.89
FE203	13.16	12.82	12.83	13.02	13.32	13.14	13.55	13.94	12.99	13.26	12.73	13.57	13.64
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	3.33	5.24	5.10	4.09	3.93	3.49	3.63	3.71	3.38	4.33	4.44	4.32	4.05
CAO	6.92	9.01	8.76	7.65	7.60	7.16	7.08	7.11	6.78	8.05	8.13	7.84	7.65
NA2O	3.14	2.89	2.89	2.89	3.04	2.90	2.94	2.94	2.92	2.71	2.98	3.03	2.94
K2O	1.92	0.92	1.05	1.59	1.58	2.06	2.05	1.95	1.79	1.26	1.37	1.31	1.72
H2O	1.08	0.93	0.90	1.69	0.93	1.22	0.96	1.08	1.78	1.86	0.80	1.01	1.24
TIO2	2.23	1.68	1.73	1.90	2.07	2.39	2.40	2.38	2.10	1.91	2.01	2.05	2.15
P2O5	0.37	0.25	0.24	0.28	0.40	0.43	0.43	0.43	0.39	0.29	0.30	0.32	0.41
MNO	0.20	0.19	0.19	0.18	0.21	0.20	0.19	0.19	0.18	0.19	0.19	0.20	0.21
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.72	100.76	100.41	100.33	100.30	100.61	100.46	100.34	100.46	100.19	100.47	100.30	100.98

SAMPLE	75-91	75-92	75-93	75-94	75-95	75-96	75-97	75-98	75-99	75-100	75-101	75-102	75-104
SIO2	52.72	53.46	53.60	53.34	52.95	53.68	55.05	54.80	52.01	51.72	53.42	55.11	53.10
AL203	13.95	14.59	14.17	14.13	13.93	13.84	14.08	14.46	14.08	14.28	13.91	13.71	14.60
FE203	13.83	11.48	12.91	12.66	14.06	13.42	12.60	11.75	13.56	12.48	13.33	12.31	4.20
FEO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.70
MGO	4.09	4.85	4.37	4.44	4.21	3.77	3.75	4.14	4.26	5.53	3.86	3.20	5.10
CAO	7.67	8.72	7.90	8.04	7.11	7.14	7.22	7.82	7.72	9.40	7.60	6.81	8.50
NA2O	3.06	2.97	3.03	2.87	3.18	3.13	3.13	3.18	2.79	2.60	2.99	2.98	3.00
K2O	1.50	1.12	1.36	1.38	1.37	1.38	1.73	1.39	1.03	0.90	1.69	2.04	1.00
H2O	1.11	1.18	0.91	1.24	1.56	1.89	1.00	1.01	2.73	2.28	0.70	0.99	1.05
TIO2	2.18	1.61	1.79	1.74	2.04	1.97	1.90	1.94	2.04	1.56	2.12	2.14	1.90
P2O5	0.40	0.24	0.29	0.30	0.37	0.30	0.31	0.29	0.25	0.22	0.39	0.37	0.30
MNO	0.21	0.19	0.19	0.20	0.19	0.21	0.19	0.18	0.17	0.19	0.19	0.19	0.18
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
TOTAL	100.72	100.41	100.52	100.34	100.97	100.73	100.96	100.96	100.64	101.16	100.20	99.85	100.69

Table 1b. Major oxide analyses of DSIW- flows collected 1971-1977.

SAMPLE	75-107	75-110	75-116	75-117	75-121	75-122	75-123	75-124	75-129	75-134	75-134A	75-134B	75-160
SIO2	53.30	48.84	48.40	48.84	48.82	49.35	50.00	49.40	53.80	49.30	49.10	49.60	53.60
AL203	14.40	14.07	15.10	14.08	14.08	14.45	14.00	14.00	14.40	14.40	14.20	14.10	13.90
FE203	5.90	15.26	3.30	15.60	15.08	14.61	2.70	3.30	4.00	1.90	2.00	3.60	3.90
FEO	6.10	0.00	8.20	0.00	0.00	0.00	10.90	11.00	7.90	12.10	12.40	10.30	9.20
MGO	4.50	4.91	7.60	4.80	4.62	4.82	5.30	5.60	5.10	5.60	5.10	5.20	3.90
CAO	8.30	8.43	10.40	8.46	8.40	8.69	9.10	8.70	8.50	9.10	8.70	8.70	6.50
NA2O	3.10	2.60	2.20	2.77	2.89	2.89	2.60	2.70	3.00	2.60	2.60	3.10	3.20
K2O	0.80	1.44	0.34	1.32	1.37	1.38	1.00	0.91	0.98	0.98	1.00	0.95	1.60
H2O	2.27	1.19	2.70	1.25	1.52	0.67	1.33	1.46	0.98	0.98	1.05	1.26	1.53
TIO2	1.80	2.77	2.20	2.83	2.79	2.86	3.10	3.00	1.80	3.00	3.10	3.20	2.20
P2O5	0.28	0.64	0.51	0.62	0.63	0.64	0.79	0.77	0.30	0.75	0.80	0.77	0.48
MNO	0.14	0.21	0.14	0.20	0.19	0.21	0.18	0.18	0.17	0.18	0.18	0.17	0.14
CO2	0.02	0.00	0.04	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.05	0.02
TOTAL	100.91	100.36	101.13	100.77	100.39	100.57	101.01	101.03	100.94	100.90	100.24	101.00	100.17

SAMPLE	75-162	75-201	75-207	75-208	75-209	75-210	75-211	75-212	75-213	75-214	75-215	75-216	75-217
SIO2	50.10	52.10	53.40	52.57	54.99	51.60	53.86	54.91	54.28	53.00	53.72	54.32	53.82
AL203	13.60	13.73	13.20	14.38	14.07	14.87	14.11	14.31	14.23	14.40	14.18	13.89	14.10
FE203	2.20	13.78	7.10	13.01	12.85	12.68	12.80	11.17	12.31	13.07	13.20	13.01	13.09
FEO	12.90	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGO	4.40	4.21	2.60	4.83	3.38	4.95	4.08	3.83	3.20	3.78	3.72	3.67	3.20
CAO	8.30	8.56	6.30	8.39	6.71	8.97	7.62	7.41	6.97	7.59	7.37	6.34	6.82
NA2O	2.40	3.10	2.90	3.04	3.06	2.89	2.99	3.10	3.38	2.99	3.27	3.48	3.37
K2O	1.30	1.38	1.80	1.03	2.01	0.83	1.65	2.03	1.52	1.45	1.76	1.80	1.80
H2O	0.93	0.00	2.60	1.46	1.38	2.13	1.98	1.08	2.79	2.01	0.77	1.55	1.46
TIO2	3.50	3.13	2.40	1.72	1.90	1.71	1.87	2.03	2.26	2.15	2.44	2.22	2.30
P2O5	0.58	0.64	0.97	0.24	0.29	0.24	0.29	0.36	0.45	0.40	0.43	0.39	0.48
MNO	0.17	0.21	0.16	0.18	0.17	0.18	0.19	0.18	0.15	0.19	0.18	0.15	0.19
CO2	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.39	100.84	99.43	100.85	100.81	101.05	101.44	100.41	101.54	101.03	101.04	100.82	100.63

SAMPLE	75-218	75-219	75-220	75-221	75-222	75-223	75-224	75-225	75-231	76-26	76-28	76-44	76-48
SIO2	56.40	50.40	52.20	54.90	48.70	50.40	48.30	53.30	51.30	48.90	47.90	50.60	54.60
AL203	14.20	15.30	13.80	14.50	17.00	14.30	16.90	13.80	13.40	13.80	13.80	13.50	13.90
FE203	2.40	4.20	3.20	2.00	4.40	3.90	3.20	6.00	4.10	3.80	3.00	2.40	2.70
FEO	6.90	8.20	9.60	7.40	6.20	7.70	7.20	7.20	10.60	11.10	11.90	12.40	9.40
MGO	3.60	5.90	4.90	4.50	7.20	5.90	7.80	3.50	4.20	5.70	6.10	4.40	2.40
CAO	7.20	9.20	8.20	8.10	10.70	9.90	10.80	7.00	7.70	9.10	9.70	8.20	6.10
NA2O	2.70	2.60	2.60	2.50	2.10	3.10	2.50	3.20	2.80	2.40	2.30	2.30	3.00
K2O	2.00	0.47	1.10	1.60	0.29	0.49	0.22	1.40	1.20	0.85	0.83	1.20	3.10
H2O	1.68	1.25	1.65	1.17	1.19	2.28	1.21	1.71	1.43	0.82	1.00	1.50	2.13
TIO2	2.10	1.70	2.00	1.80	0.96	1.50	0.98	2.30	3.10	3.50	3.30	3.40	2.60
P2O5	0.39	0.32	0.36	0.40	0.19	0.37	0.20	0.50	0.63	0.88	0.83	0.58	0.96
MNO	0.15	0.18	0.18	0.15	0.16	0.15	0.14	0.15	0.18	0.19	0.18	0.18	0.17
CO2	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.04
TOTAL	99.72	99.73	99.80	99.02	99.09	99.99	99.45	100.06	100.65	101.06	100.86	100.68	101.10

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	76-49	76-51	76-62	76-63	76-64	76-66	76-67	76-76	76-85	76-87	76-91	76-92	76-94
SIO2	49.30	50.70	50.20	50.00	50.60	50.70	50.60	49.70	51.20	50.10	49.50	49.20	52.70
AL203	13.50	13.30	13.30	14.00	13.40	13.60	13.50	13.30	15.50	13.30	13.80	13.90	14.80
FE203	2.30	2.60	3.60	3.50	2.20	2.90	3.50	3.30	2.30	2.70	1.90	2.30	2.60
FEO	12.40	12.30	11.20	9.80	12.40	11.90	11.40	11.40	7.40	12.00	12.00	11.70	8.20
MGO	5.30	4.30	4.40	4.90	4.40	4.40	4.40	4.30	6.50	4.20	5.40	5.40	5.70
CAO	8.90	8.10	8.00	8.60	8.10	8.30	8.30	8.20	9.60	8.00	8.60	8.50	8.80
NA20	2.30	2.20	2.40	2.50	2.30	2.40	2.40	2.30	2.30	2.40	2.60	2.40	2.40
K20	1.10	1.30	1.10	0.95	1.20	1.30	1.30	1.20	0.77	1.20	1.20	1.20	1.40
H20	1.10	1.38	1.83	2.11	1.39	1.39	1.59	1.85	2.06	2.30	1.38	1.05	1.42
TIO2	3.40	3.50	3.50	3.20	3.50	3.40	3.50	3.40	1.60	3.50	3.20	3.10	1.70
P205	0.95	0.59	0.59	0.83	0.60	0.58	0.57	0.58	0.34	0.61	0.86	0.85	0.46
MNO	0.20	0.18	0.18	0.18	0.18	0.18	0.17	0.18	0.12	0.17	0.19	0.20	0.14
CO2	0.02	0.02	0.02	0.02	0.02	0.08	0.02	0.02	0.02	0.02	0.04	0.02	0.02
TOTAL	100.77	100.47	100.32	100.59	100.29	101.13	101.25	99.73	99.71	100.50	100.67	99.82	100.34

SAMPLE	76-213	76-217	76-218	76-229	76-232	76-233	76-235	76-239	76-240	76-255	76-263	76-264	76-265
SIO2	48.80	54.60	57.20	49.80	49.70	51.00	48.10	51.30	53.60	53.60	53.80	52.50	51.40
AL203	15.10	14.10	16.60	13.60	13.20	13.80	13.00	14.10	13.90	14.30	13.50	14.40	13.60
FE203	1.50	2.80	5.20	3.80	2.90	1.90	3.60	2.70	3.10	3.40	8.10	3.50	3.00
FEO	8.80	7.60	1.20	10.60	11.40	9.60	8.70	9.10	8.00	8.20	5.40	7.40	10.00
MGO	7.90	4.60	0.04	5.20	5.00	5.50	4.80	5.40	4.70	5.00	3.00	5.80	2.50
CAO	11.00	8.30	4.60	9.10	9.00	10.00	11.10	9.50	8.70	8.50	6.70	9.90	6.60
NA20	2.40	2.90	4.20	2.70	2.70	2.60	2.50	2.60	2.70	2.70	3.20	2.70	3.20
K20	0.38	1.50	3.50	0.94	0.93	0.83	0.82	0.90	1.30	1.40	1.50	0.90	2.70
H20	1.00	1.00	1.40	1.30	1.10	1.20	1.61	0.80	0.72	1.10	1.90	1.70	1.30
TIO2	1.80	2.20	3.40	3.00	3.10	2.50	3.00	2.40	2.20	2.20	2.50	1.60	3.00
P205	0.44	0.36	1.40	0.73	0.77	0.52	0.75	0.52	0.31	0.38	0.45	0.29	0.89
MNO	0.14	0.13	0.04	0.16	0.18	0.16	0.17	0.15	0.15	0.14	0.25	0.24	0.27
CO2	0.01	0.01	0.00	0.00	0.01	0.41	1.40	0.02	0.00	0.02	0.02	0.02	0.02
TOTAL	99.27	100.10	98.78	100.93	99.99	100.02	99.55	99.49	99.38	100.94	100.32	100.95	98.48

SAMPLE	76-266	76-273	76-277	77-202	77-206	77-217	77-218	77-219	77-220	77-252	77-253	77-255	77-256
SIO2	53.80	53.50	53.50	51.10	53.80	50.60	52.40	52.70	51.10	51.60	54.50	51.00	50.60
AL203	13.90	13.90	13.90	13.80	13.50	13.20	13.60	13.40	13.00	13.10	14.20	13.00	13.10
FE203	4.00	3.00	3.90	3.50	3.70	3.20	5.00	2.90	2.80	2.00	4.30	3.80	2.90
FEO	7.70	8.60	7.50	7.50	8.90	11.40	6.60	9.80	11.00	12.00	5.90	10.40	11.40
MGO	4.90	4.90	4.90	6.70	2.90	4.20	2.60	2.70	4.10	3.00	5.30	3.00	4.10
CAO	8.50	8.40	8.30	10.70	6.50	8.50	7.10	6.30	7.60	6.60	7.30	7.10	8.50
NA20	2.70	2.80	2.70	2.40	3.30	2.70	3.00	3.00	2.50	3.00	2.80	2.90	3.00
K20	1.30	1.40	1.50	0.74	2.60	1.40	2.50	2.90	1.40	2.40	1.40	2.30	1.70
H20	1.10	0.75	1.55	1.34	0.84	0.88	1.73	1.11	1.21	0.78	1.46	0.80	0.61
TIO2	2.20	2.20	2.10	1.60	2.70	3.10	2.90	2.60	3.00	3.10	1.80	3.10	3.10
P205	0.37	0.38	0.37	0.24	1.10	0.67	0.96	1.10	0.67	0.84	0.36	0.81	0.68
MNO	0.14	0.15	0.15	0.21	0.26	0.25	0.32	0.24	0.26	0.27	0.18	0.34	0.30
CO2	0.02	0.02	0.02	0.06	0.04	0.08	0.04	0.02	0.02	0.08	0.02	0.08	0.04
TOTAL	100.63	100.00	100.29	99.89	100.14	100.18	98.75	98.77	98.66	98.77	99.52	98.63	100.03

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	77-273	77-274	77-275	77-276	77-278	77-316	77-324	77-336	77-342	C-2	C-5	C-9	C-10
SIO2	74.20	51.30	50.70	53.50	53.90	52.90	52.30	52.40	53.10	49.66	49.72	49.55	49.22
AL203	12.90	15.70	17.00	14.70	13.50	13.70	13.60	13.70	14.20	13.52	13.53	13.73	13.53
FE203	1.60	7.10	2.70	2.50	3.00	4.90	3.50	3.30	4.40	3.08	3.62	3.15	3.29
FEO	0.24	2.60	6.40	8.00	9.00	8.80	10.00	9.60	7.60	10.69	10.18	10.59	10.32
MGO	0.19	4.50	6.50	4.70	3.00	2.90	3.30	3.10	4.60	4.92	4.87	5.04	4.92
CAO	1.60	7.50	9.40	8.80	7.40	6.00	7.10	7.00	8.40	8.53	8.51	8.52	8.53
NA2O	4.00	5.10	3.30	3.00	3.30	3.30	3.10	3.10	2.70	2.76	2.59	2.77	2.65
K2O	3.90	1.70	1.10	1.40	1.90	2.60	2.30	2.70	1.10	1.50	1.38	1.52	1.49
H2O	0.72	0.83	1.16	0.79	0.92	0.87	1.10	1.05	1.28	0.88	1.60	0.90	1.28
TIO2	0.20	1.80	1.80	1.80	2.70	2.70	3.10	3.00	2.00	2.87	2.85	2.88	2.87
P2O5	0.06	0.95	0.62	0.42	0.86	0.99	0.85	0.89	0.32	0.62	0.64	0.68	0.65
MNO	0.03	0.12	0.15	0.26	0.26	0.16	0.17	0.18	0.17	0.21	0.20	0.20	0.20
CO2	0.08	0.02	0.08	0.04	0.02	0.02	0.02	0.08	0.06	0.00	0.00	0.00	0.00
TOTAL	99.72	99.22	100.91	99.91	99.76	99.84	100.44	100.10	99.93	99.24	99.69	99.53	98.95

SAMPLE	C-16	C-17	C-21	C-24	C-26	C-27	C-28	C-32	C-42	C-43	C-48	C-50	C-54
SIO2	51.19	49.23	49.86	51.43	52.56	51.26	51.71	54.94	50.51	53.18	49.07	51.13	49.56
AL203	14.54	13.59	12.64	14.60	14.32	14.66	14.73	13.76	12.73	13.51	13.46	14.59	13.76
FE203	1.12	3.91	3.78	1.98	2.95	1.41	0.98	3.03	1.27	3.11	5.32	2.37	4.33
FEO	9.55	9.78	10.76	8.52	8.41	9.06	9.41	8.47	13.44	9.27	8.55	8.35	9.56
MGO	7.07	4.87	4.26	6.86	5.47	6.93	6.97	3.53	4.34	3.86	4.76	6.91	5.12
CAO	10.57	8.43	8.40	10.56	8.75	10.50	10.53	6.90	8.27	7.75	8.51	10.48	8.50
NA2O	2.29	2.54	2.00	2.15	3.02	2.19	2.42	2.90	2.57	2.70	2.59	2.37	2.66
K2O	0.57	1.44	1.13	0.57	0.93	0.66	0.69	1.76	1.35	1.76	1.34	0.62	1.44
H2O	0.74	1.68	2.33	1.63	1.00	1.27	0.54	1.64	1.09	1.60	2.00	1.08	1.50
TIO2	1.59	2.86	3.40	1.59	1.63	1.61	1.67	1.89	3.51	2.69	2.84	1.70	2.86
P2O5	0.25	0.66	0.56	0.26	0.27	0.27	0.32	0.33	0.59	0.40	0.66	0.28	0.66
MNO	0.17	0.20	0.19	0.17	0.19	0.17	0.17	0.17	0.21	0.18	0.20	0.17	0.22
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	99.65	99.19	99.31	100.32	99.50	99.99	100.14	99.32	99.88	100.01	99.30	100.05	100.17

SAMPLE	C-57	C-77	C-79	C-109	C-115	C-116	C-123	C-137	C-150	C-156	C-166	C-168	C-171
SIO2	52.01	53.47	49.20	52.89	49.59	49.09	49.61	51.45	51.62	52.92	50.86	50.82	53.11
AL203	14.90	13.55	13.66	14.24	13.80	13.60	13.66	14.54	14.59	13.67	14.71	14.54	13.46
FE203	1.56	3.46	4.55	3.11	2.77	5.08	4.45	2.70	1.52	2.94	1.75	1.97	5.64
FEO	8.66	9.09	9.24	8.47	11.09	8.95	9.26	8.10	8.83	9.46	8.95	8.63	7.37
MGO	6.99	3.80	5.11	5.18	5.05	4.74	4.90	6.24	7.11	3.76	7.05	7.09	3.79
CAO	10.46	7.67	8.54	8.89	8.51	8.42	8.52	10.44	10.58	7.66	10.64	10.56	7.26
NA2O	2.43	2.66	2.58	2.54	3.01	2.76	2.72	2.41	2.32	2.55	2.42	2.36	2.98
K2O	0.67	1.70	1.39	1.10	1.53	1.48	1.43	0.65	0.65	1.77	0.57	0.58	1.80
H2O	0.76	1.66	1.73	1.37	0.83	1.74	1.58	1.31	0.60	1.51	1.36	1.28	0.74
TIO2	1.62	2.76	2.87	1.75	2.91	2.86	2.89	1.69	1.63	2.68	1.62	1.62	2.44
P2O5	0.26	0.40	0.66	0.30	0.63	0.65	0.66	0.29	0.27	0.39	0.25	0.25	0.45
MNO	0.17	0.18	0.21	0.19	0.21	0.21	0.21	0.17	0.17	0.18	0.17	0.16	0.19
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.49	100.40	99.74	100.03	99.93	99.58	99.89	99.99	99.89	99.49	100.35	99.86	99.23

Table 1b. Major oxide analyses of DSTW- flows collected 1971-1977.

SAMPLE	C-177
SIO2	50.82
AL203	14.71
FE203	1.09
FEO	9.39
MGO	7.31
CAO	10.72
NA20	2.33
K20	0.62
H20	0.54
TIO2	1.54
P205	0.25
MNO	0.16
CO2	0.00
TOTAL	99.48

Table 1c

Table 1c. Trace element analyses of DSTW- flows collected 1971-1977.

SAMPLE	71-011 F	71-015 F	71-017 F	71-052 F	71-054 F	71-054 F	71-066 F	71-066 R	71-069 F	71-082 F	71-084 F	71-088 F	71-088 F
BA	1290.00	320.00	530.00	350.00	520.00	590.00	430.00	319.00	450.00	410.00	860.00	560.00	550.00
CO	35.00	46.00	44.00	40.00	36.00	39.00	38.00	38.10	40.00	40.00	37.00	47.00	43.00
CR	----	262.00	20.00	94.00	29.00	35.00	167.00	168.80	100.00	96.00	36.00	198.00	196.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	5.60	3.10	6.70	----	5.70	5.60	----	2.80	5.00	4.40	5.90	6.10	6.00
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	0.57	----	----	----	----	----
TH	5.90	2.10	6.20	1.00	4.20	4.00	1.00	1.20	3.10	3.30	6.90	2.00	2.00
ZN	----	----	----	----	----	----	----	128.00	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	31.00	32.00	33.00	42.00	38.00	38.00	43.00	40.34	38.00	38.00	28.00	42.00	41.00
LA	27.70	15.10	33.40	11.20	25.90	26.30	14.50	17.00	24.20	23.60	40.70	32.00	32.40
CE	----	----	----	----	----	----	----	37.00	----	----	----	66.00	----
SM	8.00	4.40	2.00	4.50	7.80	8.30	5.00	5.40	8.00	7.80	8.40	9.60	9.70
EU	2.70	1.80	3.60	1.20	2.30	2.20	1.70	1.60	2.40	2.50	2.70	3.02	4.00
YB	----	----	----	----	----	----	----	----	----	----	----	4.70	----
LU	0.66	0.37	0.75	0.48	0.67	0.70	0.50	0.52	0.66	0.64	0.69	0.67	0.77
C.T.	GR INC	ASOTIN	ELEPHANT	----	ROZA	ROZA	DODGE	DODGE	LOLO INC	LOLO INC	WILBUR	MARTIN	MARTIN

SAMPLE	71-090 F	71-096 F	71-104 R	71-114 R	72-030 F	72-031 F	72-033 F	72-050 F	72-052 F	72-065 F	72-070 F	72-083 F	72-098 F
BA	510.00	410.00	819.00	505.00	470.00	240.00	530.00	350.00	----	----	260.00	----	----
CO	40.00	40.00	37.60	42.00	42.00	48.00	41.00	40.00	42.00	39.00	39.00	46.00	38.00
CR	32.00	98.00	49.50	192.90	90.00	283.00	96.00	160.00	150.00	15.00	98.00	150.00	140.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	5.80	4.40	10.70	5.80	5.00	2.80	4.60	2.60	1.90	3.10	3.20	2.90	2.90
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	3.07	1.51	----	----	----	----	----	----	----	----	----
TH	8.20	3.30	4.40	2.20	3.50	1.70	3.30	0.80	1.10	0.60	1.70	0.80	1.00
ZN	----	----	331.00	189.00	----	----	----	----	----	----	----	----	----
ZR	----	----	534.00	328.00	----	----	----	----	----	----	----	----	----
SC	29.00	38.00	36.56	38.07	39.00	32.00	37.00	43.00	42.00	42.00	39.00	41.00	41.00
LA	34.90	24.80	78.00	42.00	25.80	14.00	23.80	14.00	13.80	13.60	13.70	7.40	13.00
CE	----	----	157.00	80.00	----	----	----	----	----	----	----	----	----
SM	7.90	8.30	21.60	10.80	7.80	4.20	8.70	4.90	4.90	4.80	4.80	4.60	4.50
EU	3.00	2.60	5.70	3.03	2.60	1.84	2.50	1.50	----	1.60	----	1.40	----
YB	----	----	8.60	4.00	----	----	----	----	----	----	----	----	----
LU	0.54	0.69	1.40	0.73	0.65	0.34	0.67	0.51	0.50	0.51	0.44	0.53	0.49
C.T.	ESQUAT	LOLO INC	GOOSE	MARTIN	LOLO INC	ASOTIN	LOLO INC	DODGE	DODGE	DODGE	GR INC	DODGE	DODGE

SAMPLE	72-104 F	72-104 R	72-120 F	72-132 F	72-132 R	72-133 F	72-133 F	72-133 R	72-144 F	72-150 F	72-150 F	72-158 F	72-158 R
BA	----	182.00	140.00	490.00	464.00	400.00	440.00	503.00	480.00	550.00	540.00	600.00	581.00
CO	47.00	47.40	45.00	42.00	39.60	36.00	35.00	37.50	43.00	----	34.00	45.00	44.40
CR	148.00	155.90	140.00	92.00	97.10	50.00	45.00	54.60	19.00	29.00	35.00	102.00	----
CS	----	----	----	----	0.60	----	----	1.20	----	----	----	----	0.80
HF	----	1.50	1.30	5.10	4.50	5.00	4.80	4.30	----	5.30	4.80	4.60	4.60
RB	----	----	----	----	22.00	----	----	25.00	----	----	----	----	19.00
TA	----	----	----	----	1.18	----	----	0.99	----	----	----	----	0.92
TH	----	0.40	----	3.20	3.60	3.70	3.40	3.80	5.80	3.90	3.70	3.50	3.10
ZN	----	113.00	----	----	214.00	----	----	177.00	----	----	----	----	190.00
ZR	----	----	----	----	215.00	----	----	216.00	----	----	----	----	229.00
SC	40.00	36.82	37.00	38.00	35.52	37.00	34.00	35.45	33.00	38.00	36.00	40.00	36.69
LA	6.50	8.00	7.00	25.00	30.00	23.10	22.40	27.00	32.70	26.20	25.20	----	30.00
CE	----	17.00	----	----	60.00	----	----	55.00	----	----	----	----	60.00
SM	2.90	3.10	3.00	8.60	8.90	7.10	7.30	7.80	9.10	7.90	8.00	8.40	9.00
EU	1.40	1.06	1.10	----	2.68	2.40	2.30	2.34	3.60	2.90	2.60	3.50	2.67
YB	----	1.80	----	----	3.50	----	----	3.20	----	----	----	----	3.50
LU	0.33	0.40	0.37	0.69	0.66	0.62	0.65	0.61	0.75	0.65	0.64	0.66	0.66
C.T.	ROBIN	ROBIN	ROBIN	LOLO INC	LOLO INC	ROZA	ROZA	ROZA	ELEPHANT	ROZA	ROZA	LOLO INC	LOLO INC

Table 1c. Trace element analyses of DSIW- flows collected 1971-1977.

SAMPLE	72-163 F	72-167 F	72-169 F	72-169 F	72-170 F	72-174 F	72-175 F	72-176 F	72-178 F	72-180 F	72-180 F	72-209 F	72-213 F
BA	3170.00	380.00	610.00	590.00	1160.00	3320.00	3240.00	460.00	450.00	520.00	460.00	900.00	910.00
CO	27.00	37.00	38.00	40.00	31.00	25.00	27.00	40.00	44.00	42.00	42.00	42.00	50.00
CR	----	110.00	30.00	30.00	----	----	----	94.00	110.00	99.00	95.00	33.00	43.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	9.90	3.30	5.60	5.10	7.00	10.20	10.90	4.80	4.40	4.70	4.00	5.90	----
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	7.60	1.60	4.30	3.90	5.90	7.30	6.60	3.20	3.40	3.20	3.00	6.80	7.00
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	26.00	43.00	39.00	39.00	39.00	26.00	27.00	39.00	38.00	39.00	36.00	29.00	29.00
LA	42.60	8.10	26.50	26.90	38.80	44.60	43.00	26.10	23.90	25.60	24.10	41.10	40.70
CE	----	----	----	----	----	----	----	----	----	----	----	----	----
SM	10.00	5.30	8.10	7.80	13.40	10.20	10.60	8.40	7.20	8.20	7.90	8.50	8.20
EU	4.10	1.60	2.60	2.40	3.80	4.20	4.40	2.60	2.60	3.60	2.60	2.50	2.70
YB	----	----	----	----	----	----	----	----	----	----	----	----	----
LU	0.71	0.60	0.70	0.68	1.04	0.76	0.77	0.65	0.68	0.64	0.60	0.70	0.70
C.T.	UMATILLA	DODGE	ROZA	ROZA	UNC	UMATILLA	UMATILLA	LOLO INC	LOLO INC	LOLO INC	LOLO INC	WILBUR	WILBUR

SAMPLE	72-224 F	72-231 F	72-240 F	72-250 F	72-260 F	72-262 F	72-266 F	72-267 F	72-268 F	72-269 F	72-270 F	72-270 F	72-272 F
BA	850.00	3160.00	420.00	540.00	600.00	820.00	620.00	3220.00	3850.00	430.00	360.00	----	530.00
CO	38.00	28.00	42.00	50.00	41.00	42.00	43.00	27.00	28.00	43.00	39.00	36.00	41.00
CR	38.00	----	26.00	147.00	30.00	191.00	27.00	----	----	180.00	160.00	153.00	110.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	6.30	10.10	6.30	7.90	5.10	6.10	6.20	11.10	12.30	2.80	3.40	2.70	3.90
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	6.90	6.40	5.90	2.30	8.00	2.00	6.20	6.80	7.70	0.90	1.10	1.00	0.90
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	28.00	25.00	32.00	42.00	28.00	42.00	33.00	27.00	26.00	44.00	42.00	42.00	43.00
LA	40.80	41.30	32.50	39.00	34.10	33.50	32.50	42.60	45.40	12.40	13.60	13.20	17.40
CE	----	----	----	81.00	----	----	----	----	----	----	----	----	----
SM	8.20	9.80	8.90	11.60	7.10	10.00	9.10	10.50	11.00	4.30	4.70	4.70	5.50
EU	----	4.10	3.10	3.63	2.40	4.00	1.50	2.70	4.30	1.40	1.70	1.80	2.60
YB	----	----	----	5.60	----	----	----	----	----	----	----	----	----
LU	0.68	0.68	0.66	0.89	0.53	0.76	0.72	0.74	0.75	0.44	0.44	0.46	0.55
C.T.	WILBUR	UMATILLA	ELEPHANT	BASIN	ESQUAT	MARTIN	ELEPHANT	UMATILLA	UMATILLA	DODGE	DODGE	DODGE	DODGE

SAMPLE	72-273 F	72-274 F	72-287 F	72-292 F	72-293 F	72-296 R	72-299 F	72-299 F	72-300 F	72-305 F	72-305 F	72-313 F	72-313 R
BA	1010.00	350.00	480.00	380.00	500.00	556.00	590.00	540.00	3390.00	580.00	550.00	550.00	534.00
CO	25.00	41.00	44.00	38.00	39.00	40.20	48.00	51.00	30.00	38.00	41.00	37.00	37.70
CR	----	170.00	93.00	29.00	51.00	21.90	88.00	86.00	----	53.00	52.00	13.00	15.60
CS	----	----	----	----	----	0.90	----	----	----	----	----	----	1.00
HF	6.90	3.00	4.60	3.70	3.70	4.70	4.60	5.40	11.00	5.50	5.20	5.80	5.40
RB	----	----	----	----	----	29.00	----	----	----	----	----	----	28.00
TA	----	----	----	----	----	1.20	----	----	----	----	----	----	1.12
TH	5.80	1.50	3.50	3.20	3.40	4.20	3.60	3.60	7.40	3.90	4.00	4.10	4.10
ZN	----	----	----	----	----	199.00	----	----	----	----	----	----	220.00
ZR	----	----	----	----	----	264.00	----	----	----	----	----	----	308.00
SC	36.00	44.00	37.00	37.00	36.00	34.30	35.00	36.00	28.00	40.00	39.00	38.00	36.69
LA	35.50	14.30	24.20	16.90	16.60	29.00	22.80	23.40	43.60	25.40	26.00	27.90	34.00
CE	----	----	----	----	----	58.00	----	----	----	----	----	----	69.00
SM	11.10	4.80	7.90	5.50	5.20	----	7.90	8.00	10.40	8.00	7.60	9.10	----
EU	3.40	1.00	2.60	2.20	2.00	2.33	3.10	2.60	4.10	2.60	2.30	1.50	2.81
YB	----	----	----	----	----	3.50	----	----	----	----	----	----	4.20
LU	0.95	0.48	0.62	0.47	0.46	0.62	0.57	0.60	0.70	0.67	0.64	0.74	0.
C.T.	NUMAKER	DODGE	LOLO INC	GR INC	GR INC	FS INC	LOLO INC	LOLO INC	UMATILLA	ROZA	ROZA	ROSALIA	ROSA

Table 1c. Trace element analyses of DSIW- flows collected 1971-1977.

SAMPLE	72-321 R	72-322 F	72-323 F	72-325 F	72-325 F	72-330 F	73-011AF	73-011BF	73-015 F	73-019 F	73-085 F	73-114 F	73-122 F
BA	572.00	550.00	470.00	450.00	500.00	750.00	550.00	560.00	2830.00	670.00	510.00	730.00	640.00
CO	38.50	35.00	38.00	45.00	44.00	40.00	46.00	46.00	28.00	44.00	46.00	43.00	45.00
CR	44.30	38.00	48.00	26.00	24.00	15.00	29.00	25.00	----	----	182.00	42.00	113.00
CS	1.00	----	----	----	----	----	----	----	----	----	----	----	----
HF	4.00	4.00	3.70	----	----	5.50	----	----	----	6.40	6.70	11.60	7.30
RB	28.00	----	----	----	----	----	----	----	----	----	----	----	----
TA	0.82	----	----	----	----	----	----	----	----	----	----	----	----
TH	3.20	4.30	3.70	6.90	6.00	4.00	8.20	7.90	7.80	8.90	1.80	4.00	3.10
ZN	203.00	----	----	----	----	----	----	----	----	----	----	----	----
ZR	201.00	----	----	----	----	----	----	----	----	----	----	----	----
SC	38.48	35.00	37.00	33.00	33.00	39.00	30.00	31.00	28.00	30.00	40.00	39.00	39.00
LA	24.00	20.20	18.70	33.60	31.90	29.00	33.80	34.20	42.80	35.90	33.00	62.00	40.00
CE	47.00	----	----	----	----	----	----	----	----	----	67.00	123.00	81.00
SM	7.20	5.50	5.20	9.30	9.20	9.10	7.80	7.90	9.90	8.30	10.00	18.10	10.90
EU	2.20	2.10	1.60	2.80	3.00	3.90	2.30	2.20	4.10	----	2.94	5.43	3.35
YB	3.20	----	----	----	----	----	----	----	----	----	4.90	8.50	5.10
LU	0.64	0.53	0.53	0.73	0.76	0.76	0.56	0.60	0.67	0.58	0.79	1.38	0.85
C.T.	FS INC	GR INC	GR INC	ELEPHANT	ELEPHANT	ROSALIA	FS INC	FS INC	UMATILLA	ESQUAT	MARTIN	GOOSE	INDIAN

SAMPLE	73-125 F	73-144 F	73-145 F	73-146 F	73-151 F	73-157 F	73-355 R	73-355 R	73-356 R	73-358 R	73-359 R	73-360 R	74-207 R
BA	660.00	570.00	530.00	620.00	650.00	490.00	382.00	353.00	416.00	766.00	725.00	460.00	585.00
CO	45.00	51.00	42.00	51.00	43.00	50.00	35.30	32.70	37.80	37.40	38.50	39.10	37.60
CR	110.00	147.00	33.00	149.00	20.00	135.00	92.40	76.60	115.50	12.90	11.40	93.90	48.00
CS	----	----	----	----	----	----	----	----	----	1.40	0.90	0.80	1.00
HF	7.00	7.00	5.90	7.00	6.30	7.60	2.80	2.80	2.90	4.80	4.90	3.70	4.20
RB	----	----	----	----	----	----	12.00	20.00	12.00	51.00	53.00	24.00	29.00
TA	----	----	----	----	----	----	0.44	0.42	0.60	1.04	0.90	0.72	0.74
TH	3.20	2.20	7.70	1.90	8.70	2.20	2.00	1.70	2.10	6.00	6.70	3.70	4.30
ZN	----	----	----	----	----	----	119.00	126.00	130.00	140.00	144.00	131.00	139.00
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	38.00	39.00	29.00	40.00	29.00	41.00	37.49	36.12	35.93	31.87	32.45	33.99	34.99
LA	40.10	38.00	34.00	37.00	35.30	40.00	15.00	16.00	17.00	27.00	27.00	18.00	22.00
CE	----	76.00	65.00	78.00	----	82.00	30.00	32.00	33.00	54.00	55.00	38.00	46.00
SM	11.00	10.70	7.80	11.00	8.10	11.80	4.20	4.40	5.00	6.80	7.00	5.30	6.10
EU	3.20	3.44	2.38	3.46	2.30	3.60	1.25	1.26	1.59	1.92	2.11	1.64	1.79
YB	----	5.10	3.50	5.30	----	5.60	1.90	2.00	2.30	2.90	3.10	2.50	2.80
LU	0.85	0.81	0.54	0.80	0.58	0.83	0.41	0.41	0.45	0.54	0.57	0.50	0.54
C.T.	INDIAN	BASIN	ESQUAT	BASIN	ESQUAT	BASIN	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	74-244 R	74-245 R	74-246 R	74-247 R	74-248 R	74-249 R	74-250 R	74-251 R	74-252 R	74-253 R	74-254 R	74-255 R	74-256 R
BA	427.00	545.00	491.00	722.00	713.00	824.00	731.00	596.00	669.00	654.00	535.00	430.00	523.00
CO	39.60	38.90	42.20	40.70	38.70	38.40	43.60	41.60	42.10	38.90	40.10	41.30	43.40
CR	25.50	25.50	23.40	17.30	15.80	9.40	12.60	22.60	22.00	20.40	117.70	143.10	57.70
CS	1.00	1.20	1.80	1.10	0.90	1.60	1.10	----	0.80	1.40	0.70	----	----
HF	3.70	4.30	4.00	4.80	5.00	4.90	4.90	4.20	4.20	4.40	3.90	3.40	3.90
RB	----	35.00	29.00	38.00	35.00	69.00	41.00	48.00	35.00	42.00	30.00	19.00	26.00
TA	0.62	0.98	0.68	1.12	0.99	0.91	0.89	1.18	0.73	0.86	0.75	0.59	0.74
TH	----	4.30	3.90	6.70	5.00	7.40	5.10	4.80	5.20	5.10	3.90	3.20	3.80
ZN	122.00	139.00	136.00	137.00	142.00	137.00	145.00	127.00	129.00	139.00	128.00	132.00	135.00
ZR	----	----	----	----	172.00	287.00	510.00	394.00	391.00	----	----	365.00	----
SC	34.11	35.01	34.98	31.32	32.28	29.25	35.26	33.20	32.83	33.40	36.29	38.40	36.23
LA	17.00	21.00	19.00	28.00	26.00	29.00	26.00	22.00	22.00	23.00	19.00	17.00	20.00
CE	34.00	43.00	39.00	56.00	53.00	58.00	53.00	42.00	44.00	46.00	39.00	34.00	41.00
SM	5.40	6.70	6.20	7.30	7.30	8.00	7.20	5.90	5.90	6.30	5.50	5.10	5.70
EU	1.65	1.99	1.71	2.15	1.92	2.08	2.15	1.72	1.82	1.90	1.63	1.58	1.77
YB	2.60	3.10	2.90	3.10	3.60	3.40	3.50	2.80	2.80	3.00	2.70	2.50	2.70
LU	0.44	0.56	0.51	0.53	0.60	0.55	0.61	0.50	0.50	0.55	0.50	0.47	0 [illegible]
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	G[illegible] C

Table 1c. Trace element analyses of DSTW- flows collected 1971-1977.

SAMPLE	74-257 R	74-258 R	74-259 R	74-260 R	74-261 R	74-271 R	74-272 R	74-273 R	74-274 R	74-275 R	74-276 R	74-277 R	74-278 R
BA	513.00	565.00	843.00	489.00	586.00	539.00	484.00	727.00	724.00	816.00	760.00	738.00	699.00
CO	40.40	47.80	35.10	29.90	53.70	40.40	39.90	41.10	38.00	35.20	38.60	34.00	36.70
CR	53.40	57.40	6.10	58.20	61.80	98.60	113.80	9.20	14.90	9.80	12.80	14.20	11.00
CS	0.80	0.90	1.40	----	1.10	0.90	0.80	1.10	0.90	1.80	1.30	1.30	1.40
HF	3.80	3.80	4.90	4.00	4.00	3.70	3.70	4.80	5.00	5.10	5.30	4.70	4.80
RB	27.00	40.00	56.00	27.00	34.00	30.00	27.00	40.00	45.00	44.00	46.00	49.00	38.00
TA	0.89	0.74	0.64	1.00	0.79	0.75	0.74	0.99	0.88	0.91	0.97	0.91	0.88
TH	3.50	3.80	5.90	3.60	3.80	3.40	3.70	5.30	5.40	5.80	5.80	6.30	6.40
ZN	121.00	133.00	134.00	137.00	139.00	138.00	141.00	150.00	148.00	147.00	158.00	142.00	139.00
ZR	----	----	----	----	----	----	----	----	----	236.00	462.00	305.00	----
SC	36.26	36.71	32.34	36.43	36.79	38.16	36.53	33.47	32.38	30.01	32.87	30.92	31.34
LA	20.00	20.00	30.00	20.00	22.00	18.00	19.00	26.00	25.00	28.00	29.00	28.00	27.00
CE	41.00	40.00	59.00	42.00	45.00	37.00	40.00	54.00	54.00	57.00	60.00	55.00	55.00
SM	5.80	5.80	7.50	5.80	6.20	5.60	5.60	7.30	7.20	7.70	8.00	7.30	7.30
EU	1.78	1.73	2.20	1.80	1.82	1.70	1.67	2.13	2.07	2.19	2.26	2.15	2.03
YB	2.70	2.90	3.80	3.10	3.10	2.60	2.50	3.40	3.20	3.50	3.80	3.00	3.20
LU	0.52	0.51	0.64	0.54	0.58	0.53	0.52	0.63	0.61	0.61	0.67	0.55	0.58
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	74-279 R	74-280 R	74-281 R	74-282 R	74-283 R	74-284 R	74-285 R	74-286 R	74-287 R	74-288 R	74-289 R	74-290 R	74-291 R
BA	549.00	597.00	510.00	574.00	485.00	607.00	451.00	525.00	547.00	543.00	536.00	660.00	660.00
CO	42.40	39.00	39.30	38.70	37.30	39.30	39.30	39.60	38.50	39.50	37.90	40.90	37.60
CR	21.80	19.90	23.90	16.30	22.50	14.50	26.90	40.30	----	13.80	10.90	11.00	8.10
CS	----	0.90	----	1.00	1.00	0.90	1.20	0.80	0.80	1.40	1.30	1.30	1.60
HF	4.20	4.30	3.60	4.20	3.50	4.30	3.80	3.80	5.00	4.30	4.60	4.60	5.10
RB	24.00	28.00	22.00	30.00	29.00	38.00	46.00	46.00	48.00	41.00	48.00	45.00	61.00
TA	0.74	0.77	0.70	0.74	0.70	0.72	0.71	0.64	0.82	0.64	0.69	0.82	0.90
TH	3.80	4.00	3.50	3.80	3.70	4.20	3.30	3.60	4.00	3.80	3.90	4.50	5.40
ZN	145.00	147.00	131.00	152.00	132.00	137.00	128.00	134.00	134.00	127.00	132.00	123.00	134.00
ZR	361.00	302.00	----	----	----	----	----	----	----	----	308.00	----	987.00
SC	35.17	35.51	34.84	36.51	35.47	35.48	34.90	35.04	32.62	32.76	33.67	33.21	30.09
LA	19.00	21.00	17.00	21.00	18.00	20.00	18.00	19.00	22.00	20.00	21.00	22.00	25.00
CE	39.00	44.00	37.00	45.00	36.00	41.00	36.00	38.00	46.00	42.00	45.00	46.00	53.00
SM	6.10	6.60	5.40	6.60	5.30	5.80	5.30	5.40	6.50	6.00	6.40	6.40	7.00
EU	1.75	1.92	1.62	2.00	1.66	1.88	1.73	1.70	1.99	1.91	1.97	1.88	2.04
YB	3.00	3.30	2.30	3.30	2.40	3.00	2.50	2.70	3.20	3.00	3.10	3.30	3.50
LU	0.55	0.66	0.49	0.62	0.48	0.59	0.50	0.49	0.57	0.57	0.58	0.51	0.60
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	74-292 R	74-293 R	74-294 R	74-295 R	74-296 R	75-011 R	75-012 R	75-013 R	75-014 R	75-015 R	75-016 R	75-017 R	75-018 R
BA	641.00	557.00	644.00	574.00	534.00	505.00	459.00	695.00	829.00	613.00	450.00	452.00	528.00
CO	36.50	38.50	38.80	39.00	40.50	43.10	43.40	39.50	37.60	40.00	40.40	37.80	38.00
CR	10.20	17.20	14.50	11.30	35.30	64.70	128.10	11.10	12.50	25.40	24.50	23.00	18.80
CS	1.50	----	1.20	1.40	1.60	----	----	1.20	1.40	1.20	1.00	1.20	1.00
HF	5.10	5.00	5.30	4.80	4.70	3.90	3.60	4.70	5.50	4.20	3.60	3.60	4.10
RB	49.00	50.00	40.00	47.00	41.00	38.00	30.00	36.00	56.00	23.00	28.00	26.00	39.00
TA	0.90	0.85	0.81	0.87	0.88	0.72	0.62	0.95	0.99	0.65	0.75	0.63	0.63
TH	5.60	4.30	4.50	5.30	3.80	3.40	3.40	5.00	6.30	4.00	3.50	3.50	3.50
ZN	135.00	137.00	143.00	117.00	125.00	134.00	131.00	139.00	137.00	147.00	127.00	127.00	138.00
ZR	----	----	----	----	----	----	----	----	----	----	283.00	----	----
SC	30.52	33.09	33.15	30.95	34.06	37.10	37.63	32.86	30.10	35.97	34.44	34.15	35.99
LA	23.00	22.00	24.00	22.00	21.00	19.00	18.00	26.00	30.00	22.00	17.00	18.00	20.00
CE	49.00	48.00	52.00	47.00	46.00	40.00	36.00	55.00	60.00	45.00	37.00	38.00	41.00
SM	6.70	6.90	7.50	6.40	6.70	5.50	5.20	7.10	7.80	6.30	5.20	5.30	5.80
EU	2.00	2.11	2.26	1.87	1.96	1.76	1.69	2.13	2.13	2.05	1.71	1.72	1.82
YB	3.20	3.50	3.90	2.90	3.40	2.80	2.80	3.40	3.80	3.30	2.50	2.50	3.20
LU	0.56	0.57	0.63	0.51	0.55	0.52	0.49	0.59	0.61	0.58	0.47	0.46	4
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	G NC

Table 1c. Trace element analyses of DSIW- flows collected 1971-1977.

SAMPLE	75-019 R	75-020 R	75-021 R	75-022 R	75-023 R	75-024 R	75-025 R	75-026 R	75-027 R	75-028 R	75-035 R	75-035 R	75-036 R
BA	550.00	566.00	611.00	463.00	612.00	543.00	623.00	639.00	761.00	597.00	797.00	860.00	666.00
CO	38.40	38.70	36.40	37.90	40.60	38.40	39.00	38.30	36.50	38.50	37.50	39.00	40.80
CR	16.30	21.50	24.00	24.60	6.80	14.00	13.60	14.60	9.40	16.70	40.10	38.30	114.40
CS	0.90	1.40	0.90	1.10	1.20	0.70	1.40	1.20	2.10	1.50	----	0.50	----
HF	4.00	4.20	3.90	3.80	5.00	4.20	4.70	4.50	5.40	4.80	10.50	11.10	6.50
RB	34.00	37.00	23.00	28.00	32.00	22.00	60.00	31.00	46.00	35.00	26.00	24.00	20.00
TA	0.93	0.70	0.71	0.60	0.85	0.78	1.05	0.83	1.00	0.77	3.12	3.03	1.92
TH	4.20	4.60	4.00	3.60	4.90	3.90	5.00	4.40	6.30	4.90	4.40	4.10	3.50
ZN	134.00	144.00	142.00	135.00	159.00	146.00	140.00	146.00	156.00	147.00	261.00	232.00	223.00
ZR	----	----	103.00	----	673.00	----	----	----	----	----	476.00	363.00	292.00
SC	34.85	35.46	35.54	34.12	32.70	32.79	32.13	33.97	30.16	31.44	36.32	38.80	36.78
LA	21.00	22.00	19.00	19.00	23.00	19.00	22.00	21.00	26.00	23.00	77.00	54.00	49.00
CE	43.00	46.00	40.00	37.00	46.00	40.00	45.00	42.00	52.00	49.00	153.00	150.00	98.00
SM	5.90	6.20	5.70	5.30	6.90	5.80	6.80	6.40	7.50	7.00	21.00	20.50	12.50
EU	1.82	1.97	1.74	1.62	1.98	1.75	1.87	1.91	1.93	1.95	5.66	5.57	3.39
YB	3.00	3.00	2.90	2.70	3.40	2.90	3.00	3.20	3.40	3.10	8.40	9.30	4.80
LU	0.52	0.53	0.54	0.48	0.57	0.50	0.53	0.57	0.58	0.54	1.39	1.46	0.86
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GOOSE	GOOSE	INDIAN

SAMPLE	75-036 R	75-046 R	75-046 R	75-077 R	75-078 R	75-079 R	75-080 R	75-081 R	75-082 R	75-083 R	75-084 R	75-085 R	75-086 R
BA	719.00	579.00	598.00	515.00	746.00	480.00	507.00	635.00	653.00	701.00	724.00	705.00	730.00
CO	42.90	45.00	48.20	40.40	36.10	42.30	42.20	44.10	43.20	40.20	40.10	39.80	36.30
CR	123.20	148.30	158.00	48.50	----	85.80	98.90	17.80	15.40	13.50	14.90	14.10	11.80
CS	----	----	----	0.60	1.40	----	0.70	1.20	1.20	1.30	1.70	1.20	1.40
HF	7.00	6.60	6.60	3.70	4.80	3.80	3.80	4.30	4.80	5.20	5.10	4.90	5.00
RB	21.00	----	----	37.00	47.00	----	20.00	41.00	31.00	58.00	41.00	54.00	41.00
TA	1.79	1.82	1.98	0.66	0.86	0.53	0.87	0.94	0.81	1.02	0.94	0.67	0.90
TH	3.40	2.20	2.20	3.60	5.60	3.20	3.30	4.50	4.10	5.40	5.20	5.10	6.80
ZN	190.00	206.00	195.00	146.00	133.00	136.00	124.00	144.00	157.00	147.00	159.00	141.00	146.00
ZR	351.00	256.00	369.00	----	----	----	----	----	----	----	----	154.00	----
SC	39.47	37.95	40.59	36.90	32.75	38.89	37.76	34.89	36.26	33.41	33.06	32.79	31.83
LA	34.00	46.00	30.00	20.00	28.00	17.00	18.00	23.00	24.00	28.00	27.00	26.00	28.00
CE	92.00	91.00	90.00	41.00	55.00	33.00	41.00	44.00	50.00	59.00	58.00	56.00	58.00
SM	12.00	12.90	12.40	5.70	7.00	5.20	5.40	5.70	7.10	7.80	7.70	7.40	7.60
EU	3.32	3.54	3.55	1.68	2.19	1.59	1.77	1.90	2.07	2.34	2.08	2.05	2.17
YB	5.50	4.90	5.70	3.00	3.60	2.90	2.60	3.00	3.80	3.70	3.70	3.50	3.60
LU	0.88	0.86	0.96	0.51	0.56	0.49	0.49	0.53	0.63	0.61	0.60	0.59	0.55
C.T.	INDIAN	BASIN	BASIN	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	75-087 R	75-088 R	75-089 R	75-090 R	75-091 R	75-092 R	75-093 R	75-094 R	75-095 R	75-096 R	75-097 R	75-098 R	75-099 R
BA	519.00	490.00	609.00	586.00	530.00	556.00	577.00	521.00	584.00	689.00	682.00	734.00	496.00
CO	43.60	41.90	41.90	40.70	40.70	42.20	41.30	40.70	41.20	37.70	38.10	39.80	39.50
CR	19.60	20.00	19.30	19.10	22.60	23.10	13.90	18.80	13.70	----	8.60	13.80	13.00
CS	1.30	1.00	1.00	1.30	1.20	1.00	1.10	1.10	1.00	1.40	1.30	1.20	1.10
HF	4.00	4.00	4.10	4.40	4.20	3.80	4.20	4.10	4.20	4.70	4.80	4.50	4.70
RB	31.00	36.00	44.00	60.00	40.00	24.00	39.00	25.00	28.00	71.00	43.00	39.00	26.00
TA	0.76	0.71	0.67	0.92	0.83	0.72	0.76	0.69	0.71	0.91	0.87	0.82	0.93
TH	3.70	3.90	4.00	3.60	4.40	3.60	3.90	3.80	4.40	4.70	4.50	4.40	4.70
ZN	131.00	145.00	143.00	150.00	146.00	139.00	133.00	134.00	139.00	142.00	142.00	140.00	137.00
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	35.57	36.36	35.69	37.28	36.53	35.98	35.69	35.77	36.11	32.75	32.55	34.27	33.26
LA	19.00	19.00	19.00	22.00	21.00	17.00	20.00	19.00	21.00	22.00	21.00	21.00	21.00
CE	39.00	39.00	42.00	49.00	43.00	37.00	42.00	40.00	44.00	46.00	49.00	43.00	44.00
SM	6.00	6.30	6.20	6.90	6.80	5.60	6.50	6.10	6.70	7.00	6.60	6.70	6.70
EU	1.66	1.89	1.90	2.01	1.99	1.55	1.82	1.88	2.01	2.07	2.11	2.09	1.96
YB	3.00	3.20	3.30	3.70	3.50	2.80	3.40	2.90	3.00	3.50	3.40	3.00	3.10
LU	0.53	0.54	0.54	0.59	0.59	0.50	0.56	0.53	0.59	0.57	0.57	0.56	0.
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR

Table 1d. Major oxide analyses of glass associated with DSIW- flows collected 1971-1977.

SAMPLE	71-14 G	71-17 G	71-23 G	71-23 G	71-23 G	71-23 G	71-23 G	71-23 G	71-23 G	71-24 G	71-24 G	71-24 G	71-45 G
SIO2	55.31	52.25	50.76	51.00	51.23	51.22	51.30	51.00	50.87	50.98	50.80	51.12	49.31
AL203	13.34	11.88	13.24	12.92	12.37	13.30	13.20	12.32	12.42	11.73	12.54	11.51	12.50
'FEO'	11.17	16.16	14.62	14.79	14.23	14.44	14.57	14.55	14.59	15.13	14.49	15.57	14.74
MGO	2.91	3.69	4.08	4.22	4.10	4.09	4.08	4.14	4.24	3.98	4.14	3.63	4.54
CAO	6.78	8.47	8.46	8.38	8.01	8.42	8.45	8.25	8.16	8.39	8.64	8.28	9.24
NA20	2.82	2.36	2.69	2.72	1.57	2.61	2.53	1.87	1.83	1.45	1.90	1.36	2.50
K20	1.92	1.35	1.24	1.13	1.12	1.11	1.11	1.11	1.17	1.39	1.66	1.33	1.12
TIO2	2.26	4.12	3.35	3.53	3.30	3.31	3.39	3.44	3.37	3.72	3.30	3.68	3.57
P205	0.41	0.51	0.61	0.58	0.57	0.57	0.60	0.59	0.57	0.63	0.59	0.61	0.83
TOTAL	96.92	100.79	99.05	99.27	96.50	99.07	99.23	97.27	97.22	97.40	98.06	97.09	98.35
C.T.	GR INC	ELEPHANT	ROZA	ROZA	ROZA	ROZA	ROZA	ROZA	ROZA	ROZA	ROZA	ROZA	LOLO INC

SAMPLE	71-84 G	71-115 G	71-129 G	72-20 G	72-21 G	72-36 G	72-227 G	72-259 G	72-294 G	72-309 G	73-19 G	73-20 G	73-37 G
SIO2	55.61	52.64	50.94	48.58	53.37	54.55	50.18	47.78	52.44	50.27	54.96	51.60	51.20
AL203	13.21	13.76	12.26	11.85	11.97	12.51	12.19	11.02	12.21	11.81	12.74	12.07	11.74
'FEO'	12.24	11.48	15.42	15.39	15.42	12.10	15.06	17.59	15.21	16.24	14.04	15.96	15.89
MGO	3.27	5.84	3.55	4.20	3.40	3.33	4.42	4.40	3.48	3.58	3.07	3.39	3.62
CAO	7.43	10.61	8.41	8.15	8.11	6.55	9.17	9.73	8.20	8.45	7.08	8.13	8.45
NA20	2.59	2.43	2.76	2.29	1.65	2.04	2.60	2.18	2.67	2.65	2.72	2.47	2.14
K20	2.04	0.66	1.36	1.09	1.23	1.55	1.06	0.89	1.34	1.32	1.92	1.39	1.13
TIO2	2.41	1.90	3.73	3.26	3.86	2.06	3.74	4.83	3.41	4.19	3.24	3.75	4.00
P205	0.52	0.22	0.75	0.67	0.56	0.33	0.77	1.16	0.54	0.82	0.37	0.54	0.56
TOTAL	99.32	99.54	99.18	95.48	99.57	95.02	99.19	99.58	99.50	99.33	100.14	99.30	98.73
C.T.	WILBUR	POMONA	ROZA	ROZA	FS INC	GR INC	LOLO INC	BASIN	FS INC	ROSALIA	ESQUAT	ELEPHANT	ELEPHANT

SAMPLE	73-57 G	73-85 G	73-95 G	73-107 G	73-162 G	74-205 G	74-301 G	74-303 G	74-308 G	74-311 G	74-313 G	74-322 G	74-325 G
SIO2	52.73	51.35	50.04	51.14	46.53	52.46	49.97	51.39	49.62	52.13	49.68	50.05	52.13
AL203	13.96	12.22	11.63	11.81	11.94	12.01	12.13	11.70	12.02	14.38	12.16	12.20	12.21
'FEO'	11.37	14.99	16.81	15.84	16.97	15.66	15.09	16.11	15.31	11.45	15.40	15.26	16.23
MGO	5.70	4.10	3.85	3.68	4.71	3.37	4.29	3.67	4.29	5.66	4.28	4.20	3.70
CAO	10.37	8.69	8.90	8.36	9.93	7.95	9.06	8.40	9.13	10.45	9.07	9.20	8.46
NA20	2.53	2.85	0.88	2.28	2.29	2.20	2.48	2.24	2.48	2.49	2.58	2.50	2.47
K20	0.79	1.27	1.05	1.28	0.81	1.48	1.21	1.26	1.24	0.94	1.24	1.16	1.36
TIO2	1.99	3.50	4.52	3.84	4.28	3.55	3.79	4.03	3.86	1.90	3.90	3.85	4.02
P205	0.23	0.69	0.92	0.51	0.85	0.57	0.68	0.49	0.70	0.24	0.76	0.69	0.52
TOTAL	99.67	99.66	98.60	98.74	98.31	99.25	98.70	99.29	98.65	99.64	99.07	99.11	101.10
C.T.	POMONA	MARTIN	INDIAN	GR INC	BASIN	FS INC	LOLO INC	ELEPHANT	LOLO INC	ASOTIN	UNC	LOLO INC	ELEPHANT

SAMPLE	75-104 G	75-111 G	75-118 G	75-119 G	75-122 G	75-124 G	75-140 G	75-165 G	76-01 G	76-03 G	76-05 G	76-07 G	76-08 G
SIO2	55.37	50.02	49.51	55.05	52.41	50.14	50.25	54.86	53.13	49.47	48.43	48.28	52.49
AL203	14.61	11.81	11.44	12.76	11.77	12.20	11.72	13.97	11.92	11.40	11.39	12.89	11.58
'FEO'	11.98	15.64	16.05	12.16	16.18	15.00	15.54	11.72	15.82	16.74	16.03	15.29	15.49
MGO	5.13	4.02	3.93	2.60	3.40	4.16	4.07	4.62	3.12	3.74	3.84	5.31	2.52
CAO	8.97	8.90	8.67	6.63	8.27	8.96	8.91	9.26	7.79	8.83	8.84	10.14	6.91
NA20	2.41	2.19	2.50	1.96	2.21	2.49	2.58	2.52	2.30	1.60	2.31	2.37	1.86
K20	0.32	1.24	1.14	2.07	1.37	1.23	1.14	1.21	1.68	1.46	1.28	0.79	1.76
TIO2	1.78	4.01	4.34	2.64	3.93	3.87	3.98	2.21	3.87	4.49	4.50	3.90	3.43
P205	0.23	0.76	0.84	0.62	0.60	0.91	0.76	0.37	0.65	0.92	0.86	0.76	0.69
TOTAL	100.80	98.59	98.42	96.49	100.14	98.96	98.95	100.74	100.28	98.65	97.48	99.73	96.73
C.T.	GR INC	LOLO INC	LOLO INC	WILBUR	LM	LOLO INC	LOLO INC	ASOTIN	FS INC	INDIAN	INDIAN	MARTIN	FS INC

Table 1d. Major oxide analyses of glass associated with DSIW- flows collected 1971-1977.

SAMPLE	76-10 G	76-11 G	76-13 G	76-14 G	76-24 G	76-27 G	76-37 G	76-41 G	76-50 G	76-52 G	76-54 G	76-56 G	76-57 G
SIO2	53.20	52.36	52.60	53.10	51.74	55.45	51.91	56.97	52.87	52.26	54.88	53.62	54.43
AL203	11.90	12.24	12.24	12.38	11.85	12.81	12.45	12.64	13.39	11.49	13.46	12.67	14.23
'FEO'	15.59	14.70	15.52	15.19	15.24	12.50	14.91	12.63	12.40	15.62	12.32	15.42	11.31
MGO	2.86	3.59	3.38	2.96	3.22	2.18	3.57	1.96	5.07	3.11	3.03	4.24	3.99
CAO	7.49	8.22	7.95	7.56	7.95	6.03	8.19	5.42	9.89	7.62	7.22	7.36	8.54
NA2O	1.89	2.65	2.59	2.33	1.85	1.81	2.66	2.68	2.58	2.58	2.47	0.29	2.68
K2O	1.49	1.48	1.36	1.66	1.40	2.59	1.23	3.05	0.70	1.38	1.87	0.54	1.55
TIO2	3.78	3.42	3.59	3.42	3.59	2.55	3.46	2.68	2.32	3.79	2.45	3.58	2.07
P2O5	0.57	0.59	0.72	0.74	0.56	1.03	0.50	1.13	0.25	0.56	0.48	0.58	0.39
TOTAL	98.77	99.25	99.95	99.34	97.40	96.95	98.88	99.16	99.47	98.41	98.18	98.30	99.19
C.T.	FS INC	FS INC	FS INC	FS INC	FS INC	UMATILLA	FS INC	UMATILLA	POMONA	FS INC	WILBUR	ROZA	WILBUR

SAMPLE	76-58 G	76-59 G	76-65 G	76-71 G	76-75 G	76-77 G	76-78 G	76-79 G	76-80 G	76-81 G	76-86 G	76-88 G	76-89 G
SIO2	50.26	51.82	55.13	52.93	53.23	51.21	51.17	52.90	51.81	51.78	52.91	54.66	52.64
AL203	11.54	11.97	14.13	13.61	12.28	11.95	11.70	13.68	11.42	11.23	13.95	13.66	13.45
'FEO'	15.83	16.40	12.10	12.57	16.99	15.69	16.03	12.02	16.11	16.49	11.55	11.86	11.64
MGO	3.50	3.58	4.26	4.79	3.28	3.66	3.52	5.34	3.49	3.26	5.68	4.12	5.63
CAO	8.44	8.22	8.72	9.88	7.98	8.28	8.22	9.96	8.12	7.94	10.42	8.86	10.49
NA2O	2.46	2.36	2.55	2.26	2.22	2.32	2.30	2.35	2.14	1.97	2.49	1.44	2.50
K2O	1.53	1.32	1.52	0.72	1.44	1.35	1.28	0.78	1.24	1.45	0.68	1.61	0.61
TIO2	4.27	4.18	2.14	2.26	3.72	4.06	4.05	2.12	4.20	3.88	2.04	2.24	1.97
P2O5	0.80	0.94	0.50	0.25	0.73	0.53	0.54	0.25	0.50	0.56	0.30	0.44	0.23
TOTAL	98.63	100.79	101.05	99.27	101.87	99.05	98.81	99.40	99.03	98.56	100.02	98.89	99.16
C.T.	LOLO INC	LOLO INC	WILBUR	POMONA	ELEPHANT	ELEPHANT	ELEPHANT	POMONA	ELEPHANT	ELEPHANT	POMONA	UNC	POMONA

SAMPLE	76-90 G	76-212 G	76-215 G	76-231 G	76-234 G	76-267 G	77-203 G	77-248 G	77-263 G	77-270 G	77-293 G
SIO2	51.38	55.02	53.85	55.05	52.02	49.84	51.96	54.27	52.56	55.04	54.66
AL203	11.73	12.44	13.09	13.19	14.59	14.62	12.66	14.29	12.31	13.10	12.28
'FEO'	16.31	13.68	12.94	11.29	11.09	11.16	15.23	12.08	14.82	13.15	13.27
MGO	3.40	3.10	2.93	2.20	6.00	7.07	3.46	4.94	3.73	4.26	2.90
CAO	7.98	7.55	6.25	5.72	11.21	11.43	8.04	8.74	8.15	8.62	6.87
NA2O	2.14	1.76	2.48	2.07	2.45	2.33	2.37	2.92	2.06	2.50	2.03
K2O	1.52	1.84	2.55	2.74	0.60	0.47	1.44	0.84	1.32	0.99	1.58
TIO2	4.02	2.72	2.69	2.22	1.88	1.94	3.73	1.79	3.41	2.29	2.22
P2O5	0.57	0.37	0.70	1.08	0.26	0.38	0.59	0.28	0.59	0.31	0.40
TOTAL	99.05	98.48	97.48	95.56	100.10	99.24	99.48	100.15	98.95	100.26	96.21
C.T.	ELEPHANT	BUFORD	UMATILLA	UMATILLA	ASOTIN	UNC	FS INC	GR INC	FS INC	GR INC	GR INC

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
		LOCATION					STRATIGRAPHY			CHEMISTRY		
71-1	O	Wallowa	Harl Butte	SW/NW	1S	47E	GR			RR-4	GR INC	
	"Excellent, fine-grained rock"(DSTW,1971). Location same as McDougal(1976) CR 71. Equal WT-56.											
71-12	O	Wallowa	Table Mountain	SW/NE3	3N	45E	WP	Eck Mt	Shumaker Creek	RR-2	"SHUMAKER"	
	Thicker of 2 dikes near hairpin turn in road along upper Joseph Creek. Al2O3 low.											
71-13	O	Wallowa	Table Mountain	SW/NE3	3N	45E	GR			RR-2	GR INC	
	100 ft. downstream from 71-12.											
71-86	W	Franklin	Eltopia 15'	NW/NW23	11N	30E	SM	Ice H	Goose Island	RR-3	"GOOSE"	
	Thickest of three dikes, roadcut along E side of Highway 395 S of Eltopia. Altered chemistry.											
71-110	W	Walla Walla	Humorist	SE/SW23	9N	31E	SM	Ice H	Martindale	RR-1	"MARTIN"	yes
	Multiple dike at E base of tuff cone, S of turn-around. Altered chemistry.											
71-110A	W	Walla Walla	Humorist	SE/SW23	9N	31E	SM	Ice H	Martindale			yes
	Glass only. Same dike complex as 71-110.											
71-113	W	Walla Walla	Humorist	SE/SE22	9N	31E	SM	Ice H	Goose Island	RR-1	GOOSE	
	Merges into overlying flow 71-112.											
71-117	W	Franklin	Levey S	NW/SW18	9N	32E	SM	Ice H	Basin City	RR-1	"BASIN"	
	Westernmost of 3 dikes, SW end of railroad cut. Equals 75-43. Fractionated chemistry.											
72-23	W	Garfield	Almota	SW/SE35	14N	42E	WP	Roza		RR-3	ROZA	yes
	Glass only. Selvage of dike 819671.											
72-24A	W	Garfield	Penawawa 15'	NW/NW26	14N	42E	WP	Fr Sp		RR-5	UNC	
	Road to Lower Granite Dam, 830'. Unusual low FeO, high TiO2, SiO2 chemistry. Aphyric center of dike. Equals WT-R12.											
72-A24	W	Garfield	Penawawa 15'	NW/NW26	14N	42E	WP	Fr Sp		WET-2	UNC	
	Same location as DSTW72-24A.											
72-24B	W	Garfield	Penawawa 15'	NW/NW26	14N	42E	WP	Fr Sp		RR-5	UNC	
	Unusual low FeO, high TiO2, SiO2 chemistry. Phyric margin of dike.											
72-B24	W	Garfield	Penawawa 15'	NW/NW26	14N	42E	WP	Fr Sp		WET-2	UNC	
	Same location as DSTW72-24B.											
72-219	W	Whitman	Pullman	NE/NE8	14N	45E	SM		Sprague Lake	RR-7	UNC	yes
	Cuts flow 72-220.											
73-27	W	Franklin	Elwood	NW/NW1	11N	33E	WP	Fr Sp				yes
	Glass only. Selvage on dike 73-29.											
73-29	W	Franklin	Elwood	NW/NW1	11N	33E	WP	Fr Sp		RR-8	"FS INC"	
	Merges upward into phyric flow. See Swanson and others(1975, Fig.1), N35W, 1220', 9m wide. High MgO. Glass selvage = 73-27.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
73-60	W	Walla Walla	Levey S	NW/NE9	9N	32E	SM	Ice H	Indian Memorial	RR-8	"INDIAN"	
	S of Dalton Lake on E side of Snake River, N35W, 2m wide. High Al2O3, low TiO2.											
73-147	W	Franklin	Eltopia 15'	NW/NW25	11N	30E	SM	Ice H	Basin City	RR-8	"BASIN"	yes
	Natural outcrop, one of 2 thin dikes cutting flow 73-146, N35W, 1m wide. TiO2 high.											
73-163	W	Franklin	Mesa 15'	NE/NE34	14N	29E	SM	Ice H	Basin City	RR-8	"BASIN"	
	Phyric dike near power line N of Bailie Ranch. Altered chemistry.											
73-229	W	Columbia	Godman Spring	NE/NE5	7N	40E	GR			RR-14	GR INC	
	Prominent dike crossing road going up N fork of Touchet River. Equals WT-31.											
73-230	W	Columbia	Godman Spring	NE/NW5	7N	40E	WP	Eck Mt	Robinette Mt	RR-14	ROBIN	
	Dike 15m wide upstream from 73-229.											
73-240	O	Umatilla	Big Meadows	SW/NW21	6N	38E	WP	Fr Sp		RR-14	UNC	yes
	0.5 mi up Mill Creek from Henry Canyon, N10W, 2320', 10m wide. Phyric. Bad analysis. Glassy selvage has FS INC chemistry.											
73-241	O	Umatilla	Big Meadows	SW/NW21	6N	38E	WP	Fr Sp		RR-14	"FS INC"	
	12m wide, possibly same dike as 73-240. Low Al2O3, high SiO2.											
73-384	W	Whitman	Almota	SW/NW34	14N	43E	GR			RR-14	GR INC	
	Multiple dike E of Lower Granite Dam, main phase, N20W, 12m wide.											
73-385	W	Whitman	Almota	SW/NW34	14N	43E	GR					yes
	Glass only. Dike chilled against 73-384. Same location.											
73-387	W	Whitman	Almota	SW/NW18	14N	43E	GR			RR-14	GR INC	
	E of Almota along railroad tracks, N20W, 21m wide.											
74-4	W	Grant	Steamboat Rock S	NW/SW33	27N	29E	GR			RR-17	GR INC	
	East side of Banks Lake. Cuts flow 74-5.											
74-46	W	Asotin	Anatone 15'	SE/NE25	7N	44E	WP	Roza		D-1	ROZA	
	Thickest of several phyric dikes in roadcut on Rattlesnake Creek. N15-20W.											
74-240	W	Whitman	Penewawa 15'	NW/NW23	9N	46E	GR					yes
	Glass only. Dike cuts Almota-Schultz Bar section (flow 74-245 to 74-264).											
74-307	W	Asotin	Lewiston Orchards S	NW/NW12	9N	46E	SM	W Rdg	Lewiston Orchards	XRF-6	UNC	yes
	1m wide dike mapped by Lupher and Warren SE of Asotin. Unusual fractionated chemistry.											
74-315	W	Asotin	Lewiston Orchards S	NW/NW13	9N	46E	SM	W Rdg	Lewiston Orchards	XRF-6	UNC	yes
	Roadcut along Weissenfels Ridge. Unusual fractionated chemistry.											
74-316	W	Asotin	Lewiston Orchards S	SE/SE2	9N	46E	SM	W Rdg	Lewiston Orchards			yes
	Glass only. Continuation of 74-307 at crest of Weissenfels Ridge, 6m wide.											

Table 2a. Sample information for DSIW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-6	W	Whitman	Cheney 15'	NW/SW34	22N	41E	WP	Pr Rp		D-1	ROSALIA	
Dike associated with ring(?) structure, W shore of Badger Lake across from low hill of pre-T quartzite.												
75-42	W	Franklin	Levey SE	NW/SW18	9N	46E	SM	Ice H	Basin City	RR-16	"BASIN"	
Dike just east of 71-117 (75-43). Altered chemistry.												
75-43	W	Franklin	Levey SE	NW/SW18	9N	46E	SM	Ice H	Basin City	RR-16	"BASIN"	
Re-collection of 71-117. Fractionated chemistry.												
75-108	W	Garfield	Stember Creek	SW/NE16	11N	44E	GR			RR-17	GR INC	yes
Dike near shear zone near mouth of Clayton Creek, N10W.												
75-113	W	Asotin	Stember Creek	NE/NW5	10N	44E	GR			RR-17	GR INC	yes
Dike in Pow Wah Kee Gulch near Driscoll Gulch, N25W, 2m wide, extends to at least 1640'.												
75-114	W	Asotin	Stember Creek	NE/NE6	10N	44E	GR			RR-17	GR INC	yes
Columnar dike exposed along creek bank in Pow Wah Kee Gulch, N20W, 12m wide.												
75-115	W	Asotin	Peola	SW/SE5	10N	43E	GR			RR-17	GR INC	yes
Dike in Alpowa Creek near Kidwell Gulch, N20W, 15m wide.												
75-152	W	Asotin	Potter Hill	SW/NW18	9N	44E	GR			RR-17	GR INC	yes
Dike crossing N1-R2 contact, just E of dike with curving columns (75-151, not analysed).												
75-153	W	Asotin	Potter Hill	NW/NE8	9N	44E	WP	Roza				yes
Glass only. Road along ridge crest S of Charlie Creek, N20W, 1m wide, 3190'.												
75-154	W	Asotin	Harlow Ridge	SE/NW22	9N	44E	GR			RR-17	GR INC	yes
Dike in S fork of Asotin Creek, equals WT-48, 9-12m wide.												
75-155	W	Asotin	Harlow Ridge	SE/SW28	9N	44E	WP	Roza				yes
Glass only. Warner Gulch near junction with S fork of Asotin Creek.												
75-156	W	Asotin	Harlow Ridge	NE/NW21	9N	44E	WP	Roza				yes
Glass only. Dike = WT-45, N fork of Asotin Creek.												
75-157	W	Asotin	Harlow Ridge	SW/NW19	9N	44E	GR			RR-17	GR INC	yes
Dike crossing S fork of Asotin Creek, 2600' (extends to at least 2850'), 15m wide.												
75-158	W	Asotin	Harlow Ridge	NE/SE24	9N	43E	GR			RR-17	GR INC	yes
Dike upstream from 75-157, 2660', N25W, 15m wide. Glass from outer margin and interior.												
75-159	W	Asotin	Harlow Ridge	SW/SW15	8N	44E	WP	Roza				yes
Glass only. Roadcut along George Creek N of Little Butte, N20W, 1m wide.												
75-161	W	Asotin	Harlow Ridge	NE/SW15	8N	44E	WP	Roza				yes
Glass only. Small gully up from George Creek road, 3810'.												

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
75-202	W	Asotin	Pinkham Butte	NW/NW2	8N	43E	GR					yes
	Glass only. Dike = WT-47, crosses trail at 3980', 14m wide.											
75-203	W	Asotin	Potter Hill	SW/NE4	9N	44E	GR					yes
	Glass only. Charlie Creek, 9m wide, N20W. Probably feeds Grande Ronde R2 flow at 2040'.											
75-204	W	Garfield	Peola	NW/SE8	9N	43E	GR			XRF-10	GR INC	
	Dike on Charlie Creek, N10W, 7m wide.											
75-205	W	Garfield	Peola	NW/NW10	9N	43E	GR			XRF-10	GR INC	
	Dike along Charlie Creek, N7W, 12m wide.											
75-226	W	Columbia	Eckler Mountain	SE/NE29	8N	40E	GR			XRF-10	GR INC	
	Coarse grained dike on E slope of Chase Mountain, 4700', 15m wide.											
75-227	W	Columbia	Oregon Butte	NE/NW16	7N	41E	WP	Eck Mt	Dodge			yes
	Glass only. Phyric dike S of Danger Point.											
75-228	W	Columbia	Oregon Butte	SW4	7N	41E	WP	Eck Mt	Dodge	XRF-10	DODGE	
	Coarse grained phyric dike, W side of Oregon Butte, extending to top of butte, N10W, 18m wide.											
75-230	W	Columbia	Eckler Mountain	NW/NE33	9N	40E	GR					yes
	Glass only. Dike cutting R2-N1 contact on Jim Creek on upthrown site of Hite Fault.											
76-17	W	Asotin	Black Butte	13	7N	46E	GR					yes
	Glass only. Near mouth of Grande Ronde river.											
76-29	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. Palagonite glass above 76-31 to 35.											
76-30	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. Selvage in upper part of vent complex over 76-31 to 35.											
76-31	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. Dikes in sheeted dike complex, intruded successively from west(76-31) to east(76-35), N20W, 7m wide.											
76-32	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. See 76-31											
76-33	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. See 76-31											
76-34	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. See 76-31											
76-35	W	Walla Walla	Zangar Junction	SE/NE21	7N	32E	SM	Ice H	Goose Island			yes
	Glass only. See 76-31											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
76-207	W	Garfield	Saddle Butte	SW/SW36	8N	42E	WP	Eck Mt	Dodge			yes
	Glass only. Phyric dike just below Diamond Peak road to SE,5880'.											
76-211	W	Asotin	Mountain View	SW/SE33	7N	44E	WP	Eck Mt	Dodge			yes
	Glass only. Selvage of dike 821674,9m wide. Equals dike G-10 (Price,1978).											
76-222	W	Asotin	Black Butte	SE/SW13	7N	45E	SM	W Rdg				yes
	Glass only. Mouth of Rice Creek in Shumaker Canyon,6m wide. Chemistry like 76-252,253. Equals dike G-13 (Price,1978).											
76-223	W	Asotin	Black Butte	NW/NE31	7N	46E	GR					yes
	Glass only. Grande Ronde Canyon between Myers Creek and Hackberry Gulch, equals WT-1069 and J-7 (Price,1978), N10W,4m wide.											
76-224	W	Asotin	Black Butte	NE/SE30	7N	46E	SM?					yes
	Glass only. Near mouth of Hackberry Gulch,9m wide. Altered chemistry. Probably continuation of dike J-6 (Price,1978).											
76-225	W	Asotin	Fields Spring	SE/NE3	6N	45E	SM	W Rdg				yes
	Glass only. Roadcut along Grande Ronde River near tunnel. Dike obvious across river,6m wide. Equals dike G-19 (Price,1978).											
76-226	W	Asotin	Fields Springs	NW/NW3	6N	45E	SM	Um				yes
	Glass only. Selvage on dike 822672 = WT-1055, and G-17 (Price,1978). At tunnel along Grande Ronde River,9m wide.											
76-227	W	Asotin	Fields Spring	SW/NW35	7N	45E	SM	W Rdg				yes
	Glass only. Plagioclase-phyric dike E of 76-225,9m wide. Chemistry like 76-252,253.											
76-228	W	Asotin	Fields Spring	NW/NE35	7N	45E	GR?					yes
	Glass only. E of 76-227,roadcut on N side of river,7m wide.											
76-246	W	Columbia	Oregon Butte	SE/NE28	7N	41E	WP	Eck Mt	Dodge	RR-25	DODGE	yes
	Phyric dike NE of Lodgepole Spring,9m wide.											
76-248	W	Columbia	Godman Spring	NW/NW10	6N	40E	GR			RR-25	GR INC	
	Dike in trail just beyond end of road on Dexter Ridge. Possible projection of 76-249.											
76-249	W	Columbia	Godman Spring	SE/NE4	6N	40E	GR			RR-25	GR INC	yes
	Prominent dike crossing Beaver Creek,4800',9-12m wide.											
76-251	W	Columbia	Godman Spring	NE/NE5	7N	40E	GR			RR-25	GR INC	
	Northern of 2 dikes(Southern one = 73-229) along slopes above Touchet River near Touchet corral.											
76-252	W	Asotin	Black Butte	NE/SE14	7N	45E	SM	W Rdg		RR-24	UNC	yes
	Dike swarm on W wall of Shumaker Canyon. Olivine-bearing. Magnesian chemistry similar to flow 76-213.											
76-253	W	Asotin	Black Butte	NE/SE14	7N	45E	SM	W Rdg		RR-24	UNC	yes
	Same as 76-252.											
76-256	W	Asotin	Fields Spring	SE/NW19	7N	45E	GR					yes
	Glass only. Roadcut along Rattlesnake Grade,7m wide. Same as dike G-11 (Price,1978).											

Table 2a. Sample information for DSIW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
76-257	W	Asotin	Saddle Butte	SE/SE11	6N	43E	GR					yes
	Glass only. N side of Grande Ronde River, 12m wide. Probably equals dike G-8 (Price, 1978).											
76-258	W	Asotin	Black Butte	NW/NW2	6N	46E	GR					yes
	Glass only. Selvage of dike WT-37. Same as dike J-2 (Price, 1978).											
76-259	W	Asotin	Black Butte	NE/SE9	6N	46E	GR			RR-24	GR INC	yes
	Mouth of Cottonwood Creek. Same as dike J-3 (Price, 1978).											
76-260	O	Wallowa	Teepee Butte	SW/NE22	6N	46E	GR			RR-24	GR INC	yes
	Dike near intersection of Cottonwood and Horse Creeks.											
76-261	W	Asotin	Limekiln Rapids	SE/NE12	7N	46E	SM	W Rdg	Lewiston Orchards			yes
	Glass only. Thin, snaky dike along W side of Snake River.											
76-274	I	Nez Perce	Wapshilla Creek	SW/SE12	30N	4W	SM	Pomona?				yes
	Glass only. Powerline road, 1850', extends to 3600', 3m wide, N15W.											
76-278	W	Asotin	Mountain View	SW/SW4	7N	44E	GR			RR-24	GR INC	yes
	Dike below Crite Spring, 4640', 7m wide.											
77-210	W	Whitman	Penawawa	N/NE22	14N	42E	WP	Roza				yes
	Glass only. Dike = C-172.											
77-211	W	Whitman	Penawawa	NE/NE21	14N	42E	WP	Roza				yes
	Glass only. Dike below old road.											
77-214	I	Clearwater	Orofino East?	?33	36N	2E	WP	Pr Rp				yes
	Glass only. Younger of two dikes at site of WT-989, 990.											
77-225	O	Umatilla	Peterson Ridge	NE/SW14	5N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow dipping dike, 6-10m wide, N20E.											
77-230	O	Umatilla	Peterson Ridge	SW/NE28	6N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike cutting breccia, N70E, 60m wide, 3140'.											
77-231	O	Umatilla	Peterson Ridge	NE/NE28	6N	37E	WP	Fr Sp		RR-26	"FS INC"	yes
	Shallowing dipping dike, N60W, in small quarry. K20 high.											
77-232	O	Umatilla	Peterson Ridge	NW/SW27	6N	37E	WP	Fr Sp		RR-26	"FS INC"	yes
	Shallow-dipping dike, at least 50m wide, about N70E, Saddle Mountain Rd. K20 high.											
77-233	O	Umatilla	Peterson Ridge	NE/SW27	6N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike, 15m wide, N50E, intruding Dodge.											
77-234	O	Umatilla	Peterson Ridge	NE/NE28	5N	37E	WP	fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike, 1m wide, N30W, 2210', above N fork, Walla Walla River.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
77-235	O	Umatilla	Peterson Ridge	SE/SE21	5N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow dipping dike,base at 2680'.Slope above 77-234.											
77-237	O	Umatilla	Peterson Ridge	NE/NE28	5N	37E	WP	Fr Sp		RR-26	"FS INC"	yes
	Shallow-dipping dike,base at 2380',top at 2480'.K20 high.											
77-238	O	Umatilla	Peterson Ridge	NW/NW27	5N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,roadcut and slope up to 2160',N fork Walla Walla River.											
77-242	O	Umatilla	Bowlus Hill	SE/SE23	5N	36E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,6-9m wide,N25W,roadcut along N side of S fork of Walla Walla River											
77-243	O	Umatilla	Blalock Mountain	NW/SW10	4N	37E	WP	Fr Sp				yes
	Glass only. Shallow-dipping dike,2430',S side of S fork of Walla Walla River, basal selvage.											
77-244	O	Umatilla	Blalock Mountain	NE/SW10	4N	37E	WP	Fr Sp				yes
	Glass only. Shallow-dipping dike,lowest unit on N side of river at Rotary Park,upper selvage.											
77-245	O	Umatilla	Blalock Mountain	NE/NE10	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike = 77-243,3540'above Rotary Park.											
77-246	O	Umatilla	Peterson Ridge	NE/NE15	5N	37E	WP	Fr Sp				yes
	Glass only. Shallow-dipping dike,near headwaters of Cottonwood Cr.											
77-247	O	Umatilla	Big Meadows	SW/SW22	5N	38E	GR			RR-26	GR INC	yes
	Dike at least 30m wide,N20W.											
77-249	O	Umatilla	Blalock Mountain	SE/SE10	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike near Gaging station SE of Rotary Park.											
77-250	O	Umatilla	Blalock Mountain	NE/SW11	4N	37E	WP	Fr Sp		RR-26	"FS INC"	yes
	Shallow-dipping dike,4-9m wide,above 77-249.Na20 high.											
77-251	O	Umatilla	Blalock Mountain	NE/NE14	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,6m wide,above S fork of Walla Walla River at Tamarack Basin.											
77-257	O	Umatilla	Athena	NW/NW13	4N	35E	WP	Fr Sp				yes
	Glass only. Thin shallow-dipping dike,N45W,1870',roadcut along little dry creek.											
77-258	O	Umatilla	Athena	NW/NW13	4N	35E	WP	Fr Sp		RR-26	FS INC	
	Thicker shallow-dipping dike in same roadcut as 77-257.											
77-259	O	Umatilla	Athena	NW/NW24	4N	35E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,2330',roadcut along highway 204 E of Weston.											
77-260	O	Umatilla	Athena	NE/SE24	4N	35E	WP	Fr Sp		RR-26	"FS INC"	yes
	Shallow-dipping dike,at least 9m wide,W side of quarry.Na20,K20 high.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
		LOCATION					STRATIGRAPHY			CHEMISTRY		
77-261	O	Umatilla	Athena	NE/SE24	4N	35E	WP	Fr Sp		RR-26	FS INC	
	More phyric phase of 77-260 S end of quarry.											
77-265	O	Umatilla	Athena	NW/NW1	3N	35E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,roadcut along Pine Cr Rd,9m wide,2380'.											
77-266	O	Umatilla	Athena	SW/NW1	3N	35E	WP	Fr Sp				yes
	Glass only. Glass selvage within a sill above 77-265, roadcut, 2600'.											
77-267	O	Umatilla	Big Meadows	SE/SE18	6N	38E	GR			RR-26	GR INC	yes
	Dike along Mill Creek just inside Oregon,4-6m wide,N15W.											
77-268	O	Umatilla	Big Meadows	SE/NE1	5N	38E	GR			RR-26	GR INC	
	Dike along new logging road,headwaters of N fork of Walla Walla River,6m wide,N10W.											
77-269	O	Umatilla	Big Meadows	SE/NE15	5N	38E	WP	Fr Sp		RR-26	FS INC	yes
	Dike on hill 5093 SW of 77-269,9-12m wide.											
77-290	O	Umatilla	Tollgate	SW/SE22	4N	38E	GR			RR-26	GR INC	yes
	Dike,9-12m wide,N05W,forms 'great wall'.											
77-291	O	Umatilla	Tollgate	NW/SE22	4N	38E	GR			RR-26	GR INC	
	Dike NE of 77-290,6m wide,N05E.											
77-292	O	Umatilla	Tollgate	NW/SE22	4N	38E	GR			RR-26	GR INC	yes
	Dike 100m up ridge from 77-291,3m wide,N25E.											
77-311	O	Umatilla	Blalock Mountain	SW/NW25	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike exposed on new logging road,headwaters of Elbow Cr,3730'.											
77-312	O	Umatilla	Blalock Mountain	NE/SW14	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike = 77-249,S of S fork of Walla Walla River,3130'.											
77-313	O	Umatilla	Blalock Mountain	SW/SE15	4N	37E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike = 77-245,W of Elbow Creek,3330'.											
77-338	O	Umatilla	Thorn Hollow	NE/SE32	3N	35E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,cutting aphyric flow along grade.											
77-339	O	Umatilla	Thorn Hollow	NE/SE32	3N	35E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike,roadcuts just S of saprolite,1900'.											
77-340	O	Umatilla	Thorn Hollow	NE/SE32	3N	35E	WP	Fr Sp		RR-26	FS INC	yes
	Shallow-dipping dike cutting breccia top below 77-338.											
77-341	O	Umatilla	Thorn Hollow	NE/SE32	3N	35E	WP	Fr Sp		RR-26	FS INC	
	Shallow-dipping dike cut(?) by 77-340.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	LOCATION: COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY: FM	MEMBER	FLOW	CHEMISTRY: METHOD	CHEM TYPE	GLASS
77-343	O	Umatilla	Thorn Hollow	NW/SW33	3N	35E	WP	Fr Sp		RR-26	FS INC	
Shallow-dipping dike intruding breccia top just NE of 77-342.												
77-344	O	Umatilla	Thorn Hollow	NW/NW4	2N	35E	WP	Fr Sp		Ti-4	FS INC	
Shallow-dipping dike(?) ,base of Thorn Hollow grade. TiO2 = 3.1												
C-169	W	Whitman	Penawawa 15'	NE/NE21	14N	42E	GR			XRF-1	GR INC	
C-170	W	Whitman	Penawawa 15'	NE/SE20	14N	42E	GR			XRF-1	GR INC	
C-172	W	Whitman	Penawawa 15'	SE/NE22	14N	42E	WP	Roza		XRF-1	ROZA	
819671	W	Garfield	Almota	SW/SE35	14N	42E	WP	Roza		RR-3	ROZA	
Glassy selvage collected as DSTW 72-23. Equals WT-R14.												
822672	W	Asotin	Fields Spring	NW/NW3	6N	45E	SM	Um		RR-3	UNATILLA	
Same as dike DSTW 76-226, WT-1055, and G-17(Price,1978).												
821674	W	Asotin	Mountain View	SW/SE33	7N	44E	WP	Eck Mt	Dodge	RR-3	"DODGE"	
FeO high. Equals dike G-10 (Price,1978), WT-1049.												
822675	W	Asotin	Mountain View	NW/NW11	6N	44E	GR			RR-3	GR INC	
Same as dike G-2 (Price,1978), WT-50.												
WT-R12	W	Garfield	Penawawa 15'	NW/SW26	14N	42E	WP	Fr Sp		RR-18	UNC	
Unusual high SiO2, TiO2, low FeO chemistry. Equal to DSTW 71-24, 2m wide, N30W.												
WT-R13	W	Garfield	Penawawa 15'	NW/SW26	14N	42E	WP	Roza		RR-18	ROZA	
2m wide, N30W.												
WT-R14	W	Garfield	Almota	SW/SE35	14N	42E	WP	Roza		RR-18	ROZA	
Casey Creek Road about 3km NW of Mayview, 2m wide, N18W, 1460'. Equals 819671.												
WT-3	O	Baker	Mineral 15'	S30	11S	46E	IM?			RR-18	UNC	
Cuts Mesozoic sediments, 7m wide, N10W.												
WT-4	O	Baker	Mineral 15'	S30	11S	46E	WP	Eck Mt	Dodge	RR-18	DODGE	
Cuts Mesozoic sediments, 6m wide, N20E.												
WT-5	O	Baker	Mineral 15'	S30	11S	46E	GR			RR-18	GR INC	
Cuts Mesozoic sediments, 6m wide, N30E.												
WT-6	O	Baker	Mineral 15'	NW/NE19	11S	46E	IM?			RR-18	UNC	
Cuts Mesozoic sediments, 22m wide, N27W.												

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FMI	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
WT-10	O	Baker	Huntington 15'	NW/NW22	14S	44E	GR			RR-18	GR INC	
	7m wide, N05W.											
WT-12	O	Malheur	Huntington 15'	NE/SW3	15S	43E	IM?			RR-18	UNC	
	6m wide, N10W.											
WT-17	I	Washington	Sturgill Peak 15'	NE/SE20	15N	5W	GR			RR-18	GR INC	
	6m wide, N20W.											
WT-18	I	Washington	Sturgill Peak 15'	SW/NW28	14N	5W	GR			RR-18	GR INC	
	22m wide, N30W.											
WT-19	I	Washington	Sturgill Peak 15'	SW/NW28	14N	5W	IM?			RR-18	UNC	
	7m wide, N30W.											
WT-20	I	Washington	Sturgill Peak 15'	NE/NW19	14N	4W	GR			RR-18	GR INC	
	6m wide, N05E. P205 high.											
WT-26	I	Adams	New Meadows 15'	7	1E	18N	IM?			RR-18	UNC	
	W side of US 95 about 1.2 miles N of Evergreen, 6m wide, N15W.											
WT-29	I	Adams	Copperfield 15'	SW/NE13	18N	4W	IM?			RR-18	UNC	
	6m wide, N20W.											
WT-31	W	Columbia	Godman Spring	NE/NE5	7N	40E	GR			RR-18	GR INC	
	Equals DSTW 73-229, 16m wide, N10E.											
WT-32	W	Garfield	Penawawa 15'	SW/SW26	14N	42E	WP	Roza		RR-18	ROZA	
	2m wide, 1140'.											
WT-33	W	Garfield	Penawawa 15'	NW/NE27	14N	42E	WP	Roza		RR-18	ROZA	
	4m wide, 800'.											
WT-37	W	Asotin	Anatone 15'	SW/NE2	6N	46E	GR			RR-18	GR INC	
	Same as dike J-2 (Price,1978), and DSTW 76-258.											
WT-39	W	Whitman	Almota	SW/NW34	14N	43E	GR			RR-18	GR INC	
	N side of Snake River, 8m wide.											
WT-40	W	Whitman	Almota	SW/NW34	14N	43E	GR			RR-18	GR INC	
	N side of Snake River, 8m wide.											
WT-41	W	Whitman	Almota	SE/SW14	14N	42E	GR			RR-18	GR INC	
	WT-41,42,43 form composite dike about 8m wide, N side of Snake River.											
WT-42	W	Whitman	Almota	SE/SW14	14N	42E	GR			RR-18	GR INC	
	See WT-41.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
WT-43	W	Whitman	Almota	SE/SW14	14N	42E	GR			RR-18	GR INC	
	See WT-41.											
WT-45	W	Asotin	Peola 15'	SW/NW16	9N	44E	WP	Roza		RR-18	ROZA	
	5m wide.											
WT-47	W	Asotin	Saddle Butte 15'	NW/NW35	9N	43E	GR			RR-18	GR INC	
	S of N fork of Asotin Creek, 17m wide.											
WT-48	W	Asotin	Peola 15'	NE/NE16	9N	44E	GR			RR-18	GR INC	
	Asotin Creek, 9m wide.											
WT-49	W	Asotin	Saddle Butte 15'	NE/SE1	7N	42E	WP	Eck Mt	Dodge	RR-18	DODGE	
	W of Ray Ridge and E of E fork of First Creek, 17m wide.											
WT-50	W	Asotin	Saddle Butte 15'	NE/NW11	6N	44E	GR			RR-14	GR INC	
	Same as dike 822675, and G-2 (Price,1978), 15m wide, N10W.											
WT-51	O	Wallowa	Table Mountain	SW/NE3	3N	45E	GR			RR-14	GR INC	
	Joseph Creek, 21m wide, N-S.											
WT-52	O	Wallowa	Table Mountain	SW/NE3	3N	45E	GR			RR-14	"GR INC"	
	Joseph Creek, 24m wide, N04E. P2O5 very high. Sample contaminated?											
WT-54	O	Wallowa	Joseph 15'	NW/NE36	1S	46E	WP	Eck Mt	Dodge	RR-18	"DODGE"	
	19m wide, N02W. High MgO.											
WT-55	O	Wallowa	Harl Butte 15'	NW/SE17	1S	47E	GR			RR-18	GR INC	
	6m wide, N-S.											
WT-56	O	Wallowa	Harl Butte 15'	SE/NW17	1S	47E	GR			RR-18	GR INC	
	11m wide, N03W. Equals 71-1.											
WT-57	O	Wallowa	Troy	SE/NE19	5N	43E	SM	El Mt	Wenaha	RR-18	ELEPHANT	
	25m wide, N13W.											
WT-58	O	Wallowa	Troy	NE/NE1	5N	42E	SM	El Mt	Wenaha	RR-18	ELEPHANT	
	18m wide, N20W.											
WT-59	O	Wallowa	Eagle Cap 15'		4S	44E	IM?			RR-18	UNC	
	Cuts Triassic metasediments, 9m wide, N10W.											
WT-61	O	Wallowa	Eagle Cap 15'		4S	44E	IM?			RR-18	FS INC	
	Cuts Mesozoic granitic rocks, 7m wide, N10W.											
WT-64	O	Wallowa	Minam	SW/SE36	2N	41E	GR			RR-18	GR INC	
	2m wide, N05E.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
WT-64	O	Wallowa	Minam	SW/SE36	2N	41E	GR			RR-14	GR INC	
	Same dike.											
WT-65	O	Union	China Cap	NW/NW36	4S	42E	GR			RR-18	GR INC	
	7m wide, N8GW.											
WT-67	O	Union	China Cap	NW/NE35	4S	42E	GR			RR-18	GR INC	
	3m wide, N70W.											
WT-71	O	Baker	Cornucopia 15'	NW/SW21	6S	45E	IM?			RR-18	UNC	
	Cuts Mesozoic granitic rocks, 6m wide, N05W.											
WT-73	O	Baker	Cornucopia 15'	NW/SW21	6S	45E	IM?			RR-18	UNC	
	Cuts Mesozoic granitic rocks, 5m wide, N20W.											
WT-76	O	Baker	Cornucopia 15'	SW/NW21	6S	45E	GR			RR-18	GR INC	
	Cuts Mesozoic granitic rocks, 9m wide, N55E.											
WT-77	O	Baker	Cornucopia 15'		6S	45E	GR			RR-18	GR INC	
WT-78	O	Baker	Cornucopia 15'	NE/SW21	6S	45E	IM?			RR-18	DODGE	
	Cuts Mesozoic granitic rocks, 7m wide, N20W.											
WT-82	O	Baker	Cornucopia 15'	NE/SE20	6S	45E	GR			RR-18	GR INC	
	Cuts Mesozoic granitic rocks, 9m wide, N15W.											
WT-83	I	Washington	Copperfield 15'	NE/SW26	17N	5W	IM?			RR-18	UNC	
	2m wide, N10W.											
WT-84	O	Baker	Copperfield 15'	NE/SE25	8S	47E	GR			RR-18	GR INC	
	3m wide, N09W.											
WT-85	O	Baker	Copperfield 15'	SW/SE25	8S	47E	GR			RR-18	GR INC	
	3m wide, N15W.											
WT-87	O	Baker	Copperfield 15'	S4	8S	48E	GR			RR-18	GR INC	
	2m wide, N10W.											
WT-91	O	Wallowa	Homestead 15'	SW/SW31	4S	48E	GR			RR-18	GR INC	
	9m wide, N10W.											
WT-93	O	Wallowa	Marl Butte 15'	SW/SW11	3S	48E	GR			RR-18	GR INC	
	9m wide, N08W.											
WT-112	O	Baker	Halfway 15'	NE/SW23	9S	46E	GR			RR-18	GR INC	
	4m wide, N-S.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	LOCATION: COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY: FM	MEMBER	FLOW	CHEMISTRY: METHOD	CHEM TYPE	GLASS
WT-119	O	Baker	Mineral 15'	NE/SW29	10S	46E	GR			RR-18	GR INC	
	12m wide, N10W. Cuts pre-Tertiary rocks.											
WT-120	O	Baker	Mineral 15'	N8	11S	46E	GR?			RR-18	"GR INC"	
	7m wide, N05W. Cuts pre-Tertiary rocks. CaO low. Bad analysis.											
WT-121	O	Baker	Mineral 15'	S30	11S	46E	GR			RR-18	GR INC	
	9m wide, N-S. Cuts pre-Tertiary rocks.											
WT-123	I	Washington	Sturgill Peak 15'	NE/SW28	14N	5W	GR			RR-18	GR INC	
	9m wide, N22W.											
WT-124	I	Washington	Sturgill Peak 15'	NE/SE29	14N	5W	GR			RR-18	GR INC	
	7m wide, N20W.											
WT-125	I	Washington	Sturgill Peak 15'	NE/SE29	14N	5W	GR			RR-18	GR INC	
	7m wide, N22W.											
WT-126	I	Washington	Sturgill Peak 15'	SW/NW33	14N	5W	GR			RR-18	GR INC	
	9m wide, N20W.											
WT-128	I	Washington	Mann Creek 15'	NW/SE15	13N	5W	IM?			RR-18	UNC	
	9m wide, N25W.											
WT-141	O	Baker	Huntington 15'	NW/NW22	14S	44E	GR?			RR-18	GR INC	
	5m wide, N05W.											
WT-143	O	Baker	Huntington 15'	SE/SE18	13S	43E	GR			RR-18	GR INC	
	9m wide, N-S. Cuts pre-Tertiary rocks.											
WT-151	I	Idaho	Florence	NE/NE3	26N	3E	WP	Pr	Rp	RR-18	LOLO INC	
	30m wide, N30E. Cuts pre-Tertiary rocks.											
WT-152	I	Idaho	Dairy Mountain	SE/SW34	27N	3E	?			RR-18	UNC	
	47m wide, N20W. Cuts pre-Tertiary rocks. Very high P2O5.											
WT-153	I	Idaho	Dairy Mountain	SE/SW34	27N	3E	?			RR-18	UNC	
	40m wide. Cuts pre-Tertiary rocks. Very high P2O5.											
WT-154	I	Idaho	Dairy Mountain	NW/SW34	27N	3E	?			RR-18	UNC	
	18m wide, N10W. Cuts pre-Tertiary rocks.											
WT-155	I	Idaho	Dairy Mountain	NW/SW34	27N	3E	?			RR-18	UNC	
	9m wide, N10W. Cuts pre-Tertiary rocks.											
WT-157	I	Idaho	Dairy Mountain	NW/SW34	27N	3E	IN?	?		RR-14	"FS INC"	
	10m wide, N10W. Cuts pre-Tertiary rocks. CaO low, Na2O and K2O high.											

Table 2a. Sample information for DSIW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION ST	COUNTY	QUADRANGLE	SECTION	T	R	STRATIGRAPHY FM	MEMBER	FLOW	CHEMISTRY METHOD	CHEM TYPE	GLASS
WT-159	I	Idaho	Riggins	SE/SW26	25N	1E	IM?			RR-14	UNC	
2m wide, N35W. Cuts pre-Tertiary rocks.Similar chemistry to dikes 76-252,253.												
WT-160	I	Idaho	Lucile	NE/SW2	25N	1E	?			RR-18	UNC	
3m wide, N-S. Cuts Mesozoic Slate.												
WT-164	I	Washington	Olds Ferry	S27	14S	45E	GR			RR-18	GR INC	
4m wide, N05W.												
WT-171	I	Washington	Copperfield 15'	NW/SW24	17N	5W	GR			RR-18	GR INC	
5m wide, N07W.												
WT-175	I	Washington	Sturgill Peak 15'	SW/SE7	15N	5W	GR			RR-18	GR INC	
4m wide, N10W.												
WT-223	O	Baker	Sparta 15'	SW/SW2	9S	44E	GR			RR-18	GR INC	
4m wide, N07W.												
WT-224	O	Baker	Sparta 15'	SW/SW2	9S	44E	GR			RR-18	GR INC	
2m wide, N05W.												
WT-500	I	Idaho	Florence	SW/NW10	26N	3E	IM?			RR-14	"FS INC"	
13m wide, N30E. Cuts Precambrian(?) rocks. CaO low,K2O high.												
WT-501	I	Idaho	Florence	NW/NW10	26N	3E	IM?			RR-14	UNC	
30m wide, N30E. Cuts Precambrian(?) rocks. P2O5,TiO2 high.												
WT-502	I	Idaho	Florence	NE/NW10	26N	3E	IM?			RR-14	UNC	
6m wide, N28E. Cuts Precambrian(?) rocks. K2O,TiO2 high.												
WT-818	I	Lewis	Sixmile Creek	SE/NW12	34N	2E	IM?			RR-14	UNC	
6m wide, N05W. Cuts Mesozoic granitic rocks. Chemistry similar to LOLO INC except for high TiO2.												
WT-819	I	Lewis	Sixmile Creek	SE/NE13	34N	2E	IM?			RR-14	UNC	
8m wide, N10W. Cuts Mesozoic granitic rocks. Chemistry similar to LOLO INC except for high TiO2.												
WT-845	I	Idaho	Slate Creek	NW/SW21	27N	1E	WP?	Pr	Rp?	RR-14	"LOLO INC"	
Slate Creek, 13m wide N30E. Cuts pre-Tertiary rocks. High CaO,low K2O.												
WT-846	I	Idaho	Slate Creek	NW/SW21	27N	1E	WP	Pr	Rp	RR-14	"LOLO INC"	
Same dike as 845. High CaO.												
WT-870	I	Idaho	Kooskia	NE/SE31	34N	4E	WP	Pr	Rp	RR-14	ROSALIA	
9m wide, N03W. Cuts Mesozoic gabbroic rocks.												
WT-872	I	Lewis	Sixmile Creek	SE/SE15	35N	2E	WP	Pr	Rp	RR-14	"LOLO INC"	
13m wide, N10W. Cuts Mesozoic granitic rocks. High TiO2,low Al2O3.												

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
WT-873	I	Lewis	Sixmile Creek	SW/SE15	35N	2E	WP	Pr Rp		RR-14	"LOLO INC"	
	1m wide, N25E. Cuts Mesozoic granitic rocks. Low Al2O3.											
WT-874	I	Lewis	Sixmile Creek	NW/NE22	35N	2E	WP	Pr Rp		RR-14	"LOLO INC"	
	15m wide, N10W. Cuts Mesozoic granitic rocks. Low Al2O3.											
WT-875	I	Lewis	Sixmile Creek	NW/SW26	35N	2E	WP	Pr Rp		RR-14	"LOLO INC"	
	7m wide, N18W. Cuts Mesozoic granitic rocks. Low Al2O3.											
WT-985	I	Idaho	Huddleston Bluff		29N	5E	IM?			RR-14	"GR INC"	
	Al2O3 high. W of Junction of Peasley Creek with S fork of Clearwater River. Cuts pre-Cambrian rocks.											
WT-989	I	Clearwater	Orofino East	NW/NE33	36N	2E	WP	Pr Rp		RR-14	LOLO INC	
	8m wide, N10W. Cuts Mesozoic quartz diorite.											
WT-990	I	Clearwater	Orofino East	NW/NE33	36N	2E	WP	Pr Rp		RR-14	"LOLO INC"	
	Same dike as WT-989, high TiO2.											
WT-1023	I	Idaho	Syringa	NW/SE3	32N	6E	?			RR-14	UNC	
	1m wide, N20W. Cuts Precambrian rocks.											
WT-1048	O	Wallowa	Paradise	NW/NW29	5N	45E	GR			RR-14	GR INC	
	Same as dike J-30 (Price, 1978). 13m wide, N07W.											
WT-1049	W	Asotin	Mountain View	SW/SE33	7N	44E	WP	Eck Mt	Dodge	RR-14	DODGE	
	Same dike as 821674 and G-10 (Price, 1978). 10m wide, N10W.											
WT-1050	W	Asotin	Anatone	NW/NW36	7N	44E	GR			RR-14	GR INC	
	Same as dike G-3 (Price, 1978). 4m wide, N08W.											
WT-1055	W	Asotin	Fields Spring	NW/NW3	6N	45E	SM	Um		RR-14	UMATILLA	
	Same dike as 822672, DSTW 76-226, and G-17 (Price, 1978). 18m wide, N03W.											
WT-1056	W	Asotin	Anatone	NE/SE34	7N	45E	GR			RR-14	GR INC	
	Same as dike G-10 (Price, 1978). 15m wide, N18E.											
WT-1063	W	Asotin	Saddle Butte 15'	SE/SW2	7N	44E	GR			RR-14	GR INC	
	SW of Anatone Butte, 6m wide, N14W, 4000-4400'.											
WT-1064	O	Wallowa	Table Mountain	SE/NW34	4N	45E	SM	El Mt		RR-14	"ELEPHANT"	
	Joseph Creek, 7m wide, N-S. High MgO, P2O5.											
WT-1065	O	Wallowa	Table Mountain	NW/SE3	3N	45E	GR			RR-14	GR INC	
	Joseph Creek, 10m wide, N02W.											
WT-1068	W	Asotin	Saddle Butte 15'	NE/NE15	6N	44E	GR			RR-14	GR INC	
	Same as dike G-1 (Price, 1978). Crosses Buford Creek in section 10 about 1840', 9m wide, N10W.											

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
WT-1069	W	Asotin	Anatone	NW/SW8	6N	46E	GR			RR-14	"GR INC"	
Same dike as 76-223. High Al2O3. Same as dike J-7 (Price,1978). 7m wide, N04W.												
WT-1070	W	Asotin	Anatone	SW/NW8	6N	46E	SM? W Rdg?			RR-14	"LOLO INC"	
Low SiO2,high TiO2. Same as dike J-6 (Price,1978). 12m wide, N16W.												
WT-1071	W	Asotin	Anatone	NW/NW9	6N	46E	GR			RR-14	GR INC	
Same as dike J-5 (Price,1978). 7m wide, N02E.												
WT-1072	W	Asotin	Anatone	NW/NW9	6N	46E	GR			RR-14	GR INC	
Same as dike J-4 (Price,1978). 8m wide, N-S.												
WT-1073	W	Asotin	Anatone	SW/NE35	7N	46E	GR			RR-14	GR INC	
Same as dike J-1 (Price,1978). Cottonwood Creek, 15m wide, N05W, 950'.												
WT-1133	W	Asotin	Saddle Butte 15'	SE/SE11	6N	43E	GR			RR-14	GR INC	
Grande Ronde River, 11m wide, N17W, 1500'.												
WT-1135	W	Asotin	Anatone	SW/SE25	7N	44E	WP	Roza		RR-14	"FS INC"	
High SiO2. Same as dike G-5 (Price,1978). Rattlesnake grade, 2m wide, N15W, 1900'.												
WT-1136	W	Whitman	Silcott	NE/SE15	11N	45E	GR			RR-14	GR INC	
9m wide, N12W. Cuts upper basalts of Lewiston structure just N of Snake River. Possibly steeply dipping lava flow.												
WT-1173	O	Wallowa	Imnaha	NW/SW3	2N	48E	GR			RR-14	GR INC	
6m wide, N14E. Cuts pre-Tertiary rocks.												
WT-1174	O	Wallowa	Howard Butte	NE/SE19	2N	41E	GR			RR-14	GR INC	
20m wide, N05W.												
WT-2416	O	Union	Eagle Cap 15'		5S	43E	GR			RR-18	GR INC	
11m wide, N53W. Cuts Mesozoic granitic rocks.												
WT-2420	O	Union	Eagle Cap 15'		5S	43E	GR			RR-18	GR INC	
5m wide, N50E. Cuts Mesozoic granitic rocks.												
WT-2443	O	Union	Eagle Cap 15'		5S	44E	GR			RR-18	GR INC	
1m wide, N70W. Cuts Mesozoic granitic rocks.												
WT-2465	O	Wallowa	Eagle Cap 15'		4S	44E	GR			RR-18	GR INC	
12m wide, N15E. Cuts Mesozoic granitic rocks.												
WT-2488	O	Wallowa	Eagle Cap 15'		4S	44E	GR?			RR-18	GR INC	
4m wide, N10E. Cuts Mesozoic granitic rocks.												
WT-2491	O	Wallowa	Eagle Cap 15'		4S	44E	GR			RR-18	GR INC	
8m wide, N14W. Cuts Mesozoic granitic rocks.												

Table 2a. Sample information for DSTW- dikes collected 1971-1977.

SAMPLE NUMBER	ST	LOCATION: COUNTY	LOCATION: QUADRANGLE	LOCATION: SECTION	T	R	STRATIGRAPHY: FM	STRATIGRAPHY: MEMBER	STRATIGRAPHY: FLOW	CHEMISTRY: METHOD	CHEMISTRY: CHEM TYPE	CHEMISTRY: GLASS
WT-2495	O	Wallowa	Eagle Cap 15'		4S	44E	WP? Eck Mt? Dodge?			RR-18	DODGE	
	9m wide, N08W. Cuts Mesozoic granitic rocks.											
WT-2679	O	Wallowa	Eagle Cap 15'		4S	43E	GR			RR-18	GR INC	
	11m wide, N55W. Cuts Mesozoic granitic rocks.											
WT-2684	O	Union	China Cap	NW/NE26	4S	42E	GR			RR-18	GR INC	
	15m wide, N40W. Cuts Mesozoic granitic rocks.											
WT-2686	O	Union	China Cap	SE/NW23	4S	42E	GR			RR-18	GR INC	
	4m wide, N02E. Cuts Mesozoic granitic rocks.											
WT-2690	O	Union	China Cap	SE/NE13	4S	42E	GR			RR-18	GR INC	
	8m wide, N17W. Cuts Mesozoic granitic rocks.											
WT-2693	O	Union	China Cap	SW/NE13	4S	42E	GR			RR-18	GR INC	
	9m wide, N14W. Cuts Mesozoic granitic rocks.											
WT-2699	O	Wallowa	Eagle Cap 15'		4S	43E	IM?			RR-18	GR INC	
	7m wide, N32W. Cuts Mesozoic granitic rocks. Possibly fractionated DODGE chemical type.											
WT-2717	O	Wallowa	Eagle Cap 15'		4S	44E	IM			RR-18	GR INC	
	14m wide, N17W. Cuts Mesozoic granitic rocks.											
WT-2719	O	Wallowa	Eagle Cap 15'		4S	44E	IM			RR-18	UNC	
	14m wide, N20W. Cuts Mesozoic granitic rocks.											
WT-2721	O	Wallowa	Eagle Cap 15'		5S	44E	GR			RR-18	GR INC	
	4m wide, N18W. Cuts Mesozoic granitic rocks.											
WT-2724	O	Union	Eagle Cap 15'		5S	44E	IM?			RR-18	UNC	
	8m wide, N15W. Cuts Mesozoic granitic rocks.											
WT-2725	O	Wallowa	Eagle Cap 15'		4S	44E	GR			RR-18	GR INC	
	11m wide, N28W. Cuts Mesozoic granitic rocks.											
WT-2730	O	Wallowa	Eagle Cap 15'		4S	44E	GR			RR-18	GR INC	
	12m wide, N30W. Cuts Mesozoic granitic rocks.											
WT-2733	O	Wallowa	Eagle Cap 15'		4S	44E	GR			RR-18	"GR INC"	
	9m wide, N25W. Cuts Mesozoic granitic rocks. Low P2O5.											
WT-2745	O	Union	Jim White Ridge	SE/SE21	3S	42E	GR			RR-18	GR INC	
	14m wide, N30W. Cuts Mesozoic granitic rocks.											
WT-2774	O	Wallowa	Enterprise 15'	SW/NW30	2S	43E	WP? Eck Mt? Dodge?			RR-18	DODGE	
	12m wide, N07W.											

Table 2a. Sample information for OSTW- dikes collected 1971-1977.

SAMPLE NUMBER	LOCATION						STRATIGRAPHY			CHEMISTRY		
	ST	COUNTY	QUADRANGLE	SECTION	T	R	FM	MEMBER	FLOW	METHOD	CHEM TYPE	GLASS
WT-2808	O	Wallowa	Jim White Ridge	SE/NW26	2S	42E	GR			RR-18	GR INC	
	11m wide, N14W.											
WT-2811	O	Wallowa	Jim White Ridge	SW/NE26	2S	42E	GR			RR-18	GR INC	
	12m wide, N15W.											
WT-2814	O	Wallowa	Fox Point	SW/NE1	2S	42E	WP?	Eck Mt?	Dodge?	RR-18	DODGE	
	10m wide, N08W.											
WT-2837	O	Wallowa	Jim White Ridge	SE/NW27	2S	42E	WP?	Eck Mt?	Robinette Mountain?	RR-18	"ROBIN"	
	9m wide, N27W. Low CaO,TiO2,P2O5.											
WT-2842	O	Wallowa	Jim White Ridge	SW/NE34	2S	42E	WP?	Eck Mt?	Robinette Mountain?	RR-18	"ROBIN"	
	8m wide, N24W. Low CaO,P2O5											
WT-2851	O	Wallowa	Jim White Ridge	SE/NE9	3S	42E	IM?			RR-18	UNC	
	4m wide, N13E. Cuts Mesozoic granitic rocks.											
WT-3023	O	Wallowa	Jim White Ridge	NE/SE11	3S	42E	GR			RR-18	GR INC	
	11m wide, N17W. Cuts Mesozoic granitic rocks.											

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	71-1	71-12	71-13	71-86	71-110	71-113	71-117	72-24A	72-A24	72-24B	72-B24	72-219	73-29
SIO2	53.70	54.20	54.50	48.50	47.20	46.60	47.10	51.40	51.29	50.40	49.58	49.80	50.70
AL203	13.70	13.00	13.30	12.70	13.30	12.00	14.80	14.00	13.83	15.20	14.31	13.90	13.70
FE203	2.00	4.20	2.70	5.90	2.10	3.60	5.50	4.50	4.29	4.90	6.41	2.20	1.90
FEO	10.90	9.58	10.23	7.40	11.57	13.69	8.55	6.80	6.96	6.50	6.57	11.00	12.40
MGO	4.00	2.90	3.50	3.10	6.20	4.30	5.00	3.80	3.90	3.10	3.22	5.80	4.40
CAO	7.40	6.70	7.30	9.10	10.80	8.80	10.10	8.50	8.99	8.70	8.86	9.50	7.40
NA20	2.70	3.50	3.40	2.20	2.50	2.30	2.50	2.30	2.49	2.60	2.49	2.50	2.60
K20	1.50	2.00	1.90	1.10	1.20	1.30	0.70	1.40	1.48	1.20	1.09	0.90	1.40
H20	1.10	0.70	0.87	3.30	0.53	1.73	1.28	3.20	2.33	3.40	3.49	1.00	1.38
TIO2	2.10	2.46	2.21	3.90	3.28	3.60	3.55	3.30	3.38	3.00	3.01	3.00	3.00
P2O5	0.48	0.83	0.38	1.80	0.72	1.52	0.73	0.79	0.74	0.68	0.66	0.70	0.70
MNO	0.24	0.28	0.21	0.24	0.23	0.31	0.21	0.20	0.20	0.20	0.18	0.24	0.25
CO2	0.00	0.06	0.09	0.00	0.16	0.27	0.14	0.05	0.02	0.05	0.02	0.01	0.02
TOTAL	99.82	100.41	100.59	99.14	99.79	100.02	100.16	100.24	99.90	99.93	99.89	100.55	99.85

SAMPLE	73-60	73-147	73-163	73-229	73-230	73-240	73-241	73-384	73-387	74-4	74-307	74-315	75-42
SIO2	49.20	46.30	46.40	52.40	49.70	52.60	52.90	51.50	53.30	51.80	49.31	49.08	46.00
AL203	14.30	13.10	13.70	13.80	16.30	13.00	11.80	12.60	12.90	14.10	14.09	14.15	14.60
FE203	2.20	5.00	4.80	3.30	1.10	3.10	2.40	3.10	4.10	2.30	13.61	13.39	7.30
FEO	11.40	9.70	8.20	8.70	8.40	9.40	12.30	8.80	9.20	9.70	0.00	0.00	7.90
MGO	5.50	5.20	5.50	5.40	7.90	4.40	4.50	4.30	3.70	4.90	4.22	3.90	5.50
CAO	8.60	9.95	9.50	8.50	10.80	7.60	7.50	7.30	6.70	8.60	9.44	9.86	9.60
NA20	2.20	2.00	2.80	2.80	2.40	2.80	2.70	2.60	3.00	2.80	2.66	2.63	1.20
K20	1.10	0.75	0.58	0.87	0.25	1.20	1.20	1.10	1.70	1.00	1.09	0.79	0.55
H20	1.10	2.40	3.60	1.79	1.20	1.60	1.95	4.90	1.73	1.53	1.36	4.22	3.00
TIO2	3.20	3.60	3.50	1.60	0.94	2.50	3.20	2.00	2.40	1.90	2.61	2.53	3.30
P2O5	0.87	0.95	0.90	0.33	0.15	0.46	0.57	0.49	0.44	0.34	0.60	0.58	0.75
MNO	0.23	0.25	0.23	0.15	0.15	0.15	0.18	0.15	0.16	0.16	0.17	0.19	0.26
CO2	0.04	0.05	0.05	0.05	0.01	0.02	0.03	0.01	0.03	0.01	0.00	0.00	0.05
TOTAL	99.94	99.25	99.76	99.69	99.30	98.83	101.23	98.85	99.36	99.14	99.16	101.32	100.01

SAMPLE	75-43	75-108	75-113	75-114	75-115	75-152	75-154	75-157	75-158	75-204	75-205	75-226	75-228
SIO2	47.30	53.90	54.00	54.00	51.90	54.50	53.30	53.60	54.60	53.86	52.17	51.60	51.46
AL203	14.40	13.90	15.40	14.70	14.40	14.20	14.50	14.10	13.70	13.66	14.17	14.10	13.91
FE203	7.20	2.30	3.50	2.40	2.20	2.20	2.00	3.50	2.60	13.99	12.62	12.80	12.94
FEO	7.10	9.90	5.50	7.10	9.40	10.20	7.60	9.00	10.40	0.00	0.00	0.00	0.00
MGO	4.90	4.20	5.30	6.20	5.70	4.00	5.90	3.70	3.80	3.93	5.70	5.66	5.91
CAO	9.80	8.00	9.90	9.50	9.30	7.10	9.10	6.70	7.00	7.00	9.65	9.14	9.93
NA20	2.30	2.70	2.80	2.70	2.80	3.10	2.80	3.00	3.20	20.26	3.01	3.16	3.30
K20	0.63	1.40	0.71	0.88	0.87	1.70	1.00	2.00	1.60	1.64	1.11	0.88	0.68
H20	3.30	1.44	1.68	1.36	1.23	0.74	0.93	1.08	1.12	0.00	0.00	0.00	0.00
TIO2	3.30	2.30	1.30	1.20	1.70	2.10	1.30	2.20	2.20	2.18	1.64	1.68	1.53
P2O5	0.87	0.51	0.24	0.28	0.30	0.40	0.29	0.41	0.41	0.41	0.26	0.28	0.33
MNO	0.23	0.19	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.20	0.20	0.19	0.21
CO2	0.01	0.03	0.02	0.05	0.02	0.02	0.04	0.01	0.02	0.00	0.00	0.00	0.00
TOTAL	101.34	100.77	100.51	100.53	99.98	100.42	98.91	99.46	100.81	117.13	100.53	99.49	100.20

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	76-246	76-248	76-249	76-251	76-252	76-253	76-259	76-260	76-278	77-225	77-230	77-231	77-232
SIO2	51.00	54.20	51.80	52.10	49.40	48.40	55.50	53.10	54.10	50.10	49.80	50.60	51.00
AL203	14.30	14.40	14.20	14.20	15.70	16.60	14.00	14.40	13.60	12.90	13.10	13.00	13.00
FE203	3.90	2.70	1.60	1.60	2.10	3.10	1.70	2.30	2.30	8.20	3.50	3.20	2.30
FEO	7.00	6.80	9.60	9.60	9.00	6.20	9.80	8.80	10.20	6.90	11.40	11.20	12.10
MGO	6.30	4.50	5.70	5.90	8.00	8.50	3.90	5.40	3.80	4.20	4.30	3.50	3.90
CAO	10.00	8.60	9.10	9.20	11.10	11.10	7.40	8.90	7.40	8.30	8.20	8.00	8.20
NA20	3.10	3.00	2.80	2.90	2.20	2.10	3.30	2.80	3.10	2.60	2.50	2.50	2.40
K20	0.60	0.91	0.96	0.64	0.40	0.32	1.40	1.20	1.60	1.40	1.30	1.60	1.70
H20	1.30	1.20	0.59	1.06	0.87	1.60	1.20	1.40	1.30	1.11	1.00	1.43	1.12
TIO2	1.50	2.30	1.80	1.80	1.90	1.60	2.10	1.70	2.60	3.00	3.10	2.90	2.90
P205	0.35	0.37	0.36	0.33	0.47	0.38	0.34	0.31	0.42	0.65	0.66	0.76	0.76
MNO	0.16	0.13	0.15	0.15	0.15	0.13	0.16	0.15	0.16	0.26	0.28	0.29	0.26
CO2	0.02	0.01	0.01	0.02	0.04	0.02	0.04	0.02	0.02	0.08	0.02	0.08	0.04
TOTAL	99.53	99.12	98.67	99.50	101.33	100.05	100.84	100.48	100.60	99.70	99.16	99.06	99.68

SAMPLE	77-233	77-234	77-235	77-237	77-238	77-242	77-245	77-247	77-249	77-250	77-251	77-258	77-259
SIO2	51.00	50.20	50.40	50.00	50.20	49.90	50.50	52.10	49.90	50.80	50.90	50.80	49.80
AL203	13.30	13.10	13.00	12.80	12.90	13.10	13.10	14.10	12.80	13.00	13.00	13.00	12.90
FE203	2.50	2.60	3.60	3.40	3.60	3.00	2.50	2.10	2.90	2.50	2.40	3.00	6.40
FEO	12.10	11.60	10.80	11.20	11.10	11.30	12.00	9.50	12.00	12.00	12.10	12.00	8.00
MGO	4.20	4.20	4.20	3.90	4.10	4.50	4.00	4.80	4.20	3.90	3.90	4.20	4.10
CAO	8.30	8.60	8.20	8.30	8.30	8.60	8.10	8.70	8.30	8.00	8.00	8.30	8.40
NA20	2.40	2.40	2.60	2.50	2.80	2.80	2.70	3.10	2.90	3.00	2.90	2.90	4.20
K20	1.50	1.40	1.30	1.80	1.30	1.30	1.50	1.30	1.30	1.40	1.50	1.60	1.30
H20	1.03	1.34	1.00	1.72	1.04	1.31	1.01	0.81	1.59	1.71	1.29	0.82	1.63
TIO2	3.10	2.90	3.00	2.90	3.00	2.90	3.10	1.80	3.00	2.90	2.90	3.00	3.00
P205	0.67	0.55	0.66	0.76	0.67	0.63	0.67	0.34	0.65	0.77	0.79	0.67	0.64
MNO	0.26	0.27	0.24	0.26	0.26	0.27	0.24	0.21	0.25	0.24	0.25	0.27	0.24
CO2	0.04	0.04	0.02	0.02	0.04	0.02	0.06	0.02	0.02	0.02	0.02	0.02	0.04
TOTAL	100.40	99.20	99.02	99.56	99.31	99.63	99.48	98.88	99.81	100.24	99.95	100.58	100.65

SAMPLE	77-260	77-261	77-265	77-267	77-268	77-269	77-290	77-291	77-292	77-311	77-312	77-313	77-338
SIO2	51.10	50.40	50.20	52.20	53.60	50.10	53.20	53.50	53.70	51.20	50.20	50.60	50.40
AL203	13.00	13.30	13.00	14.30	13.30	13.50	14.20	14.20	14.20	13.40	13.40	13.50	13.40
FE203	3.40	3.80	3.50	2.50	2.30	3.20	1.80	2.10	2.70	3.20	3.70	3.00	3.30
FEO	11.00	10.80	11.50	9.50	11.50	11.60	9.60	9.40	8.80	11.80	11.00	11.50	10.70
MGO	4.00	4.40	4.20	5.20	3.40	4.40	4.70	4.90	4.60	3.90	4.20	4.10	4.20
CAO	8.20	8.70	8.00	9.30	7.60	8.70	8.70	7.60	8.60	8.20	8.20	8.40	8.50
NA20	3.00	2.90	2.80	2.90	3.20	2.90	2.80	2.80	2.90	2.80	2.80	2.80	2.70
K20	1.70	1.30	1.50	1.20	1.70	1.20	1.60	1.50	1.50	1.50	1.40	1.60	1.60
H20	0.99	0.85	0.86	0.82	0.57	0.98	0.81	0.98	0.67	1.16	0.91	1.30	1.13
TIO2	3.00	3.00	3.10	1.80	2.50	3.10	1.80	1.80	1.80	3.00	3.00	3.10	3.10
P205	0.75	0.63	0.67	0.35	0.57	0.61	0.40	0.41	0.40	0.65	0.65	0.67	0.66
MNO	0.26	0.27	0.26	0.24	0.25	0.26	0.20	0.07	0.19	0.22	0.21	0.20	0.23
CO2	0.02	0.08	0.08	0.04	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.08	0.04
TOTAL	100.42	100.43	99.67	100.35	100.51	100.59	99.83	99.28	100.08	101.05	99.69	100.85	99.96

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	77-339	77-340	77-341	77-343	C-169	C-170	C-172	819671	822672	821674	822675	WT-R12	WT-R13
SIO2	50.30	50.80	49.80	50.70	52.63	53.05	50.64	50.20	52.60	50.20	54.30	51.90	50.40
AL203	13.50	13.50	13.20	13.40	14.10	14.53	13.09	13.30	13.40	14.30	13.50	13.90	13.50
FE203	14.60	3.80	4.60	3.90	1.99	1.65	1.94	1.50	5.20	3.10	1.70	3.00	2.40
FEO	1.40	10.70	10.00	11.20	9.41	8.01	12.04	12.50	7.70	8.80	10.90	7.20	11.30
MGO	3.90	4.10	4.20	4.00	5.31	6.18	4.56	4.40	2.70	5.90	3.70	3.80	4.40
CAO	7.70	8.30	8.20	8.70	8.82	9.70	8.35	8.10	5.80	9.80	7.10	9.00	8.30
NA20	2.90	2.70	2.70	2.80	2.85	2.72	2.39	2.50	3.10	2.60	2.90	2.60	2.60
K20	1.40	1.50	1.30	1.50	1.15	0.91	1.42	1.40	2.30	0.48	1.40	1.50	1.40
H20	0.28	1.28	1.13	0.97	0.73	1.07	1.04	1.10	2.50	1.98	1.56	2.16	1.45
TIO2	3.10	3.10	3.00	3.10	1.71	1.16	3.09	3.10	2.70	1.40	2.00	3.40	3.10
P205	0.65	0.70	0.65	0.69	0.27	0.29	0.69	0.72	0.89	0.35	0.39	0.73	0.86
MNO	0.18	0.16	0.18	0.21	0.19	0.18	0.22	0.27	0.23	0.24	0.23	0.20	0.20
CO2	0.02	0.08	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
TOTAL	99.93	100.72	98.98	101.21	99.16	99.45	99.47	99.09	99.12	99.15	99.68	99.42	99.93

SAMPLE	WT-R14	WT-3	WT-4	WT-5	WT-6	WT-10	WT-12	WT-17	WT-18	WT-19	WT-20	WT-26	WT-29
SIO2	50.10	49.40	50.90	53.00	50.10	51.30	50.20	53.80	53.80	49.40	52.90	50.10	50.40
AL203	13.20	13.70	15.80	13.50	15.10	14.70	16.40	13.40	14.00	16.30	13.30	16.60	14.90
FE203	2.20	5.50	4.00	6.60	4.40	3.30	1.80	3.70	1.90	2.10	3.70	1.80	2.40
FEO	11.80	8.40	6.60	5.80	6.60	8.10	9.30	8.60	10.10	9.00	9.10	8.40	9.80
MGO	4.50	4.60	5.30	3.20	4.50	4.60	5.00	3.90	3.30	6.50	3.90	5.40	4.80
CAO	8.20	8.30	10.50	6.45	7.27	8.80	9.50	6.90	7.20	9.40	7.10	9.20	8.20
NA20	2.70	2.80	2.70	3.00	2.80	3.00	3.00	3.20	3.30	2.70	3.10	2.70	3.00
K20	1.40	0.82	0.56	1.70	0.83	1.00	0.75	1.50	1.60	0.49	1.40	1.00	1.00
H20	1.29	2.40	2.09	3.00	2.50	1.81	1.10	1.70	1.59	1.66	2.26	0.94	1.79
TIO2	3.20	2.50	1.50	2.50	2.00	2.00	2.00	2.30	2.30	2.00	2.20	2.20	2.70
P205	0.59	0.34	0.23	0.50	0.34	0.35	0.27	0.51	0.39	0.26	0.51	0.30	0.43
MNO	0.23	0.16	0.15	0.15	0.15	0.18	0.15	0.17	0.17	0.16	0.17	0.13	0.18
CO2	0.02	0.08	0.01	0.04	0.04	0.05	0.07	0.05	0.03	0.04	0.04	0.04	0.04
TOTAL	99.43	99.00	100.34	99.44	96.63	99.19	100.44	99.73	99.68	100.01	99.68	98.81	99.64

SAMPLE	WT-31	WT-32	WT-33	WT-37	WT-39	WT-40	WT-41	WT-42	WT-43	WT-45	WT-47	WT-48	WT-49
SIO2	52.20	50.20	49.80	51.30	52.60	52.80	53.20	53.20	53.80	50.40	51.70	53.80	50.60
AL203	14.30	13.30	13.40	13.80	14.00	13.40	14.20	14.40	14.20	13.10	14.20	14.80	14.70
FE203	1.80	1.90	1.90	2.60	3.40	2.40	2.70	3.20	2.00	4.00	2.80	1.90	2.00
FEO	9.60	12.20	12.20	9.10	8.00	9.90	8.50	7.50	9.40	9.70	8.80	7.40	9.00
MGO	5.30	4.70	4.50	5.30	5.10	4.40	4.80	4.30	4.80	4.30	5.70	6.10	6.40
CAO	8.60	8.60	8.30	8.80	9.10	7.80	8.40	8.90	8.20	8.10	9.30	9.60	9.80
NA20	2.80	2.70	2.60	2.80	2.70	2.70	2.80	2.90	2.80	2.50	2.60	2.60	2.80
K20	1.00	1.40	1.50	0.74	1.20	1.40	1.20	1.30	1.40	1.30	1.00	1.10	0.73
H20	1.50	1.36	1.18	2.60	2.08	2.41	1.38	1.60	1.33	1.97	1.75	1.15	1.51
TIO2	1.70	3.20	3.10	2.30	1.70	2.10	1.70	1.80	1.80	3.10	1.70	1.20	1.40
P205	0.37	0.68	0.78	0.42	0.36	0.50	0.34	0.39	0.33	0.66	0.35	0.33	0.39
MNO	0.18	0.20	0.21	0.17	0.17	0.19	0.19	0.17	0.19	0.19	0.18	0.17	0.18
CO2	0.02	0.02	0.02	0.02	0.01	0.03	0.03	0.06	0.02	0.02	0.02	0.01	0.02
TOTAL	99.37	100.46	99.49	99.95	100.42	100.03	99.44	99.72	100.27	99.34	100.10	100.16	99.53

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	WT-50	WT-51	WT-52	WT-54	WT-55	WT-56	WT-57	WT-58	WT-59	WT-61	WT-64	WT-64	WT-65
SIO2	53.50	54.20	53.80	49.80	54.60	54.30	50.40	50.10	51.20	51.20	51.90	52.70	53.20
AL203	13.00	13.00	12.50	15.10	13.40	13.60	13.00	12.70	14.00	12.40	14.60	14.50	13.60
FE203	2.30	2.70	3.80	2.90	2.20	1.90	2.90	1.90	4.50	4.80	5.60	4.90	3.80
FEO	10.80	10.30	9.80	7.80	10.20	10.40	11.90	12.90	8.20	9.50	5.80	5.80	9.40
MGO	4.00	3.70	3.00	6.80	3.40	3.20	4.00	4.10	5.10	4.30	5.10	4.70	4.20
CAO	7.00	7.10	6.30	10.70	7.10	7.20	8.00	8.10	9.30	8.10	8.70	8.60	7.60
NA20	3.10	3.10	3.40	2.80	3.30	3.10	2.60	2.40	2.80	2.90	2.90	3.00	3.10
K20	1.60	1.80	1.70	0.48	1.90	1.60	1.20	1.20	0.80	1.20	0.87	0.93	1.30
H20	1.33	1.00	1.20	1.60	1.16	1.10	1.10	1.77	2.00	2.07	2.20	1.90	1.20
TIO2	2.10	2.20	2.40	1.20	2.30	2.00	3.70	3.60	2.60	2.90	1.70	1.50	2.10
P205	0.37	0.40	0.97	0.32	0.55	0.43	0.48	0.50	0.39	0.51	0.36	0.30	0.39
MNO	0.15	0.15	0.19	0.17	0.19	0.19	0.20	0.20	0.16	0.20	0.17	0.14	0.18
CO2	0.07	0.03	0.05	0.02	0.02	0.02	0.03	0.04	0.08	0.02	0.02	0.02	0.02
TOTAL	99.32	99.68	99.11	99.69	100.32	99.54	99.51	99.51	101.13	100.10	99.92	98.99	100.09

SAMPLE	WT-67	WT-71	WT-73	WT-76	WT-77	WT-78	WT-82	WT-83	WT-84	WT-85	WT-87	WT-91	WT-93
SIO2	51.50	50.10	50.70	52.40	53.00	50.10	50.70	50.10	51.70	51.10	53.80	52.80	53.50
AL203	13.80	17.90	15.80	13.60	13.10	15.40	13.30	16.50	13.70	14.80	13.90	14.00	13.40
FE203	3.40	4.50	3.90	5.40	4.40	5.00	8.50	1.70	3.10	5.20	3.80	2.20	2.10
FEO	9.10	5.80	6.70	7.40	9.10	6.80	5.40	8.30	8.40	7.10	7.80	9.20	10.60
MGO	4.90	4.30	5.50	3.80	4.10	5.90	4.80	5.80	4.30	4.30	4.50	5.10	3.80
CAO	8.40	9.00	10.10	7.20	7.30	9.60	8.20	9.80	7.39	9.00	7.90	8.70	7.10
NA20	2.90	2.90	2.80	3.20	3.10	2.90	2.70	2.70	2.50	2.80	3.00	2.60	3.10
K20	1.10	0.70	0.49	1.20	1.40	0.61	1.10	0.67	1.10	1.10	1.00	1.30	1.40
H20	2.11	2.50	2.30	1.90	1.45	2.70	2.80	1.38	3.20	1.88	1.61	1.63	1.55
TIO2	2.40	2.00	1.40	2.50	2.20	1.30	2.40	1.90	2.40	2.40	1.90	1.70	2.20
P205	0.39	0.31	0.35	0.42	0.47	0.35	0.40	0.29	0.38	0.41	0.34	0.33	0.45
MNO	0.18	0.12	0.16	0.18	0.19	0.16	0.18	0.14	0.17	0.18	0.18	0.18	0.19
CO2	0.04	0.04	0.04	0.04	0.02	0.08	0.02	0.06	0.04	0.02	0.02	0.04	0.06
TOTAL	100.22	100.17	100.24	99.24	99.83	100.90	100.50	99.34	98.38	100.29	99.75	99.78	99.45

SAMPLE	WT-112	WT-119	WT-120	WT-121	WT-123	WT-124	WT-125	WT-126	WT-128	WT-141	WT-143	WT-151	WT-152
SIO2	53.20	53.00	53.50	53.20	54.00	54.30	52.50	55.10	47.80	51.10	53.50	48.90	49.60
AL203	13.50	14.40	13.50	13.60	14.50	14.30	14.50	13.80	16.80	14.40	14.30	13.20	13.40
FE203	5.00	5.80	3.50	5.00	1.80	1.40	1.40	1.30	2.00	2.20	5.30	4.60	5.70
FEO	7.10	5.70	9.00	7.90	9.90	9.70	9.40	9.60	9.20	9.30	7.10	9.40	8.20
MGO	4.30	4.50	3.20	3.40	3.20	4.10	5.30	4.10	6.40	5.60	3.20	5.00	3.60
CAO	7.60	8.10	4.67	6.80	7.50	7.30	8.60	7.40	9.40	9.80	7.00	8.15	7.70
NA20	2.70	3.50	3.30	3.20	3.10	3.00	2.70	2.90	2.70	3.30	3.20	2.70	2.60
K20	1.40	1.20	1.50	1.40	1.70	1.70	1.20	1.60	0.90	1.10	1.30	0.93	1.30
H20	2.12	2.40	1.43	1.70	1.26	1.35	1.29	1.23	1.10	1.28	2.04	2.20	2.60
TIO2	1.90	1.80	2.50	2.50	2.20	2.00	2.00	1.80	2.00	2.00	2.30	3.20	2.90
P205	0.43	0.32	0.36	0.39	0.38	0.28	0.35	0.42	0.98	0.35	0.35	0.81	0.92
MNO	0.19	0.16	0.16	0.18	0.16	0.16	0.16	0.17	0.15	0.17	0.17	0.17	0.19
CO2	0.02	0.08	0.04	0.08	0.04	0.02	0.03	0.06	0.04	0.05	0.08	0.05	0.08
TOTAL	99.46	100.96	96.66	99.35	99.74	99.61	99.43	99.48	99.47	100.65	99.84	99.31	98.79

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	WT-153	WT-154	WT-155	WT-157	WT-159	WT-160	WT-164	WT-171	WT-175	WT-223	WT-224	WT-500	WT-501
SIO2	48.70	50.50	50.40	51.80	48.40	48.00	55.80	54.60	53.00	54.30	53.20	50.90	48.30
AL203	12.80	12.90	13.60	13.70	14.80	15.00	13.70	13.40	14.20	13.40	13.10	13.20	13.30
FE203	4.40	6.60	8.80	5.60	2.50	1.80	2.00	1.40	1.90	2.80	2.00	6.20	6.00
FEO	10.20	7.60	5.10	8.00	7.80	10.00	9.60	9.60	9.60	10.00	10.90	7.70	8.70
MGO	4.90	3.40	1.50	3.50	8.00	5.90	2.80	3.70	4.20	3.60	3.80	3.70	3.60
CAO	8.20	6.80	4.90	6.47	10.30	5.76	6.10	5.51	8.10	7.00	7.40	7.00	7.70
NA20	2.50	2.80	2.80	3.00	2.10	2.80	3.30	2.90	3.10	3.00	3.10	2.90	2.60
K20	1.00	1.70	1.80	1.70	0.36	0.58	1.50	1.60	1.40	1.80	1.60	1.60	1.20
H20	2.28	2.54	4.10	1.60	2.09	0.87	2.05	1.54	1.46	1.20	1.41	2.00	2.70
TIO2	3.20	3.00	3.10	2.90	1.60	2.50	2.20	1.90	2.10	2.50	2.40	2.90	3.60
P205	0.79	0.55	0.54	0.58	0.38	0.28	0.55	0.29	0.46	0.45	0.44	0.55	1.13
MNO	0.21	0.20	0.30	0.14	0.13	0.14	0.18	0.17	0.18	0.19	0.19	0.14	0.17
CO2	0.10	0.82	2.10	0.05	0.07	0.05	0.01	0.04	0.02	0.03	0.02	0.07	0.08
TOTAL	99.28	99.41	99.04	99.04	98.53	93.68	99.79	96.65	99.72	100.27	99.56	98.86	99.08

SAMPLE	WT-502	WT-818	WT-819	WT-845	WT-846	WT-870	WT-872	WT-873	WT-874	WT-875	WT-985	WT-989	WT-990
SIO2	50.30	48.20	48.40	47.80	47.90	48.80	48.80	49.90	49.30	48.60	50.00	49.50	47.60
AL203	12.20	12.80	13.10	13.80	14.50	12.40	12.60	13.10	13.10	12.70	15.20	13.10	12.90
FE203	4.50	3.90	2.50	5.20	4.60	5.90	2.20	2.60	2.30	2.20	3.60	2.40	3.20
FEO	10.70	10.80	10.90	7.60	7.70	9.60	12.20	10.80	11.80	12.00	6.80	11.00	11.90
MGO	3.40	5.00	5.20	5.40	5.10	4.40	5.30	5.40	5.20	5.40	5.20	5.20	5.40
CAO	6.50	8.20	9.00	10.17	10.10	8.00	8.30	8.40	8.40	8.40	9.70	8.40	8.20
NA20	2.60	2.50	2.40	2.40	2.40	2.40	2.50	2.60	2.60	2.50	2.60	2.60	2.50
K20	2.00	1.00	1.00	0.56	0.63	1.10	0.99	1.10	0.92	1.00	0.58	0.69	0.87
H20	2.80	1.98	1.40	1.80	2.00	1.70	1.20	1.42	1.60	4.01	2.20	1.80	1.50
TIO2	3.50	3.50	3.70	2.70	2.70	3.60	3.50	3.10	3.20	3.10	1.90	3.10	3.80
P205	0.58	0.78	0.72	0.59	0.68	0.82	0.77	0.79	0.74	0.77	0.30	0.79	0.72
MNO	0.15	0.18	0.18	0.16	0.14	0.18	0.18	0.16	0.18	0.17	0.13	0.17	0.18
CO2	0.02	0.04	0.06	0.05	0.07	0.03	0.05	0.06	0.01	0.02	0.04	0.05	0.03
TOTAL	99.25	98.88	98.56	98.23	98.52	98.93	98.59	99.43	99.35	100.87	98.25	98.80	98.80

SAMPLE	WT-1023	WT-1048	WT-1049	WT-1050	WT-1055	WT-1056	WT-1063	WT-1064	WT-1065	WT-1068	WT-1069	WT-1070	WT-1071
SIO2	46.20	53.30	50.50	53.60	52.30	53.80	53.50	48.60	53.80	54.90	53.30	47.50	54.70
AL203	13.90	13.90	15.20	13.40	12.50	13.00	13.50	12.20	13.20	13.30	15.60	14.90	13.20
FE203	3.60	1.90	3.90	3.70	5.40	3.00	1.80	5.10	2.40	3.00	2.40	3.80	2.20
FEO	6.00	9.30	6.90	9.40	7.90	9.40	9.80	9.60	10.20	8.20	8.80	11.30	8.80
MGO	6.00	4.70	5.30	4.40	2.90	3.50	4.70	4.50	3.80	4.10	4.80	4.70	4.20
CAO	7.40	7.70	9.20	7.60	5.50	6.70	8.30	7.80	6.70	7.20	8.30	8.60	7.40
NA20	3.20	2.90	3.00	2.90	3.10	3.10	2.90	2.60	3.00	3.00	2.70	2.60	3.00
K20	0.78	1.30	0.53	1.30	2.40	1.70	1.20	1.00	1.70	1.70	1.20	0.86	1.40
H20	2.80	1.30	2.40	1.40	2.90	1.41	0.68	3.00	1.37	0.81	1.72	1.40	1.35
TIO2	2.20	1.70	1.30	1.70	2.60	2.20	1.70	3.50	2.20	1.90	1.60	3.60	1.90
P205	0.59	0.33	0.31	0.35	0.98	0.50	0.33	0.70	0.42	0.34	0.29	0.71	0.28
MNO	0.12	0.15	0.15	0.14	0.16	0.15	0.15	0.17	0.15	0.14	0.14	0.16	0.13
CO2	6.20	0.04	0.01	0.04	0.07	0.03	0.02	0.03	0.03	0.01	0.02	0.07	0.02
TOTAL	98.99	98.52	98.70	99.93	98.71	98.49	98.58	98.80	98.97	98.60	100.87	100.20	98.58

Table 2b. Major oxide analyses of DSTW- dikes collected 1971-1977.

SAMPLE	WT-1072	WT-1073	WT-1133	WT-1135	WT-1136	WT-1173	WT-1174	WT-2416	WT-2420	WT-2443	WT-2465	WT-2488	WT-2491
SIO2	55.30	53.90	52.70	52.60	54.10	54.90	54.70	50.50	50.10	50.10	53.50	50.50	51.80
AL203	13.90	13.40	14.10	12.80	12.90	13.00	12.70	14.20	14.20	15.10	13.30	14.90	13.50
FE203	2.00	4.40	3.00	6.10	2.50	3.00	9.90	4.80	6.20	5.60	4.60	3.40	5.70
FEO	8.40	8.00	8.00	6.90	8.80	9.90	3.80	7.60	6.70	6.30	9.40	8.40	6.60
MGO	4.70	3.70	5.10	3.90	3.90	3.80	3.20	5.20	4.50	4.90	3.70	5.40	4.80
CAO	8.00	6.36	8.50	8.00	6.90	7.00	6.50	8.90	7.70	10.00	6.80	10.30	8.40
NA20	2.80	3.20	2.80	2.50	2.90	3.10	3.10	2.50	2.70	2.70	3.40	2.80	2.90
K20	1.20	1.20	0.78	1.10	1.60	1.20	1.60	0.80	1.00	0.40	1.50	0.80	1.00
H20	1.72	1.40	2.20	2.80	2.24	1.55	1.00	2.80	3.10	2.70	0.93	1.58	2.60
TIO2	1.60	2.20	1.50	2.90	2.20	2.00	2.50	1.90	2.10	1.60	2.30	1.70	2.30
P205	0.29	0.38	0.30	0.64	0.38	0.44	0.41	0.33	0.38	0.23	0.41	0.27	0.34
MNO	0.14	0.12	0.14	0.17	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.16	0.19
CO2	0.02	0.05	0.03	0.01	0.02	0.01	0.03	0.04	0.04	0.07	0.02	0.10	0.04
TOTAL	100.07	98.31	99.15	100.42	98.58	100.05	99.59	99.73	98.88	99.87	100.04	100.31	100.17

SAMPLE	WT-2495	WT-2679	WT-2684	WT-2686	WT-2690	WT-2693	WT-2699	WT-2717	WT-2719	WT-2721	WT-2724	WT-2725	WT-2730
SIO2	49.60	51.00	54.80	53.70	52.50	53.70	50.10	50.20	50.20	53.20	50.30	52.90	51.00
AL203	14.50	14.00	14.20	13.40	13.60	14.10	15.10	14.20	13.20	12.90	14.20	13.80	13.50
FE203	5.30	6.30	4.50	6.90	5.00	4.70	4.70	5.90	6.50	4.70	3.50	5.50	4.20
FEO	5.60	6.70	6.80	6.30	8.50	7.00	7.50	6.90	7.60	8.60	10.40	6.80	9.20
MGO	6.20	4.80	5.00	3.90	4.20	4.50	5.40	4.90	4.50	3.80	4.80	4.50	4.50
CAO	10.30	8.30	7.90	7.00	7.30	8.10	9.30	9.00	8.30	7.20	7.80	7.80	8.30
NA20	2.70	2.80	3.00	2.90	3.30	3.20	2.60	2.70	2.70	3.00	3.00	3.00	2.70
K20	0.45	0.70	1.20	1.60	1.40	1.40	0.40	0.80	1.20	1.60	1.00	1.30	1.00
H20	3.40	3.20	1.30	1.88	1.30	1.61	3.40	2.90	2.40	1.78	1.60	1.90	2.70
TIO2	1.30	1.80	1.70	2.10	2.40	1.90	1.70	2.10	2.60	2.70	2.90	2.10	2.30
P205	0.32	0.29	0.26	0.35	0.48	0.30	0.23	0.33	0.41	0.48	0.41	0.37	0.36
MNO	0.15	0.18	0.15	0.17	0.18	0.15	0.16	0.16	0.20	0.18	0.18	0.15	0.18
CO2	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.04
TOTAL	99.84	100.09	100.83	100.22	100.20	100.68	100.61	100.13	99.83	100.16	100.11	100.14	99.98

SAMPLE	WT-2733	WT-2745	WT-2774	WT-2808	WT-2811	WT-2814	WT-2837	WT-2842	WT-2851	WT-3023
SIO2	55.50	52.80	52.00	54.00	51.70	51.70	50.10	50.10	50.50	52.20
AL203	13.00	14.20	15.20	13.70	14.00	15.00	16.30	16.40	13.80	13.70
FE203	4.80	3.50	10.00	4.50	3.00	2.10	3.00	1.80	3.00	5.20
FEO	8.70	8.60	1.60	9.10	9.40	8.90	7.60	8.80	10.30	7.80
MGO	2.40	5.20	6.00	3.50	5.80	6.50	7.10	7.20	5.30	4.90
CAO	5.80	8.50	9.80	6.80	9.00	10.20	9.80	9.80	8.40	7.70
NA20	3.10	2.80	2.80	3.10	2.70	2.80	2.60	2.50	2.90	2.90
K20	2.10	1.20	0.70	1.60	1.10	0.62	0.50	0.60	0.80	1.20
H20	1.70	1.40	0.73	0.69	1.40	1.00	1.20	1.40	2.04	1.70
TIO2	2.30	1.70	1.40	2.50	1.80	1.40	1.20	1.10	2.50	2.20
P205	0.22	0.27	0.34	0.44	0.35	0.31	0.25	0.25	0.41	0.42
MNO	0.16	0.16	0.17	0.18	0.17	0.18	0.15	0.15	0.18	0.18
CO2	0.02	0.02	0.02	0.02	0.04	0.04	0.02	0.04	0.02	0.02
TOTAL	99.80	100.35	100.76	100.13	100.46	100.75	99.82	100.14	100.15	100.12

Table 2c. Trace element analyses of DSTW- dikes collected 1971-1977.

SAMPLE	72-219 F	73-060 F	WT-R12 F	WT-R13 F	WT-R14 F	WT-3 F	WT-4 F	WT-4 F	WT-5 F	WT-6 F	WT-10 F	WT-12 F	WT-17 F
BA	620.00	570.00	620.00	340.00	510.00	390.00	----	210.00	570.00	420.00	450.00	270.00	620.00
CO	48.00	46.00	66.00	34.00	35.00	45.00	44.00	40.00	29.00	39.00	42.00	46.00	35.00
CR	70.00	121.00	39.00	7.00	29.00	26.00	150.00	168.00	4.00	55.00	140.00	118.00	24.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	6.30	7.40	----	----	----	4.10	3.40	----	----	4.60	3.50	----	5.20
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	2.70	3.70	4.10	2.30	3.80	2.00	1.40	1.40	4.80	2.40	2.20	1.60	4.40
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	40.00	40.00	41.00	35.00	36.00	39.00	39.00	37.00	29.00	27.00	37.00	26.00	33.00
LA	38.00	41.00	28.90	26.20	27.00	14.70	9.30	9.70	26.60	16.40	14.20	14.30	22.60
CE	----	83.00	----	----	----	----	----	----	----	----	----	----	----
SM	9.80	11.40	9.60	7.70	8.30	5.70	3.90	4.20	7.50	5.70	5.60	6.30	7.70
EU	1.90	3.40	2.60	2.10	2.30	1.70	----	1.40	2.20	----	----	1.70	2.30
YB	----	5.50	----	----	----	----	----	----	----	----	----	----	----
LU	0.78	0.85	0.55	0.49	0.49	0.60	0.42	0.34	0.48	0.45	0.47	0.32	0.61
C.T.	UNC	INDIAN	UNC	ROZA	ROZA	UNC	DODGE	DODGE	GR INC	UNC	GR INC	UNC	GR INC

SAMPLE	WT-18 F	WT-19 F	WT-20 F	WT-26 F	WT-29 F	WT-31 F	WT-32 F	WT-33 F	WT-37 F	WT-39 F	WT-40 F	WT-41 F	WT-42 F
BA	530.00	220.00	680.00	----	360.00	460.00	380.00	580.00	380.00	530.00	350.00	380.00	420.00
CO	35.00	46.00	35.00	38.00	40.00	40.00	34.00	37.00	41.00	37.00	33.00	40.00	37.00
CR	14.00	110.00	17.00	119.00	59.00	75.00	21.00	28.00	110.00	48.00	33.00	47.00	48.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	4.80	3.40	4.50	----	6.80	3.40	----	----	4.20	3.80	----	3.90	3.70
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	4.50	1.30	3.50	1.90	2.70	2.80	3.40	3.20	3.20	3.00	3.40	2.70	2.90
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	32.00	30.00	36.00	29.00	29.00	37.00	35.00	37.00	35.00	37.00	34.00	36.00	35.00
LA	20.60	10.60	19.60	14.90	21.20	16.70	25.90	27.40	16.80	16.30	21.80	18.60	18.20
CE	----	----	----	----	----	----	----	----	----	----	----	----	----
SM	7.20	5.20	7.00	5.70	7.90	5.50	7.90	9.00	6.00	5.60	6.80	5.70	5.30
EU	2.20	1.90	1.10	1.70	2.20	1.80	2.40	2.50	1.10	1.10	2.00	1.70	1.50
YB	----	----	----	----	----	----	----	----	----	----	----	----	----
LU	0.57	0.40	0.63	0.37	0.50	0.45	0.48	0.55	0.49	0.47	0.49	0.46	0.41
C.T.	GR INC	UNC	GR INC	UNC	UNC	GR INC	ROZA	ROZA	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	WT-45 F	WT-47 F	WT-48 F	WT-49 F	WT-54 F	WT-55 F	WT-56 F	WT-57 F	WT-58 F	WT-59 F	WT-61 F	WT-64 F	WT-65 F
BA	440.00	270.00	430.00	350.00	290.00	550.00	400.00	510.00	510.00	450.00	460.00	290.00	630.00
CO	38.00	37.00	38.00	40.00	38.00	31.00	34.00	42.00	46.00	40.00	37.00	35.00	39.00
CR	25.00	94.00	66.00	140.00	222.00	6.00	5.00	11.00	21.00	98.00	27.00	115.00	16.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	6.80	3.10	3.00	24.00	3.50	6.40	5.20	8.00	69.00	5.10	5.90	3.80	4.80
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	3.90	1.90	1.80	----	0.80	4.50	3.90	4.80	5.80	2.30	3.10	2.10	3.90
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	37.00	39.00	42.00	43.00	38.00	31.00	34.00	31.00	33.00	36.00	40.00	36.00	38.00
LA	26.80	14.90	13.10	13.20	10.60	26.50	20.60	31.70	31.90	11.20	20.90	15.80	19.20
CE	----	----	----	----	----	----	----	----	----	----	----	----	----
SM	8.00	4.60	4.50	4.90	3.70	7.50	6.10	7.90	8.50	6.90	8.50	4.60	6.60
EU	2.30	1.60	1.40	----	1.40	2.30	1.70	2.60	2.40	2.20	2.40	1.60	2.00
YB	----	----	----	----	----	----	----	----	----	----	----	----	----
LU	0.55	0.40	0.40	0.45	0.36	0.57	0.48	0.61	0.72	0.57	0.78	0.35	0.6(
C.T.	ROZA	GR INC	GR INC	DODGE	DODGE	GR INC	GR INC	ELEPHANT	ELEPHANT	UNC	FS INC	GR INC	GR INC

Table 2c. Trace element analyses of DSTW- dikes collected 1971-1977.

SAMPLE	WT-67 F	WT-71 F	WT-73 F	WT-76 F	WT-77 F	WT-78 F	WT-82 F	WT-83 F	WT-84 F	WT-85 F	WT-87 F	WT-91 F	WT-93 F
BA	480.00	320.00	230.00	570.00	630.00	190.00	200.00	230.00	----	260.00	----	410.00	690.00
CO	38.00	32.00	32.00	39.00	37.00	39.00	33.00	39.00	41.00	34.00	36.00	38.00	37.00
CR	53.00	60.00	108.00	13.00	13.00	160.00	19.00	132.00	45.00	63.00	35.00	54.00	----
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	5.60	4.40	3.10	4.50	3.80	2.30	----	3.50	4.20	5.10	3.60	3.20	4.50
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	3.00	1.60	0.80	3.60	4.00	1.40	2.10	1.80	3.70	2.60	3.80	3.10	3.40
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	35.00	22.00	39.00	32.00	36.00	40.00	34.00	25.00	34.00	32.00	37.00	38.00	36.00
LA	19.60	13.50	13.90	17.80	20.00	12.80	19.20	12.20	18.90	18.20	18.80	16.40	19.90
CE	----	----	----	----	----	----	----	----	----	----	----	----	----
SM	6.30	5.10	4.40	6.80	6.20	4.60	6.40	4.40	5.80	6.20	5.60	5.20	6.80
EU	2.00	1.70	1.40	2.10	1.60	1.20	2.10	1.60	1.80	2.00	----	1.00	1.80
YB	----	----	----	----	----	----	----	----	----	----	----	----	----
LU	0.48	0.36	0.42	0.59	0.58	0.46	0.53	0.32	0.47	0.47	0.44	0.45	0.68
C.T.	GR INC	UNC	UNC	GR INC	GR INC	DODGE	GR INC	UNC	GR INC	GR INC	GR INC	GR INC	GR INC

SAMPLE	WT-112 F	WT-119 F	WT-120 F	WT-121 F	WT-123 F	WT-124 F	WT-125 F	WT-126 F	WT-128 F	WT-141 F	WT-143 F	WT-152 F	WT-153 F
BA	510.00	490.00	590.00	540.00	480.00	660.00	370.00	560.00	410.00	320.00	560.00	490.00	480.00
CO	34.00	32.00	35.00	35.00	33.00	38.00	36.00	39.00	39.00	39.00	36.00	27.00	39.00
CR	32.00	8.00	----	----	15.00	13.00	71.00	10.00	142.00	110.00	10.00	22.00	77.00
CS	----	----	----	----	----	----	----	----	----	----	----	----	----
HF	4.50	4.40	4.50	4.60	5.80	4.90	4.10	4.40	2.70	4.20	4.30	6.30	4.70
RB	----	----	----	----	----	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----	----	----	----	----	----
TH	3.90	2.50	3.60	3.70	4.20	4.20	2.40	4.30	1.00	2.40	3.60	4.00	3.40
ZN	----	----	----	----	----	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----	----	----	----	----	----
SC	34.00	35.00	31.00	31.00	31.00	28.00	32.00	34.00	32.00	36.00	29.00	31.00	35.00
LA	19.90	20.50	20.80	19.10	22.60	21.10	15.70	17.90	16.70	14.70	20.50	32.10	23.80
CE	----	----	----	----	----	----	----	----	----	----	----	----	----
SM	5.00	5.20	6.90	6.50	7.30	6.00	5.00	5.60	5.50	4.90	6.30	10.40	8.60
EU	1.50	1.40	1.70	1.70	1.70	1.60	1.40	1.60	1.80	1.60	1.70	3.20	2.70
YB	----	----	----	----	----	----	----	----	----	----	----	----	----
LU	0.44	0.44	0.60	0.57	0.53	0.46	0.40	0.49	0.33	0.40	0.52	0.65	0.62
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC	UNC	GR INC	GR INC	UNC	UNC

SAMPLE	WT-154 F	WT-155 F	WT-164 F	WT-171 F	WT-171 F	WT-175 F	WT-223 F	WT-224 F
BA	620.00	660.00	850.00	580.00	400.00	420.00	580.00	580.00
CO	37.00	39.00	28.00	36.00	34.00	32.00	39.00	38.00
CR	7.00	5.00	----	10.00	6.00	32.00	----	10.00
CS	----	----	----	----	----	----	----	----
HF	7.20	6.90	6.70	4.90	5.50	5.10	5.50	5.80
RB	----	----	----	----	----	----	----	----
TA	----	----	----	----	----	----	----	----
TH	6.30	7.40	5.70	4.80	3.90	36.00	4.30	4.60
ZN	----	----	----	----	----	----	----	----
ZR	----	----	----	----	----	----	----	----
SC	26.00	29.00	30.00	32.00	31.00	38.00	35.00	35.00
LA	42.10	45.20	27.70	19.50	21.00	21.80	22.80	21.20
CE	----	----	----	----	----	----	----	----
SM	8.20	10.10	8.40	6.00	5.60	7.00	7.40	7.80
EU	2.60	2.80	2.10	1.60	1.70	2.00	1.10	2.50
YB	----	----	----	----	----	----	----	----
LU	0.45	0.59	0.69	0.51	0.46	0.57	0.64	0.65
C.T.	UNC	UNC	GR INC	GR INC	GR INC	GR INC	GR INC	GR INC

Table 2d. Major oxide analyses of glass associated with DSTW- dikes collected 1971-1977.

SAMPLE	71-110 G	71-110AG	72-23 G	72-219AG	72-219BG	73-27 G	73-147 G	73-240 G	73-385 G	74-240 G	74-307 G	74-315 G	74-316 G
SIO2	47.72	47.70	53.05	50.09	49.52	51.82	47.61	51.88	53.65	55.02	49.96	51.17	50.65
AL203	12.38	12.32	12.40	11.65	11.49	12.32	11.58	12.13	12.63	13.26	13.36	13.14	13.33
'FEO'	16.13	15.89	14.59	16.45	16.66	15.69	17.33	14.98	12.99	13.09	13.83	14.42	13.81
MGO	5.25	5.20	3.22	4.22	3.93	3.43	4.67	3.33	3.56	3.75	4.70	4.52	4.86
CAO	10.21	9.83	8.26	9.12	8.86	8.12	9.96	7.78	7.55	7.77	8.99	9.30	9.17
NA2O	2.18	2.34	2.44	2.35	2.49	2.57	2.04	2.89	3.03	3.01	2.82	2.45	2.55
K2O	0.82	0.79	1.55	1.07	1.08	1.42	0.89	1.48	1.27	1.33	0.96	0.99	0.97
TIO2	3.79	3.62	3.72	4.15	4.07	3.71	4.69	3.35	2.16	2.16	2.94	3.15	2.84
P2O5	0.78	0.72	0.88	0.73	0.75	0.74	0.97	0.58	0.48	0.34	0.49	0.57	0.49
TOTAL	99.26	98.41	100.11	99.83	98.85	99.82	99.74	98.40	97.32	99.73	98.05	99.71	98.67
C.T.	MARTIN	MARTIN	ROZA	UNC	UNC	FS INC	BASIN	FS INC	GR INC	GR INC	LEW ORCH	LEW ORCH	LEW ORCH

SAMPLE	75-108 G	75-113 G	75-114 G	75-115 G	75-152 G	75-153 G	75-154 G	75-155 G	75-156 G	75-157 G	75-158G1	75-158G2	75-159 G
SIO2	53.27	54.82	55.52	52.69	55.32	51.25	56.69	50.81	50.59	55.60	54.82	53.98	51.76
AL203	13.15	14.30	14.37	13.61	13.29	12.67	14.18	12.74	12.71	13.16	13.26	12.91	13.22
'FEO'	13.94	10.48	10.33	12.68	13.42	14.53	10.71	15.29	14.51	13.17	13.06	14.20	14.50
MGO	3.85	5.06	5.03	4.88	3.21	3.71	4.89	3.84	3.88	3.10	3.53	3.19	4.09
CAO	7.71	9.25	9.29	9.37	6.85	8.03	9.15	8.34	8.38	7.00	7.22	6.76	8.49
NA2O	2.85	2.60	2.95	2.61	2.69	2.54	2.88	2.74	2.53	2.57	2.69	2.99	2.61
K2O	1.37	0.82	0.83	0.80	1.56	1.20	0.90	1.17	1.46	1.47	1.33	1.84	1.14
TIO2	2.52	1.40	1.48	1.96	2.45	3.33	1.47	3.50	3.32	2.46	2.22	2.56	3.55
P2O5	0.51	0.27	0.26	0.26	0.39	0.76	0.28	0.70	0.66	0.43	0.41	0.41	0.58
TOTAL	99.07	99.00	100.06	98.86	99.18	98.02	101.15	99.13	98.04	98.96	98.54	98.84	99.94
C.T.	GR INC	GR INC	GR INC	GR INC	GR INC	ROZA	GR INC	ROZA	ROZA	GR INC	GR INC	GR INC	ROZA

SAMPLE	75-161 G	75-202 G	75-203 G	75-227 G	75-230 G	76-17 G	76-29 G	76-30A G	76-30B G	76-31 G	76-32 G	76-33 G	76-34 G
SIO2	50.60	51.96	54.96	52.50	53.22	54.20	47.86	47.98	48.17	47.93	47.65	48.16	48.48
AL203	13.12	14.44	14.78	13.78	13.97	13.35	11.14	10.81	10.91	11.45	10.50	10.73	11.38
'FEO'	14.74	12.15	10.26	13.04	13.05	13.50	18.06	18.36	18.35	17.49	18.80	18.46	18.09
MGO	4.34	5.49	5.07	4.72	4.57	3.44	3.84	3.67	3.68	3.94	3.67	3.64	3.98
CAO	8.53	9.76	9.25	9.32	8.94	7.28	8.88	8.94	9.03	8.87	9.00	9.09	9.00
NA2O	2.71	2.73	2.86	2.95	2.87	3.05	2.26	2.19	2.15	2.49	2.42	2.44	2.40
K2O	1.28	0.79	0.98	0.83	0.92	1.35	1.13	1.42	1.37	1.38	1.38	1.30	1.15
TIO2	3.35	1.68	1.35	1.78	2.05	2.27	4.01	4.20	4.14	3.87	4.27	4.19	3.77
P2O5	0.67	0.25	0.32	0.35	0.35	0.36	1.90	1.75	1.71	1.60	1.74	1.66	1.98
TOTAL	99.34	99.25	99.83	99.27	99.14	98.80	99.08	99.32	99.51	99.02	99.43	99.67	100.23
C.T.	ROZA	GR INC	GR INC	DODGE	GR INC	GR INC	GOOSE	GOOSE	GOOSE	GOOSE	GOOSE	GOOSE	GOOSE

SAMPLE	76-35 G	76-207 G	76-211 G	76-222 G	76-223 G	76-224 G	76-225 G	76-226 G	76-227 G	76-228 G	76-246 G	76-249 G	76-252 G
SIO2	47.18	52.39	53.16	49.30	54.65	48.11	49.49	53.65	49.78	52.56	53.72	53.11	50.07
AL203	10.34	14.29	13.64	14.85	14.09	11.73	13.98	13.11	15.20	12.93	13.54	13.49	15.04
'FEO'	18.30	11.82	13.61	11.38	12.10	14.96	11.02	11.47	11.07	11.80	12.79	12.80	11.75
MGO	3.58	5.38	5.13	6.94	4.40	3.89	6.48	2.42	6.82	3.92	4.85	4.59	7.23
CAO	8.92	9.88	9.99	11.49	8.40	8.91	11.29	6.21	11.26	8.33	9.45	9.08	11.92
NA2O	2.00	3.12	2.48	2.35	3.01	0.79	2.02	2.22	2.49	1.08	2.94	2.95	2.26
K2O	1.49	0.72	0.67	0.43	1.24	1.71	1.95	3.91	0.47	2.07	0.78	0.96	0.42
TIO2	4.10	1.60	1.84	2.05	1.92	3.28	2.00	2.42	2.08	2.20	1.87	2.09	2.09
P2O5	1.71	0.34	0.36	0.47	0.36	0.79	0.46	1.04	0.51	0.34	0.48	0.38	0.43
TOTAL	97.62	99.54	100.88	99.26	100.17	94.17	98.69	96.45	99.68	95.23	100.42	99.45	101.21
C.T.	GOOSE	DODGE	DODGE	UNC	GR INC	UNC	UNC	UMATILLA	UNC	UNC	DODGE	GR INC	UNC

Table 2d. Major oxide analyses of glass associated with DSTW- dikes collected 1971-1977.

SAMPLE	76-253 G	76-256 G	76-257 G	76-258 G	76-259 G	76-260 G	76-261 G	76-274 G	76-278 G	77-210 G	77-211 G	77-214 G	77-225G1
SIO2	49.04	56.28	52.96	53.69	56.00	54.69	49.89	51.11	55.37	51.60	50.78	48.94	51.77
AL203	14.85	14.87	14.20	13.78	13.53	13.13	12.69	13.20	13.56	12.99	13.00	12.13	13.07
'FEO'	11.36	10.55	12.35	12.99	11.88	12.44	12.90	12.47	13.02	14.82	14.55	14.46	14.69
MGO	7.05	5.15	5.49	4.68	3.43	3.84	4.40	5.34	3.10	3.33	4.13	4.22	3.55
CAO	11.62	9.40	9.73	9.07	7.30	7.90	9.05	10.64	7.11	8.25	8.66	9.26	7.87
NA20	2.35	0.53	2.64	2.91	3.18	2.10	0.54	2.20	3.13	2.66	2.46	1.74	2.83
K20	0.41	0.82	0.71	1.15	1.35	1.81	2.20	0.70	1.62	1.47	1.27	1.22	1.49
TIO2	2.00	1.45	1.70	2.63	2.17	2.08	2.69	2.15	2.30	3.70	3.51	3.60	3.49
P205	0.41	0.35	0.27	0.36	0.29	0.34	0.45	0.36	0.37	0.77	0.66	0.70	0.56
TOTAL	99.09	99.40	100.05	101.26	99.13	98.33	94.81	98.17	99.58	99.59	99.02	96.27	99.32
C.T.	UNC	GR INC	DODGE	GR INC	GR INC	GR INC	LEW ORCH	POMONA	GR INC	FS INC	FS INC	FS INC	FS INC

SAMPLE	77-225G2	77-230G1	77-230G2	77-231 G	77-232G1	77-232G2	77-233G1	77-233G2	77-234 G	77-235 G	77-237 G	77-238G1	77-238G2
SIO2	52.45	52.38	51.85	52.58	52.98	53.16	52.79	52.04	51.94	52.75	51.97	52.34	52.10
AL203	12.36	12.41	12.42	12.23	12.22	12.62	12.44	12.26	12.23	12.28	11.77	12.14	11.92
'FEO'	15.53	15.33	15.10	14.98	15.22	15.24	15.38	15.22	15.12	15.51	15.01	15.24	15.29
MGO	3.76	3.47	3.50	3.15	3.29	3.27	3.80	3.92	3.48	3.57	3.36	3.53	3.57
CAO	7.70	7.99	7.85	7.66	7.59	7.79	8.12	8.14	7.70	7.84	7.33	7.64	7.46
NA20	2.31	2.29	2.69	2.85	2.61	2.60	2.63	2.51	2.76	2.38	2.24	2.64	2.08
K20	1.38	1.41	1.36	1.59	1.52	7.79	1.27	1.30	1.38	1.30	1.58	1.52	1.88
TIO2	3.51	3.50	3.49	3.29	3.35	3.40	3.42	3.40	3.52	3.49	3.19	3.43	3.39
P205	0.61	0.61	0.59	0.67	0.68	0.70	0.60	0.58	0.58	0.58	0.72	0.66	0.68
TOTAL	99.61	99.39	98.85	99.00	99.46	106.57	100.45	99.37	98.71	99.70	97.17	99.14	98.37
C.T.	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC

SAMPLE	77-242 G	77-243G1	77-243G2	77-244G1	77-244G2	77-245G1	77-245G2	77-246 G	77-247 G	77-249G1	77-249G2	77-250G1	77-250G2
SIO2	52.32	51.96	51.83	52.37	50.27	52.36	52.06	54.98	53.74	52.52	52.56	52.64	52.23
AL203	12.91	12.16	12.55	12.34	11.61	12.40	12.12	11.94	13.62	12.11	12.18	11.90	11.60
'FEO'	14.90	15.32	15.38	15.22	14.49	15.02	15.15	15.33	12.05	15.39	15.46	15.15	15.01
MGO	3.60	3.58	3.48	3.46	3.29	3.67	3.61	3.63	4.24	3.50	3.49	3.33	3.23
CAO	8.24	7.83	7.83	7.68	7.40	7.80	7.86	7.74	8.11	7.69	7.83	7.57	7.35
NA20	2.85	2.36	3.02	2.94	0.84	2.68	2.11	2.52	2.91	2.78	2.37	2.21	2.32
K20	1.39	1.50	1.53	1.56	1.73	1.44	1.16	1.14	1.05	1.14	1.20	1.45	1.59
TIO2	3.28	3.40	3.37	3.44	3.29	3.49	3.42	3.41	1.89	3.45	3.48	3.26	3.23
P205	0.58	0.61	0.59	0.62	0.59	0.66	0.58	0.58	0.33	0.59	0.61	0.69	0.64
TOTAL	100.07	98.72	99.58	99.63	93.51	99.52	98.07	101.27	97.94	99.17	99.18	98.20	97.20
C.T.	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	GR INC	FS INC	FS INC	FS INC	FS INC

SAMPLE	77-251G2	77-257 G	77-259 G	77-260G1	77-260G2	77-265 G	77-266 G	77-267 G	77-269 G	77-290 G	77-292 G	77-311 G	77-312G1
SIO2	52.96	52.35	51.92	52.61	52.54	52.92	53.00	53.37	52.20	54.48	54.71	52.27	52.64
AL203	11.93	12.58	12.01	11.99	12.11	12.49	12.40	13.75	12.91	14.06	13.81	12.49	12.44
'FEO'	15.38	15.16	15.07	14.95	15.05	15.20	15.25	12.23	14.58	11.79	11.97	15.07	15.50
MGO	3.17	3.60	3.64	3.53	3.50	3.61	3.93	4.60	3.64	4.20	3.96	3.39	3.40
CAO	7.47	8.11	7.96	7.36	7.72	7.75	8.04	8.70	7.97	8.06	8.13	7.76	7.75
NA20	2.52	2.85	1.79	1.56	1.77	2.13	1.88	2.96	2.79	3.00	2.85	2.67	2.87
K20	1.26	1.33	1.76	2.29	2.26	1.42	1.26	1.00	1.24	0.95	1.02	1.14	1.18
TIO2	3.33	3.28	3.42	3.29	3.17	3.32	3.45	1.93	3.24	1.84	1.92	3.49	3.50
P205	0.65	0.57	0.60	0.67	0.64	0.67	0.64	0.29	0.59	0.36	0.37	0.62	0.62
TOTAL	98.67	99.83	98.17	98.25	98.76	99.51	99.85	98.83	99.16	98.74	98.74	98.90	99.90
C.T.	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	FS INC	GR INC	FS INC	GR INC	GR INC	FS INC	FS INC

Table 2d. Major oxide analyses of glass associated with DSDW- dikes collected 1971-1977.

SAMPLE	77-312G2	77-313 G	77-338 G	77-339 G	77-340 G
SIO2	52.76	52.28	52.49	53.70	52.26
AL2O3	12.21	12.55	12.36	12.61	12.13
'FEO'	15.43	15.16	15.31	15.51	15.27
MGO	3.51	3.54	3.79	3.82	3.91
CAO	7.81	7.73	8.15	8.32	8.05
NA2O	2.06	2.73	2.63	1.87	2.02
K2O	1.17	1.10	1.11	0.29	1.24
TIO2	3.52	3.34	3.34	3.40	3.36
P2O5	0.61	0.63	0.62	0.61	0.61
TOTAL	99.08	99.06	99.80	100.13	98.85
C.T.	FS INC	FS INC	FS INC	FS INC	FS INC

Table 3. Chemical analyses used to define chemical types listed in Tables 1 and 2.

LM LOWER MONUMENTAL MEMBER

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	COMMENTS
	50.19	13.93	13.60	5.21	8.71	2.63	1.41	2.92	0.67	0.21		C-79
	50.22	13.94	13.63	5.18	8.61	2.69	1.45	2.89	0.66	0.22		C-54
	50.43	13.92	13.49	5.15	8.52	2.85	1.53	2.88	0.68	0.21		73-333
*	50.81	14.60	13.34	5.14	7.92	2.57	1.34	2.88	0.70	0.26		73-101
	49.72	14.32	14.00	5.13	8.61	2.79	1.47	2.82	0.66	0.21		74-309
	50.23	13.92	13.61	5.11	8.63	2.80	1.54	2.92	0.68	0.20		C-9
	50.04	13.92	13.70	5.09	8.58	3.03	1.54	2.93	0.63	0.21		C-115
	50.78	14.02	13.14	5.07	8.61	2.71	1.51	2.85	0.69	0.20		73-339
	50.60	13.92	13.51	5.06	8.59	2.71	1.54	2.89	0.68	0.21		73-345
	50.39	13.85	13.59	5.03	8.73	2.71	1.52	2.93	0.66	0.20		C-10
	50.66	13.75	13.60	5.02	8.58	2.94	1.42	2.90	0.61	0.21		72-145F
	49.90	14.37	14.03	5.01	8.61	2.65	1.47	2.83	0.65	0.21		75-110
	50.48	13.74	13.68	5.00	8.67	2.80	1.52	2.91	0.63	0.21		C-2
	50.48	13.93	13.63	4.99	8.64	2.60	1.47	2.93	0.67	0.20		C-17
	49.77	14.34	13.94	4.98	8.63	2.90	1.45	2.85	0.66	0.21		74-304
*	52.18	13.57	12.89	4.98	9.02	2.78	0.97	2.81	0.35	0.19		75-29
	50.46	13.89	13.49	4.98	8.66	2.76	1.45	2.93	0.67	0.21		C-123
	50.68	13.79	13.69	4.96	8.67	2.64	1.40	2.90	0.65	0.20		C-5
	49.96	14.40	13.84	4.95	8.66	2.74	1.51	2.82	0.65	0.21		74-297
	50.37	13.75	13.68	4.95	8.71	2.89	1.44	2.97	0.64	0.21		73-362
	49.98	14.44	13.71	4.92	8.65	2.81	1.52	2.83	0.65	0.21		74-243
	50.33	13.99	13.72	4.91	8.71	2.64	1.45	2.93	0.70	0.21		73-361
	50.56	13.90	13.57	4.90	8.60	2.83	1.39	2.86	0.67	0.21		73-101F
	50.43	13.83	13.70	4.89	8.74	2.66	1.37	2.91	0.67	0.20		C-48
*	49.73	14.33	14.29	4.88	8.61	2.82	1.34	2.88	0.63	0.20		75-117
*	50.02	14.64	13.32	4.88	8.80	2.92	1.39	2.89	0.64	0.21		75-122
	50.17	13.90	13.82	4.84	8.60	2.82	1.51	2.92	0.66	0.21		C-116
*	49.68	14.25	14.59	4.81	8.49	2.70	1.40	2.91	0.58	0.19		72-145
	50.02	14.42	13.90	4.73	8.60	2.96	1.40	2.85	0.64	0.19		75-121
AVERAGE	50.29	14.01	13.68	5.00	8.64	2.77	1.47	2.89	0.66	0.21		LM
MAXIMUM	50.78	14.44	14.03	5.21	8.74	3.03	1.54	2.97	0.70	0.22		
MINIMUM	49.72	13.74	13.14	4.73	8.52	2.60	1.37	2.82	0.61	0.19		
DIFFERENCE	1.06	0.70	0.89	0.48	0.22	0.43	0.17	0.15	0.09	0.03		

GOOSE ICE HARBOR MEMBER; GOOSE ISLAND FLOW

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	COMMENTS
	47.69	12.25	17.35	4.55	8.78	2.32	1.21	3.74	1.51	0.27		71-104S
	47.82	12.57	17.16	4.53	8.63	2.37	1.13	3.91	1.34	0.24		73-114
	47.45	12.42	16.94	4.48	8.71	2.34	1.12	3.86	1.73	0.34		72-249
	46.64	12.47	18.25	4.46	8.38	2.43	1.41	3.68	1.53	0.33		71-112
*	48.25	12.96	15.77	4.42	8.91	2.57	0.90	3.90	1.23	0.26		73-135
*	47.22	12.32	17.44	4.41	8.80	2.53	1.24	3.78	1.69	0.28		75-35
*	47.26	12.43	17.44	4.40	8.85	2.42	1.34	3.79	1.49	0.00		71-104A
*	48.39	12.71	15.93	4.34	8.76	2.27	1.24	3.61	1.65	0.34		73-132
	47.28	12.24	17.70	4.31	8.49	2.40	1.30	3.81	1.70	0.35		72-248
*	47.10	12.87	17.41	4.18	8.68	2.61	0.92	3.66	1.25	0.26		73-158
*	46.29	13.72	17.08	3.89	8.89	2.45	1.02	3.78	1.74	0.34		72-252
*	50.03	12.69	15.95	3.73	7.44	2.77	0.98	3.41	1.81	0.25		73-159
AVER	47.38	12.39	17.48	4.47	8.60	2.37	1.23	3.80	1.56	0.31		GOOSE

	MAXIMUM	47.82	12.57	18.25	4.55	8.78	2.43	1.41	3.91	1.73	0.35		
	MINIMUM	46.64	12.24	16.94	4.31	8.38	2.32	1.12	3.68	1.34	0.24		
DIFFERENCE		1.18	0.33	1.31	0.24	0.40	0.11	0.29	0.23	0.39	0.11		

INDIAN ICE HARBOR MEMBER; INDIAN MEMORIAL FLOW

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	49.30	14.04	14.08	5.53	8.77	2.35	1.12	3.38	0.87	0.24		73-122
	49.99	13.71	13.81	5.48	8.49	2.54	1.01	3.55	0.80	0.15		73-82
	49.00	13.65	14.39	5.40	9.14	2.44	1.01	3.46	0.91	0.27		72-247
	49.71	13.76	13.76	5.34	9.10	2.67	0.97	3.49	0.78	0.19		73-125
*	48.85	13.40	14.76	5.32	9.35	2.49	0.94	3.48	0.81	0.23		75-36
	49.48	13.55	14.52	5.31	8.90	2.30	1.10	3.41	0.95	0.20		76-49
	48.87	14.18	14.52	5.22	8.93	2.51	1.00	3.31	0.83	0.21		75-38
AVERAGE	49.39	13.81	14.18	5.38	8.89	2.47	1.03	3.43	0.86	0.21		INDIAN
MAXIMUM	49.99	14.18	14.52	5.53	9.14	2.67	1.12	3.55	0.95	0.27		
MINIMUM	48.87	13.55	13.76	5.22	8.49	2.30	0.97	3.31	0.78	0.15		
DIFFERENCE	1.12	0.63	0.76	0.31	0.65	0.37	0.15	0.24	0.17	0.12		

MARTIN ICE HARBOR MEMBER; MARTINDALE FLOW

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
*	47.72	13.44	13.61	6.26	10.71	2.52	1.21	3.31	0.72	0.23		71-110
	48.05	13.75	14.44	6.17	9.78	2.32	0.90	3.33	0.78	0.20		71-114
	47.98	13.82	14.62	6.11	9.69	2.30	0.83	3.30	0.83	0.18		76-28
*	48.93	14.08	13.60	6.07	9.58	2.63	0.65	3.24	0.72	0.18		73-129
	48.33	13.65	14.52	6.06	9.99	2.42	0.75	3.33	0.58	0.18		72-263
	48.91	14.07	14.03	6.06	9.58	2.36	0.56	3.18	0.67	0.18		73-130
*	48.00	13.76	14.35	5.99	10.13	2.39	0.88	3.28	0.72	0.24		71-114A
	48.45	13.83	14.50	5.94	9.68	2.45	0.61	3.27	0.69	0.18		73-117
	48.84	14.14	14.20	5.90	9.55	2.44	0.69	3.15	0.64	0.18		73-116
	48.80	13.68	14.41	5.81	9.80	2.24	0.72	3.26	0.77	0.27		71-88
	48.80	13.89	14.29	5.78	10.00	2.43	0.42	3.24	0.71	0.18		73-85
*	48.69	14.40	13.51	5.78	9.78	2.94	0.50	3.04	0.55	0.18		73-142
*	48.07	13.66	15.01	5.76	9.40	2.42	0.91	3.41	0.74	0.22		71-108
	48.78	13.79	14.23	5.76	9.55	2.57	0.65	3.39	0.78	0.18		73-115
	48.46	14.32	14.40	5.68	9.64	2.33	0.66	3.04	0.77	0.22		75-72
	48.80	13.77	14.49	5.68	9.05	2.39	0.84	3.49	0.87	0.18		76-26
	49.17	13.36	14.39	5.40	9.98	2.44	0.73	3.36	0.63	0.18		72-262
*	49.50	14.06	12.81	4.79	10.11	2.50	0.85	3.64	0.88	0.28		72-243
AVERAGE	48.61	13.84	14.38	5.86	9.69	2.39	0.70	3.28	0.73	0.19		MARTIN
MAXIMUM	49.17	14.32	14.62	6.17	10.00	2.57	0.90	3.49	0.87	0.27		
MINIMUM	47.98	13.36	14.03	5.40	9.05	2.24	0.42	3.04	0.58	0.18		
DIFFERENCE	1.19	0.96	0.59	0.77	0.95	0.33	0.48	0.45	0.29	0.09		

BASIN ICE HARBOR MEMBER; BASIN CITY FLOW

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
*	47.78	14.07	14.44	6.47	9.34	2.15	0.69	3.49	0.91	0.25		73-144

	46.94	13.67	14.84	6.32	9.99	2.34	0.74	3.57	0.93	0.25	73-154
	47.02	13.52	15.21	6.15	9.67	2.42	0.80	3.73	0.92	0.29	72-250
*	47.05	13.74	14.86	6.11	9.11	3.25	0.75	3.56	0.96	0.25	73-157
	46.99	13.48	15.29	6.03	9.74	2.41	0.85	3.82	0.74	0.20	72-264
	47.90	13.67	14.79	5.97	9.39	2.43	0.78	3.64	0.90	0.19	73-134
	46.83	13.89	15.40	5.96	9.58	2.36	0.51	3.70	0.85	0.21	73-140
*	47.04	13.31	15.57	5.96	9.74	2.34	0.81	3.79	0.88	0.25	75-46
	46.74	13.93	15.66	5.95	9.54	2.32	0.68	3.53	0.90	0.21	75-67
	47.54	13.48	15.52	5.88	9.09	2.33	0.75	3.54	1.11	0.22	75-66
	46.81	13.84	15.05	5.80	9.47	2.13	0.88	3.66	0.96	0.22	75-59
*	47.89	14.48	14.00	5.68	9.99	2.06	0.71	3.51	0.92	0.22	73-146
	47.10	14.22	15.03	5.56	10.30	2.16	0.46	3.40	0.88	0.21	75-51
	47.83	14.09	14.92	5.45	9.77	2.16	0.67	3.39	0.86	0.21	75-518
AVERAGE	47.17	13.78	15.17	5.91	9.65	2.31	0.71	3.60	0.90	0.22	BASIN
MAXIMUM	47.90	14.22	15.66	6.32	10.30	2.43	0.88	3.82	1.11	0.29	
MINIMUM	46.74	13.48	14.79	5.45	9.09	2.13	0.46	3.39	0.74	0.19	
DIFFERENCE	1.16	0.74	0.87	0.87	1.21	0.30	0.42	0.43	0.37	0.10	

BUFORD BUFORD MEMBER

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	53.71	14.32	11.28	5.01	8.49	2.70	1.40	2.20	0.38	0.14	76-255	
	53.92	14.01	11.39	4.93	8.44	2.82	1.41	2.21	0.38	0.15	76-273	
	54.07	13.97	11.35	4.92	8.51	2.71	1.30	2.21	0.37	0.14	76-266	
	54.20	14.08	11.15	4.86	8.38	2.73	1.51	2.12	0.37	0.15	76-277	
	54.32	14.81	10.38	4.83	8.80	2.84	1.30	2.05	0.28	0.17	72-146	
	54.32	14.08	10.93	4.76	8.81	2.73	1.31	2.22	0.31	0.15	76-240	
	54.65	14.43	11.43	4.70	8.05	2.45	1.43	2.04	0.32	0.21	71-3	
	55.10	14.23	10.21	4.64	8.36	2.92	1.51	2.22	0.36	0.13	76-217	
	53.60	14.81	11.95	4.62	8.51	2.36	1.33	1.95	0.26	0.16	72-171	
AVERAGE	54.21	14.30	11.12	4.81	8.48	2.70	1.39	2.14	0.34	0.16	BUFORD	
MAXIMUM	55.10	14.81	11.95	5.01	8.81	2.92	1.51	2.22	0.38	0.21		
MINIMUM	53.60	13.97	10.21	4.62	8.05	2.36	1.30	1.95	0.26	0.13		
DIFFERENCE	1.50	0.84	1.74	0.39	0.76	0.56	0.21	0.27	0.12	0.08		

ELEPHANT ELEPHANT MOUNTAIN MEMBER

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	51.64	13.77	14.33	4.49	7.92	2.24	1.22	3.36	0.59	0.23	73-20	
	50.99	13.51	14.66	4.46	8.10	2.43	1.11	3.55	0.59	0.18	76-62	
*	51.39	13.13	14.47	4.45	8.65	2.46	1.20	3.27	0.54	0.20	73-20 F	
	51.18	13.55	14.54	4.45	8.16	2.32	1.21	3.54	0.60	0.18	76-64	
	50.77	13.82	14.29	4.44	8.17	2.32	1.41	3.63	0.62	0.25	72-241	
	49.93	14.04	14.86	4.44	8.58	2.12	0.97	3.53	0.66	0.22	75-60	
	49.97	13.39	15.12	4.43	8.66	2.41	1.51	3.47	0.50	0.23	71-111	
	51.04	13.61	14.68	4.43	8.24	2.32	1.21	3.42	0.58	0.18	76-44	
	50.38	13.67	14.96	4.42	8.33	2.41	1.30	3.51	0.58	0.17	75-162	
	50.77	12.64	15.04	4.41	8.61	2.60	1.40	3.51	0.58	0.18	72-325	
*	49.22	14.66	15.07	4.41	8.63	2.31	1.30	3.39	0.48	0.23	71-116	
	50.92	13.66	14.57	4.41	8.23	2.41	1.30	3.41	0.58	0.18	76-66	
	50.79	13.55	14.60	4.41	8.30	2.40	1.30	3.51	0.57	0.17	76-67	
	50.22	14.36	13.98	4.40	8.68	2.30	0.79	3.56	0.77	0.19	73-84	

	50.27	13.20	15.28	4.39	8.44	2.68	1.24	3.44	0.55	0.21		74-90
	50.80	13.59	14.68	4.39	8.35	2.35	1.22	3.47	0.59	0.18		76-76
*	51.41	13.03	14.60	4.39	8.66	2.06	1.16	3.50	0.57	0.19		C-21
	51.12	12.88	14.76	4.39	8.37	2.60	1.36	3.55	0.59	0.21		C-42
	50.58	13.78	14.95	4.35	8.19	2.43	1.11	3.44	0.58	0.18		71-95
	50.68	13.41	14.74	4.35	8.36	2.63	1.32	3.44	0.56	0.21		74-310
	50.70	13.27	14.74	4.34	8.48	2.65	1.30	3.44	0.56	0.21		74-324
	51.18	13.42	14.78	4.34	8.15	2.22	1.31	3.53	0.59	0.18		76-51
	50.73	13.34	14.72	4.33	8.40	2.55	1.38	3.47	0.57	0.21		74-298
	50.52	13.50	14.52	4.32	8.70	2.42	1.26	3.53	0.49	0.35		71-109
	50.75	13.34	14.85	4.31	8.46	2.52	1.31	3.41	0.55	0.21		74-317
	49.52	14.33	14.68	4.31	8.57	2.60	1.00	3.50	0.59	0.21		75-62
	50.50	13.38	15.19	4.28	8.28	2.53	1.32	3.44	0.56	0.20		74-328
	51.18	12.72	14.97	4.27	8.59	2.44	1.32	3.36	0.49	0.22		71-122
	50.85	13.22	15.08	4.27	7.91	2.54	1.22	3.55	0.56	0.18		72-256
	51.04	13.55	14.70	4.27	8.12	2.44	1.22	3.56	0.62	0.17		76-87
	50.60	14.57	13.66	4.26	8.66	2.39	0.98	3.43	0.59	0.20		75-44
	50.81	13.59	14.65	4.25	8.15	2.43	1.31	3.65	0.59	0.27		72-240
	50.92	14.04	14.71	4.24	8.01	2.52	1.21	3.33	0.60	0.23		72-144
	50.11	13.30	14.73	4.23	8.45	2.62	1.31	3.62	0.61	0.18		72-265
	51.58	13.79	14.37	4.22	7.60	2.47	1.23	3.70	0.66	0.18		73-74
*	50.10	13.80	15.19	4.19	8.15	2.76	1.12	3.37	0.55	0.18		75-57
*	50.50	14.00	14.56	4.19	8.69	2.45	0.90	3.37	0.55	0.18		75-58
*	50.90	13.35	14.55	4.11	8.54	2.50	1.41	3.68	0.54	0.00		71-107A
	51.19	13.41	14.40	4.09	7.97	2.35	1.22	3.68	0.65	0.24		72-266
	51.62	12.60	15.12	4.06	8.11	2.54	1.32	3.57	0.52	0.22		71-101
	50.86	13.83	14.99	4.06	8.12	2.33	1.22	3.45	0.56	0.16		73-38
	51.94	13.94	14.09	4.04	7.85	2.42	1.21	3.53	0.60	0.17		73-56
	51.01	13.53	14.48	4.04	8.35	2.62	1.31	3.63	0.61	0.20		71-107
	50.63	13.32	15.24	4.02	8.56	2.42	1.26	3.49	0.56	0.20		74-299
	51.74	13.03	14.85	4.00	8.31	2.36	1.12	3.49	0.58	0.24		71-89
*	50.59	13.72	14.78	3.99	8.70	2.35	1.00	3.48	0.58	0.19		75-56
	51.65	13.16	14.70	3.98	8.16	2.45	1.32	3.47	0.62	0.24		71-17
	51.29	14.00	13.56	3.89	8.75	2.84	0.92	3.58	0.50	0.16		73-160
	51.09	13.66	14.03	3.87	8.86	2.54	1.01	3.56	0.59	0.18		72-251
	52.09	13.28	14.48	3.70	8.23	2.26	1.13	3.50	0.60	0.24		71-124
AVERAGE	50.89	13.52	14.66	4.26	8.31	2.45	1.23	3.51	0.58	0.20		ELEPHANT
MAXIMUM	52.09	14.57	15.28	4.49	8.86	2.84	1.51	3.70	0.77	0.35		
MINIMUM	49.52	12.60	13.56	3.70	7.60	2.12	0.79	3.33	0.49	0.16		
DIFFERENCE	2.57	1.97	1.72	0.79	1.26	0.72	0.72	0.37	0.28	0.19		

POMONA POMONA MEMBER

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	51.74	14.99	10.30	7.44	10.45	2.21	0.67	1.61	0.22	0.16		71-106
	51.36	14.86	10.48	7.38	10.83	2.35	0.62	1.55	0.25	0.16		C-177
*	51.30	15.09	10.50	7.25	10.70	2.39	0.67	1.55	0.19	0.00		71-106A
	51.85	14.69	10.12	7.22	10.82	2.46	0.67	1.58	0.26	0.16		73-102
	51.55	14.74	10.55	7.19	10.71	2.39	0.58	1.64	0.25	0.16		C-168
	51.04	15.18	10.84	7.19	10.43	2.39	0.69	1.62	0.22	0.17		71-115
	51.98	14.69	10.27	7.16	10.65	2.33	0.65	1.64	0.27	0.17		C-150
	51.75	14.70	10.67	7.14	10.68	2.31	0.57	1.60	0.25	0.17		C-16
	51.23	14.91	10.75	7.13	10.89	2.39	0.56	1.54	0.20	0.18		74-327
	51.37	14.86	10.63	7.12	10.74	2.44	0.57	1.63	0.25	0.17		C-166
	51.32	15.07	10.44	7.06	10.85	2.41	0.68	1.58	0.21	0.17		74-329
	52.09	14.60	10.57	7.05	10.57	2.30	0.59	1.62	0.24	0.17		73-365A

	51.93	14.92	10.63	7.05	10.21	2.14	0.75	1.63	0.28	0.20		73-18
	51.73	14.76	10.60	7.04	10.71	2.37	0.55	1.60	0.26	0.17		73-348
	51.92	14.85	10.46	7.01	10.63	2.21	0.66	1.63	0.27	0.17		C-27
	51.39	14.85	10.79	7.00	10.61	2.51	0.69	1.57	0.20	0.18		74-334
	52.15	14.94	10.09	7.00	10.48	2.43	0.67	1.62	0.26	0.17		C-57
	51.91	14.78	10.33	6.99	10.57	2.42	0.69	1.67	0.32	0.17		C-28
	51.66	14.74	10.59	6.98	10.58	2.39	0.62	1.71	0.28	0.17		C-50
	52.11	14.79	10.43	6.95	10.70	2.17	0.57	1.61	0.26	0.17		C-24
	51.32	14.88	10.55	6.93	10.90	2.50	0.68	1.61	0.23	0.18		74-323
	52.13	15.03	10.55	6.91	10.30	2.23	0.63	1.62	0.26	0.19		72-143A
*	52.22	14.57	10.11	6.88	10.68	2.42	0.89	1.61	0.27	0.19		73-58
	51.97	14.99	10.73	6.88	10.16	2.33	0.56	1.72	0.31	0.20		72-40A
*	52.14	14.14	10.80	6.87	10.49	2.42	0.67	1.81	0.25	0.15		72-324
	51.37	15.08	10.74	6.78	10.96	2.32	0.59	1.54	0.22	0.17		73-41
	52.18	15.19	10.29	6.78	10.37	2.33	0.49	1.72	0.27	0.19		72-90
	51.30	14.81	10.95	6.77	10.78	2.49	0.65	1.62	0.22	0.18		74-305
	52.09	14.71	10.66	6.73	10.60	2.30	0.65	1.61	0.27	0.17		73-18F
*	52.11	15.43	9.99	6.63	10.33	2.49	0.70	1.66	0.24	0.20		73-80
*	52.25	15.43	9.96	6.61	10.48	2.43	0.63	1.57	0.23	0.19		73-71
	52.23	14.74	10.54	6.55	10.65	2.35	0.65	1.63	0.23	0.17		71-127
*	52.50	14.83	10.41	6.03	10.74	2.25	0.78	1.63	0.24	0.20		71-128
*	53.08	14.67	10.26	5.80	10.64	2.34	0.79	1.63	0.32	0.19		73-57
*	51.75	14.25	12.34	5.76	10.67	1.92	0.54	1.81	0.28	0.14		73-106
AVERAGE	51.73	14.86	10.54	7.02	10.62	2.35	0.63	1.62	0.25	0.17		POMONA
MAXIMUM	52.23	15.19	10.95	7.44	10.96	2.51	0.75	1.72	0.32	0.20		
MINIMUM	51.04	14.60	10.09	6.55	10.16	2.14	0.49	1.54	0.20	0.16		
DIFFERENCE	1.19	0.59	0.86	0.89	0.80	0.37	0.26	0.18	0.12	0.04		

ESQUAT ESQUATZEL MEMBER

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	53.86	14.18	12.31	4.21	7.78	2.46	1.54	2.67	0.42	0.20		73-152
	54.55	13.23	12.63	4.17	7.54	2.74	1.52	2.74	0.39	0.15		73-145
	54.01	13.50	12.88	4.09	7.14	2.55	1.84	3.06	0.47	0.20		73-19
	54.02	14.11	12.62	3.99	7.26	2.55	1.63	2.86	0.45	0.20		73-151
	53.30	14.12	12.62	3.87	7.99	2.86	1.81	2.63	0.36	0.19		74-218
	54.37	13.82	12.36	3.81	7.72	2.57	1.65	2.78	0.40	0.24		71-90
	53.87	13.77	12.79	3.77	7.29	2.75	1.73	3.06	0.45	0.20		73-22
	54.25	13.91	12.70	3.73	7.43	2.72	1.61	2.72	0.33	0.15		72-260
	53.71	13.62	12.98	3.59	7.78	2.63	1.71	3.02	0.43	0.18		73-22 F
AVERAGE	53.99	13.81	12.65	3.91	7.55	2.65	1.67	2.84	0.41	0.19		ESQUAT
MAXIMUM	54.55	14.18	12.98	4.21	7.99	2.86	1.84	3.06	0.47	0.24		
MINIMUM	53.30	13.23	12.31	3.59	7.14	2.46	1.52	2.63	0.33	0.15		
DIFFERENCE	1.25	0.95	0.67	0.62	0.85	0.40	0.32	0.43	0.14	0.09		

SLIP WEISSENFELS RIDGE MEMBER; SLIPPERY CREEK FLOW

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	52.10	14.09	11.55	5.61	9.68	2.65	0.84	2.55	0.53	0.16		76-233
	51.85	14.50	11.59	5.60	9.56	2.77	0.85	2.43	0.43	0.19		72-147
	52.00	14.29	11.68	5.47	9.60	2.63	0.91	2.43	0.52	0.15		76-239

AVERAGE	51.98	14.29	11.61	5.56	9.61	2.68	0.87	2.47	0.49	0.17		SLIP
MAXIMUM	52.10	14.50	11.68	5.61	9.68	2.77	0.91	2.55	0.53	0.19		
MINIMUM	51.85	14.09	11.55	5.47	9.56	2.63	0.84	2.43	0.43	0.15		
DIFFERENCE	0.25	0.41	0.13	0.14	0.12	0.14	0.07	0.12	0.10	0.04		

LEW ORCH WEISSENFELS RIDGE MEMBER; LEWISTON ORCHARDS FLOW

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O		--------- COMMENTS ---------
	49.21	15.35	11.35	7.72	10.52	2.23	0.34	2.23	0.51	0.14		75-116	
*	50.53	15.07	10.61	6.55	10.82	2.39	0.48	2.41	0.63	0.27		74-312	
	50.03	15.08	12.23	6.44	9.63	2.39	0.57	2.60	0.58	0.28		71-36	
AVERAGE	49.62	15.22	11.79	7.08	10.07	2.31	0.45	2.41	0.54	0.21		LEW ORCH	
MAXIMUM	50.03	15.35	12.23	7.72	10.52	2.39	0.57	2.60	0.58	0.28			
MINIMUM	49.21	15.08	11.35	6.44	9.63	2.23	0.34	2.23	0.51	0.14			
DIFFERENCE	0.82	0.27	0.88	1.28	0.89	0.16	0.23	0.37	0.07	0.14			

ASOTIN ASOTIN MEMBER

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O		--------- COMMENTS ---------
	50.11	16.29	9.85	8.42	10.86	2.11	0.42	1.40	0.16	0.16		74-311	
	50.93	16.29	9.65	8.40	10.54	2.15	0.10	1.43	0.17	0.11		72-31	
	50.28	15.69	9.63	8.34	11.13	2.41	0.43	1.50	0.20	0.12		75-1	
	50.50	16.12	9.64	8.16	10.76	2.31	0.54	1.41	0.21	0.18		71-37	
	50.43	16.14	9.81	8.12	10.70	2.30	0.48	1.50	0.18	0.19		71-48	
	50.91	16.32	9.53	8.01	10.64	2.12	0.54	1.41	0.17	0.19		71-38	
	51.04	16.07	9.27	7.93	10.62	2.31	0.65	1.50	0.21	0.18		71-15	
AVERAGE	50.60	16.13	9.63	8.20	10.75	2.24	0.45	1.45	0.19	0.16		ASOTIN	
MAXIMUM	51.04	16.32	9.85	8.42	11.13	2.41	0.65	1.50	0.21	0.19			
MINIMUM	50.11	15.69	9.27	7.93	10.54	2.11	0.10	1.40	0.16	0.11			
DIFFERENCE	0.93	0.63	0.58	0.49	0.59	0.30	0.55	0.10	0.05	0.08			

WILBUR WILBUR CREEK MEMBER INCLUDING WARDEN FLOW TONGUE

	SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O		--------- COMMENTS ---------
	54.33	14.59	10.88	4.66	8.11	2.73	1.82	1.92	0.53	0.20		72-229	
*	54.42	14.68	10.53	4.62	8.33	2.81	1.71	1.91	0.53	0.19		72-209	
	54.11	14.14	11.25	4.60	8.41	2.77	1.86	1.87	0.56	0.18		74-268	
	54.03	14.32	11.14	4.57	8.62	2.64	1.72	1.92	0.51	0.25		72-213	
	53.73	14.65	11.49	4.57	8.11	2.64	1.73	1.93	0.56	0.23		72-222	
	53.93	14.64	10.96	4.54	8.55	2.72	1.81	1.91	0.51	0.23		72-224	
	54.41	14.46	11.39	4.48	8.15	2.64	1.73	1.83	0.54	0.21		71-84	
*	54.96	13.81	11.19	4.47	8.13	2.64	1.82	1.93	0.59	0.23		72-223	
	54.25	14.60	10.94	4.46	8.44	2.63	1.82	1.92	0.47	0.22		71-39	
*	54.54	14.65	10.51	4.27	8.27	2.74	1.73	2.27	0.60	0.20		72-212	
	54.17	14.59	11.19	4.21	8.09	2.56	1.64	1.95	0.67	0.18		72-288	
AVERAGE	54.12	14.50	11.15	4.51	8.31	2.67	1.77	1.91	0.54	0.21		WILBUR	
MA IM	54.41	14.65	11.49	4.66	8.62	2.77	1.86	1.95	0.67	0.25			

MINIMUM	53.73	14.14	10.88	4.21	8.09	2.56	1.64	1.83	0.47	0.18	
DIFFERENCE	0.68	0.51	0.61	0.45	0.53	0.21	0.22	0.12	0.20	0.07	

UMATILLA UMATILLA MEMBER

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	54.80	14.10	11.99	3.14	6.27	2.84	2.53	3.14	0.80	0.16		73-81
	55.00	13.95	12.21	3.13	6.04	3.03	2.42	3.03	0.84	0.19		73-83
	53.86	13.82	12.53	2.84	6.04	3.65	2.54	2.84	0.87	0.19		71-125
	53.76	13.39	13.21	2.84	6.23	3.34	2.84	2.94	0.92	0.22		72-300
	54.22	13.75	12.81	2.83	6.03	3.43	2.63	2.83	0.92	0.18		72-267
	54.86	14.52	12.43	2.74	6.05	3.04	2.33	2.74	0.82	0.16		72-163
*	53.79	13.92	12.77	2.72	6.16	3.32	2.57	2.87	0.83	0.00		71-125A
	53.94	13.97	13.52	2.67	5.97	2.97	2.67	2.77	0.90	0.23		72-234
	54.15	13.91	12.43	2.64	6.09	3.45	2.94	2.64	0.98	0.16		72-268
	54.72	14.60	12.21	2.57	6.11	3.29	2.46	2.77	0.73	0.16		72-175
	54.61	14.19	12.30	2.57	6.15	3.39	2.57	2.46	0.90	0.16		73-15
	54.01	14.58	12.78	2.56	5.14	3.49	3.28	2.69	0.89	0.25		71-4
	55.04	14.56	12.10	2.47	5.97	3.20	2.58	2.68	0.82	0.15		72-174
	55.47	14.02	13.88	2.42	3.73	3.16	3.05	2.77	0.92	0.29		71-72
	55.21	14.05	11.96	2.42	6.11	3.03	3.13	2.62	0.97	0.17		76-48
*	53.14	13.96	14.69	2.10	6.02	3.46	2.62	2.73	0.49	0.42		72-231
*	53.50	15.22	13.72	1.85	5.02	3.18	2.57	2.88	0.90	0.12		72-172
AVERAGE	54.55	14.10	12.60	2.70	5.85	3.24	2.71	2.78	0.88	0.19		UMATILLA
MAXIMUM	55.47	14.60	13.88	3.14	6.27	3.65	3.28	3.14	0.98	0.29		
MINIMUM	53.76	13.39	11.96	2.42	3.73	2.84	2.33	2.46	0.73	0.15		
DIFFERENCE	1.71	1.21	1.92	0.72	2.54	0.81	0.95	0.68	0.25	0.14		

LOLO INC PRIEST RAPIDS MEMBER; LOLO CHEMICAL TYPE

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
	49.17	14.45	13.91	5.70	8.94	2.54	1.01	3.15	0.65	0.19		72-180
	50.05	14.70	13.24	5.64	8.74	2.61	1.00	2.82	0.82	0.18		72-220
	49.22	14.04	13.94	5.62	9.08	2.70	1.10	3.03	0.76	0.22		75-75
	49.62	14.06	14.03	5.62	8.72	2.71	0.91	3.01	0.77	0.18		75-124
	49.89	14.45	13.52	5.60	9.04	2.34	1.01	3.05	0.66	0.17		72-178
	49.35	14.41	13.82	5.60	9.09	2.60	0.98	3.00	0.75	0.18		75-134
	49.71	14.53	14.01	5.49	8.51	2.44	0.88	3.05	0.83	0.19		72-201
*	49.53	13.44	14.72	5.48	8.66	2.58	1.03	3.20	0.74	0.20		73-167
	49.57	13.83	13.69	5.47	8.94	2.68	1.38	3.18	0.78	0.18		71-94
	50.72	14.62	13.34	5.47	8.32	2.48	0.99	2.88	0.77	0.17		72-182
	49.90	14.70	13.81	5.47	8.73	2.23	0.80	3.04	0.88	0.21		72-202
	49.83	14.07	13.94	5.46	8.58	2.43	1.21	3.14	0.86	0.20		76-92
	49.95	14.12	13.57	5.44	8.76	2.62	1.11	3.22	0.81	0.20		71-42S
	49.89	13.91	13.82	5.44	8.61	2.62	1.20	3.22	0.86	0.19		76-91
	50.33	14.39	13.17	5.43	8.94	2.41	1.10	3.12	0.65	0.19		72-177
	50.15	14.60	12.56	5.43	9.21	2.71	0.95	3.12	0.76	0.24		72-225
	49.25	14.24	13.65	5.43	9.46	2.71	0.97	3.03	0.75	0.23		73-112
	49.47	14.52	13.92	5.40	8.79	2.50	1.10	3.10	0.78	0.19		72-208
	49.55	14.21	14.44	5.38	8.43	2.43	1.01	3.24	0.79	0.19		71-93
	49.70	14.10	13.81	5.37	8.87	2.63	1.11	3.24	0.79	0.15		72-287
*	49.53	14.22	13.59	5.34	8.95	2.52	1.10	3.43	0.77	0.28		72-216
*	49.48	13.99	13.93	5.33	9.08	2.58	1.19	3.31	0.65	0.00		71-42P
	50.17	14.04	13.37	5.31	9.11	2.60	1.00	3.11	0.79	0.18		75-123

*	48.44	14.58	13.94	5.30	9.67	2.54	0.71	3.36	0.79	0.18	72-176
*	49.75	13.37	13.76	5.30	9.31	2.55	1.40	3.22	0.83	0.23	74-270
	50.12	13.85	13.92	5.29	8.76	2.44	1.12	3.26	0.79	0.27	71-69
	49.77	13.91	14.04	5.28	8.93	2.43	1.11	3.25	0.79	0.27	71-96
	49.73	14.21	13.74	5.27	9.04	2.53	1.11	3.14	0.83	0.19	72-132
	49.86	14.26	12.72	5.26	9.61	2.79	1.16	3.08	0.80	0.20	74-322
	49.88	14.85	13.60	5.21	8.71	2.60	0.85	3.11	0.72	0.18	72-204
*	49.78	14.15	13.59	5.21	8.66	3.11	0.95	3.21	0.77	0.17	75-134B
*	49.73	13.16	13.93	5.18	9.50	2.59	0.95	3.41	0.86	0.18	72-299
	49.85	14.49	13.97	5.16	8.79	2.63	0.92	2.93	0.72	0.18	72-211
*	49.96	13.26	13.77	5.15	9.17	2.79	1.26	3.19	0.94	0.23	74-269
	50.60	14.64	12.59	5.15	8.97	2.62	0.97	3.13	0.79	0.16	72-207
	49.67	13.93	13.87	5.14	9.10	2.52	1.31	3.21	0.73	0.24	71-74
	49.51	14.31	14.31	5.14	8.76	2.62	1.00	3.12	0.80	0.18	75-134A
	50.18	14.68	13.43	5.10	8.54	2.55	1.12	3.26	0.78	0.19	73-73
	50.08	13.84	14.15	5.08	8.75	2.44	1.11	3.25	0.78	0.27	71-82
	49.70	13.89	13.41	5.07	9.53	2.73	1.21	3.15	0.73	0.22	71-40
	50.21	14.78	13.13	5.06	8.79	2.63	1.01	3.23	0.84	0.16	72-226C
	50.15	14.30	13.53	5.03	8.44	2.71	1.20	3.22	0.81	0.19	73-169
	50.16	14.64	13.52	5.01	9.00	2.50	0.99	3.00	0.83	0.18	72-221C
	49.86	14.64	13.57	5.01	8.96	2.60	1.00	3.11	0.86	0.18	72-214
	50.37	13.96	14.56	4.98	8.35	2.39	0.99	3.19	0.76	0.19	72-203
*	49.28	14.32	14.41	4.97	8.67	2.54	0.91	3.45	0.77	0.21	73-39
	50.79	14.22	13.15	4.97	8.71	2.53	0.96	3.25	0.84	0.18	76-63
	49.77	14.10	13.72	4.96	9.54	2.50	1.07	3.10	0.77	0.21	74-308
	50.62	15.04	12.80	4.94	8.56	2.57	0.78	3.11	0.78	0.33	72-39
	49.57	14.51	14.46	4.93	8.46	2.61	1.10	3.02	0.82	0.22	71-81
	50.52	14.72	12.64	4.90	9.24	2.45	1.02	3.06	0.80	0.24	72-155
	49.69	14.44	14.98	4.88	8.29	2.58	0.95	2.88	0.73	0.17	72-285
	49.89	14.51	14.10	4.83	8.45	2.62	0.91	3.32	0.85	0.18	72-210
*	49.81	14.69	14.35	4.83	8.72	2.11	0.86	3.22	0.83	0.20	72-206
	49.63	14.18	14.65	4.79	8.47	2.59	0.99	3.19	0.81	0.21	72-227
	50.10	14.44	13.38	4.64	9.28	2.62	1.21	3.23	0.72	0.19	72-30
	50.08	14.43	14.05	4.64	8.65	2.52	0.90	3.23	0.80	0.16	72-302
	49.92	13.74	14.66	4.64	8.82	2.52	0.90	3.13	0.75	0.16	73-42
	50.67	14.83	12.51	4.53	9.58	2.36	0.92	3.29	0.63	0.16	72-158
	49.78	14.55	14.14	4.47	9.15	2.54	1.01	3.25	0.65	0.19	72-33
	50.76	13.68	14.86	4.45	7.76	2.83	1.11	3.24	0.72	0.20	73-166
	51.15	14.52	13.29	4.43	8.44	2.62	0.98	3.12	0.80	0.16	72-205
*	50.77	14.78	12.57	3.97	9.48	2.44	1.22	3.26	0.84	0.15	72-173
AVERAGE	49.96	14.33	13.71	5.15	8.83	2.56	1.03	3.13	0.78	0.20	LOLO INC
MAXIMUM	51.15	15.04	14.98	5.70	9.61	2.83	1.38	3.32	0.88	0.33	
MINIMUM	49.17	13.68	12.51	4.43	7.76	2.23	0.78	2.82	0.63	0.15	
DIFFERENCE	1.98	1.36	2.47	1.27	1.85	0.60	0.60	0.50	0.25	0.18	

ROSALIA PRIEST RAPIDS MEMBER; ROSALIA CHEMICAL TYPE

SIO2	AL203	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O	--------- COMMENTS ---------
49.51	13.79	15.47	4.63	8.09	2.67	1.13	3.39	0.70	0.30		71-79
49.58	13.07	14.87	4.62	8.93	2.71	1.20	3.62	0.84	0.20		72-313
49.88	13.30	14.27	4.53	8.85	2.82	1.20	3.62	0.84	0.20		72-330
49.79	14.06	14.85	4.45	8.32	2.63	1.21	3.54	0.76	0.22		72-314
50.42	13.22	15.19	4.40	8.19	2.45	1.33	3.48	0.81	0.27		71-83
50.06	13.63	14.80	4.37	8.41	2.74	1.01	3.45	0.81	0.20		75-8
49.65	13.32	15.06	4.27	8.63	2.74	1.22	3.66	0.78	0.22		72-310
50.58	13.67	14.51	4.21	8.28	2.67	1.02	3.70	0.82	0.20		72-328

	49.52	14.48	15.34	4.15	8.29	2.43	0.93	3.34	0.77	0.17		72-327
	49.90	12.92	15.32	4.14	8.47	2.72	1.41	3.63	0.89	0.22		72-318
	50.76	13.82	14.86	4.13	7.64	2.72	1.21	3.43	0.82	0.19		72-317
	50.61	13.61	15.04	4.13	7.83	2.72	1.10	3.62	0.79	0.21		72-237
	49.62	13.79	15.44	4.12	8.34	2.61	1.10	3.62	0.77	0.19		72-316
	50.71	13.85	14.80	4.00	8.08	2.66	1.12	3.49	0.85	0.21		72-312
	50.72	13.98	14.89	3.98	7.74	2.65	1.12	3.47	0.81	0.19		72-329
AVERAGE	50.09	13.63	14.98	4.28	8.27	2.66	1.15	3.54	0.80	0.21		ROSALIA
MAXIMUM	50.76	14.48	15.47	4.63	8.93	2.82	1.41	3.70	0.89	0.30		
MINIMUM	49.51	12.92	14.27	3.98	7.64	2.43	0.93	3.34	0.70	0.17		
DIFFERENCE	1.25	1.56	1.20	0.65	1.29	0.39	0.48	0.36	0.19	0.13		

ROZA ROZA MEMBER

	SIO2	AL203	FEO	MGO	CAO	NA20	K20	TIO2	P205	MNO	H20	--------- COMMENTS ---------
	50.92	13.49	14.21	4.86	7.98	2.84	1.21	3.24	0.73	0.19		71-105
	50.84	14.17	13.41	4.82	8.25	2.67	1.23	3.08	0.65	0.28		72-161
	50.71	13.99	13.74	4.76	8.48	2.73	1.21	3.04	0.66	0.26		72-133A
	51.27	13.57	13.64	4.76	8.79	2.48	1.18	3.09	0.64	0.20		72-305F
	50.57	14.23	14.06	4.74	8.25	2.72	1.21	3.02	0.70	0.29		72-235
*	50.60	13.64	14.37	4.65	8.27	2.76	1.25	3.24	0.56	0.00		71-105A
	51.07	13.44	13.96	4.64	8.41	2.79	1.22	3.08	0.69	0.22		71-54 F
	50.05	14.27	14.21	4.60	8.77	2.93	1.11	2.98	0.58	0.21		75-10
	49.36	14.41	14.96	4.56	8.81	2.73	1.15	2.91	0.55	0.25		75-76
	50.57	13.70	14.16	4.53	8.42	2.82	1.20	3.22	0.67	0.32		72-75
	50.62	13.71	14.08	4.53	8.34	2.72	1.31	3.32	0.71	0.28		72-84
	50.61	13.85	14.14	4.51	8.40	2.71	1.20	3.21	0.73	0.28		72-60
	51.14	13.73	13.98	4.51	8.08	2.80	1.20	3.20	0.69	0.27		72-102
	51.34	14.06	13.96	4.51	8.11	2.56	1.12	3.08	0.65	0.24		71-85
	50.83	13.56	14.16	4.42	8.62	2.71	1.20	3.21	0.78	0.18		72-307
	50.94	14.54	14.02	4.41	8.11	2.70	1.10	2.90	0.74	0.18		72-115
	51.58	13.86	13.77	4.38	8.05	2.65	1.22	3.05	0.73	0.27		71-54
	51.03	13.21	14.46	4.37	8.55	2.76	1.30	3.11	0.69	0.22		74-264
	50.43	14.15	14.21	4.34	8.49	2.72	1.11	3.02	0.79	0.22		71-75
	51.40	14.73	13.16	4.33	8.56	2.63	1.16	2.80	0.61	0.18		72-133F
	50.96	14.50	13.75	4.33	8.34	2.71	1.10	3.02	0.72	0.18		72-116
	50.95	13.84	13.82	4.30	8.38	2.66	1.23	3.17	0.71	0.26		72-160
	51.63	13.54	13.38	4.28	8.61	2.54	1.44	3.23	0.72	0.19		72-150F
	51.17	14.06	13.10	4.28	8.66	2.65	1.32	3.26	0.74	0.27		72-47
	51.36	14.47	13.46	4.28	8.63	2.64	1.12	2.95	0.58	0.17		73-43
	50.47	13.83	14.80	4.27	8.52	2.64	1.22	3.15	0.63	0.18		72-298
*	52.23	13.96	11.94	4.25	8.59	2.83	1.21	3.34	0.73	0.27		72-159B
	50.98	14.07	12.86	4.18	8.83	2.65	1.32	3.36	0.71	0.40		72-169
	51.19	13.74	13.15	4.16	8.88	2.60	1.32	3.29	0.71	0.32		72-169F
	51.10	13.80	13.94	4.13	8.20	2.82	1.31	3.22	0.70	0.28		72-159A
	51.31	14.43	13.84	4.10	8.19	2.50	1.40	2.90	0.78	0.22		72-126
	51.45	13.88	13.27	4.08	8.55	2.55	1.42	3.36	0.74	0.24		72-150
	51.12	14.94	13.19	4.06	8.37	2.84	1.21	2.94	0.65	0.21		72-133
*	51.70	14.00	12.66	4.03	8.25	3.22	1.31	3.12	0.75	0.18		72-149
	51.54	14.35	14.16	3.94	7.87	2.82	1.11	3.13	0.45	0.21		72-95
	51.27	14.63	13.93	3.93	8.37	2.82	1.00	3.02	0.36	0.22		72-74
	51.32	13.45	14.11	3.82	8.57	2.89	1.03	3.31	0.70	0.17		72-306
*	52.40	14.90	12.30	3.39	8.73	2.56	1.13	3.08	0.69	0.23		71-24
*	54.73	13.93	14.28	3.31	6.85	1.43	0.92	2.98	0.53	0.24		71-23
*	52.53	14.44	15.71	2.35	6.41	2.55	0.82	3.20	0.79	0.17		71-25

AVERAGE	50.97	14.01	13.85	4.37	8.42	2.71	1.21	3.11	0.67	0.24		ROZA
MAXIMUM	51.63	14.94	14.96	4.86	8.88	2.93	1.44	3.36	0.79	0.40		
MINIMUM	49.36	13.21	12.86	3.82	7.87	2.48	1.00	2.80	0.36	0.17		
DIFFERENCE	2.27	1.73	2.10	1.04	1.01	0.45	0.44	0.56	0.43	0.23		

FS INC FRENCHMAN SPRINGS MEMBER, FLOW AVERAGES USED

	SIO2	AL203	FEO	MGO	CAO	NA20	K20	TIO2	P205	MNO	H20	--------- COMMENTS ---------
	51.52	13.46	14.41	4.43	8.26	2.71	1.34	3.07	0.60	0.21		FS 9
	52.01	14.16	13.82	4.42	7.96	2.83	1.20	2.83	0.59	0.17		FS 3B
	51.85	13.48	14.35	4.41	8.21	2.70	1.09	3.08	0.61	0.23		FS 9A
	51.88	14.45	13.36	4.40	8.30	2.56	1.32	3.07	0.50	0.16		FS 5
	51.92	13.58	14.00	4.30	8.36	2.72	1.37	2.89	0.64	0.21		FS 9B
	51.37	13.80	14.57	4.27	8.06	2.78	1.29	3.03	0.60	0.23		FS 8
*	51.85	13.83	13.09	4.27	8.82	2.88	1.33	3.02	0.65	0.25		FS 10
	51.88	13.19	14.52	4.26	7.98	2.85	1.24	3.19	0.68	0.21		FS 1
	52.02	12.89	14.03	4.26	8.37	2.68	1.52	3.25	0.76	0.21		FS 2A
	52.33	14.22	13.44	4.24	7.88	2.66	1.29	3.14	0.59	0.19		FS 4
	50.85	14.34	14.58	4.20	8.21	2.65	1.24	3.16	0.61	0.17		FS 6A
	51.73	14.29	14.64	4.17	7.81	2.49	1.22	2.79	0.68	0.18		FS 6B
	51.15	14.07	14.88	4.16	8.06	2.56	1.22	3.08	0.59	0.24		FS 3A
	52.36	13.11	13.89	4.09	8.09	2.86	1.43	3.28	0.69	0.20		FS 1C
	52.29	13.21	14.38	4.04	7.90	2.67	1.41	3.17	0.71	0.22		FS 2
	51.29	14.70	14.38	4.00	8.02	2.63	1.11	3.09	0.62	0.17		FS 7
	52.82	13.52	13.92	3.95	7.81	2.84	1.25	2.99	0.69	0.20		FS 3
	52.63	13.53	14.49	3.91	7.60	2.61	1.39	2.95	0.67	0.21		FS 2B
	52.35	14.17	14.17	3.91	7.79	2.70	1.14	3.16	0.45	0.17		FS 1B
	52.49	13.73	14.46	3.85	7.66	2.82	1.23	2.93	0.64	0.19		FS 1A
	52.49	12.71	14.81	3.79	8.10	2.87	1.33	3.10	0.56	0.24		FS 6
*	52.93	14.49	12.98	3.45	8.28	2.78	1.23	2.94	0.74	0.18		FS 10
AVERAGE	51.96	13.73	14.25	4.15	8.02	2.71	1.28	3.06	0.62	0.20		FS INC
MAXIMUM	52.82	14.70	14.88	4.43	8.37	2.87	1.52	3.28	0.76	0.24		
MINIMUM	50.85	12.71	13.36	3.79	7.60	2.49	1.09	2.79	0.45	0.16		
DIFFERENCE	1.97	1.99	1.52	0.64	0.77	0.38	0.43	0.49	0.31	0.08		

SHUMAKER ECKLER MOUNTAIN MEMBER; SHOEMAKER CREEK FLOW

	SIO2	AL203	FEO	MGO	CAO	NA20	K20	TIO2	P205	MNO	H20	--------- COMMENTS ---------
	54.48	13.62	13.23	3.04	6.26	3.45	1.93	2.54	0.86	0.16		72-273
	53.85	14.12	13.60	2.84	6.48	3.04	2.03	2.43	0.87	0.37		72-152
	54.73	13.83	13.40	2.76	6.42	3.17	1.63	2.35	0.96	0.35		72-168
	55.14	13.63	12.79	2.68	6.50	2.99	1.85	2.47	1.00	0.16		75-207
*	55.72	14.44	10.72	2.56	6.53	3.07	2.25	2.76	0.99	0.27		72-170
AVERAGE	54.55	13.80	13.25	2.83	6.41	3.16	1.86	2.45	0.92	0.26		SHUMAKER
MAXIMUM	55.14	14.12	13.60	3.04	6.50	3.45	2.03	2.54	1.00	0.37		
MINIMUM	53.85	13.62	12.79	2.68	6.26	2.99	1.63	2.35	0.86	0.16		
DIFFERENCE	1.29	0.50	0.81	0.36	0.24	0.46	0.40	0.19	0.14	0.21		

DODGE ECKLER MOUNTAIN MEMBER DODGE FLOWS

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O		--------- COMMENTS ---------
	51.60	14.89	10.73	6.55	10.29	2.96	0.67	1.37	0.34	0.17		73-376	
*	51.90	14.97	10.66	6.35	10.25	2.87	0.51	1.43	0.36	0.13		72-98	
	51.85	14.75	10.51	6.23	10.29	3.01	0.72	1.49	0.33	0.16		71-57	
	52.19	15.29	10.14	6.21	10.14	2.95	0.78	1.42	0.37	0.20		73-315	
	52.11	15.06	10.81	6.19	9.90	2.78	0.73	1.44	0.33	0.18		71-66	
	52.00	15.38	10.56	6.15	9.88	2.87	0.68	1.53	0.31	0.17		72-281	
	50.74	16.10	10.42	6.14	10.75	3.02	0.48	1.51	0.31	0.15		72-280	
	51.71	15.22	10.26	6.13	10.91	2.75	0.71	1.43	0.36	0.31		72-52C	
	51.77	14.92	11.08	6.09	9.93	2.94	0.78	1.52	0.32	0.22		72-274	
	51.78	14.99	10.83	6.08	10.34	2.83	0.50	1.62	0.38	0.19		72-65	
	51.16	15.87	10.50	6.06	10.50	3.03	0.50	1.41	0.31	0.20		72-269	
	51.86	15.30	11.23	6.04	9.59	3.02	0.70	1.40	0.29	0.29		71-52	
	51.88	15.18	10.66	6.03	10.44	2.81	0.70	1.50	0.37	0.19		72-50	
	51.58	14.63	11.47	6.03	10.13	3.17	0.50	1.53	0.37	0.15		75-223	
	52.14	15.59	10.57	5.98	9.64	3.09	0.62	1.44	0.36	0.15		73-296	
	52.69	15.20	10.56	5.93	10.10	2.70	0.62	1.24	0.31	0.12		72-83	
*	51.76	14.75	10.72	5.82	10.91	3.01	0.41	1.45	0.40	0.22		72-99	
	52.02	16.29	10.11	5.76	10.15	3.03	0.51	1.31	0.26	0.20		72-105	
	51.63	15.70	10.32	5.63	10.61	3.01	0.65	1.50	0.33	0.22		72-270	
	52.61	15.01	10.98	5.61	9.32	3.06	0.79	1.53	0.44	0.23		72-167	
*	51.75	16.38	11.53	5.60	9.30	2.69	0.33	1.24	0.34	0.09		73-67	
	52.13	15.14	10.76	5.48	10.14	3.04	0.81	1.62	0.37	0.15		72-272	
	52.55	15.99	10.13	5.29	9.63	3.25	0.71	1.42	0.40	0.22		72-154	
	52.59	15.73	10.74	5.27	9.61	3.04	0.61	1.31	0.48	0.13		72-109	
	52.56	15.03	10.52	5.14	10.27	3.02	0.85	1.71	0.39	0.08		72-279	
*	54.68	16.19	8.49	4.22	9.47	3.30	0.89	1.54	0.43	0.15		72-275	
AVERAGE	51.96	15.33	10.63	5.91	10.12	2.97	0.66	1.47	0.35	0.19		DODGE	
MAXIMUM	52.69	16.29	11.47	6.55	10.91	3.25	0.85	1.71	0.48	0.31			
MINIMUM	50.74	14.63	10.11	5.14	9.32	2.70	0.48	1.24	0.26	0.08			
DIFFERENCE	1.95	1.66	1.36	1.41	1.59	0.55	0.37	0.47	0.22	0.23			

ROBIN ECKLER MOUNTAIN MEMBER; ROBINETTE MOUNTAIN FLOW

	SIO2	AL2O3	FEO	MGO	CAO	NA2O	K2O	TIO2	P2O5	MNO	H2O		--------- COMMENTS ---------
	49.16	16.93	10.18	8.26	11.00	2.65	0.22	1.02	0.18	0.14		73-322	
*	50.68	15.86	9.86	8.24	11.21	2.36	0.20	0.91	0.18	0.12		72-120	
*	49.94	17.08	10.20	8.08	10.39	2.22	0.60	0.95	0.15	0.14		72-104	
	50.27	16.38	10.21	7.99	10.91	2.32	0.15	1.01	0.17	0.14		73-338	
	50.14	16.81	9.86	7.95	10.86	2.51	0.26	1.00	0.21	0.16		73-232	
	49.16	17.20	10.26	7.93	10.99	2.54	0.22	0.99	0.20	0.14		75-224	
	49.28	17.85	9.71	7.55	11.08	2.55	0.17	1.12	0.21	0.15		73-280	
	49.74	17.36	10.37	7.35	10.92	2.14	0.29	0.98	0.19	0.16		75-222	
	50.21	17.71	9.10	6.98	11.32	2.63	0.35	1.01	0.20	0.14		73-264	
AVERAGE	49.71	17.18	9.96	7.72	11.01	2.48	0.24	1.02	0.19	0.15		ROBIN	
MAXIMUM	50.27	17.85	10.37	8.26	11.32	2.65	0.35	1.12	0.21	0.16			
MINIMUM	49.16	16.38	9.10	6.98	10.86	2.14	0.15	0.98	0.17	0.14			
DIFFERENCE	1.11	1.47	1.27	1.28	0.46	0.51	0.20	0.14	0.04	0.02			

* GR INC GRANDE RONDE FORMATION, FLOW AVERAGES USED

SIO2	AL203	FEO	MGO	CAO	NA20	K20	TIO2	P205	MNO	H20	--------- COMMENTS ---------
52.17	14.99	11.09	6.14	10.30	3.02	0.39	1.46	0.30	0.15		GRGF13N2
51.83	15.20	11.82	6.00	9.72	2.69	0.55	1.70	0.32	0.17		GRMG 6N2
54.37	15.28	9.46	5.91	9.79	2.80	0.77	1.17	0.29	0.16		GRLH 2N2
51.56	14.61	11.71	5.76	11.11	2.78	0.49	1.54	0.28	0.15		GRGF15R2
53.21	14.53	11.14	5.59	9.71	2.78	0.98	1.63	0.24	0.19		GRLH 6N2
52.74	14.79	11.40	5.57	9.75	2.92	0.77	1.59	0.30	0.19		GRMG 4N2
53.80	14.37	11.36	5.40	8.97	2.99	0.99	1.63	0.29	0.20		GRNY 3N2
53.78	14.45	11.33	5.25	9.07	2.83	1.05	1.78	0.28	0.19		GRNY 1N2
53.70	14.62	11.13	5.24	9.10	2.90	1.15	1.70	0.26	0.19		GRKB 1R2
53.29	14.18	12.16	5.21	8.76	3.12	0.82	1.98	0.31	0.17		GRGF 5N2
52.72	14.08	11.87	5.18	9.43	3.31	1.04	1.86	0.37	0.15		GRGF11N2
54.08	14.45	11.19	5.17	8.81	3.07	1.14	1.66	0.24	0.19		GRKB 6N1
54.61	14.62	10.45	5.05	8.87	2.85	1.17	1.88	0.34	0.17		GRNY 2N2
54.80	14.16	11.28	5.05	8.16	3.29	1.16	1.70	0.24	0.16		GRAS18N1
53.39	14.11	12.76	5.01	8.37	2.65	1.12	2.04	0.36	0.18		GREM 2N2
54.52	14.62	11.08	5.00	8.84	2.93	1.11	1.67	0.25	0.18		GRPG23N1
54.16	13.85	12.29	4.96	8.61	2.68	1.02	1.86	0.38	0.18		GRNM 5N2
53.17	13.86	12.29	4.96	8.48	3.10	1.74	1.86	0.38	0.17		GRNM 6N2
54.16	14.23	12.10	4.95	8.67	2.47	1.03	1.96	0.28	0.15		GRTR 5N2
54.16	14.34	11.73	4.94	8.97	2.68	0.91	1.75	0.33	0.18		GRTR11R2
53.88	14.19	12.21	4.93	8.22	3.18	0.94	1.95	0.35	0.15		GRGF12N2
54.03	14.49	11.56	4.92	8.67	2.86	1.11	1.85	0.32	0.18		GRLG 3N2
53.96	14.33	12.08	4.90	8.82	2.78	0.82	1.83	0.30	0.18		GRGF 1N2
53.62	14.48	11.79	4.89	9.07	2.86	1.01	1.87	0.28	0.15		GRGF 6N2
53.91	14.55	11.49	4.88	8.88	2.93	1.11	1.80	0.25	0.19		GRPG 5N2
54.41	14.35	11.16	4.84	8.66	2.99	1.02	2.06	0.32	0.19		GRMG 4N2
54.61	14.83	10.03	4.84	8.65	2.99	1.54	1.95	0.39	0.16		GRGF 4N2
53.63	14.24	11.94	4.82	9.07	2.84	1.19	1.81	0.25	0.20		GRPG 6N2
54.51	14.54	11.22	4.82	8.57	2.96	1.23	1.70	0.26	0.19		GRKB12N1
53.93	14.20	11.96	4.81	8.74	2.90	0.99	1.91	0.39	0.16		GRGF10N2
53.76	13.98	12.17	4.79	8.52	3.03	1.06	2.02	0.46	0.21		GRMG 2N2
54.32	14.28	11.35	4.78	8.64	2.99	1.38	1.76	0.31	0.19		GRAS 6N2
53.98	13.87	12.53	4.75	8.30	2.93	1.01	2.13	0.33	0.17		GRGF 8N2
54.10	15.06	11.41	4.75	8.49	2.73	0.84	2.12	0.34	0.16		GRGT 3N2
53.60	15.15	12.40	4.74	7.93	3.09	0.81	1.80	0.28	0.19		GRPG25N1
55.11	14.90	10.13	4.73	8.61	3.13	1.19	1.73	0.28	0.19		GRKB11N1
54.57	14.39	11.26	4.71	8.61	2.94	1.03	2.02	0.33	0.16		GRGF 7N2
54.61	14.30	11.39	4.68	8.38	2.73	1.53	1.86	0.35	0.17		GRPF 1N2
54.75	14.23	11.09	4.65	8.82	2.89	1.32	1.77	0.30	0.18		GRAS 5N2
55.10	14.45	10.64	4.64	8.58	2.85	1.52	1.63	0.37	0.20		GREJ 1N2
54.83	14.61	11.37	4.63	8.30	2.64	1.27	1.83	0.36	0.16		GRTR 2N2
54.29	13.73	12.29	4.59	8.21	2.96	1.42	2.00	0.31	0.20		GRAS16R2
54.36	14.45	11.15	4.58	9.50	2.64	1.11	1.73	0.32	0.16		GRGT 4N2
54.61	14.07	11.94	4.58	8.33	2.91	1.15	1.87	0.38	0.15		GRGF 2N2
54.39	14.33	12.09	4.57	8.54	2.84	1.01	1.73	0.34	0.15		GRTR 6N2
54.73	14.35	12.14	4.54	7.84	2.84	0.97	2.06	0.33	0.19		GRPG 4N2
55.22	14.65	10.31	4.54	8.67	2.99	1.23	1.86	0.39	0.14		GRGF 3N2
53.29	14.64	12.54	4.52	8.54	2.69	1.11	2.08	0.41	0.17		GRGT 7N2
54.59	14.46	11.56	4.50	8.16	3.00	1.45	1.79	0.30	0.20		GRKB 8N1
54.22	14.31	11.97	4.49	8.28	2.91	1.34	2.00	0.30	0.19		GRTA11R2
54.69	13.75	12.05	4.49	8.03	3.19	1.18	2.07	0.34	0.21		GRTO 9R2
54.71	14.55	11.39	4.49	8.04	2.93	1.61	1.78	0.31	0.19		GRPG26N1
54.34	14.56	10.25	4.46	9.72	2.95	1.43	1.75	0.31	0.22		GRAS 4N2
54.98	14.80	10.88	4.46	8.43	2.81	1.27	1.84	0.37	0.17		GRDC 1N2
55.26	14.54	10.92	4.45	8.58	2.62	1.40	1.72	0.37	0.15		GRTR 1N2
54.10	14.06	12.46	4.43	7.73	3.27	1.37	2.01	0.38	0.19		GRIO14N1
55.26	14.00	11.53	4.41	7.84	3.10	1.53	1.86	0.28	0.19		GRSD 1R2
53.97	14.12	12.47	4.41	8.00	3.09	1.33	2.09	0.32	0.20		GRTA13R2
55.80	14.94	9.62	4.41	8.49	2.82	1.59	1.76	0.41	0.16		GRGT 1N2

53.89	14.59	12.64	4.41	7.99	2.89	1.06	2.11	0.25	0.17	GRTA23N1
54.34	13.78	12.15	4.40	8.35	2.86	1.44	2.16	0.33	0.19	GRTO26R1
54.60	14.29	11.86	4.30	7.95	3.51	1.29	1.93	0.27	0.20	GRKB14N1
55.22	14.11	11.42	4.29	8.16	2.75	1.32	2.24	0.32	0.16	GRPF 3N2
54.05	14.00	12.54	4.28	7.90	3.13	1.53	1.96	0.40	0.21	GRTO12N1
54.67	14.56	11.62	4.25	7.84	3.13	1.52	1.93	0.28	0.19	GRKB16N1
54.52	14.44	11.67	4.23	8.14	3.13	1.39	1.94	0.33	0.20	GRKB 9N1
54.74	14.70	11.64	4.20	7.73	3.09	1.43	1.98	0.31	0.18	GRKB18N1
55.04	14.07	12.01	4.17	7.81	2.82	1.66	1.95	0.29	0.18	GRAS 9R2
53.69	14.21	12.67	4.16	7.81	3.11	1.52	2.22	0.40	0.21	GRTA15N1
53.79	13.80	12.89	4.14	7.84	3.16	1.50	2.24	0.42	0.22	GRKB 5R2
56.40	12.84	10.64	4.10	8.01	3.18	2.05	2.26	0.36	0.16	GRGF14N2
54.57	14.21	12.65	4.08	7.28	3.22	1.40	2.05	0.34	0.20	GRTA19N1
54.28	14.04	12.48	4.08	7.89	3.05	1.57	2.07	0.35	0.19	GRTO19N1
54.48	13.96	12.50	4.06	7.53	3.52	1.42	1.98	0.32	0.22	GRTO18N1
55.37	14.24	11.53	4.01	7.67	3.03	1.67	1.99	0.29	0.19	GRKB15N1
54.65	13.98	12.40	3.99	7.99	3.09	1.40	1.99	0.35	0.16	GRGT 6N2
54.96	14.14	12.22	3.97	7.33	3.12	1.66	2.07	0.36	0.17	GRPG10R2
55.94	14.04	11.36	3.96	7.51	3.09	1.61	1.99	0.30	0.19	GRTO25R1
54.43	14.09	12.18	3.95	7.78	3.09	1.71	2.19	0.39	0.20	GRKB10N1
55.81	14.41	11.05	3.93	7.58	3.23	1.57	1.95	0.30	0.19	GRKB13N1
55.57	14.12	11.56	3.88	7.27	3.24	1.93	1.90	0.33	0.20	GRLG 5N2
54.61	14.31	11.82	3.87	7.86	3.02	1.76	2.17	0.40	0.19	GRPG16R2
56.20	13.83	12.19	3.85	6.73	3.08	1.49	2.10	0.37	0.15	GRGF16R2
55.47	14.24	11.18	3.84	7.56	3.08	1.91	2.16	0.36	0.20	GRPG11R2
54.88	13.64	12.89	3.83	7.31	3.17	1.53	2.17	0.36	0.22	GRTO23R1
55.11	13.49	12.35	3.82	7.47	3.03	1.73	2.31	0.49	0.20	GRTO 3R2
54.15	13.93	12.81	3.81	7.22	3.16	1.82	2.46	0.43	0.20	GRPG18R2
54.81	14.14	12.09	3.80	7.55	3.19	1.75	2.12	0.37	0.19	GRHG 9R2
55.82	13.87	12.02	3.78	7.29	2.91	1.82	1.96	0.34	0.19	GRHG 5N2
54.45	13.85	12.89	3.78	7.47	3.27	1.36	2.28	0.47	0.18	GRPS 1N2
55.54	13.83	12.05	3.77	7.24	3.44	1.57	2.05	0.35	0.18	GRTO17N1
56.23	14.14	10.30	3.77	7.64	3.08	2.05	2.15	0.43	0.21	GRLH10R2
55.98	13.64	11.72	3.76	7.32	3.06	1.91	2.10	0.33	0.19	GRNY11N2
56.44	14.11	10.63	3.76	7.32	3.00	2.16	2.05	0.34	0.20	GRNY 8N2
54.48	14.08	12.69	3.74	7.29	3.23	1.67	2.21	0.41	0.20	GRPG15R2
56.37	14.16	10.95	3.74	7.17	3.05	2.21	1.88	0.32	0.18	GRLG 9N2
56.76	14.05	10.44	3.73	7.40	3.08	2.04	1.98	0.33	0.20	GRPF 8N2
56.36	13.95	11.68	3.72	6.76	3.24	1.73	2.01	0.38	0.18	GRHG 7N2
55.18	13.69	12.15	3.65	7.30	2.84	2.23	2.33	0.43	0.21	GRGF18R2
56.24	14.14	11.28	3.65	7.20	3.02	2.00	1.95	0.34	0.18	GRLG 7N2
54.81	13.61	12.84	3.63	7.15	3.47	1.58	2.28	0.43	0.20	GRTO24R1
54.97	13.39	12.94	3.62	7.01	3.37	1.70	2.38	0.42	0.20	GRSR PN2
56.29	13.93	11.07	3.62	7.08	3.01	2.06	2.32	0.42	0.21	GRLG 8N2
55.77	14.28	11.09	3.61	7.37	3.30	1.34	2.47	0.59	0.17	GRPG 1N2
55.87	14.02	11.59	3.60	7.19	3.00	2.03	2.14	0.36	0.20	GRPG22N1
56.63	13.85	11.29	3.56	7.10	3.09	1.80	2.14	0.37	0.16	GRPG 8N2
56.84	14.86	10.59	3.56	7.07	2.83	1.86	1.96	0.30	0.13	GRCC 3N2
54.84	14.12	12.06	3.56	7.30	2.96	2.10	2.44	0.43	0.20	GRTA 7R2
57.62	14.40	9.62	3.55	7.16	2.97	1.94	2.18	0.40	0.16	GRNM 4N2
56.16	13.81	11.21	3.55	7.51	3.05	1.72	2.33	0.51	0.16	GRGT 2N2
54.87	14.30	12.57	3.54	6.99	3.13	1.61	2.43	0.38	0.18	GRCC 7N2
55.00	14.15	12.74	3.53	7.13	3.11	1.71	2.14	0.32	0.17	GRPG21R2
55.15	14.08	11.61	3.52	7.64	3.22	1.91	2.31	0.41	0.15	GRGT 8N2
55.69	13.75	11.86	3.51	7.11	3.19	2.03	2.23	0.42	0.20	GRTO 7R2
56.21	14.06	10.78	3.47	7.22	3.16	2.01	2.38	0.54	0.17	GRLH11R2
56.83	13.58	11.03	3.44	7.08	3.01	2.16	2.29	0.40	0.20	GRAS 3N2
55.53	13.78	12.21	3.43	7.02	3.14	2.02	2.29	0.39	0.20	GRLH 5N2
57.06	14.35	9.88	3.38	7.00	3.11	2.35	2.25	0.42	0.19	GRPG19R2
58.06	14.31	9.20	3.38	7.18	3.23	2.20	1.96	0.30	0.18	GRPG 9R2

	55.94	14.04	11.77	3.36	6.88	3.14	1.99	2.27	0.43	0.19	GRPG20R2
	55.60	14.76	12.52	3.34	6.59	2.61	1.67	2.30	0.37	0.24	GRCC 6N2
	56.74	13.54	11.89	3.33	6.89	3.09	1.93	2.10	0.30	0.19	GRTO22N1
	55.74	14.17	12.51	3.23	6.94	3.00	1.78	2.12	0.33	0.18	GRPG 7N2
	56.17	13.61	11.77	3.22	6.79	3.01	2.39	2.31	0.52	0.21	GRSB 2R2
	56.80	13.91	11.69	3.12	6.67	3.18	1.98	2.14	0.32	0.18	GRKB17N1
	55.95	13.20	12.88	3.02	6.85	3.02	1.71	2.62	0.56	0.19	GRAC 4N2
AVERAGE	54.84	14.21	11.65	4.29	8.01	3.01	1.47	2.00	0.35	0.18	GR INC
MAXIMUM	58.06	15.28	12.94	6.14	11.11	3.52	2.39	2.62	0.59	0.24	
MINIMUM	51.56	12.84	9.20	3.02	6.59	2.47	0.39	1.17	0.24	0.13	
DIFFERENCE	6.50	2.44	3.74	3.12	4.52	1.05	2.00	1.45	0.35	0.11	