Exhibit 5-III, continued: Tabular hydrograph unit discharges (csm/in) for type III rainfall distribution

TRVL TIME (HR)	HYDROGRAPH TIME (HOURS)																																
	11.0	11.3	11.6	11.9	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	13.0	13.2	13.4	13.6	13.8	14.0	14.3	14.6	15.0	15.5	16.0	16.5	17.0	17.5	18.0	19.0	20.0	22.0	26.0
	IA/P = 0.10											* * * TC =1.5 HR * * *																			IA/P = 0.10	
0.0	12	15	19	25	27	31	37	45	57	75	97	122	151	203	231	238	213	182	150	115	91	70	54	44	37	30	26	23	18	15	12	1
.10	10	13	17	21	23	26	29	34	41	52	67	87	111	165	210	233	227	205	173	131	102	77	58	46	39	32	27	24	19	15	12	1
.20	10	13	16	21	23	25	28	32	38	47	61	78	100	152	199	228	231	210	181	138	107	80	59	47	39	33	28	24	19	15	12	2
.30	9	12	15	20	22	24	27	30	36	44	55	70	90	139	188	221	228	215	188	145	112	83	61	48	40	33	28	24	19	15	12	2
.40	8	11	14	18	19	21	23	25	29	33	40	50	64	103	152	196	223	226	208	166	127	92	66	52	42	35	30	25	20	16	13	2
.50	8	10	13	17	18	20	22	24	27	31	37	46	58	93	140	186	216	224	212	173	133	96	69	53	43	36	30	26	20	16	13	3
.75	6	8	11	14	15	16	18	19	21	23	26	31	36	55	87	130	173	205	217	202	165	119	81	60	48	39	33	28	21	17	13	4
1.0	5	6	8	11	12	13	14	15	16	18	19	21	24	31	46	71	109	151	189	214	200	153	102	72	55	44	37	31	23	18	13	6
1.5	3	4	5	7	8	9	10	11	11	12	14	15	16	19	24	31	45	69	103	159	207	207	147	99	71	54	44	36	26	20	14	8
2.0	1	2	3	5	5	6	6	7	8	9	9	10	11	13	16	19	23	31	45	81	132	189	199	142	97	69	53	43	30	22	15	10
2.5	0	1	1	2	3	3	4	4	4	5	6	6	7	8	10	12	14	17	20	31	53	107	179	194	147	102	73	55	36	26	16	10
3.0	0	0	1	1	1	2	2	2	3	3	3	4	4	5	7	8	10	11	13	18	26	51	116	178	188	142	100	71	43	30	18	11
	IA/P = 0.30											* * * TC =1.5 HR * * *																			IA/P = 0.30	
0.0	0	0	0	0	0	1	2	5	11	22	38	59	84	138	180	200	195	176	154	125	105	86	71	60	52	44	39	34	27	23	19	2
.10	0	0	0	0	0	0	0	1	4	9	18	31	50	99	149	184	198	190	170	139	115	93	75	63	55	47	40	35	28	23	19	3
.20	0	0	0	0	0	0	0	1	3	7	14	25	41	86	137	176	195	192	175	144	119	95	76	64	55	47	41	36	28	24	19	3
.30	0	0	0	0	0	0	0	0	1	2	5	11	21	53	100	147	181	194	187	159	130	103	81	68	58	50	43	37	29	24	19	4
.40	0	0	0	0	0	0	0	0	0	2	4	9	17	45	88	136	172	192	189	164	135	106	83	69	59	51	43	38	30	24	20	4
.50	0	0	0	0	0	0	0	0	0	0	1	3	7	23	56	101	145	177	190	177	149	116	89	73	62	53	45	39	31	25	20	6
.75	0	0	0	0	0	0	0	0	0	0	0	1	3	13	35	71	113	151	176	184	162	128	97	77	65	55	48	41	32	26	20	7
1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	24	53	92	132	174	182	153	114	88	72	61	52	45	34	27	21	10
1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9	24	50	103	152	175	148	112	87	71	60	51	38	30	22	14
2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	24	62	127	170	151	116	89	73	61	45	34	23	16
2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	16	58	131	165	146	113	88	72	52	39	25	16
3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16	67	134	161	142	111	87	60	44	27	17
	IA/P = 0.50											* * * TC =1.5 HR * * *																			IA/P = 0.50	
0.0	0	0	0	0	0	0	0	1	2	6	13	22	34	65	94	114	129	122	117	108	100	91	81	74	66	58	52	46	38	33	28	2
.10	0	0	0	0	0	0	0	0	0	2	5	10	18	42	73	99	116	126	121	112	104	94	84	76	68	60	53	48	39	33	28	3
.20	0	0	0	0	0	0	0	0	0	1	4	8	15	36	65	93	112	123	122	113	105	95	85	77	69	61	54	48	39	34	28	4
.30	0	0	0	0	0	0	0	0	0	0	1	3	6	20	44	72	97	114	122	118	109	99	88	79	71	63	56	50	41	34	28	5
.40	0	0	0	0	0	0	0	0	0	0	1	2	5	16	38	65	91	110	121	119	110	100	89	80	72	64	57	51	41	34	29	5
.50	0	0	0	0	0	0	0	0	0	0	0	1	4	13	33	59	85	105	118	120	112	101	90	81	73	65	57	51	41	35	29	6
.75	0	0	0	0	0	0	0	0	0	0	0	1	2	7	20	41	66	89	107	118	115	105	93	83	75	67	60	53	43	35	29	8
1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	14	31	53	78	106	117	113	100	89	80	72	64	57	46	37	30	12
1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	14	29	60	91	115	111	99	88	79	71	63	50	41	31	18
2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	20	45	85	113	109	98	87	78	70	56	45	32	22
2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13	42	87	111	107	97	86	78	62	49	34	24
3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	39	82	109	109	98	87	70	56	37	25
	RAINFALL TYPE = III											* * * TC = 1.5 HR * * *																			SHEET 9 OF 10	

Exhibit 5-III, continued: Tabular hydrograph unit discharges (csm/in) for type III rainfall distribution

TRVL TIME (HR)	11.3 11.0	11.9 11.6	12.1 12.0	12.3 12.2	12.5 12.4	12.7 12.6	13.0 12.8	13.4 13.2	13.8 13.6	14.3 14.0	15.0 14.6	16.0 15.5	17.0 16.5	18.0 17.5	20.0 19.0	26.0 22.0
	IA/P = 0.10						* * * TC =2.0 HR * * *								IA/P = 0.10	
0.0	9	11	15	19	21	23	27	31	39	48	60	75	91	129	164	187	200	191	178	147	119	92	69	55	45	37	31	26	20	16	13	3
.10	8	10	13	17	18	20	22	25	29	36	44	55	68	101	139	170	189	197	188	163	132	101	75	59	47	39	33	28	21	17	13	3
.20	7	10	13	16	18	19	21	24	28	33	40	50	62	93	129	162	185	195	190	168	137	104	77	60	48	40	33	28	21	17	13	4
.30	7	9	12	15	17	18	20	23	26	31	37	46	56	85	120	154	179	193	191	172	142	108	80	62	49	41	34	29	21	17	13	4
.40	6	8	11	14	15	16	18	19	22	25	29	34	42	64	94	129	161	183	192	183	157	120	87	66	53	43	36	30	22	17	13	5
.50	6	8	10	13	14	16	17	19	21	23	27	32	38	58	87	121	153	177	191	185	162	124	90	68	54	44	36	31	22	18	13	5
.75	5	6	8	11	12	13	14	15	16	18	20	23	26	37	55	81	113	144	169	186	179	147	106	78	61	49	40	33	24	19	14	6
1.0	4	5	7	9	10	11	12	13	14	15	17	18	20	27	38	56	82	113	143	176	185	164	121	88	67	53	43	36	26	20	14	7
1.5	2	3	4	5	6	7	7	8	9	10	10	11	12	15	18	23	31	45	65	106	148	180	166	126	92	69	55	44	31	23	15	9
2.0	1	1	2	3	4	4	5	5	6	6	7	8	8	10	12	14	18	23	31	52	87	139	176	160	122	90	68	54	36	26	16	10
2.5	0	0	1	2	2	2	2	3	3	4	4	5	5	6	7	9	11	13	16	22	36	71	132	172	161	126	94	71	45	31	18	11
3.0	0	0	0	1	1	1	1	1	2	2	2	3	3	4	5	6	7	9	10	14	19	35	78	136	168	156	123	92	54	36	20	11
	IA/P = 0.30						* * * TC =2.0 HR * * *								IA/P = 0.30	
0.0	0	0	0	0	0	0	1	2	6	11	18	29	41	75	111	140	159	170	163	145	124	103	84	70	60	51	44	39	30	25	20	4
.10	0	0	0	0	0	0	0	1	2	4	9	15	24	50	84	118	145	160	167	155	134	110	89	74	63	54	46	40	31	25	20	5
.20	0	0	0	0	0	0	0	0	1	3	7	12	20	43	76	110	138	157	165	157	138	113	91	75	64	55	47	41	32	26	20	5
.30	0	0	0	0	0	0	0	0	1	3	5	10	17	38	68	101	131	152	164	159	141	116	93	77	65	56	48	41	32	26	20	6
.40	0	0	0	0	0	0	0	0	0	1	2	4	8	22	45	76	109	137	155	163	151	125	99	81	68	58	50	43	33	26	20	7
.50	0	0	0	0	0	0	0	0	0	1	1	3	7	18	39	69	101	130	151	162	153	128	101	83	69	59	51	44	34	27	20	7
.75	0	0	0	0	0	0	0	0	0	0	0	1	2	6	17	36	63	93	122	151	158	143	114	92	76	64	55	47	36	28	21	9
1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	18	37	63	93	132	157	153	125	100	82	68	58	50	38	29	21	11
1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	12	26	59	100	142	154	128	102	83	70	59	44	34	23	15
2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	18	43	93	142	150	125	101	82	69	50	36	24	16
2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12	41	98	141	147	122	99	81	58	43	26	17
3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	38	92	135	144	124	102	69	50	30	18
	IA/P = 0.50						* * * TC =2.0 HR * * *								IA/P = 0.50	
0.0	0	0	0	0	0	0	0	0	1	3	6	11	16	33	54	75	91	102	114	114	103	96	87	79	72	64	57	51	41	35	29	6
.10	0	0	0	0	0	0	0	0	1	2	5	9	14	29	49	70	87	99	106	113	104	97	88	80	72	65	58	52	42	35	29	6
.20	0	0	0	0	0	0	0	0	0	1	2	4	7	18	34	54	74	90	101	112	107	99	90	82	75	67	60	53	43	36	29	8
.30	0	0	0	0	0	0	0	0	0	0	1	3	6	15	30	49	69	86	98	111	108	100	91	83	75	68	60	54	43	36	29	8
.40	0	0	0	0	0	0	0	0	0	0	0	1	2	8	19	35	55	73	89	105	110	103	94	86	78	70	62	56	45	37	30	10
.50	0	0	0	0	0	0	0	0	0	0	0	1	2	6	16	31	50	69	85	102	109	104	95	86	78	71	63	56	45	37	30	11
.75	0	0	0	0	0	0	0	0	0	0	0	0	1	4	10	21	37	55	73	93	107	107	97	89	81	73	65	58	47	38	30	13
1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	15	29	46	72	93	107	103	94	86	78	70	62	50	40	31	16
1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	7	15	34	59	89	105	101	93	85	77	69	55	44	32	21
2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	10	25	55	90	104	100	92	84	76	61	49	34	23
2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	24	59	91	103	99	91	83	68	54	36	25
3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	28	62	91	101	98	90	75	60	39	26
	RAINFALL TYPE = III						* * * TC = 2.0 HR * * *								SHEET 10 OF 10	

Chapter 6: Storage volume for detention basins

As rural areas become urbanized, the resulting increases in peak discharges can adversely affect downstream flood plains. Increasingly, planners, developers, and the public want these downstream areas to be protected. Many local governments are adopting ordinances to control the type of development and its allowable impacts on the watershed. One of the most common controls requires that postdevelopment discharges do not exceed present-condition discharges for one or more storm frequencies at specified points along a channel.

This chapter discusses ways to manage peak discharges by delaying runoff. It also presents a procedure for estimating the storage capacity required to maintain the peaks within a specified level.

Efforts to reduce the effects of increased runoff from urban areas have been innovative and diverse. Many methods have been used effectively, such as infiltration trenches, porous pavement, rooftop storage, and cisterns. But these solutions can be expensive or require site conditions that cannot be provided.

The detention basin is the most widely used measure for controlling peak discharge. It is generally the least expensive and most reliable of the measures that have been considered. It can be designed to fit a wide variety of sites and can accommodate multiple-outlet spillways to meet requirements for multifrequency control of outflow. Measures other than a detention basin may be preferred in some locations; their omission here is not intended to discourage their use. Any device selected, however, should be assessed as to its function, maintenance needs, and impact.

Estimating the effect of storage

When a detention basin is installed, hydraulic routing procedures can be used to estimate the effect on hydrographs. Both the TR-20 (SCS 1983) and DAMS2 (SCS 1982) computer programs provide accurate methods of analysis. Programmable calculator and computer programs are available for routing hydrographs through dams.

This chapter contains a manual method for quick estimates of the effects of temporary detention on peak discharges. The method is based on average storage and routing effects for many structures.

Figure 6-1 relates two ratios: peak outflow to peak inflow discharge (q_o/q_i) and storage volume to runoff volume (V_s/V_r) for all four rainfall distributions.

The relationships in figure 6-1 were determined on the basis of single stage outflow devices. Some were controlled by pipe flow, others by weir flow. Verification runs were made using multiple stage outflow devices, and the variance was similar to that in the base data. The method can therefore be used for both single- and multiple-stage outflow devices. The only constraints are that (1) each stage requires a design storm and a computation of the storage required for it and (2) the discharge of the upper stage(s) includes the discharge of the lower stage(s).

The brevity of the procedure allows the planner to examine many combinations of detention basins. When combined with the Tabular Hydrograph method, the procedure's usefulness is increased. Its principal use is to develop preliminary indications of storage adequacy and to allocate control to a group of detention basins. It is also adequate, however, for final design of small detention basins.

Input requirements and procedures

Use figure 6-1 to estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by any other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use

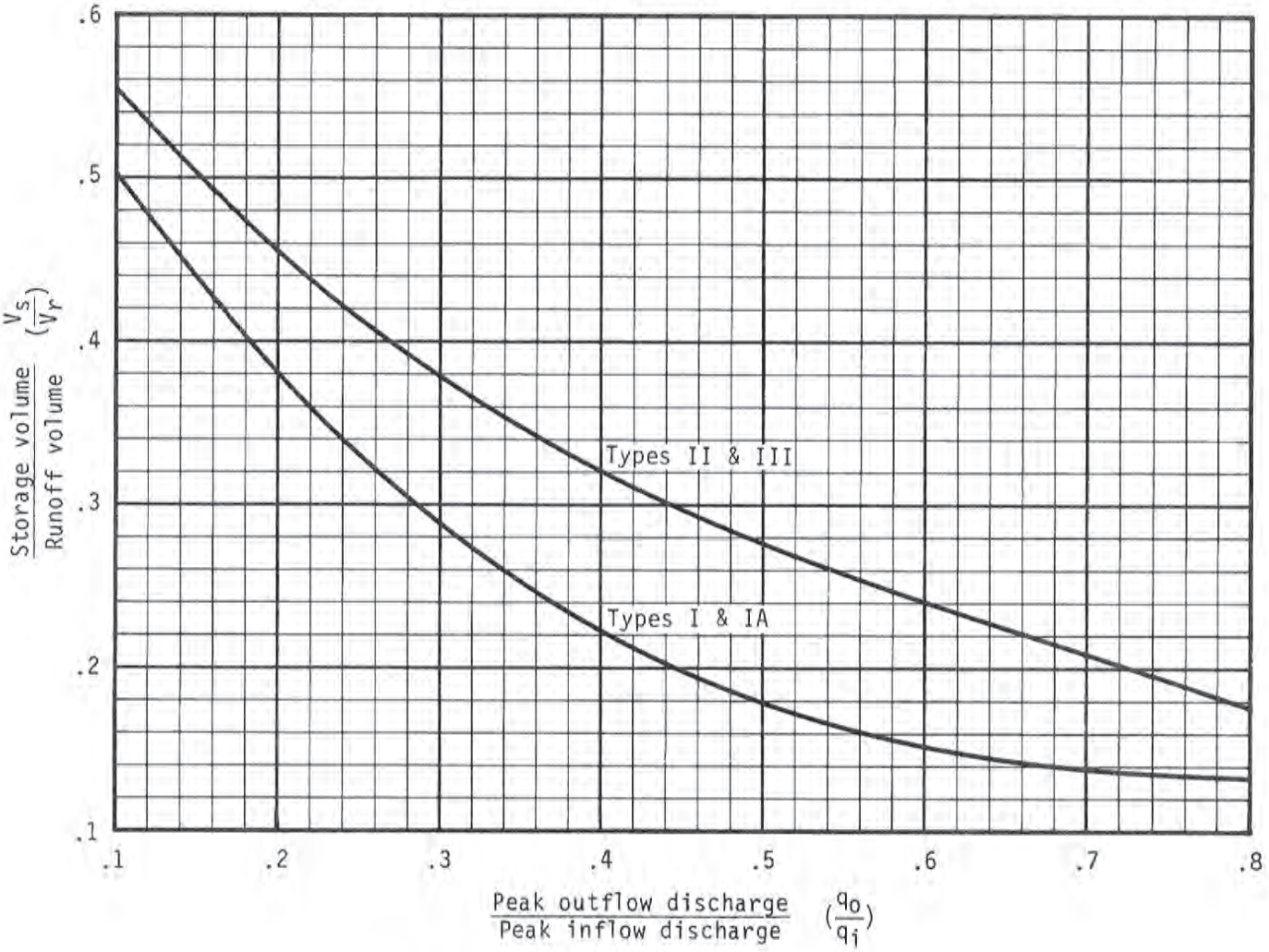


Figure 6-1.—Approximate detention basin routing for rainfall types I, IA, II, and III.

peak discharge associated with $T_t = 0$.

3. Compute q_o/q_i and determine V_s/V_r from figure 6-1.
4. Q (in inches) was determined when computing q_i in step 2, but now it must be converted to the units in which V_s is to be expressed—most likely, acre-feet or cubic feet. The most common conversion of Q to V_r is expressed in acre-feet:

$$V_r = 53.33Q(A_m) \qquad \text{[Eq. 6-1]}$$

where

V_r = runoff volume (acre-ft),
Q = runoff (in),
A_m = drainage area (mi_2), and
53.33 = conversion factor from in-mi^2 to acre-ft.

5. Use the results of steps 3 and 4 to compute V_s:

$$V_s = V_r\left(\frac{V_s}{V_r}\right) \qquad \text{[Eq. 6-2]}$$

where V_s = storage volume required (acre-ft).

6. The stage in the detention basin corresponding to V_s must be equal to the stage used to generate q_o. In most situations a minor modification of the outflow device can be made. If the outflow device has been preselected, repeat the calculations with a modified q_o value.

Estimating q_o

Use worksheet 6b to estimate q_o, required peak outflow discharge, by the following procedure.

1. Determine V_s. If the maximum stage in the detention basin is constrained, set V_s by the maximum permissible stage.
2. Compute Q (in inches) by the procedures in chapter 2, and convert it to the same units as V_s (see step 4 in "Estimating V_s").
3. Compute V_s/V_r and determine q_o/q_i from figure 6-1.
4. Estimate q_i by the procedures in chapters 4 or 5. Do not use peak discharges developed by any other method. When using the Tabular method to estimate q_i for a subarea, use only the peak discharge associated with $T_t = 0$.
5. From steps 3 and 4, compute q_o:

$$q_o = q_i\left(\frac{q_o}{q_i}\right) \qquad \text{[Eq. 6-3]}$$

6. Proportion the outflow device so that the stage at q_o is equal to the stage corresponding to V_s. If q_o cannot be calibrated except in discrete steps (i.e., pipe sizes), repeat the procedure until the stages for q_o and V_s are approximately equal.

Limitations

- This routing method is less accurate as the q_o/q_i ratio approaches the limits shown in figure 6-1. The curves in figure 6-1 depend on the relationship between available storage, outflow device, inflow volume, and shape of the inflow hydrograph. When storage volume (V_s) required is small, the shape of the outflow hydrograph is sensitive to the rate of rise of the inflow hydrograph. Conversely, when V_s is large, the inflow hydrograph shape has little effect on the outflow hydrograph. In such instances, the outflow hydrograph is controlled by the hydraulics of the outflow device and the procedure therefore yields consistent results. When the peak outflow discharge (q_o) approaches the peak inflow discharge (q_i), parameters that affect the rate of rise of a hydrograph, such as rainfall volume, curve number, and time of concentration, become especially significant.

- The procedure should not be used to perform final design if an error in storage of 25 percent cannot be tolerated. Figure 6-1 is biased to prevent undersizing of outflow devices, but it may significantly overestimate the required storage capacity. More detailed hydrograph development and routing will often pay for itself through reduced construction costs.

Examples

Four examples illustrate the use of figure 6-1. Examples 6-1 through 6-4, respectively, show estimation of V_s, use of a two-stage structure, estimation of q_o, and use with the Tabular Hydrograph method.

Example 6-1: Estimating V_s, single-stage structure

A development is being planned in a 75-acre (0.117-mi²) watershed that outlets into an existing concrete-lined channel designed for present conditions. If the channel capacity is exceeded, damages will be substantial. The watershed is in the type II storm distribution region. The present channel capacity, 180 cfs, was established by computing discharge for the 25-year-frequency storm by the Graphical Peak Discharge method (chapter 4).

The developed-condition peak discharge (q_i) computed by the same method is 360 cfs, and runoff (Q) is 3.4 inches. Since outflow must be held to 180 cfs, a detention basin having that maximum outflow discharge (q_o) will be built at the watershed outlet.

How much storage (V_s) will be required to meet the maximum outflow discharge (q_o) of 180 cfs, and what will be the approximate dimensions of a rectangular weir outflow structure? Figure 6-2 shows how worksheet 6a is used to estimate required storage (V_s = 5.9 acre-ft) and maximum stage (E_{max} = 105.7 ft).

The rectangular weir was chosen for its simplicity; however, several types of outlets can meet the outflow device proportion requirement. Most hydraulic references, along with considerable research data that are available, provide more guidance on variations of outlet devices than can be summarized here.

An outlet device should be proportioned to meet specific objectives. A single-stage device was specified in this example because only one storm was considered. A weir is suitable here because of the low head. The weir crest elevation is 100.0 ft.

Using V_s = 5.9 acre-ft (figure 6-2, step 9) and the elevation-storage curve, the maximum stage (E_{max}) is 105.7 ft.

The rectangular weir equation is

$$q_o = 3.2\ L_w H_w^{1.5} \qquad \text{[Eq. 6-4]}$$

where

q_o = peak outflow discharge (cfs),
L_w = weir crest length (ft), and
H_w = head over weir crest (ft).

H_w and q_o are computed as follows:

$$H_w = E_{max} - \text{weir crest elevation}$$
$$= 105.7 - 100.0 = 5.7 \text{ ft.}$$

Since q_o is known to be 180 cfs, solving equation 6-4 for L_w yields

$$L_w = \frac{q_o}{3.2\ H_w^{1.5}} \qquad \text{[Eq. 6-5]}$$

$$= \frac{180}{3.2\ (5.7)^{1.5}} = 4.1 \text{ ft.}$$

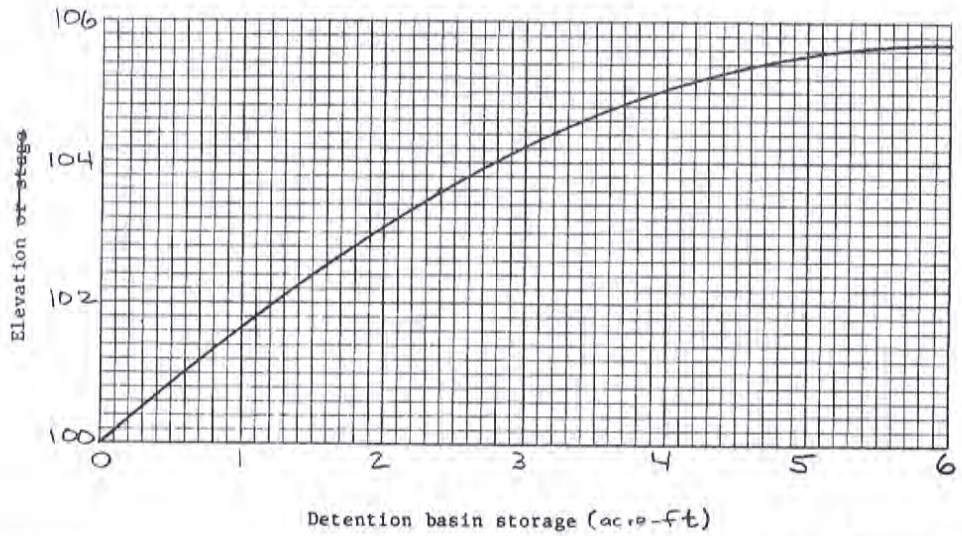
In summary, the outlet structure is a rectangular weir with crest length of 4.1 ft, H_w = 5.7 ft, and q_o = 180 cfs corresponding to a V_s = 5.9 acre-ft.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project Robbinsville By SWR Date 11/5/85

Location Dyer County, Tennessee Checked RGC Date 11/8/85

Circle one: Present (Developed) Single-stage structure



		1st stage	2nd stage
1.	Data: Drainage area ..... A_m = 0.117 mi^2; Rainfall distribution type (I, IA, II, III) = II		
2.	Frequency ..... yr	25	
3.	Peak inflow discharge, q_i .... cfs (From worksheet 4 or 5b)	360	
4.	Peak outflow discharge, q_o .... cfs 1/	180	
5.	Compute $\frac{q_o}{q_i}$	0.50	
6.	$\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.28	
7.	Runoff, Q ..... in (From worksheet 2)	3.4	
8.	Runoff volume, V_r ..... ac-ft ($V_r = QA_m 53.33$)	21.2	
9.	Storage volume, V_s ..... ac-ft ($V_s = V_r(\frac{V_s}{V_r})$)	5.9	
10.	Maximum stage, E_{max} (From plot)	105.7	

1/ 2nd stage q_o includes 1st stage q_o.

Figure 6-2.—Worksheet 6a for example 6-1.

Example 6-2: Estimating V_s, two-stage structure

In addition to the requirements for a 25-year peak outflow discharge of 180 cfs stated in example 6-1, a decision was made to limit the 2-year outflow discharge to 50 cfs because of potential damages to agricultural property below the lined channel. By the method in chapter 4, the estimated 2-year peak discharge for developed conditions will be 91 cfs and runoff (Q) will be 1.5 inches.

Again, a rectangular concrete weir outflow device was selected; the device could have been another type, but it is important to remember that the flows through the first stage are part of the total discharge of the higher stage.

Figure 6-3 shows how worksheet 6a is used to compute the V_s of 2.4 acre-ft and E_{max} of 103.6 for the first stage. E_{max} of 103.6 is the weir crest elevation for the second stage.

Equation 6-5 is again used to compute L_w for the first stage. The weir crest elevation for the first stage is 100.00 ft and q_o = 50 cfs. The first-stage computations for H_w and L_w are

$$H_w = E_{max} - \text{weir crest elevation}$$
$$= 103.6 - 100.0 = 3.6 \text{ ft;}$$

and, from equation 6-5,

$$L_w = \frac{50}{3.2(3.6)^{1.5}} = 2.3 \text{ ft.}$$

The second stage is then proportioned to discharge the correct amount at 105.7 ft (figure 6-2, step 10). Compute the discharge through the first stage for elevation 105.7 ft using

$$L_w = 2.3 \text{ ft (first stage)}$$

and

$$H_w = 105.7 - 100.0 = 5.7 \text{ ft.}$$

By substituting these values in equation 6-4, discharge (q_o) through the first stage at 105.7 ft is calculated:

$$q_o = 3.2(2.3)(5.7)^{1.5} = 100 \text{ cfs.}$$

Now compute the required weir crest length (L_w) for the second stage, using equation 6-5. Since the second stage crest elevation is 103.6 ft,

$$H_w = 105.7 - 103.6 = 2.1 \text{ ft;}$$

and, since q_o for the second stage equals the total discharge from example 6-1 minus discharge through the first stage,

$$q_o = 180 - 100 = 80 \text{ cfs.}$$

Finally, substituting these H_w and q_o values in equation 6-5 results in

$$L_w = \frac{80}{3.2(2.1)^{1.5}} = 8.2 \text{ ft.}$$

In summary, the outlet structure is a 2-stage rectangular weir with first stage crest length of 2.3 ft at elevation 100.0, and second stage crest length of 8.2 ft at elevation 103.6 ft.

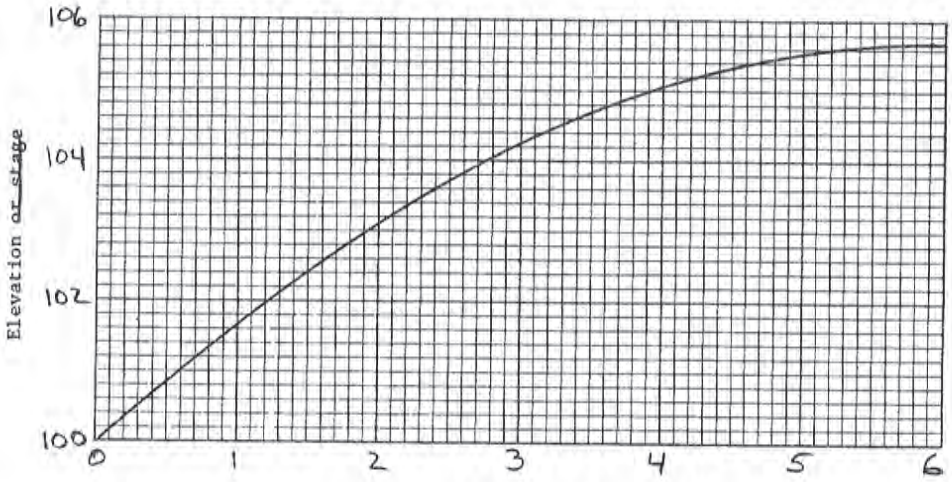
The weir equation used is probably less accurate for the two-stage example than for the single-stage example. The actual second-stage discharge will be slightly more than the one computed, but a discussion of hydraulics of outflow devices is outside the scope of this technical release. Example 6-2 is presented only to illustrate the interrelationship of outflow discharges and storage volume and to show how to develop preliminary estimates of storage requirements for two-stage outlet structures.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project Robbinsville By SWR Date 11/6/85

Location Dyer County, Tennessee Checked RGC Date 11/9/85

Circle one: Present (Developed) 2- stage structure



		1st stage	2nd stage
1.	Data: Drainage area ..... A_m = 0.117 mi^2; Rainfall distribution type (I, IA, II, III) = II		
2.	Frequency ..... yr	2	25
3.	Peak inflow discharge, q_i .... cfs (From worksheet 4 or 5b)	91	360
4.	Peak outflow discharge, q_o .... cfs 1/	50	180
5.	Compute $\frac{q_o}{q_i}$	0.55	0.50
6.	$\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)	0.26	0.28
7.	Runoff, Q ..... in (From worksheet 2)	1.5	3.4
8.	Runoff volume, V_r ..... ac-ft ($V_r = QA_m 53.33$)	9.4	21.2
9.	Storage volume, V_s ..... ac-ft ($V_s = V_r(\frac{V_s}{V_r})$)	2.4	5.9
10.	Maximum stage, E_{max} (From plot)	103.6	105.7

1/ 2nd stage q_o includes 1st stage q_o.

Figure 6-3.—Worksheet 6a for example 6-2.

Example 6-3: Estimating q_o

A development is being planned for a 10-acre watershed (0.0156 mi^2). A county ordinance requires that the developed-condition outflow from the watershed for a 24-hr, 100-year frequency storm does not exceed the outflow for present conditions. The peak discharge from the watershed for present conditions, 35 cfs, is calculated from procedures in chapter 4. For developed conditions, runoff (Q) is 5.4 inches, peak discharge from the watershed is 42 cfs from procedures in chapter 4, and rainfall distribution is type II.

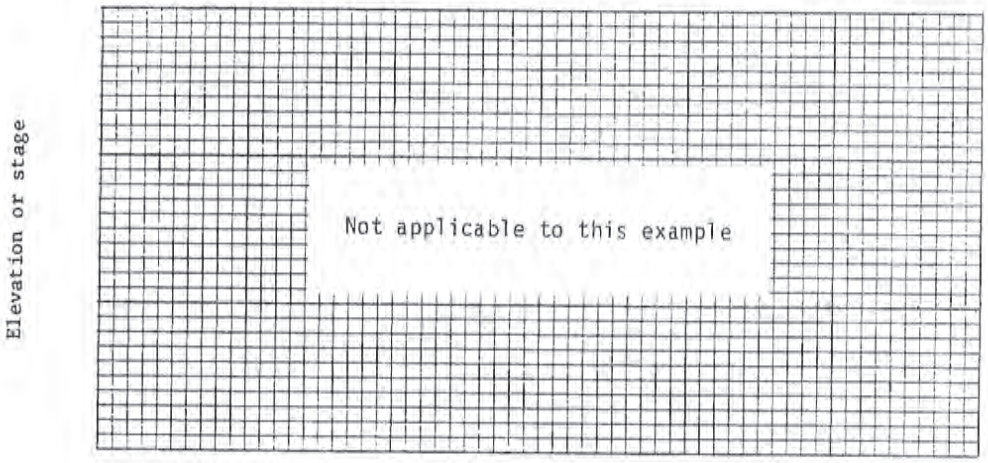
What will be the peak outflow discharge (q_o) from a detention basin that is located at the outlet and has maximum allowable storage volume (V_s) of 35,000 ft^3 and peak inflow discharge (q_i) of 42 cfs? Figure 6-4 shows how worksheet 6b is used to estimate q_o as 33 cfs, which is within the 35-cfs limit. An outflow device will be selected to discharge 33 cfs at a stage corresponding to a V_s of 35,000 ft^3.

Worksheet 6b: Detention basin peak outflow, storage volume (V_s) known

Project Woods Acres By SWR Date 11/8/85

Location Dyer County, Tennessee Checked RGC Date 11/11/85

Circle one: Present (Developed)



		1st stage	2nd stage
1.	Data: Drainage area ..... A_m = 0.0156 mi^2; Rainfall distribution type (I, IA, II, III) = II		
2.	Frequency ..... yr	100	
3.	Storage volume, V_s ..... ac ft	0.8	
4.	Runoff, Q ..... in (From worksheet 2)	5.4	
5.	Runoff volume, V_r ..... ac-ft ($V_r = QA_m 53.33$)	4.5	
6.	Compute $\frac{V_s}{V_r}$	0.18	
7.	$\frac{q_o}{q_i}$ ..... in (Use $\frac{V_s}{V_r}$ and figure 6-1)	0.78	
8.	Peak inflow discharge, q_i .... cfs (From worksheet 4 or 5b)	42	
9.	Peak outflow discharge, q_o .... cfs ($q_o = q_i(\frac{q_o}{q_i})$) 1/	33	
10.	Maximum stage, E_{max} (From plot)	N/A	

1/ 2nd stage q_o includes 1st stage q_o.

Figure 6-4.—Worksheet 6b for example 6-3.

Example 6-4: Estimating V_s, Tabular Hydrograph method

This example builds on examples 5-1 and 5-2 (pages 5-4 to 5-8). If peak outflow discharge from subarea 7 must not exceed the discharge for present conditions, what will be the storage volume (V_s) required in a detention basin at the outlet of subarea 6?

First, compute the outflow hydrograph without subarea 6 as shown in the table below, which presents developed-condition discharges for example 5-2. (The information in the table is from figure 5-4.)

	Discharge (cfs) at time (hr)—								
Subarea	13.0	13.2	13.4	13.6	13.8	14.0	14.3	14.6	15.0
	cfs								
1	7	9	11	16	24	40	78	122	155
2	7	9	12	20	33	55	96	132	132
3	14	29	58	89	106	102	74	46	25
4	19	32	63	114	169	207	193	143	83
5	117	167	205	214	202	175	132	99	70
6 omitted	—	—	—	—	—	—	—	—	—
7	244	167	119	90	72	59	48	40	34
Total without subarea 6	408	413	468	543	606	638	621	582	499

After computing the outflow hydrograph, determine the maximum permissible outflow discharge from subarea 6. The present condition peak discharge at the outlet of subarea 7 is 720 cfs at 14.3 hr (figure 5-2), and the developed condition peak discharge at the outlet of subarea 7 minus subarea 6 is 638 cfs (table above). The difference between these two discharges, 82 cfs, is the maximum outflow discharge (q_o) for the detention basin.

Next, determine the peak discharge for subarea 6 for developed conditions by substituting values in equation 5-1:

$$q = q_t A_m Q. \qquad \text{[Eq. 5-1]}$$

From exhibit 5-II, the largest q_t value is 357 csm/in (exhibit 5-II, sheet 7: T_c = 1.0 hr, T_t = 0, and I_a/P = 0.10 at 12.8 hr). From figure 5-4, A_mQ for subarea 6 is 1.31. Therefore,

$$q = (357)\,(1.31) = 468 \text{ cfs.}$$

This q value is, of course, the same as the peak inflow discharge (q_i) into the detention basin.

Finally, use worksheet 6a (figure 6-5) to compute V_s as 33.2 acre-ft.

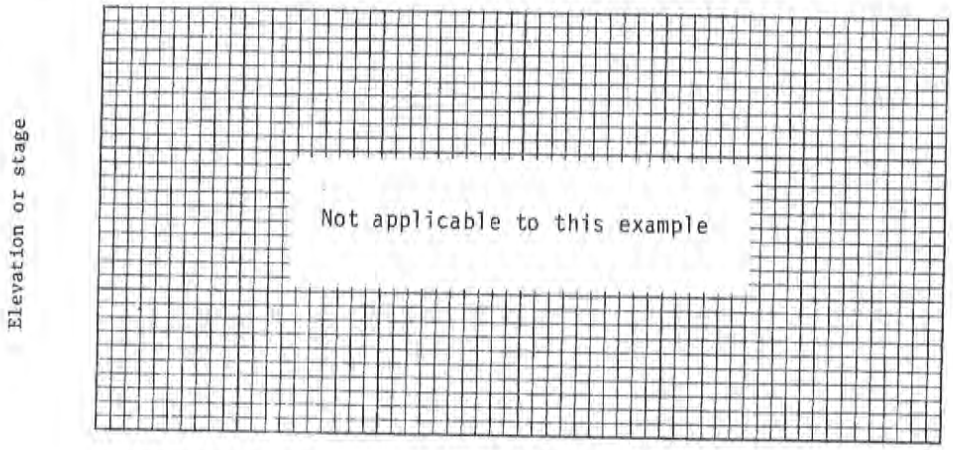
The required storage volume of 33.2 acre-ft is the basis for determining the required stage in the detention basin. This stage is a guide in proportioning a spillway that will discharge 82 cfs or less at that storage. The timing or routing effect is not considered because the outflow hydrograph will discharge at near q_o for a significant period.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project Fallswood By SNR Date 10/8/85

Location Dyer County, Tennessee Checked RGC Date 10/10/85

Circle one: Present Developed



Detention basin storage

1. Data:
   Drainage area ..... A_m = 0.40 mi^2
   Rainfall distribution type (I, IA, II, III) = II

	1st stage	2nd stage
2. Frequency ..... yr	25	
3. Peak inflow discharge, q_i .... cfs (From worksheet 4 or 5b)	468	
4. Peak outflow discharge, q_o .... cfs 1/	82	
5. Compute $\frac{q_o}{q_i}$	0.175	

6. $\frac{V_s}{V_r}$ ..... 0.475 (Use $\frac{q_o}{q_i}$ with figure 6-1)
7. Runoff, Q ..... in 3.28 (From worksheet 2)
8. Runoff volume, V_r ..... ac-ft 69.9 ($V_r = QA_m 53.33$)
9. Storage volume, V_s ..... ac-ft 33.2 ($V_s = V_r(\frac{V_s}{V_r})$)
10. Maximum stage, E_{max} N/A (From plot)

1/ 2nd stage q_o includes 1st stage q_o.

Figure 6-5.—Worksheet 6a for example 6-4.

Appendix A: Hydrologic soil groups

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's, which are A, B, C, and D, are one element used in determining runoff curve numbers (see chapter 2). For the convenience of TR-55 users, exhibit A-1 lists the HSG classification of United States soils.

The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the transmission rate—the rate at which the water moves within the soil. This rate is controlled by the soil profile. Approximate numerical ranges for transmission rates shown in the HSG definitions were first published by Musgrave (USDA 1955). The four groups are defined by SCS soil scientists as follows:

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (greater than 0.30 in/hr).

Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (0.15-0.30 in/hr).

Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05-0.15 in/hr).

Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (0-0.05 in/hr).

In exhibit A-1, some of the listed soils have an added modifier; for example, "Abrazo, gravelly." This refers to a gravelly phase of the Abrazo series that is found in SCS soil map legends.

Disturbed soil profiles

As a result of urbanization, the soil profile may be considerably altered and the listed group classification may no longer apply. In these circumstances, use the following to determine HSG according to the texture of the new surface soil, provided that significant compaction has not occurred (Brakensiek and Rawls 1983):

HSG	*Soil textures*
A	Sand, loamy sand, or sandy loam
B	Silt loam or loam
C	Sandy clay loam
D	Clay loam, silty clay loam, sandy clay, silty clay, or clay

Drainage and group D soils

Some soils in the list are in group D because of a high water table that creates a drainage problem. Once these soils are effectively drained, they are placed in a different group. For example, Ackerman soil is classified as A/D. This indicates that the drained Ackerman soil is in group A and the undrained soil is in group D.

Exhibit A-1: Hydrologic soil groups for United States soils

AABAB	D	ADAVEN	C	AHREN	B	ALDING	D	ALSEA	B
AABERG	D	ADDICKS	D	AHRNKLIN	C	ALDIND	C	ALSPAUGH	C
AARON	C	ADDIELOU	E	AHRS	S	ALEDO	C	ALSTAD	C
AASTAD	B	ADE	A	AHTANUM	D	ALEGROS	C	ALSTONY	B
AAZDAHL	B	ADEK	B	AHTANUM, DRAINED	C	ALEKNAGIK	C	ALSUP	C
ABAC	D	ADEL	B	AHWAHNEE	B	ALEMEDA	C	ALTAMONT	D
ABAJO	C	ADEL, WET	D	AIEONITO	C	ALEX	B	ALTAPEAK	B
ABALOBADIAH	B	ADELAIDE	D	AIDO	D	ALEXANDER	C	ALTAR	B
ABARCA	B	ADELANTO	B	AIKEN	E	ALEXANDRIA	C	ALTAVISTA	C
ABBAYE	B	ADELINO	B	AIKMAN	D	ALFIR	B	ALTDORF	D
ABBIE	B	ADELINO,	C	AIKMAN, STONY	C	ALFLACK	C	ALTHOUSE	B
ABBOTT	D	SALINE-ALKALI		AILEY	B	ALFORD	B	ALTICREST	B
ABBOTTSTOWN	C	ADELPHIA	B/C	AIMELIIK	E	ALGANSEE	E	ALTITA	C
ABCAL	D	ADEN	C	AINAKEA	B	ALGARROBO	A	ALTMAR	B
ABEGG	B	ADENA	C	AINSLEY	B	ALGERITA	B	ALTO	C
ABELA	B	ADGER	D	AINSWORTH	E	ALGIERS	C/D	ALTOGA	C
ABELL	B	ADIEUX	B	AIRMONT	C	ALGOA	C	ALTON	A
ABERDEEN	C	ADILIS	B	AIRPORT	D	ALGOMA	B/D	ALTOONA	C
ABERDNE	B	ADIN	D	AITS	E	ALHAMBRA	B	ALTUDA	D
ABERSITO	C	ADIOS	D	AJO	C	ALHARK	B	ALTURAS	C
ABERT	B	ADJUNTAS	C	AJOLITO	D	ALICE	B	ALTUS	B
ABES	D	ADKINS	B	AKAD	C	ALICEL	B	ALTVAN	B
ABGESE	B	ADKINS, ALKALI	C	AKAKA	A	ALICIA	B	ALUF	A
ABILENE	C	ADKINS, WET	C	AKAN	B/D	ALIDA	B	ALUM	B
ABIQUA	B	ADLER	C	AKASKA	B	ALIKCHI	B	ALUSA	D
ABIQUA, FLOODED	C	ADMAN	D	AKELA	D	ALINE	A	ALVARADO	B
ABITA	C	ADOBE	C	AKERCAN	B	ALKIRIDGE	C	ALVIN	B
ABO	C	ADOLPH	B/D	AKERUE	D	ALKO	D	ALVIRA	C
ABOR	D	ADOS	C	AKINA	E	ALLAGASH	B	ALVISO	D
ABORIGINE	D	ADRIAN	A/D	AKLEP	D	ALLAMORE	D	ALVODEST	D
ABOTEN	D	ADVOKAY	D	ALADDIN	B	ALLANTON	B/D	ALVOR	D
ABRA	B	AECET	C	ALAGSHI	B	ALLANTON,	D	ALVOR, DRAINED	C
ABRAHAM	B	AENEAS	B	ALAE	A	DEPRESSIONAL		ALVOR, PROTECTED	C
ABRAZO	D	AFFEY	C	ALAELOA	B	ALLARD	B	ALWILDA	B
ABRAZO, GRAVELLY	C	AFLEY	B	ALAGA	A	ALLDOWN	B	ALYAN	C
ABREU	D	AFTADEN	D	ALAKAI	C	ALLEGHENY	B	ALZADA	D
ABRIGO	B	AFTON	C/D	ALAMA	E	ALLEMANDS	D	ALZOLA	C
ABSAROKEE	C	AGA	B	ALAMADITAS	C	ALLEN	B	AMADOR	D
ABSCOTA	A	AGAIPAH	D	ALAMANCE	B	ALLENDALE	B	AMAGON	D
ABSHER	D	AGAN	D	ALAMBIQUE	B	ALLENDORF	B	AMALIA	B
ABSTED	C	AGAR	B	ALAMO	D	ALLENS PARK	B	AMALU	D
ABSTED, FLOODED	D	AGASSIZ	D	ALAMOGORDO	B	ALLENS PARK, STONY	C	AMANA	B
ABSTON	C	AGATE	D	ALAMOSA	D	ALLENTINE	D	AMANDA	C
ACACIO	B	AGATHA	E	ALAMOSA, DRAINED	E	ALLENWOOD	B	AMARILLO	B
ACADEMY	C	AGAWAM	B	ALAMUCHEE	B	ALLEY	B	AMASA	B
ACADIA	D	AGENCY	C	ALANGS	D	ALLHANDS	D	AMASA, MODERATELY	C
ACANA	D	AGER	D	ALAPAHA	D	ALLIANCE	B	WET, SANDY	
ACANDO	C	AGFAYAN	D	ALAPAI	A	ALLIGATOR	D	SUBSTRATUM	
ACASCO	D	AGNAL	D	ALAZAN	B	ALLIS	D	AMBER	B
ACCELERATOR	B	AGNESTON	E	ALBAN	B	ALLISON	E	AMBIA	D
ACEITUNAS	B	AGNESTON, COBBLY	C	ALBANO	D	ALLKER	E	AMBOAT	C
ACEL	C	SUBSTRATUM		ALBANY	C	ALLOR	B	AMBOY	C
ACHIMIN	C	AGNESTON, COBBLY	C	ALBATON	D	ALLOUEZ	B	AMBRANT	B
ACKER	B	AGNESTON,	C	ALBEE	C	ALMAC	B	AMBRAW	B/D
ACKERMAN	A/D	NONGRAVELLY		ALBEMARLE	B	ALMANOR	B	AMELIA	C
ACKERVILLE	C	AGNEW	C	ALBERTON	B	ALMAVILLE	E	AMENE	D
ACKETT	D	AGNOS	D	ALBERTVILLE	C	ALMENA	C	AMENIA	B
ACKLEY	B	AGON	C	ALBINAS	B	ALMERIA	D	AMENSON	D
ACKMEN	B	AGORT	C	ALBION	B	ALMIRANTE	B	AMERICANOS	B
ACKMORE	B	AGRA	D	ALBRIGHTS	C	ALMO	D	AMERICUS	A
ACKWATER	D	AGUA	E	ALBURZ	C	ALMONT	D	AMERY	B
ACME	C	AGUA DULCE	D	ALBURZ, DRAINED	D	ALMOTA	C	AMES	C/D
ACO	B	AGUA FRIA	C	ALBUS	B	ALMY	E	AMESHA	B
ACOMA	C	AGUA FRIA, HIGH	S	ALCAN	D	ALNITE	D	AMESMONT	C
ACORD	C	RAINFALL		ALCESTER	E	ALO	D	AMHERST	D
ACOVE	C	AGUA FRIA, STONY	B	ALCOA	E	ALOHA	C	AMISTAD	D
ACREDALE	D	AGUADILLA	A	ALCONA	B	ALOMAX	D	AMITY	D
ACREE	C	AGUALT	B	ALCOT	A	ALONA	B	AMMON	B
ACRELANE	C	AGUEDA	B	ALCOVA	E	ALONSO	B	AMODAC	C
ACTON	B	AGUILARES	B	ALDA	C	ALOVAR	C	AMOLE	A
ACUFF	B	AGUILITA	B	ALDA, SALINE	B/D	ALPENA	A	AMOR	B
ACUNA	C	AGUIRRE	D	ALDAX	D	ALPHA	B	AMORUS	D
ACY	C	AGUSTIN	B	ALDEN	D	ALPIN	A	AMOS	C
ADA	C	AHART	C	ALDER	C	ALPON	B	AMOSTOWN	C
ADAIR	C	AHL	C	ALDERDALE	C	ALPOWA	B	AMPAD	C
ADAMS	A	AHLSTROM	D	ALDERMAND	B	ALRED	B	AMPHION	C
ADAMSON	B	AHMEEK	C	ALDERWOOD	C	ALROS	C	AMSDEN	B
ADAMSVILLE	C	AHOLT	D	ALDI	E	ALS	A	AMSTERDAM	B
ADATON	D	AHPAH	B	ALDINE	D	ALSCO	B	AMTOFT	D

NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION.
MODIFIERS SHOWN, E.G., BEDROCK SUBSTRATUM, REFER TO A SPECIFIC SOIL SERIES PHASE FOUND IN SOIL MAP LEGEND.

Exhibit A-1, continued: Hydrologic soil groups for United States soils

AMWELL	C	ANSELMO, BEDROCK SUBSTRATUM	A	ARCH	B	ARMYDRAIN	C	ASSUMPTION	B
AMY	D			ARCHABAL	B	ARNEGARD	B	ASTA	B
ANACAPA	B	ANSGAR	B/D	ARCHBOLD	A	ARNESS	D	ASTATULA	A
ANACOCO	D	ANSPING	B	ARCHER	C	ARNHEIM	D	ASTOR	B/D
ANACONDA	B	ANT FLAT	C	ARCHERDALE	C	ARNO	D	ASTOR, FLOODED	D
ANAHEIM	C	ANTEL	B	ARCHES	D	ARNOLD	A	ASTORIA	B
ANAHUAC	D	ANTELOPE SPRINGS	C	ARCHIN	D	ARNOT	C/D	ATARQUE	D
ANAMITE	D	ANTERO	D	ARCHIN, COOL	C	ARNTZ	C	ATASCO	C
ANAPRA	B	ANTHO	B	ARCHULETA	D	AROL	D	ATASCOSA	D
ANASAZI	C	ANTHOLOP	D	ARCIA	C	AROSA	C	ATATE	B
ANATONE	D	ANTHONY	B	ARCLAY	D	ARP	C	ATCHEE	D
ANAUD	D	ANTIGO	B	ARCO	C	ARRADA	D	ATCO	B
ANAVERDE	B	ANTILON	C	ARCO, DRAINED	B	ARRASTRE	B	ATENCIO	B
ANAWALT	D	ANTIOCH	D	ARCOLA	C	ARREDONDO	A	ATEPIC	D
ANCHO	B	ANTLER	C	ARD	C	ARRIBA	C	ATHELWOLD	B
ANCHO, SALINE	C	ANTOINE	B	ARDENMONT	B	ARRINGTON	B	ATHENA	B
ANCHOR POINT	D	ANTONITO	C	ARDENVOIR	B	ARRIOLA	D	ATHERTON	B/D
ANCHORAGE	A	ANTOSA	D	ARDEP	B	ARRITOLA	D	ATHOL	B
ANCLOTE	B/D	ANTROBUS	B	ARDEP, WET	C	ARROLIME	C	ATKINS	D
ANCLOTE, DEPRESSIONAL	D	ANTWERP	C	ARDILLA	C	ARRON	D	ATKINSON	B
		ANTY	B	ARDIVEY	B	ARROWHEAD	C	ATLAS	D
ANCLOTE, FREQUENTLY FLOODED	D	ANUNDE	B	ARDNAS	B	ARROYADA	D	ATLEE	C
		ANVIK	B	ARDTOO	B	ARROYO SECO	B	ATLOW	D
		ANWAY	B	ARECIBO	A	ARSITE	D	ATMORE	B/D
ANCO	C	AOWA	B	AREDALE	B	ARTA	C	ATOKA	C
ANDERGEORGE	B	APACHE	D	ARENA	D	ARTESIA	D	ATOMIC	B
ANDERLY	C	APAKUIE	A	ARENA, DRAINED	C	ARTESIAN	D	ATRAC	B
ANDERS	C	APALACHEE	D	ARENALES	A	ARTNOC	B	ATRAVESADA	D
ANDERSON	B	APALO	B	ARENDTSVILLE	B	ARTOIS	C	ATRING	B
ANDOK	B	APAREJO	B	ARENOSA	A	ARUJO	B	ATRYPA	D
ANDOVER	D	APELDORN	D	ARENZVILLE	B	ARUNDEL	C	ATSION	C/D
ANDRADA	D	APEX	B	ARGALT	D	ARVA	D	ATSION, TIDE FLOODED	D
ANDREESON	C	APISHAPA	D	ARGENT	D	ARVADA	D		
ANDREGG	B	APISON	B	ARGENTA	C	ARVANA	C	ATTELLA	D
ANDRES	B	APMAT	B	ARGONAUT	D	ARVESON	B/D	ATTER	A
ANDREWS	C	APMAY	D	ARGORA	B	ARVILLA	A	ATTERBERRY	B
ANDRUSIA	A	APOLLO	B	ARGYLE	B	ARVIN	B	ATTEWAN	B
ANDRY	D	APOPKA	A	ARIEL	C	ARZO	D	ATTEWAN, WET	D
ANDYS	B	APPANOOSE	D	ARIKARA	B	ASA	B	ATTICA	B
ANED	D	APPERSON	C	ARIMO	B	ASABEAN	B	ATTOYAC	B
ANELA	B	APPIAN	B	ARIPEKA	C	ASBILL	D	ATWATER	B
ANETH	B	APPIAN,	C	ARIPINE	A	ASCALON	B	ATWELL	D
ANETH, DRY	A	SALINE-ALKALI		ARIS	D	ASCAR	C	ATWOOD	B
ANGELICA	B/D	APPIAN, WET	C	ARISPE	C	ASCHOFF	B	AU GRES	B
ANGELINA	D	APPIAN, RECLAIMED	C	ARIZO	A	ASH SPRINGS	C	AUA	B
ANGELO	C	APPLEBUSH	B	ARKABUTLA	C	ASHART	D	AUBARQUE	D
ANGELUS	B	APPLEDELLIA	C	ARKANA	C	ASHBON	D	AUBBEENAUBBEE	B
ANGIE	D	APPLEGATE	C	ARKAQUA	C	ASHCROFT	B	AUBERRY	B
ANGLE	A	APPLETON	C	ARKONA	B	ASHDALE	B	AUBREY	C
ANGLEN	C	APPLING	B	ARKPORT	B	ASHDOWN	B	AUBURN	D
ANGOLA	C	APRON	B	ARKSON	B	ASHE	B	AUBURNDALE	B/D
ANGORA	B	APT	B	ARKTON	C	ASHER	C	AUFCO	D
ANGOSTURA	B	APTAKISIC	B	ARLAND	B	ASHFORD	D	AUGGIE	B
ANHALT	D	APTOS	C	ARLE	C	ASHFORK	D	AUGSBURG	B/D
ANIAK	D	AQUILLA	A	ARLINGTON	C	ASHGROVE	D	AUGUSTA	C
ANIMAS	C	AQUINAS	C	ARLINGTON, THICK SOLUM	B	ASHHURST	C	AUGUSTINE	B
ANINTO	D	ARABRAB	D			ASHIPPUN	C	AULD	D
ANITA	D	ARADA	B	ARLO	B	ASHKUM	B/D	AURA	B
ANKENY	B	ARAGON	C	ARLOVAL	A	ASHLAR	B	AURELIE	D
ANKLAM	D	ARAMBURU	C	ARMAGH	D	ASHLEY	B	AURELIUS	B/D
ANKONA	D	ARANSAS	D	ARMCO	C	ASHLO	B	AURORA	C
ANNABELLA	B	ARAPAHOE	B/D	ARMELLS	B	ASHMED	B	AUSMUS	D
ANNANDALE	C	ARAPIEN	C	ARMENDARIS	C	ASHMUN	D	AUSTIN	C
ANNAW	B	ARARAT	B	ARMENIA	D	ASHOLLER	D	AUSTINVILLE	B
ANNEMAINE	C	ARAT	D	ARMESA	B	ASHPORT	B	AUSTWELL	D
ANNIS	C	APAVAIPA	C	ARMESPAN	B	ASHTON	B	AUT	C
ANNIS, SALINE	B	ARAVE	D	ARMIESBURG	B	ASHUE	B	AUTOMBA	B
ANNIS, DRAINED	B	ARAVETON	B	ARMIJO	D	ASHUELOT	D	AUTRYVILLE	A
ANNISQUAM	C	ARBELA	C	ARMINGTON	D	ASHWOOD	C	AUXVASSE	D
ANNISTON	B	ARBIDGE	C	ARMISTEAD	C	ASKEW	C	AUZQUI	B
ANNONA	D	ARBOLES	C	ARMITAGE	C	ASOLT	D	AVA	C
ANOCON	C	ARBONE	B	ARMO	B	ASOTIN	C	AVALON	B
ANOKA	B	ARBOR	B	ARMOINE	D	ASPARAS	B	AVANT	B
ANONES	C	ARBUCKLE	B	ARMONA	C	ASPEN	B	AVAR	D
ANOWELL	D	ARBUCKLE, WET	C	ARMOUR	B	ASPERMONT	B	AVAWATZ	A
ANSARI	D	ARBURUA	C	ARMPUP	C	ASPERSON	C	AVENAL	B
ANSEL	B	ARBUS	B	ARMSTER	C	ASSATEAGUE	A	AVILLA	B
ANSELMO	B	ARCATA	B	ARMSTRONG	C	ASSININS	B	AVIS	A
		ARCETTE	B	ARKUCHEE	C	ASSINNIBOINE	B	AVOCA	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

AVON	C	BALDFIELD	C	BARDLEY	C	BATESON	B	BEAVERTON	B
AVONBURG	D	BALDHILL	B	BARELA	C	BATESVILLE	C	BECKER	B
AVONDA	B	BALDMOUNTAIN	B	BARFIELD	D	BATH	C	BECKET	C
AVONDALE	B	BALDOCK	D	BARFUSS	B	BATTERSON	D	BECKLEY	B
AVONVILLE	B	BALDOCK, GRAVELLY	C	BARGE	C	BATTLE CREEK	C	BECKMAN	D
AVTABLE	D	SUBSTRATUM,		BARGER	C	BATTLEMENT	B	BECKS	C
AWBRIG	D	DRAINED		BARIO	B	BATZA	D	BECKTON	D
AXIS	D	BALDOCK, SALINE	C	BARISHMAN	C	BAUDETTE	B	BECKTON, WELL	C
AXTELL	D	BALDOCK, SALINE	C	BARKCAMP	B	BAUER	C	DRAINED	
AYAR	D	BALDOCK, DRAINED	C	BARKELEW	B	BAUMAN	C	BECKVILLE	B
AYCOCK	B	BALDWIN	D	BARKERVILLE	C	BAUMGARD	B	BECKWITH	D
AYDELOTTE	D	BALDY	B	BARKLEY	C	BAUSCHER	B	BECKWOURTH	C
AYERSVILLE	B	BALE	B	BARKOF	D	BAUX	B	BECRAFT	B
AYLMER	A	BALE, WET	D	BARLEYFIELD	B	BAUXSON	B	BECREEK	B
AYNOR	B/D	BALLAHACK	D	BARLING	C	BAXENDALE	B	BEDELL	B
AYON	B	BALLARD	B	BARLOW	B	BAXTER	B	BEDEN	D
AYOUB	C	BALLER	D	BARNABE	D	BAXTERVILLE	B	BEDFORD	C
AYR	B	BALLINGER	D	BARNARD	C	BAYAMON	B	BEDINGTON	B
AYRES	D	BALLTOWN	D	BARNELLCREEK	B	BAYARD	B	BEDKE	B
AYRSHIRE	C	BALLVAR	B	BARNES	B	BAYBORO	D	BEDNER	C
AYSEES	B	BALLY	C	BARNESTON	B	BAYERTON	C	BEDSTEAD	C
AZAAR	C	BALM	D	BARNESTON,	A	BAYFIELD	C	BEDWYR	D
AZELTINE	B	BALMAN	B	NONGRAVELLY		BAYFIELD, WET	D	BEE	B
AZTALAN	C	BALMAN, SALINE,	C	BARNEY	D	BAYHORSE	D	BEEBE	A
AZTEC	B	FLOODED		BARNHARDT	B	BAYLIS	B	BEECHER	C
AZTEC, HIGH	C	BALMLAKE	B	BARNHOT	D	BAYMEADE	A	BEECHGROVE	B
RAINFALL		BALMORHEA	C	BARNSDALL	B	BAYOU	D	BEECHWOOD	C
AZULE	C	BALON	B	BARNSTABLE	B	BAYOUDAN	D	BEEK	C
AZWELL	C	BALSORA	B	BARNUM	B	BAYSHORE	D	BEEKMAN	C
BAAHISH	B	BALTIC	D	BARODA	D	BAYSHORE,	B	BEELEM	D
BABB	B	BALTIMORE	B	BAROID	A	MODERATELY WET		BEELINE	D
BABBINGTON	B	BAMA	B	BAROID, WET	D	BAYSIDE	D	BEEMONT	C
BABELTHUAP	B	BAMAC	A	BARRADA	D	BAYTOWN	B	BEENOM	D
BACA	B	BAMBER	B	BARRE	D	BAYUCOS	D	BEESKOVE	B
BACA, FLOODED	C	BAMOS	C	BARRETT	D	BAYVI	D	BEETVILLE	B
BACH	B/D	BAMTUSH	B	BARRIER	D	BAYVIEW	D	BEEZEE	B
BACHELOR	B	BANADERO	D	BARRINGTON	B	BAYWOOD	A	BEFAR	D
BACHO	D	BANAT	B	BARRON	B	BAZETTE	C	BEGAY	B
BACHUS	C	BANBURY	D	BARRONETT	B/D	BAZILE	B	BEHANIN	B
BACKBAY	D	BANCAS	C	BARRY	B/D	BEACH	D	BEHEMOTOSH	C
BACKBONE	B	BANCKER	D	BARSAC	C	BEAD	C	BEHRING	D
BACLIFF	D	BANCROFT	B	BARSHAAD	D	BEAGLE	C	BEIGLE	B
BACOBI	C	BANCY	D	BART	B	BEALAND	B	BEIRMAN	D
BACONA	B	BANDAG	B	BARTINE	C	BEALES	B	BEISIGL	A
BADAXE	B	BANDERA	B	BARTLE	D	BEAM	D	BEJE	D
BADENA	B	BANDID	B	BARTLEY	C	BEAMTON	C	BEJUCOS	B
BADENAUGH	B	BANDON	C	BARTO	D	BEANBLOSSOM	B	BELAIN	C
BADGE	B	BANE	A	BARTOME	D	BEANFLAT	C	BELATE	B
BADGERTON	B	BANGO	B	BARTON	B	BEANLAKE	B	BELCHER	D
BADIN	C	BANGOR	B	BARTONFLAT	B	BEANO	D	BELDEN	C
BADITO	C	BANGSTON	A	BARVON	B	BEAR BASIN	B	BELDING	B
BADO	D	BANIDA	D	BARX	B	BEAR CREEK	B	BELEN	D
BADUS	C/D	BANKARD	A	BASCAL	B	BEAR LAKE	D	BELFAST	B
BADWATER	B	BANKHEAD	B	BASCO	C	BEAR PRAIRIE	B	BELFIELD	C
BAGARD	B	BANKS	A	BASCOM	B	BEARDALL	C	BELFORE	B
BAGDAD	B	BANLIC	C	BASCOVY	D	BEARDEN	C	BELGARRA	C
BAGGOTT	D	BANNEL	B	BASEHOR	D	BEARDSLEY	C	BELGRADE	B
BAGLEY	B	BANNER	C	BASH	C	BEARDSTOWN	C	BELHAVEN	D
BAHEM	B	BANNING	C	BASHAW	D	BEARGULCH	B	BELINDA	D
BAHIA	A	BANNION	C	BASHER	B	BEARMOUTH	B	BELJICA	B
BAHL	C	BANNOCK	B	BASILE	D	BEARPAW	C	BELK	D
BAILE	D	BANTRY	A/D	BASIN	C	BEARSKIN	D	BELKNAP	C
BAILEGAP	B	BAPOS	D	BASINGER	B/D	BEARSPRING	B	BELLAVISTA	C
BAILEYCREEK	C	BARABOO	B	BASINGER,	D	BEARTRAP	B	BELLE	B
BAILING	C	BARAGA	C	DEPRESSIONAL		BEARVILLE	C	BELLECHESTER	A
BAINVILLE	C	BARANA	B	BASINGER, FLOODED	D	BEARWALLOW	C	BELLEHELEN	D
BAIRD HOLLOW	C	BARATARI	A/D	BASKET	B	BEASLEY	C	BELLENMINE	D
BAIRD HOLLOW,	D	BARBAROSA	D	BASSEL	B	BEASON	C	BELLEVILLE	B/D
EXTREMELY COBBLY		BARBARY	D	BASSETT	B	BEATRICE	D	BELLEVILLE, PONDED	D
BAIRD HOLLOW,	B	BARBERT	D	BASSFIELD	B	BEAUCOUP	B/D	BELLEVUE	B
GRAVELLY		BARBOUR	B	BASTIAN	C	BEAUFORD	D	BELLICUM	B
BAJURA	D	BARBOURVILLE	B	BASTON	C	BEAUGHTON	D	BELLINGHAM	D
BAKEOVEN	D	BARCAVE	B	BASTROP	B	BEAUMONT	D	BELLINGHAM,	C
BAKER	C	BARCE	B	BASTSIL	B	BEAUREGARD	C	DRAINED	
BAKERSVILLE	D	BARCLAY	C	BATA	B	BEAUSITE	C	BELLPASS	D
BALAAM	B	BARCO	B	BATAN	B	BEAUVAIS	B	BELLPINE	C
BALCOM	B	BARCUS	A	BATAVIA	B	BEAVERCREEK	B	BELLWOOD	D
BALD	C	BARD	D	BATEMAN	B	BEAVERDAM	C	BELMEAR	D
BALDER	D	BARDEN	C	BATES	B	BEAVERELL	B	BELMILL	B

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BELMONT	B	BERTRAM	B	BILLINGS,	B	BLACKNOLL	C	BLUE LAKE	A
BELMORE	B	BERTRAND	B	MODERATELY SLOW		BLACKOAR	B/D	BLUE STAR	B
BELPRE	C	BERVILLE	B/D	PERM		BLACKPIPE	C	BLUEBELL	C
BELSAC	B	BERWOLF	B	BILLYCREEK	C	BLACKPRINCE	B	BLUECHIEF	C
BELTED	D	BERYL	B	BILLYHAW	D	BLACKROCK	B	BLUECREEK	D
BELTON	C	BERZATIC	D	BILTMORE	A	BLACKSAN	B	BLUEDOME	C
BELTRAMI	B	BESEMAN	A/D	BIMMER	D	BLACKSPAR	D	BLUEFLAT	C
BELTSVILLE	C	BESHERM	C	BINCO	D	BLACKSPOT	D	BLUEGROVE	C
BELUGA	D	BESNER	B	BINDLE	B	BLACKSTON	B	BLUEGULCH	B
BELUGA, DRAINED,	C	BESSEMER	C	BINFORD	B	BLACKTHORN	B	BLUEHILL	C
SLOPING		BESSIE	D	BINGER	B	BLACKTOP	D	BLUEHON	C
BELVOIR	C	BESTROM	C	BINGHAM	B	BLACKWATER	D	BLUEJOINT	B
BELZAR	C	BETHANY	C	BINGHAMPTON	B	BLACKWELL	D	BLUENOSE	B
BEMIDJI	A	BETHEL	B	BINGHAMVILLE	D	BLADEN	D	BLUEPOINT	A
BEN LOMOND	B	BETHERA	D	BINNA	B	BLAG	D	BLUERIM	C
BENCHLEY	C	BETHESDA	C	BINNSVILLE	D	BLAGO	D	BLUESLIDE	D
BENCLARE	C	BETHLEHEM	B	BINS	B	BLAINE	C	BLUESPRIN	C
BENCO	B	BETIS	A	BINTON	C	BLAIR	C	BLUESTONE	D
BENDER	B	BETONNIE	B	BINTON, RECLAIMED	B	BLAIRTON	C	BLUEWING	A
BENDIRE	C	BETRA	C	BIOYA	B	BLAKABIN	C	BLUFF	D
BENEVOLA	C	BETTERAVIA	C	BIPPUS	B	BLAKE	B	BLUFFDALE	C
BENEWAH	D	BETTS	B	BIRCHBAY	C	BLAKELAND	A	BLUFFTON	C/D
BENFIELD	C	BEULAH	B	BIRCHFIELD	D	BLAKENEY	C	BLUFORD	C
BENGAL	C	BEVENT	A	BIRCHWOOD	C	BLAKEWELL	C	BLUM	C
BENGE	B	BEVERIDGE	D	BIRDOW	B	BLALOCK	D	BLY	B
BENHAM	B	BEVERLY	B	BIRDS	C/D	BLAMER	C	BLYBURG	B
BENIN	D	BEVERLY, GRAVELLY	A	BIRDSALL	D	BLANCA	B	BLYTHE	D
BENITO	D	BEW	C	BIRDSBORO	F	BLANCHARD	A	BOARDMAN	D
BENJAMIN	D	BEWLEYVILLE	B	BIRDSLEY	D	BLANCHE	B	BOARDTREE	C
BENKLIN	C	BEXAR	D	BIRDSVIEW	A	BLANCHESTER	B/D	BOASH	D
BENMAN	C	BEZO	D	BIRKBECK	B	BLANCOT	B	BOAZ	C
BENNDALE	B	BEZZANT	B	BIRMINGHAM	B	BLAND	C	BOBBITT	C
BENNINGTON	C	BIBB	C	BIRNEY	B	BLANDING	B	BOBILLO	A
BENRIDGE	B	BIBLESPRINGS	B	BIROME	C	BLANEY	B	BOBNBOB	C
BENSLEY	B	BICE	B	BISBEE	A	BLANKET	C	BOBS	D
BENSON	D	BICKERDYKE	D	BISCARO	D	BLANTON	A	BOBTAIL	C
BENTEEN	C	BICKETT	D	BISCAY	B/D	BLANTON,	B	BOBTOWN	B
BENWY	B	BICKLETON	B	BISGANI,	B	MODERATELY WET		BOCA	B/D
BENZ	D	BICKMORE	C	MODERATELY WET		BLANYON	C	BOCA, DEPRESSIONAL	D
BEOR	D	BICONDOA	D	BISGANI, FLOODED	C	BLAPPERT	D	BOCA, TIDAL	D
BEOSKA	B	BICONDOA, DRAINED	C	BISHOP	D	BLAQUIERE	C	BOCK	B
BEOTIA	B	BIDDEFORD	D	BISMARCK	D	BLASDELL	A	BOCKER	D
BEOWAWE	B	BIDDLEMAN	B	BISOODI	D	BLASE	C	BOCKSTON	B
BEQUINN	B	BIDMAN	C	BISPING	F	BLASINGAME	C	BODE	B
BERCUMB	B	BIDWELL	B	BISSELL	B	BLAYDEN	D	BODECKER	A
BERDA	B	BIEBER	D	BISSONNET	D	BLAZBIRD	D	BODELL	D
BEREA	C	BIEDELL	D	BIT	C	BLAZON	D	BODEN	C
BERENICETON	B	BIEDSAW	C	BITTER	B	BLEAKWOOD	C	BODENBURG	B
BERGHOLZ	C	BIENVILLE	A	BITTER SPRING	B	BLEDSOE	C	BODINE	B
BERGLAND	D	BIG BLUE	D	BITTERROOT	C	BLEIBLERVILLE	D	BODORUMPE	C
BERGQUIST	B	BIG HORN	B	BITTERWATER	B	BLENCOE	D	BODOT	C
BERGSTROM	B	BIG TIMBER	D	BITTON	B	BLEND	D	BOEL	A
BERGSVIK	D	BIGARM	B	BIVANS	D	BLENDON	B	BOEL, OVERWASH	C
BERINO	B	BIGBEE	A	BIXBY	B	BLETHEN	B	BOELUS	A
BERIT	D	BIGBEND	B	BIXLER	C	BLEVINS	B	BOERNE	B
BERKS	C	BIGBROWN	C	BJORK	C	BLEVINTON	B	BOESEL	C
BERKSHIRE	B	BIGELOW	B	BLACHLY	B	BLEWETT	D	BOESEL, PROTECTED	B
BERLAKE	B	BIGETTY	B	BLACK BUTTE	B	BLICHTON	D	BOETTCHER	C
BERLIN	C	BIGFLAT	D	BLACK CANYON	D	BLICKENSTAFF	B	BOGAN	C
BERMESA	C	BIGFOOT	C	BLACK CANYON,	C	BLIND	B	BOGART	B
BERMUDIAN	B	BIGFORK	C	DRAINED		BLIMSTER	C	BOGGS	C
BERNAL	D	BIGHAMS	B	BLACK RIDGE	D	BLINN	C	BOGGY	C
BERNALDO	B	BIGHILL	B	BLACKA	C	BLISS	C	BOGRAP	B
BERNARD	D	BIGLAKE	A	BLACKBURN	B	BLITZEN	C	BOGUE	D
BERNARDINO	C	BIGMEADOW	C	BLACKDRAW	D	BLOCKHOUSE	D	BOGUS	C
BERNARDSTON	C	BIGNELL	C	BLACKETT	B	BLOMFORD	B/D	BOHANNON	C
BERNHILL	B	BIGRIVER	B	BLACKFOOT	C	BLOOM	D	BOHEMIAN	B
BERNICE	A	BIGSHEEP	B	BLACKFOOT, DRAINED	B	BLOOMFIELD	A	BOHICKET	D
BERNING	C	BIGSPRING	D	BLACKHALL	D	BLOOMING	B	BOHNA	B
BERNOW	B	BIGWIN	C	BLACKHALL, WARM	C	BLOOMSDALE	B	BOHNLY	D
BERRYLAND	B/D	BIGWINDER	D	BLACKHAMMER	B	BLOOR	C	BOHNSACK	B
BERRYMAN	C	BIJORJA	C	BLACKHAWK	D	BLOOR, GRAVELLY	D	BOISTFORT	B
BERSON	B	BIJOU	B	BLACKHOOF	D	SUBSTRATUM		BOJAC	B
BERTAG	C	BILBO	C	BLACKHORSE	C	BLOUNT	C	BOJO	D
BERTELSON	B	BILGER	D	BLACKLEED	B	BLOWERS	B	BOLAN	B
BERTHOUD	B	BILLETT	B	BLACKLEG	C	BLUCHER	C	BOLAR	C
BERTIE	B	BILLINGS	C	BLACKLOCK	D	BLUE EARTH	B/D	BOLD	B
BERTO	D			BLACKMAN	C	BLUE EARTH,	D	BOLENT	A
BERTOLOTTI	B			BLACKMOUNT	B	SLOPING		BOLES	C

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BOLFAR	C	BORGEAU	B	BRACEVILLE	C	BREW	C	BROKENHORN	D
BOLICKER	B	BORGES	D	BRACKEN	B	BREWER	C	BROLLIAR	D
BOLIO	D	BORIANA	D	BRACKETT	C	BREWLESS	C	BROMER	C
BOLIVAR	B	BORKY	C	BRAD	D	BREWSTER	D	BROMIDE	B
BOLLING	C	BORNSTEDT	C	BRADDOCK	B	BREWTON	C	BROMO	B
BOLSA	C	BORO	D	BRADEN	B	BRIBUTTE	D	BRONAUGH	B
BOLTON	B	BOROBEY	C	BRADENTON	B/D	BRICKEL	C	BRONCHO	B
BOLTUS	D	BORREGO	D	BRADENTON, FLOODED	D	BRICKMILL	C	BRONCHO, LOAMY	A
BOMAR	C	BORREGUERO	C	BRADER	D	BRICKTON	C	SUBSTRATUM	
BOMBADIL	D	BORSKI	B	BRADSHAW	B	BRICO	C	BRONELL	B
BOMBAY	B	BORTH	C	BRADSON	B	BRIDGE	C	BRONSON	B
BOMOSEEN	C	BORUP	B/D	BRADWAY	D	BRIDGECREEK	C	BRONTE	C
BON	B	BORVANT	D	BRADY	B	BRIDGEHAMPTON	B	BROOKE	D
BONAIR	D	BOSANKO	D	BRADYVILLE	C	BRIDGEPORT	B	BROOKFIELD	B
BONANZA	B	BOSCO	B	BRAFFITS	B	BRIDGER	B	BROOKINGS	B
BONAPARTE	A	BOSKET	B	BRAGG	C	BRIDGESON	D	BROOKLYN	C/D
BONCLAIR	B	BOSLER	B	BRAHAM	B	BRIDGESON, DRAINED	C	BROOKMAN	D
BOND	D	BOSO	D	BRAILSFORD	C	BRIDGET	E	BROOKSHIRE	C
BONDFARM	D	BOSQUE	B	BRAINERD	C	BRIDGEWATER	B	BROOKSIDE	C
BONDMAN	D	BOSSBURG	D	BRALLIER	D	BRIEDWELL	B	BROOKSTON	B/D
BONDRANCH	D	BOSSBURG, DRAINED	C	BRAM	C	BRIEF	B	BROOKSTON, STONY	D
BONDUEL	C	BOSTON	C	BRAMARD	B	BRIER	D	BROOKSVILLE	D
BONE	D	BOSTRUM	D	BRAMLETT	D	BRIGGS	A	BROOME	B
BONEEK	B	BOSTWICK	B	BRAMWELL	C	BRIGGSDALE	C	BROPHY	A/D
BONEYARD	C	BOSVILLE	D	BRANCH	B	BRIGGSVILLE	C	BROSE	D
BONFIELD	B	BOSWELL	D	BRANCROFT	C	BRIGHTON	B/D	BROSELEY	B
BONFRI	C	BOSWORTH	D	BRAND	D	BRIGHTWOOD	B	BROSS	B
BONG	A	BOTELLA	B	BRANDENBURG	A	BRILEY	B	BROUGHTON	D
BONHAM	C	BOTHWELL	B	BRANDON	B	BRILL	B	BROWARD	C
BONIFAY	A	BOTHWI	C	BRANDYWINE	C	BRILLIANT	B	BROWER	B
BONILLA	B	BOTON	B	BRANFORD	B	BRIMFIELD	C/D	BROWNBEAR	C
BONITA	D	BOTTINEAU	C	BRANHAM	C	BRIMLEY	B	BROWNDELL	D
BONJEA	D	BOTTLE	C	BRANSCOMB	B	BRIMSTONE	D	BROWNELL	B
BONN	D	BOTTLEROCK	C	BRANTFORD	B	BRINEGAR	B	BROWNFIELD	A
BONNEAU	A	BOULDER	B	BRANTLEY	C	BRINGHEE	B	BROWNLEE	B
BONNELL	C	BOULDER LAKE	D	BRANYON	D	BRINKER	C	BROWNRIGG	D
BONNER	B	BOULDER POINT	B	BRASHEAR	C	BRINKERT	C	BROWNSCOMBE	C
BONNERDALE	B	BOULDERCREEK	B	BRASSFIELD	B	BRINKERTON	D	BROWNSCREEK	B
BONNET	B	BOULDIN	B	BRATTON	B	BRINNUM	D	BROWNSDALE	C
BONNEVILLE	A	BOULFLAT	C	BRAUN	C	BRINNUM, DRAINED	C	BROWNSTO	B
BONNICK	A	BOUNCER	D	BRAVANE	D	BRIONES	B	BROWNSVILLE	C
BONNIE	C/D	BOUNDARY	B	BRAWLEY	D	BRIOS	A	BROWNTON	C/D
BONNIE, PONDED	C	BOURBON	B	BRAXTON	C	BRISBANE	B	BROXON	B
BONNYDOON	D	BOURNE	C	BRAY	D	BRISCO	B	BROYLES	B
BONO	D	BOUSIC	D	BRAYTON	C	BRISCOT	D	BRUBECK	D
BONSALL	D	BOW	D	BRAZILTON	D	BRISCOT, DRAINED	C	BRUCE	B/D
BONTA	B	BOWBAC	C	BRAZITO	A	BRISKY	D	BRUELLA	B
BONTI	C	BOWBELLS	B	BRAZITO, THICK	B	BRISTOW	D	BRUELLA, HARD	C
BONWIER	C	BOWDISH	C	SURFACE		BRITTO	D	SUBSTRATUM	
BONWIER, GRADED	D	BOWDLE	B	BRAZITO, THICK	C	BRITTON	D	BRUFFY	B
BONZ	C	BOWDOIN	D	SURFACE,		BRITWATER	B	BRUHEL	B
BOOFORD	C	BOWDRE	C	SALINE-ALKALI		BROAD	C	BRUIN	B
BOOFUSS	D	BOWEN	C	BRAZON	C	BROAD CANYON	B	BRUMAN	B
BOOKCLIFF	B	BOWERS	C	BRAZORIA	D	BROADALBIN	C	BRUMBAUGH	C
BOOKER	D	BOWES	B	BRECKENRIDGE	B/D	BROADAX	B	BRUNCAN	D
BOOKOUT	C	BOWIE	B	BRECKNOCK	B	BROADBROOK	C	BRUNDAGE	D
BOOKWOOD	B	BOWLAKE	C	BRECKSVILLE	C	BROADHEAD	C	BRUNEEL	D
BOOMER	B	BOWLUS	B	BREECE	B	BROADHURST	D	BRUNELDA	D
BOOMSTICK	D	BOWMAN	C	BREGAR	D	BROADMOOR	C	BRUNO	A
BOOMTOWN	D	BOWMANSVILLE	B/D	BREIEN	B	BROADUS	B	BRUNSWICK	B
BOONE	A	BOWNS	C	BREKO	B	BROADWELL	B	BRUNZELL	B
BOONESBORO	B	BOWSTRING	A/D	BREMER	C	BROBETT	C	BRUSHCREEK	C
BOONEVILLE	B	BOXELDER	C	BREMER, SANDY	B	BROCK	D	BRUSHCREEK	B
BOONTON	C	BOXFORD	C	SUBSTRATUM		BROCKET	C	BRUSSELS	C
BOONVILLE	C	BOXVILLE	C	BREMO	C	BROCKGULCH	C	BRUSSETT	B
BOONVILLE	D	BOXWELL	C	BREMS	A	BROCKLISS	B	BRYAN	A
BOOTH	C	BOY	B	BRENDA	C	BROCKMAN	C	BRYANT	B
BOOTHBAY	C	BOYCE	D	BRENHAM	C	BROCKO	B	BRYARLY	D
BOOTJACK	D	BOYD	D	BRENNAN	B	BROCKPORT	D	BRYCAN	B
BOOTS	A/D	BOYER	B	BRENNER	D	BROCKROAD	C	BRYCE	D
BOQUILLAS	C	BOYETT	B	BRENT	D	BROCKSBURG	B	BRYMAN	B
BORACHO	C	BOYKIN	B	BRENTON	B	BROCKTON	D	BRYSTAL	B
BORAH	C	BOYLE	D	BRENTSVILLE	C	BROCKWAY	B	BUB	C
BORAVALL	D	BOYSAG	D	BRENTWOOD	B	BROCKWELL	B	BUBUS	B
BORDA	D	BOYSEN	D	BRESSA	C	BRODALE	C	BUCAN	C
BORDEAUX	B	BOZE	B	BRESSER	B	BRODY	C	BUCAN, GRAVELLY	D
BORDEN	B	BOZEMAN	B	BREVARD	B	BRODE	B	BUCHANAN	C
BORDER	B	BRABAS	D	BREVATOR	C	BROGAN	B	BUCHEL	D
BOREALIS	D	BRACE	C	BREVORT	B/D	BROGDON	B	BUCHENAU	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

BUCHENAU, THICK SOLUM	B	BURCHELL	C	CABO ROJO	C	CALODO	C	CANTEEN	B
BUCKARDO	C	BURDETT	C	CABOOSE	B	CALOOSA	C	CANTEY	D
BUCKBAY	C	BUREN	C	CABOT	D	CALOUSE	B	CANTINA	C
BUCKCREEK	C	BURGESS	C	CABRILLO	C	CALPAC	B	CANTON	B
BUCKEYE	C	BURGI	B	CABSTON	B	CALPEAK	D	CANTON BEND	C
BUCKHALL	B	BURIBURI	C	CACHE	D	CALPINE	B	CANTRIL	B
BUCKHOUSE	B	BURKE	C	CACIGUE	C	CALROY	B	CANTUA	B
BUCKING	A	BURKETOWN	C	CACTUSFLAT	C	CALUME	B	CANTUCHE	D
BUCKLAKE	C	BURKEVILLE	D	CADDO	D	CALVERTON	C	CANUTIO	B
BUCKLAND	C	BURKHARDT	B	CADEVILLE	D	CALVIN	C	CANWALL	C
BUCKLE	B	BURLEIGH	A/D	CADILLAC	A	CALVISTA	D	CANYON	D
BUCKLEBAR	B	BURLESON	D	CADIZ	F	CALWOODS	D	CAPAC	C
BUCKLEY	D	BURLINGTON	A	CADOMA	D	CAMAGUEY	D	CAPAY	D
BUCKLICK	C	BURMAH	D	CAESAR	A	CAMARGO	B	CAPE	D
BUCKLICK, THICK SOLUM	B	BURNAC	D	CAGEY	C	CAMARILLO	C	CAPE FEAR	D
BUCKLON	D	BURNBOROUGH	B	CAGLE	C	CAMARILLO, DRAINED	B	CAPEHORN	D
BUCKNELL	D	BURNEL	C	CAGUABO	D	CAMAS	A	CAPERS	D
BUCKNEY	B	BURNETTE	C	CAGWIN	B	CAMAS, STONY	B	CAPERTON	D
BUCKPEAK	B	BURNHAM	D	CAHABA	B	CAMATTA	D	CAPHOR	B
BUCKS	B	BURNSIDE	B	CAHONA	B	CAMBARGE	B	CAPILLO	C
BUCKSHOT	B	BURNSVILLE	B	CAID	B	CAMBERN	C	CAPISTRANO	B
BUCKSKIN	C	BURNSWICK	B	CAINHOY	A	CAMBERT	C	CAPITAN	D
BUCKTON	B	BURNT LAKE	A	CAIRO	D	CAMBETH	C	CAPJAC	C
BUCKTOWN	B	BURNTRIVER	B	CAJALCO	C	CAMBRIA	B	CAPLEN	D
BUDE	C	BURR	D	CAJETE	B	CAMBRIDGE	C	CAPLES	D
BUDIHOL	D	BURRITA	D	CAJON, OVERWASH	A	CAMDEN	B	CAPLES, DRAINED	C
BUDLEWIS	C	BURROWSVILLE	C	CAJON, LOAMY	A	CAMEEK	D	CAPONA	C
BUELL	B	BURSLEY	D	SUBSTRATUM		CAMELBACK	B	CAPOOSE	C
BUENA VISTA	B	BURSON	C	CAJON, SILTY	A	CAMEO	B	CAPPS	B
BUFFARAN	D	BURT	D	SUBSTRATUM		CAMERON	D	CAPSHAW	C
BUFFCREEK	B	BURTON	B	CAJON, ALKALI,	A	CAMILLUS	B	CAPTINA	C
BUFFINGTON	B	BURWELL	C	OVERWASH		CAMINO	C	CAPTIVA	B/D
BUFFMEYER	B	BUSBY	B	CAJON,	B	CAMPANA	B	CAPULIN	B
BUFFORK	C	BUSE	B	SALINE-ALKALI		CAMPBELL, MUCK	C	CARADAN	D
BUFTON	C	BUSHER	B	CAJON, COOL,	A	SUBSTRATUM		CARALAMPI	B
BUHRIG	C	BUSHMAN	B	OVERWASH		CAMPBELL, DRAINED	B	CARBENGLE	B
BUICK	C	BUSHNELL	C	CAJON, GRAVELLY	A	CAMPBELLTON	C	CARBO	C
BUIST	B	BUSHVALLEY	D	CAJON, COOL	A	CAMPCREEK	C	CARBOL	D
BUKO	B	BUSKA	B	CAJON, WARM	A	CAMPIA	B	CARBONA	D
BUKO, WET	C	BUSSY	C	CALABAR	D	CAMPO	C	CARBONDALE	A/D
BUKREEK	B	BUSTER	B	CALAPASAS	B	CAMPONE	C	CARCITY	D
BULAKE	D	BUSTI	C	CALAMINE	D	CAMPSPASS	B	CARDENAS	D
BULKLEY	C	BUSYWILD	B	CALAMITY	D	CAMPUS	B	CARDIFF	B
BULL RUN	B	BUTANO	C	CALAMUS	A	CAMRODEN	C	CARDIGAN	B
BULL RUN, HARDPAN SUBSTRATUM	C	BUTCHE	D	CALAVERAS	B	CANA	C	CARDINGTON	C
BULL TRAIL	B	BUTLER	D	CALAWAH	E	CANAAN	C	CARDON	D
BULLAROS	B	BUTLERTOWN	C	CALCO	B/D	CANADIAN	B	CAREFREE	D
BULLCREEK	D	BUTTERFIELD	C	CALCOUSTA	B/D	CANADICE	D	CAREY	B
BULLFLAT	B	BUTTERMILK	B	CALCROSS	B	CANALDU	B	CAREY LAKE	B
BULLFOR	C	BUTTERS	B	CALD	C	CANANDAIGUA	D	CARGENT	B
BULLION	D	BUTTON	D	CALDER	D	CANASERAGA	C	CARGILL	C
BULLION	D	BUTTONHOOK	B	CALDERWOOD	D	CANAVERAL	C	CARIBEL	B
BULLNEL	C	BUTTONWILLOW	C	CALDWELL	C	CANBURN	D	CARIBOU	B
BULLOCK	D	BUXIN	D	CALDWELL, DRAINED	B	CANDELARIA	B	CARIOCA	B
BULLREY	B	BUXTON, SOMEWHAT POORLY DRAINED	D	CALE	B	CANDELERO	C	CARIS	C
BULLUMP	B	BUXTON, STONY	C	CALEAST	C	CANDERLY	B	CARJO	C
BULLYARD	B	BUXTON, MODERATELY WELL DRAINED	C	CALEB	B	CANDLER	A	CARLIN	D
BULLWINKLE	D	BUZZN	A	CALEDONIA	B	CANDLESTICK	C	CARLINTON	C
BULLY	B	BYARS	D	CALENDAR	C	CANDOR	A	CARLISLE	A/D
BULOW	A	BYBEE	D	CALERA	C	CANE	C	CARLITO	D
BUNCOMBE	A	BYBEE	D	CALHI	A	CANEADEA	D	CARLOS	A/D
BUNDO	B	BYINGTON	C	CALHOUN	D	CANEEK	B	CARLOTTA	B
BUNDORF	D	BYLER	C	CALICO	C	CANELO	D	CARLOW	D
BUNDY	C	BYLO	B	CALICOTT	A	CANEST	D	CARLSBAD	C
BUNDYMAN	C	BYNUM	C	CALIFON	C	CANEYVILLE	C	CARLSBORG	A
BUNEJUG	C	BYRAM	C	CALIMUS	B	CANEZ	B	CARLSON	B
BUNKER	B	BYRNIE	C	CALITA	B	CANFIELD	C	CARLSTROM	C
BUNKERHILL	D	CABALLO	D	CALIZA	B	CANISTEO	B/D	CARLTON	C
BUNKWATER	C	CABARTON	B	CALKINS	C	CANISTEO, STONY	D	CARMACK	B
BUNKY	C	CABBA	D	CALLABO	C	CANIWE	B	CARMEL	C
BUNNELL	B	CABBART	D	CALLAHAN	D	CANLON	D	CARMI	B
BUNSELMEIER	B	CABBART, STONY	C	CALLAN	C	CANNELL	B	CARMICHAEL	C
BUNTINGVILLE	C	CABBART, WARM	D	CALLEGUAS	D	CANNING	B	CARMODY	C
BUNYAN	B	CABEZON	D	CALLINGS	C	CANNON	B	CARNASAW	C
BURBANK	A	CABIN	B	CALLISBURG	C	CANNONVILLE	D	CARNEGIE	C
BURCH	B	CABINET	C	CALLOWAY	C	CANOE	B	CARNERO	C
BURCHAM	B	CABLE	B/D	CALMAR	B	CANOVA	B/D	CARNEY	D
BURCHARD	B			CALNEVA	C	CANTALA	B	CAROLINE	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

CAROLLO	D	CATALPA	C	CENCOVE	B	CHARLOTTE	B/D	CHEWACLA	C
CARON	A/D	CATAMOUNT	D	CENIZA	B	CHARLTON	B	CHEWELAH	C
CARON, MARSHY	D	CATANO	A	CENTENARY	A	CHARNOCK	C	CHEYENNE	B
CARPENTER	B	CATARACT	B	CENTER	C	CHARNOCK,	B	CHIA	D
CARR	B	CATARINA	D	CENTER CREEK	C	MODERATELY WET		CHIARA	D
CARRACAS	D	CATASKA	D	CENTERBURG	C	CHARO	C	CHICANE	C
CARRANZA	B	CATAULA	B	CENTERFIELD	B	CHASE	C	CHICHANTNA	D
CARRCREEK	B	CATCHELL	C	CENTERVILLE	D	CHASEBURG	B	CHICKAHOMINY	D
CARRIZALES	A	CATELLI	B	CENTISSIMA	B	CHASEVILLE	A	CHICKAMAN	B
CARRIZO	A	CATERL	B	CENTRAL POINT	B	CHASKA	B/D	CHICKASAW	C
CARROLLS	D	CATH	C	CENTRALIA	B	CHASTAIN	D	CHICKASHA	B
CARRYBACK	C	CATHARPIN	C	CENTRALPEAK	C	CHATBURN	B	CHICKREEK	D
CARSITAS	A	CATHAY	C	CEPBAT	D	CHATCOLET	B	CHICOLETE	C
CARSITAS, WET	B	CATHCART	B	CERESCO	B	CHATEAU	D	CHICOTE	D
CARSON	D	CATHEDRAL	D	CERINI	B	CHATFIELD	B	CHIEFLAND	B
CARSTAIRS	A	CATHEEN	B	CERINI, ALKALI	C	CHATHAM	B	CHIGLEY	C
CARSTUMP	C	CATHERINE	C	CERLIN	C	CHATSWORTH	D	CHIKAMIN	C
CART	B	CATHLAMET	B	CERRILLOS	B	CHATT	C	CHILAO	C
CARTAGENA	C	CATHRO	A/D	CERRO	C	CHATUGE	D	CHILCOTT	C
CARTECAY	C	CATILLA	B	CESTNIK	C	CHAUMONT	D	CHILCOTT, GRAVELLY	D
CARTER	D	CATLA	D	CETRACK	B	CHAUNCEY	C	CHILCOTT, COOL	D
CARTERET	D	CATLETT	C/D	CHACHA	C	CHAUTAUQUA	C	CHILDS	B
CARTHAGE	B	CATLIN	B	CHACON	C	CHAVIES	B	CHILGREN	C
CARUSO	C	CATMAN	D	CHAD	C	CHAWANAKEE	C	CHILHOWIE	C
CARUTHERSVILLE	B	CATNIP	D	CHAFFEE	D	CHAYSON	C	CHILI	B
CARVER	A	CATOCTIN	C	CHAGRIN	E	CHAZOS	C	CHILICOTAL	B
CARWILE	D	CATOOSA	B	CHAIN	C	CHEADLE	D	CHILKODT	D
CARYTOWN	D	CATPOINT	A	CHAIRES	B/D	CHEAHA	D	CHILL	D
CARYVILLE	B	CATTCREEK	B	CHAIRES,	D	CHEBOYGAN	B	CHILLUM	B
CASA GRANDE	C	CATTCREEK,	A	DEPRESSIONAL		CHECHI	D	CHILMARK	C
CASABONNE	B	GRAVELLY		CHAIX	B	CHECKER	C	CHILOQUIN	D
CASAGA	C	SUBSTRATUM		CHALCO	D	CHECKETT	D	CHILPEP	D
CASCADE	C	CATTO	D	CHALFONT	C	CHEDATNA	B	CHILSON	D
CASCAJO	A	CAUDLE	C	CHALKCREEK	B	CHEDEHAP	B	CHILTON	B
CASCAJO, COBBLY	B	CAUSEWA	C	CHALMERS	B/D	CHEDESKI	B	CHIMAYO	D
CASCILLA	B	CAUSEY	B	CHAMA, MODERATELY	B	CHEDSEY	C	CHIME	C
CASCO	B	CAVAL	B	SLOW PERM		CHEEBE	D	CHIMENEA	D
CASE	B	CAVANAUGH	C	CHAMA, MODERATE	B	CHEEKTOWAGA	D	CHIMNEY	A
CASEY	D	CAVE	D	PERMEABILITY		CHEESEMAN	B	CHINAPOINT	D
CASHEL	C	CAVEGULCH	B	CHAMA, COOL	C	CHEHALEM	C	CHINCAP	B
CASHIERS	B	CAVEHILL	C	CHAMATE	B	CHEHALIS	B	CHINCHALLO	D
CASHION	D	CAVELT	D	CHAMBEAM	B	CHEHULPUM	D	CHINCOTEAGUE	D
CASHMERE	B	CAVENDISH	B	CHAMBERINO	C	CHELAN	B	CHINEN	D
CASHMONT	B	CAVO	D	CHAMBERLAIN	B	CHELSEA	A	CHINIAK	A
CASITO	D	CAVODE	C	CHAMISE	D	CHEMAWA	B	CHINO	C
CASLO	D	CAVOUR	D	CHAMOKANE	C	CHEN	D	CHINO, DRAINED	B
CASLO, MODERATELY WET	C	CAYA	D	CHAMPAGNE	B	CHENA	A	CHINOOK	B
		CAYAGUA	C	CHAMPION	B	CHENANGO	A	CHINVAR	C
CASMOS	D	CAYTON	C	CHANAC	B	CHENAULT	B	CHIPENDALE	D
CASPAR	B	CAYUGA	C	CHANCE	D	CHENEGA	A	CHIPENHILL	D
CASPIANA	B	CAYUSE	B	CHANCELLOR	C	CHENEY	B	CHIPETA	D
CASS	B	CAZADERO	C	CHANDLER	B	CHENNEBY	C	CHIPLEY	C
CASSIA	C	CAZADOR	B	CHANEY	C	CHENOWETH	B	CHIPMAN,	D
CASSIA, MODERATELY WELL DRAINED	B	CAZENOVIA	B	CHANNAHON	D	CHEOAH	B	SALINE-ALKALI	
		CEBOLIA	C	CHANNING	B	CHEQUEST	C	CHIPMAN,	C
CASSIRO	B	CEBOLLETA	C	CHANTA	B	CHERIONI	D	MODERATELY WET	
CASSIRO, STONY	C	CEBONE	C	CHANTIER	D	CHEROKEE	D	CHIPMAN, DRAINED	D
CASSOLARY	C	CEBOYA	C	CHAPANOKE	C	CHERRY	C	CHIPOLA	A
CASTAIC	C	CECIL	B	CHAPERTON	C	CHERRY, CALCAREOUS	B	CHIPPENY	D
CASTALIA	C	CEDA	B	CHAPIN	C	CHERRY, COOL	B	CHIPPEWA	D
CASTANA	B	CEDAR BUTTE	D	CHAPMAN	E	CHERRY SPRING	C	CHIREND	D
CASTELL	C	CEDAR MOUNTAIN	D	CHAPOT	B	CHERRYHILL	B	CHIRICAHUA	D
CASTELLEIA	B	CEDARAN	D	CHAPPELL	A	CHERUM	B	CHIPPCHATTER	B
CASTELLO	B	CEDARBLUFF	C	CHAPPUIS	C	CHESAW	A	CHISCA	D
CASTEPHEN	C	CEDARCREEK	C	CHAQUA	B	CHESHIRE	B	CHISMORE	D
CASTILE	B	CEDARFALLS	A	CHARCE	C	CHESHNINA	C	CHISOLM	A
CASTINO	C	CEDARGAP	B	CHARCOL	B	CHESNIMNUS	B	CHISPA	B
CASTINO, NONSTONY	D	CEDARHILL	B	CHARD	B	CHESTATEE	B	CHISTOCHINA	B
CASTLE	D	CEDARPASS	B	CHARDOTON	C	CHESTER	B	CHITINA	C
CASTLEVALE	D	CEDONIA	B	CHARETTE	C	CHESTERTON	D	CHITTUM	D
CASTNER	D	CEEK	B	CHARGO	D	CHESTNUT	B	CHITWOOD	D
CASTO	C	CELACY	C	CHARITON	C	CHESTONIA	D	CHIVATO	C
CASTON	B	CELESTE	D	CHARLEBOIS	B	CHESUNCOOK	C	CHIWAUKUM	B
CASTRO	D	CELETON	D	CHARLEBOIS, WET	C	CHETCO	D	CHIWAWA	B
CASTROVILLE	B	CELINA	C	CHARLES	C	CHETEK	B	CHO	C
CASUSE	D	CELIO	C	CHARLESTON	C	CHETWYND	B	CHOATES	C
CASVARE	D	CELLAR	D	CHARLEVOIX	B	CHEVAL	C	CHOBEE	B/D
CASWELL	B	CELSOSPRINGS	C	CHARLOS	E	CHEVELON	C	CHOBEE,	D
CATALINA	B	CEMBER	C	CHARLOS, WET	D	CHEVIOT	B	DEPRESSIONAL	

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CHOBEE, LIMESTONE SUBSTRATUM	D	CLALLAM	C	CLIPPER	D	COKEL	B	COLVIN, OVERBLOWN, SALINE	C		
CHOCCOLOCCO	B	CLAMO	C/D	CLODINE	D	COKESBURY	D	COLWOOD	B/D		
CHOCK	D	CLAMP	D	CLONTARF	B	COKEVILLE	B	COLY	B		
CHOCORUA	D	CLANA	A	CLOQUALLUM	C	COLAND	B/D	COLYER	D		
CHOICE	D	CLANALPINE	C	CLOQUATO	B	COLBAR	C	COMAD	A		
CHOOP	D	CLANTON	C	CLOQUET	B	COLBERT	D	COMAR	C		
CHOPTIE	D	CLAPPER	B	CLOSKEY	C	COLBURN	C	COMBE	B		
CHORALMONT	B	CLAREMORE	D	CLOTHO	C/D	COLBY	B	COMBS	B		
CHOSKA	B	CLARENCE	D	CLOUD PEAK	C	COLDCREEK	B	COMER	B		
CHOTEAU	C	CLARENDON	C	CLOUD RIM	B	COLDENT	C	COMETA	D		
CHOWAN	D	CLARESON	C	CLOUDCROFT	D	COLE	C	COMFORT	D		
CHRIS	C	CLAREVILLE	C	CLOUDLAND	C	COLEMAN	C	COMFREY	B/D		
CHRISMAN	D	CLARINDA	D	CLOUGH	D	COLEMANTOWN	C/D	COMFREY, PONDED	D		
CHRISTIAN	C	CLARION	B	CLOVELLY	D	COLESTINE	C	COMITAS	A		
CHRISTIANA	C	CLARITA	D	CLOVER SPRINGS	B	COLFAX	C	COMLY	C		
CHRISTIANBURG	C	CLARK	B	CLOVERDALE	D	COLHILL	B	COMMERCE	C		
CHRISTINE	D	CLARK FORK	A	CLOVERLAND	C	COLIBRO	B	COMMSKI	B		
CHRISTOFF	C	CLARKELEN	B	CLOVIS	B	COLINAS	B	COMO	A		
CHRISTY	C	CLARKRANGE	C	CLOWERS	B	COLITA	D	COMOBABI	D		
CHRODER	B	CLARKSBURG	C	CLOWERS, WET	C	COLLAMER	C	COMODORE	D		
CHROME	C	CLARKSDALE	C	CLOWFIN	B	COLLARD	B	COMORO	B		
CHRYSLER	C	CLARKSVILLE	B	CLUFF	C	COLLAYOMI	B	COMPASS	B		
CHUALAR	B	CLARNO	B	CLUNIE	D	COLLBRAN	D	COMPTCHE	B		
CHUBBS	C	CLATO	B	CLURDE	B	COLLBRAN, COBBLY	C	COMSTOCK	C		
CHUCKANUT	B	CLATSOP	D	CLURO	B	COLLEGEDALE	C	COMUS	B		
CHUCKAWALLA	B	CLAUNCH	B	CLYDE	B/D	COLLEGIATE	D	CONA	C		
CHUCKLES	B	CLAVERACK	C	CLYMER	B	COLLETT		CONABY	B/D		
CHUCKRIDGE	D	CLAVICON	C	COACHELLA	B	COLLETT, DRAINED	C	CONALB	B		
CHUGCREEK	C	CLAWSON	C	COACHELLA, WET	C	COLLIER	A	CONANT	C		
CHUGTER	B	CLAYBURN	B	COAHUILA	B	COLLINGTON	B	CONASAUGA	C		
CHUIT	B	CLAYSPRINGS	D	COAL CREEK	D	COLLINS	C	CONATA	D		
CHULITNA	B	CLAYTON	B	COALBANK	B	COLLINSTON	B	CONBOY	D		
CHUMALL	B	CLE ELUM	C	COALDALE	D	COLLINSVILLE	D	CONCEPCION	D		
CHUMMY	D	CLEAR LAKE	D	COALDRAW	D	COLLINWOOD	C	CONCHAS	C		
CHUMSTICK	D	CLEAR LAKE, STRATIFIED	C	COALMONT	C	COLMA	B	CONCHO	C		
CHUPADERA	C			COAMO	C	COLMOR	B	CONCONULLY	B		
CHURCH	D	SUBSTRATUM		COARSEGOLD	C	COLNEVEE	B	CONCORD	D		
CHURCHILL	D	CLEAR LAKE, MODERATELY WET	C	COATSBURG	D	COLO	B/D	CONDA	D		
CHURCHVILLE	D			COBAT	B	COLO, DRAINED	B	CONDIE	B		
CHURN	B	CLEARBROOK	D	COBATUS	C	COLO, NONFLOODED	B	CONDIT	D		
CHUSKA	D	CLEARFIELD	C	COBB	B	COLOCKUM	B	CONDON	C		
CHUTE	A	CLEARFORK	D	COBBSFORK	D	COLOMA	A	CONE	A		
CIALES	D	CLEARWATER	D	COBEN	D	COLOMBO	B	CONECUH	D		
CIBEQUE	B	CLEAVAGE	D	COBEY	B	COLONA	C	CONEJO	B		
CIBO	D	CLEAVER	D	COBLE	D	COLONIE	A	CONEJO, WET	C		
CIBOLA	B	CLEAVMOR	D	COBOC	C	COLONVILLE	C	CONEJO, GRAVELLY SUBSTRATUM	C		
CID	C	CLEBIT	D	COBRE	C	COLORADO	B				
CIDRAL	C	CLEGG	B	COBURG	C	COLOROCK	D	CONESTOGA	B		
CIENEBA	C	CLEGHORN	C	COCHETOPA	C	COLOROW	B	CONESUS	B		
CIENO	D	CLEMAN	B	COCHINA	D	COLOSO	D	CONETOE	A		
CIERVO, ALKALI	D	CLEMENTINE	C	COCHITI	C	COLOSSE	A	CONGAREE	B		
CIERVO, ALKALI, WET	D	CLEMENTINE, DRAINED	B	COCHPAN	C	COLP	C	CONGER	C		
				COCOA	A	COLRAIN	B	CONGER, COBBLY SUBSTRATUM	D		
CIERVO, RECLAIMED	C	CLEMS	B	COCODRIE	C	COLSAVAGE	C				
CIFIC	C	CLEMVILLE	B	COCOLALLA	D	COLTER	B	CONGLE	B		
CIMARRON	C	CLENDENEN	D	COCOLALLA, DRAINED	C	COLTHORP	D	CONI	D		
CINCINNATI	C	CLEONE	B	CODLEY	B	COLTON	A	CONIC	C		
CINCO	A	CLEORA	B	CODORUS	C	COLTROOP	D	CONLEN	B		
CINDERHURST	D	CLERF	C	CODOUIN	D	COLTS NECK	B	CONLEY	C		
CINEBAR	B	CLERGERN	B	CODYLAKE	B	COLUMBIA, MUCK SUBSTRATUM	B	CONNEAUT	C		
CINNADALE	D	CLERMONT	D	COE	A			CONNEL	B		
CINNAMON	B	CLEVELAND	C	COEROCK	D	COLUMBIA, DRAINED, CLAY SUBSTRATUM	B	CONNERTON	B		
CINTRONA	D	CLEVERLY	B	COESSE	C/D			CONOSTA	C		
CIPRIANO	D	CLICK	A	COFF	C	COLUMBIA, MODERATELY WET	C	CONOTTON	B		
CIRAC	B	CLIFFDELL	B	COFFEEN	B			CONOVER	C		
CIRCLEBACK	A	CLIFFDOWN	B	COGGON	B	COLUMBIA, DRAINED	B	CONOWINGO	C		
CIRCLEBAR	C	CLIFFHOUSE	C	COGNA	B	COLUMBIA, FLOODED	C	CONPEAK	D		
CIRCLEVILLE	C	CLIFFORD	C	COGSWELL	C	COLUMBIA, CLAY SUBSTRATUM	C	CONRAD	A/D		
CISCO	B	CLIFSAND	B	COHAGEN	D			CONROE	B		
CISNE	D	CLIFTERSON	B	COHASSET	B	COLUMBIA, SLOPING	B	CONSEJO	C		
CISPUS	B	CLIFTON	B	COHOCTAH	B/D	COLUMBINE	A	CONSER	D		
CITADEL	C	CLIFTY	B	COHOCTAH, SANDY SUBSTRATUM	D	COLUMBUS	C	CONSTABLE	A		
CITICO	B	CLIMARA	D			COLUSA	C	CONSTANCIA	D		
CITRONELLE	D	CLIMAX	D	COHOE	B	COLVARD	B	CONSUMO	B		
CLACKAMAS	D	CLIME	C	COILS	C	COLVILLE	D	CONTACT	A		
CLAIBORNE	B	CLINETOP	D	COIT	D	COLVILLE, DRAINED	C	CONTEE	D		
CLAIRE	A	CLINT	C	COKEDALE	D	COLVIN	C/D	CONTIDE	B		
CLAIREMONT	B	CLINTON	B	COKEDALE, DRAINED	C	COLVIN, SALINE	C	CONTINE	C		

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

CONTINENTAL	C	CORRALITOS, SILTY	B	COWERS	B	CREVA	D	CUBCREEK	B
CONTO	B	SUBSTRATUM		COWESTGLEN	B	CREVASSE	A	CUBERANT	B
CONTRA COSTA	C	CORRECO	C	COWETA	C	CREVISCREEK	C	CUCAMUNGO	D
CONTRARY	B	CORRIGAN	D	COWGIL	B	CREWS	D	CUCHILLAS	C
CONVENT	C	CORSON	C	COWHORN	B	CRIDER	B	CUCHO	C
COOERS	B	CORTA	D	COWICHE	B	CRIMS	D	CUDAHY	D
COOK	D	CORTADA	B	COWLAKE	B	CRINKER	C	CUDAHY, DRAINED	C
COOKPORT	C	CORTEZ	D	COWLITZ	A	CRIPPIN	B	CUDDEBACK	C
COOLBRITH	C	CORTINA	B	COWOOD	D	CRISFIELD	B	CUERDA	C
COOLIDGE	B	CORTINA, THIN	A	COWSLY	C	CRISTO	C	CUERO	B
COOLVILLE	C	SURFACE		COWTON	C	CRISTO, LOAMY		CUERVO	C
COOMBS	B	CORUNNA	B/D	COX	D	CRISTOBAL	B	CUESTA	C
COONSKIN	C	CORWIN	B	COXLAKE	D	CRITCHELL	B	CUEVA	D
COOPER	B	CORWITH	B	COXVILLE	D	CRITTENDEN	B	CUEVITAS	D
COOSAW	B	CORY	C	COXWELL	C	CROATAN	D	CUEVOLAND	B
COOTER	C	CORYDON	D	COY	D	CROCKER	A	CULBERTSON	B
COPAKE	B	COSAD	C	COYANOSA	D	CROCKETT	D	CULDESAC	B
COPALIS	C	COSER	D	COYATA	C	CROESUS	C	CULLEN	C
COPANO	D	COSEY	B	COYET	A	CROFTON	B	CULLEOKA	B
COPASTON	D	COSH	C	COYLE	B	CROGHAN	B	CULP	C
COPELAND	B/D	COSHOCTON	C	COYNE	B	CROKE	B	CULPEPER	C
COPELAND,	D	COSKI	B	COYOTECREEK	B	CROMWELL	A	CULTUS	B
DEPRESSIONAL		COSTILLA	A	COZAD	B	CRONKHITE	C	CULVING	C
COPEMAN	B	COSUMNES	C	COZBERG	B	CRONKS	C	CUMBERLAND	B
COPENHAGEN	D	COTACO	C	COZTUR	D	CROOKED	D	CUMBRES	C
COPITA	B	COTAIL	B	CRABTREE	C	CROOKED CREEK	D	CUMLEY	C
COPPER RIVER	D	COTANT	D	CRACKERCREEK	B	CROOKED CREEK,	C	CUMMINGS	D
COPPER RIVER,	B	COTATI	C	CRACKLER	B	DRAINED		CUMMISKEY	B
LACUSTRINE		COTEAU	C	CRADDOCK	B	CROOKED CREEK,	C	CUNARD	B
SUBSTRATUM		COTHA	C	CRADLEBAUGH	D	FLOODED		CUNDICK	D
COPPER RIVER, TILL	B	COTITO	B	CRADLEBAUGH,	C	CROOKSTON	B	CUNDIYO	B
SUBSTRATUM		COTO	B	SALINE-ALKALI		CROOM	C	CUNNINGHAM	C
COPPER RIVER,	B	COTOPAXI	A	CRADLEBAUGH,	C	CROPLEY	D	CUPCO	C
SILTY SUBSTRATUM		COTT	B	DRAINED		CROPPER	D	CUPOLA	B
COPPER RIVER,	B	COTTER	B	CRAFT	B	CROQUIB	D	CUPPER	B
GRAVELLY		COTTERAL	B	CRAFTON	C	CROSBY	C	CUPPLES	C
SUBSTRATUM		COTTLE	D	CRAGGEY	D	CROSIER	C	CUPPY	D
COPPERCREEK	B	COTTONEVA	C	CRAGO	B	CROSS	D	CURABITH	A
COPPEREID	D	COTTONTHOMAS	B	CRAGOLA	D	CROSSPLAIN	C	CURANT	B
COPPERTON	B	COTTONWOOD	C	CRAGOSEN	D	CROSSTELL	D	CURDLI	C
COPPOCK	B	COTTRELL	C	CRAIG	B	CROSSVILLE	B	CURECANTI	B
COPSEY	D	COTULLA	D	CRAIGMILE	B/D	CROSWELL	A	CURHOLLOW	D
COQUAT	D	COUCH	D	CRAIGSVILLE	B	CROT	D	CUROB	D
COQUILLE	D	COUGARBAY	D	CRAMER	D	CROTON	D	CURRAN	C
CORA	D	COUGHANOUR	C	CRAMONT	C	CROUCH	B	CURRIER	A
CORAL	C	COULEEDAM	D	CRANE	B	CROW	C	CURRITUCK	D
CORALLAKE	B	COULSTONE	B	CRANECREEK	C	CROW CREEK	B	CURTIN	D
CORBETT	B	COULTERG	B	CRANFILL	B	CROW HILL	C	CURTIS CREEK	D
CORBILT	B	COULTERVILLE	D	CRANNLER	B	CROWCAMP	D	CURTIS SIDING	A
CORBIN	B	COUNCELOR	B	CRANSTON	B	CROWFLATS	B	CURTISTOWN	B
CORCEGA	C	COUNCIL	B	CRARY	C	CROWFOOT	B	CUSHENBURY	B
CORDELL	D	COUNTRYMAN	C	CRASH	B	CROWHEART	C	CUSHING	B
CORDES	B	COUNTS	D	CRATER LAKE	B	CROWLEY	D	CUSHMAN	C
CORDESTON	B	COUPEE	B	CRATERMO	C	CROWNEST	D	CUSHOOL	C
CORDOVA	C/D	COUPEVILLE	C	CRAVEN	C	CROWSHAW	B	CUSICK	D
CORDY	B	COURT	B	CRAWFORD	D	CROWTHER	D	CUSTCO	B
CORIFF	B/D	COURTHOUSE	D	CRAWLEYVILLE	B	CROYDON	B	CUSTER	D
CORINTH	C	COURTLAND	B	CREAL	C	CROZIER	C	CUSTER, DRAINED	C
CORKSTONE	D	COURTNEY	D	CREASEY	C/D	CRUCES	D	CUTAWAY	B
CORLENA	A	COURTROCK	B	CREDO	B	CRUCKTON	B	CUTHAND	B
CORLETT	A	COURVILLE	B	CREED	C	CRUICKSHANK	C	CUTHBERT	C
CORLEY	B/D	COUSE	C	CREEDMOOR	C	CRUISER	B	CUTHBERT, GRADED	D
CORMANT	A/D	COUSHATTA	B	CREEL	C	CRUMARINE	B	CUTOFF	C
CORNELIA	A	COUTIS	B	CREEMON	B	CRUME	B	CUTSHIN	B
CORNELIUS	C	COVE	D	CREFORK	C	CRUMP	D	CUTZ	D
CORNHILL	B	COVELAND	D	CREIGHTON	B	CRUMP, DRAINED	C	CUYAMA	B
CORNICK	D	COVELAND, DRAINED	C	CRELDON	C	CRUNKER	B	CUYON	A
CORNING	C	COVELLO	C	CREN	B	CRUNKVAR	A	CYAN	B
CORNISH	C	COVERT	A	CREOLE	D	CRUST	D	CYCLONE	B/D
CORNUTT	C	COVEYTOWN	C	CRESAL	B	CRUTCH	C	CYLINDER	B
CORNVILLE	B	COVILLE	B	CRESBARD	C	CRUTCHER	C	CYMRIC	D
COROLLA	D	COVING	C	CRESCO	C	CRUZE	C	CYNTHIANA	D
CORONA	B	COVINGTON	D	CRESKEN	B	CRYLUHA	C	CYNTHIANIA	D
CORONACA	B	COWAN	B	CRESFIN	C	CRYSTAL LAKE	B	CYPHER	D
COROZAL	C	COWARTS	C	CREST	C	CRYSTAL SPRINGS	D	CYRIL	B
COROZO	A	COWCO	B	CRESTLINE	B	CRYSTALBUTTE	B	CZAR	B
CORPENING	D	COWDEN	D	CRESTMAN	D	CRYSTALCREEK	B	DABNEY	A
CORRAL	C	COWDREY	C	CRESTVALE	C	CUATE	C	DABOB	C
CORRALITOS	A	COWEEMAN	D	CRETE	C	CUBA	B	DACKER	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

DACOND	B	DARLAND	B	DECKERVILLE,	C	DELLO, CLAY	B	DESCHELL	B
DACOND, COBBLY	C	DARLEY	C	DRAINED		SUBSTRATUM		DESCHUTES	C
SUBSTRATUM		DARLING	B	DECLO	B	DELLROSE	B	DESCOT	B
DACORE	B	DARNSTADT	D	DECOLNEY	B	DELLS	C	DESEED	C
DACOSTA	D	DARNELL	C	DECORDOVA	B	DELLWOOD	A	DESERET	C
DADE	A	DARNEN	B	DECRAM	C	DELMA	C	DESHA	D
DADINA	D	DARON	C	DECROSS	B	DELNITA	C	DESHLER	C
DAGAN	B	DARR	B	DECY	E	DELMONT	B	DESKAMP	C
DAGFLAT	C	DARRET	C	DEDAS	D	DELNORTE	C	DESMET	B
DAGLUM	D	DARROCH	B	DEDMOUNT	C	DELORD	D	DESOLATION	B
DAGOR	B	DARROCH, BEDROCK	C	DEDRICK	D	DELOSS	B/D	DESPAIN	B
DAGUAO	C	SUBSTRATUM		DEE	C	DELP	A	DESTAZO	B
DAGUEY	C	DARROUZETT	C	DEECREE	B	DELPHI	B	DESTER	C
DAHAR	C	DARSIL	C	DEEFAN	D	DELPHILL	C	DETER	C
DAHLQUIST	B	DARST	C	DEEMER	B	DELPIEDRA	D	DETOUR	B
DAICK	D	DART	A	DEEPCUT	D	DELPLAIN	D	DETRA	B
DAIGLE	C	DARTMOUTH	B	DEEPEEK	D	DELPOINT	C	DETROIT	C
DAILEY	A	DARVEY	B	DEEPWATER	E	DELRAY	B/D	DEUNAH	D
DAILEY, LOAMY	B	DARWIN	D	DEER CREEK	C	DELRAY,	D	DEV	A
SUBSTRATUM		DASHER	D	DEER PARK	A	DEPRESSIONAL		DEVADA	D
DAINT	B	DASSEL	B/D	DEERFIELD	B	DELRIDGE	B	DEVEN	D
DAKENT	B	DAST	B	DEERFORD	D	DELSON	C	DEVILS	D
DAKOTA	B	DATELAND	B	DEERHORN	C	DELTAJO	C	DEVILSCREEK	C
DALBO	B	DATEMAN	C	DEERLODGE	C	DELTON	B	DEVILSGAIT	D
DALBY	D	DATIL	E	DEERTON	A	DELWIN	A	DEVILSGAIT,	B
DALCAN	C	DATINO	D	DEERTRAIL	C	DELYNDIA	A	DRAINED,	
DALCO	D	DATINO, STONY	B	DEERWOOD	B/D	DEMAR	D	OCCASIONALLY	
DALE	B	DATWYLER	C	DEETZ	A	DEMAST	E	DEVILSGAIT,	B
DALECREEK	C	DAULTON	D	DEFENBAUGH	B	DEMENT	B	DRAINED	
DALEVILLE	D	DAVEY	B	DEFIANCE	D	DEMING	B	DEVINE	C
DALHART	B	DAVEY, WARM	A	DEFLER	B	DEMKY	D	DEVISADERO	C
DALIAN	B	DAVIDELL	B	DEFORD	A/D	DENNER	B	DEVOE	D
DALIG	B	DAVIDSON	B	DEGARMO	D	DEMOGUL	B	DEVOIGNES	D
DALKENA	C	DAVIS	B	DEGNER	B	DEMONA	C	DEVOIGNES, DRAINED	C
DALLAM	B	DAVISON	B	DEGOLA	B	DEMONTREVILLE	B	DEVOIGNES,	C
DALLARDSVILLE	C	DAYTONE	B	DEGRAND	B	DEMOPOLIS	C	PROTECTED	
DALLESPORT	B	DAWES	C	DEGREY	D	DEMOPOLIS, COBBLY	D	DEVOL	B
DALTON	C	DAWHOO	B/D	DEHANA	E	DEMOSS	D	DEVORE	B
DALUPE	B	DAWSON	A/D	DEHART	E	DEMOX	B	DEVOY	C
DALZELL	C	DAWTONIA	B	DEHAVEN	E	DEMPSEY	B	DEVRIES	C
DAMASCUS	B/D	DAXTY	C	DEHILL	B	DEMPSTER	B	DEWAR	D
DAMERON	B	DAY	D	DEHLINGER	B	DENAUD	B/D	DEWEY	B
DAMEWOOD	C	DAYBELL	A	DEJARNET	B	DENAY	B	DEWEYVILLE	D
DANLUIS	C	DAYSCHOOL	B	DEKALB	C	DENBAR	C	DEWMINE	D
DANON	D	DAYTON	D	DEKOOM	B	DENBY	C	DEWVILLE	B
DANA	B	DAYTONA	B	DEKOVEN	D	DENCO	D	DEXTER	B
DANAHER	C	DAYVILLE	C	DEL REY	C	DENHAWKEN	D	DIA	C
DANAVORE	B	DAZE	D	DELA	E	DENISON	C	DIA, WET, SALINE	D
DANCY	B/D	DE MASTERS	B	DELAMETER	A	DENMAN	C	DIA, WET	D
DANDAN	C	DEACON	B	DELANCO	C	DENMARK	D	DIABLO	D
DANDREA	C	DEADFALL	C	DELAND	A	DENNIS	C	DIAGULCH	B
DANDRIDGE	D	DEADHORSE	C	DELANEY	A	DENNOT	B	DIAMANTE	B
DANFORTH	B	DEADMAN	B	DELANO	E	DENNY	D	DIAMOND	D
DANGBERG	D	DEADWOOD	D	DELASSUS	C	DENROCK	D	DIAMOND SPRINGS	C
DANIA	B/D	DEADYON	B	DELCOMB	D	DENTON	D	DIAMONDVILLE	C
DANJER	D	DEAMA	D	DELCOTA	D	DENURE	B	DIANEV	C
DANKO	D	DEAN	B	DELECO	D	DENVER	C	DIANOLA	D
DANLEY	C	DEANDALE	D	DELENA	D	DEPALT	D	DIASPAR	B
DANN	C	DEARBORN	E	DELEON	C	DEPCOR	B	DIATEE	B
DANNEMORA	D	DEARYTON	C	DELEPLAIN	D	DEPOE	D	DIAZ	C
DANSKIN	B	DEATMAN	C	DELETTE	C	DEPORT	D	DIBBLE	C
DANT	D	DEAVER	C	DELFINA	B	DEPPY	D	DIBOLL	D
DANVERS	C	DEBAB	C	DELFT	B/D	DEPUTY	C	DICK	A
DANVILLE	C	DEBENGER	C	DELGADO	D	DERA	B	DICKERSON	D
DAPHNEDALE	C	DEBEQUE	B	DELHI	A	DERALLO	B	DICKEY	B
DAPOIN	C	DEBONE	C	DELICIAS	B	DERB	C	DICKINSON, MAP<25	B
DARBONNE	B	DEBORAH	D	DELKS	C/D	DERBY	A	DICKINSON, TILL	A
DARBY	C	DEBS	B	DELL	C	DERECHO	B	SUBSTRATUM	
DARCO	A	DEBUTE	C	DELLEKER	B	DERINDA	C	DICKINSON, MAAT>50	B
DARDANELLE	B	DECAN	C	DELLO, OVERWASH	A	DERLY	D	DICKINSON, MAAT<50	B
DARDEN	A	DECANTEL	D	DELLO, SALINE	C	DEROUX	C	DICKMAN	A
DARDOON	B	DECATHON	C	DELLO, GRAVELLY	D	DERR	C	DICKSON	C
DARE	D	DECATUR	B	SUBSTRATUM, WET		DERRICK	B	DIDDY	D
DARFUR	B/D	DECCA	B	DELLO,	A	DES MOINES, DRY	B	DIEHLSTADT	C
DARGOL	D	DECCA, NONGRAVELLY	C	SALINE-ALKALI		DES MOINES, COBBLY	C	DIERSSEN	D
DARIEN	C	DECHEL	D	DELLO, MODERATELY	C	DESAN	A	DIETRICH	C
DARKBULL	B	DECKER	C	WET		DESART	C	DIGBY	B
DARKCANYON	C	DECKERVILLE	D	DELLO, DRAINED	A	DESATOYA	C	DIGGER	C
DARL	C					DESCALABRADO	D	DIGHTON	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

DIGIORGIO	B	DOLAND	B	DOUGAN	C	DUCHESNE	B	DURFEE	C
DILANSON	D	DOLBEE	C	DOUGCITY	B	DUCKHILL	D	DURHAM	B
DILL	B	DOLBEE, SANDY	B	DOUGCLIFF	D	DUCKREE	B	DURKEE	C
DILLARD	C	SUBSTRATUM		DOUGH	D	DUCKSTON	A/D	DUROC	B
DILLEY	B	DOLEKEI	B	DOUGHERTY	A	DUCO	D	DURRSTEIN	D
DILLWYN	A	DOLEN	B	DOUGHTY	B	DUDA	A	DURST	C
DILMAN	C	DOLES	C	DOUGLAS	B	DUDGEN	D	DUSLER	C
DILTON	D	DOLLAR	C	DOUGVILLE	B	DUDLEY	D	DUSTON	A
DILTS	D	DOLLARD	C	DOUHIDE	D	DUEL	A	DUTCHESS	B
DIMAL	C	DOLLARHIDE	D	DOURO	B	DUELM	A	DUTEK	A
DIMEBOX	D	DOLLYCLARK	C	DOVER	E	DUETTE	A	DUTTON	C
DIMMICK	D	DOLMAN	C	DOVRAY	C/D	DUFF	B	DUVAL	B
DIMO	B	DOLPH	C	DOW	B	DUFFAU	B	DUXBURY	A
DIMYAN	C	DOLUS	C	DOWAGIAC	B	DUFFER	C	DUZEL	C
DINA	C	DOME	B	DOWDE	B	DUFFERN	A	DWIGHT	D
DINCO	B	DOMELL	B	DOWELLTON	D	DUFFIELD	B	DWORSHAK	B
DINES	B	DOMENGINE	C	DOWNATA	D	DUFFSON	B	DWYER	A
DINEVO	B	DOMERIE	B	DOWNER	E	DUFFYMONT	C	DYE	D
DINGLE	C	DOMEZ	B	DOWNEY	B	DUFORT	B	DYKE	B
DINGLISHNA	D	DOMINGUEZ	C	DOWNEYVILLE	D	DUFUR	B	DYLAN	D
DINGMAN	C	DOMINIC	B	DOWNS	E	DUGGINS	C	DYRENG	D
DINKELMAN	B	DOMINO	C	DOYCE	B	DUGOUT	D	EACHUS	B
DINKELS	B	DOMINSON	A	DOYCE, LOAMY	C	DUGWAY	C	EACHUSTON	D
DINNEN	B	DOMO	B	SUBSTRATUM		DUKES	A	EAD	C
DINSDALE	B	DONA ANA	B	DOYCE, MODERATELY	C	DULAC	C	EAGAR	B
DINUBA	C	DONAHUE	C	WET		DULCE	D	EAGLECONE	B
DINWOODY	B	DONALD	C	DOYCE, SANDY	C	DULEYLAKE	C	EAGLEPASS	D
DINZER	B	DONALDSON	B	SUBSTRATUM		DULLES	D	EAGLEROCK	B
DIOBSUD	C	DONAVAN	B	DOYLESTOWN	D	DULUTH	B	EAGLEVILLE	D
DIOXICE	B	DONERAIL	C	DOYN	D	DUMAS	B	EAGLEWING	B
DIPMAN	D	DONEY	C	DRA	C	DUMFRIES	B	EAKIN	B
DIPSEA	B	DONICA	A	DRAGE	B	DUMMERSTON	B	EALY	B
DIQUE	B	DONICA, LOAMY	B	DRAGOON	C	DUMONT	B	EAPA	B
DIREGO	D	SURFACE		DRAGSTON	C	DUN GLEN	B	EARCREE	B
DISABEL	C	DONIPHAN	B	DRAKE	B	DUNBAR	D	EARLE	D
DISAUTEL	B	DONKEHILL	D	DRAKNAB	A	DUNBARTON	D	EARLMONT	D
DISCO	B	DONLONTON	C	DRALL	E	DUNBRIDGE	B	EARLMONT, DRAINED	C
DISHNER	D	DONNA	D	DRANYON	B	DUNC	C	EARP	B
DISHPAN	C	DONNAN	C	DRAPER	C	DUNCAN	D	EARSMAN	D
DISTELL	C	DONNARDO	B	DRAX	B	DUNCANNON	B	EASBY	D
DISTERHEFF	C	DONNEL	B	DRAX, WET	C	DUNCKLEY	B	EASLEY	C
DISTON	C	DONNELLY	A	DREDGE	B	DUNCOM	D	EASPUR	B
DISWOOD	D	DONNER	C	DRESDEN	B	DUNDAS	B/D	EAST FORK	C
DITCHCAMP	C	DONNING	D	DRESSLER	C	DUNDAY	A	EAST LAKE	A
DITHOD	C	DONNYBROOK	D	DREWING	D	DUNDEE	C	EASTABLE	B
DITNEY	C	DOODLELINK	B	DREWS	B	DUNELLEN	B	EASTCAN	B
DIVERS	B	DOOLEY	C	DREXEL	B	DUNFORD	C	EASTCHOP	A
DIVIDE	B	DOOLIN	D	DRIFTWOOD	C/D	DUNGENESS	B	EASTGATE	B
DIVOT	C	DOONE	B	DRIGGS	B	DUNKIRK	E	EASTLAND	B
DIX	A	DOOR	B	DRISCOLL	C	DUNLAP	C	EASTON	D
DIXALETA	D	DOOWAK	A	DRIT	B	DUNLATOP	B	EASTPORT	A
DIXBORO	B	DORA	B/D	DRIVER	C	DUNMORE	B	EASTWELL	D
DIXIE	C	DORAN	C	DROEM	C	DUNN	A	EASTWOOD	D
DIXMONT	C	DORB	C	DROVAL	C	DUNNING	D	EATON	D
DIXON	B	DORCHESTER	B	DRUM	C	DUNNLAKE	D	EAUGALLIE	B/D
DIXONVILLE	C	DORERTON	B	DRUMMER	B/D	DUNNVILLE	B	EAUGALLIE,	D
DIYOU	C	DORMONT	C	DRUMMOND	D	DUNOIR	B	DEPRESSIONAL	
DOAK	B	DORNA	B	DRURY	B	DUNPHY	C	EAUPLEINE	B
DOAKUM	B	DOROSHIN	D	DRY CREEK	C	DUNPHY, DRAINED	B	EBA	C
DOBBINS	C	DOROTHEA	C	DRY LAKE	C	DUNPHY, HARDPAN	B	EBAL	B
DOBBS	C	DOROVAN	D	DRYADINE	C	SUBSTRATUM		EBBERT	C/D
DOBEL	D	DORPER	D	DRYBURG	B	DUNSMUIR	B	EBBS	B
DOBENT	C	DORRANCE	A	DRYDEN	B	DUNSMUIR,	C	EBIC	D
DOBROW	D	DORS	B	DRYN	C	NONGRAVELLY		EBODA	B
DOBY	D	DORSET	B	DRYVALLEY	C	DUNTON	C	EBODA, STONY	C
DOCAS	B	DOSAMIGOS	D	DU PAGE	B	DUNUL	A	EBON	C
DOCDEE	D	DOSPALOS	D	DUANE	B	DUPEE	C	EBRO	D
DOCENA	C	DOSS	C	DUART	C	DUPLIN	C	ECCLES	B
DOCKERY	C	DOSSMAN	B	DUBAKELLA	C	DUPO	C	ECHARD	D
DOCPAR	B	DOTEN	D	DUBAKELLA,	C	DUPONT	D	ECHAW	A
DOCT	C	DOTHAN	B	GRAVELLY		DUPREE	D	ECHEMOOR	C
DODES	B	DOTLAKE	D	DUBAKELLA, COBBLY	C	DURADOS	A	ECKERT	D
DODGE	B	DOTSERO	B	DUBAY	B	DURALDE	C	ECKLEY	B
DODGEVILLE	B	DOTTA	B	DUBBS	B	DURAND	B	ECKMAN	B
DODSON	C	DOTY	B	DUBBS, FLOODED	C	DURANGO	B	ECKRANT	D
DOEL	C	DOUCETTE	B	DUBINA	C	DURANT	D	ECKVOLL	B
DOGER	A	DOUDLE	B	DUBLON	E	DURAZO	A	ECLIPSE	B
DOGIECREEK	B	DOUDS	B	DUBOIS	C	DURBIN	D	ECOLA	C
DOGUE	C	DOUGAL	D	DUBUQUE	B	DURELLE	B	ECON	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

ECONFINA	A	ELBOWLAKE	B	ELRICK	B	ENOCHVILLE,	C	ESTER	D
ECTOR	D	ELBURN	B	ELRIN	F	DRAINED		ESTER, THAWED	C
EDALGO	C	ELBUTTE	D	ELROSE	B	ENOLA	B	ESTERO	D
EDDINGS	B	ELCO	F	ELS	A	ENON	C	ESTES	D
EDDS	B	ELD	B	ELSAH	B	ENOREE	D	ESTESLAKE	C
EDDY	C	ELDEAN	F	ELSIE	E	ENOS	C	ESTHERVILLE	B
EDEN	C	ELDER	B	ELSINBORO	B	ENOSBURG	C	ESTO	B
EDENBOWER	D	ELDER HOLLOW	D	ELSMERE	A	ENSENADA	B	ESTRELLA	B
EDENTON	C	ELDERON	B	ELSTON	B	ENSIGN	D	ETACH	C
EDFRO	D	ELDERON, STONY	A	ELTREE	B	ENSLEY	B/D	ETCHEN	C
EDGAR	B	ELDGIN	B	ELTSAC	D	ENSTROM	B	ETELKA	C
EDGE	D	ELDON	B	ELVE	B	ENTENTE	B	ETHAN	B
EDGEHILL	C	ELDORADO	F	ELVEDERE	C	ENTERO	D	ETHANIA	B
EDGELEY	C	ELDRIDGE	C	ELVERS	B/D	ENTERPRISE	B	ETHELMAN	B
EDGEMONT	B	ELECTRA	C	ELVIRA	B/D	ENTIAT	D	ETHETE	B
EDGEWATER	C	ELEROY	B	ELWELL	C	ENTMOOT	C	ETHETE, SALINE	C
EDGEWICK	C	ELEVA	B	ELWHA	C	ENVILLE	C	ETHRIDGE	C
EDGINGTON	C/D	ELFCREEK	C	ELWOOD	C	ENVOL	D	ETIL	A
EDINA	D	ELFRIDA	B	ELY	F	ENZIAN	D	ETOE	B
EDINBURG	C	ELGEE	A	ELYSIAN	B	EOJ	C	ETOILE	D
EDISTO	C	ELHINA	C	ELZINGA	F	EOLA	D	ETOWAH	B
EDLIN	B	ELIJAH	C	EMBAL	B	EPHRAIM	C	ETOWN	B
EDLOE	B	ELINDIO	C	EMBARGO	C	EPHRATA	B	ETSEL	D
EDMINSTER	D	ELIOAK	C	EMBDEN	B	EPIKOM	D	ETTA	B
EDMONDS	D	ELIZA	D	EMBERTON	C	EPLEY	C	ETTER	B
EDMORE	D	ELK	B	EMBLEM	B	EPOKE	B	ETTERSBURG	B
EDMUND	D	ELK HOLLOW	B	EMBRY	E	EPOT	B	ETTRICK	B/D
EDMUNDSTON	B	ELK MOUNTAIN	B	EMBUDO	F	EPOUFETTE	B/D	EUBANKS	B
EDNA	D	ELKA	C	EMDENT	D	EPPING	D	EUCLID	C
EDNEYTOWN	B	ELKADER	B	EMDENT, BEDROCK	C	EPSIE	D	EUDORA	B
EDNEYVILLE	B	ELKCREEK	C	SUBSTRATUM,		EPVIP	D	EUER	B
EDOM	C	ELKHART	B	DRAINED		EQUIS	D	EUFAULA	A
EDROY	D	ELKHILLS	B	EMDENT, DRAINED	C	ERA	B	EUHARLEE	C
EDSON	C	ELKHORN	E	EMERALD	B	ERAKATAK	C	EULONIA	C
EDWARDS	B/D	ELKINS	D	EMERALDA	D	ERAM	C	EUNOLA	C
EEL	B	ELKINSVILLE	E	EMERSON	B	ERAMOSH	D	EUREKA	D
EELCOVE	D	ELKMOUND	D	EMIGRANT	C	ERBER	C	EUSBIO	C
EELPOINT	D	ELKNER	B	EMIGRATION	C	ERCAN	B	EUSTIS	A
EEP	C	ELKOL	D	EMILY	B	ERD	D	EUTAW	D
EFFIE	C	ELKRIDGE	B	EMLIN	C	ERICSON	B	EVADALE	D
EFFINGTON	D	ELKSEL	C	EMMA	C	ERIE	C	EVANGELINE	C
EGAM	C	ELKTON	C/D	EMMERT	A	ERIN	B	EVANS	B
EGAN	B	ELLABELLE	D	EMMET	B	ERNEM	D	EVANSHAM	D
EGAS	D	ELLEDGE	C	EMMONS	B	ERNEST	C	EVANSTON	B
EGBERT	D	ELLEN	F	EMORY	B	ERNO	B	EVANSVILLE	B/D
EGBERT, STRATIFIED	C	ELLETT	D	EMCT	B	ERRAMOUSPE	C	EVANT	D
SUBSTRATUM		ELLIBER	A	EMPEDRADO	B	ERVIDE	C	EVARD	B
EGBERT, MODERATELY	C	ELLICOTT	A	EMPEYVILLE	C	ESCABOSA	C	EVARO	B
WET		ELLINGTON	B	EMPIRE	B	ESCALANTE	B	EVART	D
EGBERT, DRAINED	C	ELLINOR	C	EMPORIA	C	ESCAMBIA	C	EVENDALE	C
EGBERT, SANDY	C	ELLIOTT	C	EMRICK	B	ESCANABA	A	EVERETT	A
SUBSTRATUM		ELLIOTTSVILLE	B	EMRO	C	ESCANO	C	EVERETT, HARD	B
EGBERT, SLOPING	C	ELLIS	D	ENBAR	E	ESCARLO	B	SUBSTRATUM	
EGELAND	B	ELLISFORDE	B	ENBAR, WET	D	ESCONDIDO	C	EVERGLADES	B/D
EGINBENCH	C	ELLISVILLE	B	ENCAMPMENT	E	ESHAMY	B	EVERLY	B
EGLIN	A	ELLOAM	D	ENCHANTED	B	ESLENDO	D	EVERMAN	C
EGYPT	D	ELLOREE	D	ENCIERRO	D	ESMERALDA	B	EVERSON	D
EICKS	C	ELLSWORTH	C	ENCINA	B	ESMOND	B	EVERWHITE	C
EIGHTLAR	D	ELLUM	C	ENDCAV	C	ESPARTO	F	EVESBORO	A
EIGHTMILE	D	ELLZEY	B/D	ENDERS	C	ESPELIE	B/D	EVRIDGE	B
EILERTSEN	B	ELM LAKE	A/D	ENDERSBY	E	ESPIL	D	EWA	B
EITZEN	B	ELMDALE	B	ENDICOTT	C	ESPINAL	A	EWA, BEDROCK	C
EKAH	C	ELMENDORF	D	ENDLICH	B	ESPINOSA	B	SUBSTRATUM	
EKALAKA	B	ELMINA	C	ENDSAW	C	ESPINT	D	EWALL	A
EKIM	C	ELMIRA	A	ENERGY	B	ESPLIN	D	EXCELSIOR	B
EKRUB	D	ELMONT	F	ENET	F	ESPY	C	EXCHEQUER	D
EL DARA	B	ELMORE	B	ENFIELD	B	ESQUATZEL	B	EXCLOSE	B
EL PECO	C	ELMRIDGE	C	ENGELHARD	B/D	ESRO	D	EXEL	C
EL RANCHO	B	ELMVILLE	B	ENGETT	A	ESRO, MODERATELY	C	EXETER	C
EL SOLYO	C	ELMWOOD	C	ENGLE	B	WET		EXETER, THICK	B
ELAM	A	ELNIDO	C	ENGLEWOOD	C	ESS	B	SOLUM	
ELAM, HARDPAN	B	ELNORA	B	ENKO	C	ESSAL	B	EXETTE	B
SUBSTRATUM		ELOCHOMAN	B	ENKO, OVERBLOWN	B	ESSEN	C	EXIRA	B
ELANDCO	B	ELOCIN	D	ENLOE	D	ESSEX	C	EXLINE	D
ELBA	C	ELOIKA	B	ENNING	D	ESSEXVILLE	A/D	EXRAY	D
ELBAVILLE	B	ELOMA	C	ENNIS	B	ESTACADO	B	EXUM	C
ELBERT	D	ELPAM	D	ENOCH	C	ESTACION	B	EYAK	C
ELBETH	B	ELPEDRO	B	ENOCHVILLE	D	ESTATE	C	EYERDOW	C
ELBON	B	ELRED	B/D			ESTELLINE	B	EYLAU	C

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EYOTA	A	FARRAGUT	C	FETTIC	D	FLATRON	D	FORKWOOD	B
EYRE	D	FARRAR	B	FETZER	C	FLATTOP	D	FORMADER	C
EZBIN	B	FARRELL	B	FEZ	C	FLAXTON	B	FORMAN	B
FABIUS	B	FARRENBURG	B	FIANDER	D	FLEAK	D	FORMDALE	B
FACEVILLE	B	FARROT	C	FIANDER, DRAINED	C	FLEER	A/D	FORNEY	D
FACEY	B	FARSON	B	FIAT	C	FLEISCHMANN	D	FORNOR	B
FACTORY	C	FARSON, WET	C	FIDALGO	C	FLEMING	C	FORREST	C
FACTORY, MOIST	B	FARVA	C	FIDDLER	C	FLEMINGTON	D	FORSEER	C
FADDIN	D	FARVANT	D	FIDDLETOWN	B	FLETCHER	B	FORSEY	B
FADOLL	B	FASHING	D	FIDDYMENT	D	FLEWSIE	B	FORSGREN	C
FAGAN	C	FASKIN	B	FIELD	C	FLEX	D	FORSYTH	A
FAGASA	C	FATHOM	A	FIELDCREEK	B	FLO	A	FORT COLLINS	B
FAHEY	B	FATIMA	B	FIELDING	B	FLOER	D	FORT MEADE	A
FAIM	C	FATTIG	C	FIELDON	B/D	FLOKE	D	FORT MOTT	A
FAIM, MOIST	B	FAUNCE	A	FIFER	D	FLOM	B/D	FORT ROCK	C
FAIRBANKS	B	FAUNSDALE	D	FIFIELD	C	FLOMATON	A	FORTANK	C
FAIRBURN	D	FAUQUIER	C	FILION	D	FLOMOT	B	FORTESCUE	C/D
FAIRCHILD	C	FAUSSE	D	FILIRAN	D	FLOODWOOD	B	FORTUNA	D
FAIRDALE	B	FAVRET	C	FILLMORE	D	FLORAHOME	A	FORTWINGATE	C
FAIRFAX	B	FAWIN	B	FINCASTLE	C	FLORALA	C	FORTYFOUR	C
FAIRFIELD	B	FAX	C	FINCH	C	FLORENCE	C	FORVIC	C
FAIRHAVEN	B	FAXON	B/D	FINCHFORD	A	FLORESVILLE	C	FORWARD	B
FAIRLIE	D	FAYETTE	B	FINDOUT	D	FLORIDANA	B/D	FOSS	B
FAIRLO	B	FAYETTEVILLE	B	FINGAL	C	FLORIDANA,	D	FOSSILON	D
FAIRMOUNT	D	FAYWOOD	C	FINGEROCK	D	DEPRESSIONAL		FOSSUM	A/D
FAIRPLAY	B	FE	D	FINLAND	C	FLORIDANA, FLOODED	D	FOSTER	C
FAIRPOINT	C	FEARS	B	FINLEY	B	FLORIN	C	FOSTORIA	B
FAIRPORT	C	FEATHERLEGS	B	FINLEYPOINT	B	FLORISSANT	C	FOUNTAIN	D
FAIRWAY	C	FEATHERSTONE	D	FINNERTY	D	FLORITA	B	FOUR STAR	C
FAIRYDELL	C	FEDJI	A	FINO	B	FLOTAG	B	FOUR STAR, DRAINED	B
FAIRYLAWN	D	FEDORA	B/D	FINOL	C	FLOWELL	C	FOURCHE	B
FAJARDO	C	FEDSCREEK	B	FIONE	B	FLOWEREE	B	FOURLOG	D
FALAYA	D	FELAN	B	FIPADA	C	FLOYD	B	FOURME	B
FALBA	D	FELCHER	B	FIREBALL	B	FLUETSCH	B	FOURMILE	B
FALCON	D	FELDA	B/D	FIREBOX	B	FLUGLE	B	FOX	B
FALFA	C	FELDA,	D	FIRESTEEL	B	FLUKER	C	FOXCREEK	D
FALFURRIAS	A	DEPRESSIONAL		FIRESTONE	C	FLUVANNA	C	FOXCREEK, DRAINED	C
FALK	C	FELICITY	A	FIRMAGE	B	FLYBOW	D	FOXHOME	B
FALKIRK	B	FELIPE	D	FIRO	D	FLYGARE	B	FOXMOUNT	C
FALKNER	C	FELIZ	B	FIROKE	E	FLYNN	B	FOXOL	D
FALLBROOK	B	FELKER	B	FIRSTVIEW	C	FLYNNCOVE	B	FOXTON	C
FALLCREEK	C	FELLOWSHIP	D	FIRTH	C	FOAD	C	FOXWORTH	A
FALLERT	B	FELOR	B	FIRTH, DRAINED	B	FOARD	D	FRADDLE	B
FALLON	C	FELT	B	FISHERMAN	D	FOEHLIN	B	FRAILEY	B
FALLON, NONFLOODED	B	FELTA	C	FISHERS	B	FOIDEL	B	FRAILTON	D
FALLSAM	D	FELTHAM	B	FISHFIN	D	FOLA	B	FRAM	B
FALLSINGTON	B/D	FELTNER	D	FISHHOOK	D	FOLDAHL	B	FRANCIS	A
FALOMA	D	FELTON	B	FISHLAKE	D	FOLEY	D	FRANCISCAN	C
FALSEN	A	FELTONIA	B	FISHPOT	C	FOLLET	D	FRANCISQUITO	C
FALULA	D	FENCE	B	FISHROCK	D	FOMSENG	C	FRANCITAS	D
FANAL	C	FENDALL	C	FISHTRAP	D	FONDA	D	FRANDSEN	B
FANCHER	C	FENELON	C	FISK	F	FONDIS	C	FRANKFORT	C
FANDANGLE	C	FENN	D	FITCHVILLE	C	FONNER	B	FRANKIRK	C
FANDOW	D	FENSTER	B	FITZGERALD	B	FONS	B	FRANKLIN	B
FANG	B	FENWICK	C	FITZHUGH	E	FONTANA	B	FRANKSTOWN	B
FANNIN	B	FENWOOD	B	FIVEBLOCK	C	FONTREEN	B	FRANKTOWN	D
FANNO	C	FERA	C	FIVEMILE	B	FOPIANO	D	FRANKVILLE	B
FANSHAW	B	FERDELFORD	C	FIVEMILE, SALINE	C	FORADA	B/D	FRATERNIDAD	D
FANTZ	C	FERDINAND	C	FIVEOH	B	FORAKER	D	FRAVAL	C
FANU	B	FEREBEE	D	FIVEPINE	D	FORBAR	D	FRAVAL, GRAVELLY	B
FAPS	C	FERGUS	B	FIVES	B	FORBES	C	FRAZER	C
FARAWAY	D	FERN CLIFF	B	FIVESPRINGS	C	FORBESVILLE	C	FRAZERTON	B
FARB	D	FERNANDO	B	FLACO	C	FORBING	D	FRED	C
FARBER	B	FERNCREEK	D	FLAGG	B	FORD	D	FREDENSBORG	C
FARGO	D	FERNDALE	B	FLAGLER	B	FORDICE	B	FREDERICK	B
FARISITA	D	FERNEY	D	FLAGSTAFF	D	FORDNEY	A	FREDON	C
FARLAND	B	FERNHAVEN	B	FLAK	C	FORDNEY, WET	C	FREDONIA	C
FARLOW	B	FERNLEY	C	FLAMBEAU	B	FORDTRAN	C	FREDONYER	C
FARLOW, HIGH RAINFALL	C	FERNOW	B	FLAMING	A	FORDUM	D	FREE	B/D
		FERNPOINT	B	FLANAGAN	B	FORDVILLE	B	FREEBURG	C
FARMELL	B	FERNWOOD	B	FLANDREAU	B	FORELAND	D	FREECE	D
FARMINGTON	C	FERRELO	B	FLANE	C	FORELLE	B	FREEDOM	C
FARMSWORTH	D	FERRIS	D	FLANLY	B	FORESMAN	B	FREEDOM, SALINE	B
FARMTON	D	FERROBURRO	D	FLASHER	D	FORESTBURG	A	FREEHOLD	B
FARNHAM	B	FERRON	D	FLAT HORN	B	FORESTDALE	D	FREELAND	C
FARNHAMTON	C	FERTALINE	D	FLATHEAD	B	FORESTER	C	FREEMAN	C
FARNUF	B	FERTEG	C	FLATIRONS	C	FORESTON	C	FREEMANVILLE	B
FARNUF, WET	C	FESTINA	B	FLATNOSE	B	FORGAY	B	FREEON	B
FARNUM	B	FETT	D	FLATONIA	D	FORK	C	FREER	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

FREEST	C	FULSHEAR	C	GAPCOT	D	GED	D	GILISPIE	D
FREESTONE	C	FULSTONE	D	GAPO	D	GEE	C	GILLAND	C
FREETOWN	D	FULTON	D	GAPO, DRAINED	C	GEEBURG	C	GILLENDER	D
FREEWATER	B	FULTS	D	GAPPMAYER	B	GEEMORE	C	GILLIAM	C
FREEZENER	B	FULWIDER	D	GARA	C	GEER	B	GILLIGAN	B
FREEZEOUT	B	FUNTER	D	GARBER	B	GEERTSEN	B	GILLS	C
FRELSBURG	D	FUQUAY	B	GARBO	B	GEFO	A	GILLSBURG	C
FREMONT	C	FURNISS	D	GARBUTT	B	GEISEL	B	GILMAN	B
FREN	B	FURSHUR	D	GARCENO	C	GEKE	C	GILMORE	C
FRENCH	C	FURY	D	GARCES	D	GELKIE	B	GILPAR	B
FRENCHCREEK	B	FURY, DRAINED	C	GARCIA	C	GEM	C	GILPIN	C
FRENCHJOHN	C	FUSULINA	D	GARCITAS	C	GEM, STONY	D	GILROY	C
FRENCHMAN	B	FUSUVAR	D	GARCON	C	GEMID	C	GILSTON	B
FRENCHTOWN	D	GAASTRA	C	GARDELLA	D	GEMSON	B	GILT EDGE	D
FRESHWATER	D	GABALDON	B	GARDENA	B	GENAW	D	GIMLETT	B
FRESNO,	D	GABBS	C	GARDINER	A	GENEGRAF	B	GINAT	D
SALINE-ALKALI		GABBVALLY	D	GARDNER'S FORK	B	GENESEE	B	GINEX	D
FRESNO, THICK	C	GABEL	C	GARDNERVILLE	C	GENEVA	B	GINGER	D
SOLUM		GABICA	D	GARDONE	A	GENOA	D	GINI	B
FREWA	B	GABINO	D	GAREY	B	GENOLA	B	GINLAND	D
FREZNIK	D	GACEY	D	GARFAN	B	GENTILLY	D	GINNIS	C
FRIANA	D	GACHADO	D	GARFIELD	C	GENTRY	D	GINSER	C
FRIANT	D	GACIBA	D	GARHILL	D	GEOCONDA	C	GIRARD	D
FRIDLO	C	GADDES	C	GARIPER	C	GEOHROCK	B	GIRARDOT	D
FRIEDLANDER	C	GADDY	A	GARITA	E	GEORGECREEK	B	GIRD	B
FRIEDMAN	C	GADSDEN	D	GARLAND	B	GEORGETOWN	D	GIST	D
FRIENDS	C	GADSDEN, WET	C	GARLET	E	GEORGEVILLE	B	GITAKUP	C
FRIENDSHIP	A	SUBSTRATUM		GARLOCK	B	GEORGIA	C	GITAM	D
FRIES	D	GADWELL	C	GARMON	C	GEPFORD	D	GIVIN	C
FRIESLAND	B	GAGEBY	B	GARMORE	B	GEPP	B	GLACIERCREEK	A
FRIJOLES	B	GAGETOWN	B	GARNEL	D	GEPPERT	C	GLADDEN	B
FRINDLE	C	GAGIL	B	GARNER	D	GERALD	D	GLADEL	D
FRINES	C	GAHEE	B	GARNES	B	GERBER	D	GLADEVILLE	D
FRIO	B	GAIR	D	GARO	D	GERDRUM	D	GLADEWATER	D
FRIONA	C	GAILA	B	GARR	D	GERING	B	GLADSTONE	B
FRIOTON	C	GAINES	C	GARRETSON	B	GERLACH	D	GLADWIN	A
FRIPP	A	GAINESBORO	C	GARRETT	B	GERLANE	B	GLASGOW	C
FRISCO	B	GAINESVILLE	A	GARRISON	B	GERLE	B	GLASSNER	D
FRISITE	B	GALATA	D	GARROCHALES	D	GERMANTOWN	B	GLEAN	B
FRITZ	B	GALBRETH	D	GARSID	C	GERMANY	B	GLEASON	B
FRIZZELL	C	GALCHUTT	C	GARTON	C	GERMER	C	GLEBE	C
FROBERG	D	GALE	B	GARVESON	D	GERONI	B	GLEN	B
FRODD	D	GALEN	B	GARVIN	D	GERRARD	C	GLENBAR	B
FROHMAN	C	GALEPPI	B	GARWIN	B/D	GERRARD, DRAINED	E	GLENBAR, WET	C
FROLIC	B	GALESTINA	C	GARZA	B	GERST	D	GLENBERG	B
FROLIC,	C	GALESTOWN	A	GARZONA	D	GESSIE	B	GLENBLAIR	C
ELEVATION<8000		GALEY	B	GAS CREEK	D	GESSNER	B/D	GLENBROOK	D
FROLIC, FLOODED	C	GALILEE	C	GASCONADE	D	GESTRIN	B	GLENCARB	B
FRONDORF	B	GALISTEO	C	GASIL	B	GETAWAY	B	GLENCARB, WET,	C
FRONTENAC	B	GALISTEO,	D	GASQUET	B	GETCHELL	C	SALINE	
FRONTIER	C	SALINE-ALKALI		GASSAWAY	D	GETRAIL	D	GLENCOE	B/D
FRONTON	D	GALLAND	D	GASSVILLE	C	GETTYS	C	GLENCOE, PONDED	D
FROST	D	GALLATIN	C	GASTON	C	GETZVILLE	D	GLENDALE	B
FROZARD	C	GALLEGOS	B	GAT	B	GEWTER	C	GLENDALE, WET	C
FRUITA	B	GALLEN	B	GATES	B	GEYSER	C	GLENDALE, RARELY	C
FRUITFIELD	A	GALLIA	B	GATESON	C	GIBBLER	C	FLOODED	
FRUITHURST	C	GALLIME	B	GATEVIEW	B	GIBBON	B	GLENDERSON	B
FRUITLAND	B	GALLION	B	GATEWAY	C	GIBBONSCREEK	C	GLENDIVE	B
FRUITLAND,	C	GALLMAN	B	GATEWOOD	C	GIBBS	D	GLENDORA	A/D
MODERATELY WET		GALLUP	B	GATLIN	B	GIBNEY	C	GLENEDEN	D
FRUITLAND, WET	C	GALOO	C/D	GATOR	D	GIBSONVILLE	D	GLENELG	B
FRYE	C	GALT	D	GATTON	B	GIBWELL	C	GLENFORD	C
FRYEBURG	B	GALVA	B	GAULDY	B	GIDEON	C	GLENHALL	B
FT. DRUM	C	GALVESTON	A	GAULEY	C	GIELOW	C	GLENHAM	B
FT. GREEN	D	GALVEZ	C	GAVEL	C	GIFFORD	D	GLENMEN	B
FUBAR	C	GALVIN	D	GAVILAN	C	GIGGER	C	GLENMORA	C
FUBBLE	D	GALWAY	B	GAVINS	D	GILA	B	GLENNALLEN	C
FUEGO	C	GAMBLER	B	GAVIOTA	D	GILBERT	D	GLENOMA	B
FUEGOSTA	D	GAMBOA	B	GAY	B/D	GILBOA	B	GLENPOOL	A
FUERA	C	GAMGEE	C	GAYLESVILLE	D	GILBY	B	GLENRIO	D
FUGAWEE	B	GANADO	D	GAYLORD	C	GILCHRIST	A	GLENROSE	B
FUGHES	C	GANCE	C	GAYNOR	C	GILCO	B	GLENROSS	D
FULCHER	C	GANDO	D	GAYVILLE	D	GILCREST	B	GLENSTED	D
FULDA	C/D	GANIS	D	GAZELLE	D	GILEAD	C	GLENTON	B
FULLAM	C	GANNETT	D	GAZOS	C	GILES	B	GLENTON, WET	C
FULLER	D	GANSNER	C	GAZWELL	C	GILFORD	B/D	GLENTOSH	A
FULLERTON	B	GANSNER, PONDED	D	GEARHART	A	GILFORD,	D	GLENVIEW	B
FULMER	D	GANY	B	GEARY	B	STRATIFIED		GLENVILLE	C
FULMER, DRAINED	C	GAPBUTTE	B	GEBSON	B	SUBSTRATUM		GLENYON	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

GLOHM	C	GOOSEFLATS	D	GRANGEVILLE,	B	GRELLTON	B	GUAYABOTA	D
GLORIA	D	GOOSMUS	B	DRAINED		GRENADA	C	GUAYAMA	D
GLOUCESTER	A	GORDO	B	GRANGEVILLE,	B	GRENADIER	B	GUBE	C
GLOVER	C/D	GORE	D	OCCASIONALLY		GRENVILLE	B	GUBEN	B
GLYNDON	B	GOREEN	D	FLOODED		GRESHAM	C	GUCKEEN	C
GLYNN	C	GORGAS	D	GRANILE	B	GRETDIVID	B	GUDGEL	C
GLYNWOOD	C	GORGONIO	A	GRANMOUNT	C	GREWINGK	C	GUDGREY	B
GLYPHS	B	GORHAM	B/D	GRANO	D	GREYBACK	B	GUELPH	B
GOBAR	B	GORIN	C	GRANSHAW	B	GREYBO	B	GUEMES	B
GOBERNADOR	D	GORING	C	GRANT	B	GREYBULL	C	GUENOC	C
GOBINE	B	GORMAN	C	GRANTFORK	D	GREYEAGLE	D	GUENTHER	B
GOBLE	C	GORSKEL	D	GRANTHAM	D	GREYS	B	GUERNSEY	C
GOBLIN	D	GORST	D	GRANTSBURG	C	GRIBBLE	D	GUERO	C
GOCHEA	B	GORUS	B	GRANTSDALE	B	GRIDELL	D	GUERRERO	A
GODDARD	B	GORZELL	B	GRANVILLE	B	GRIDGE	D	GUEST	D
GODDE	D	GOSA	B	GRANYON	B	GRIDLEY	C	GUFFEY	C
GODDING	C	GOSHEN	B	GRANZAN	B	GRIETA	B	GUFFIN	D
GODECKE	D	GOSHUTE	D	GRAPEVINE	B	GRIEVES	B	GUGUAK	D
GODFREY	D	GOSINTA	C	GRAPIT	B	GRIFFITH	D	GUILDER	C
GODWIN	D	GOSLIN	B	GRASHUL	C	GRIFFY	B	GUISER	B
GOEMMER	C	GOSNEY	D	GRASMERE	B	GRIFTON	D	GULER	B
GOESLING	B	GOSPER	B	GRASSNA	B	GRIGSBY	B	GULF	B/D
GOESSEL	D	GOSPORT	C	GRASSVAL	D	GRIGSTON	B	GULKANA	B
GOFFPEAK	B	GOSS	B	GRASSVALLEY	D	GRIMM	A	GULNARE	D
GOGEBIC	B	GOSUMI	D	GRASSY BUTTE	A	GRIMM, STONY	B	GUMBLE	D
GOL	D	GOTEBO	B	GRASSYCONE	A	GRIMSLEY	B	GUMBOOT	D
GOL	C	GOTHAM	A	GRAT	D	GRIMSTAD	B	GUMBOOT, DRAINED	C
GOL, NONSTONY	C	GOTHARD	C	GRATTAN	A	GRIMSTONE	B	GUNBARREL, SALINE	D
GOL, GRAVELLY	C	GOTHENBURG	D	GRAUFELS	C	GRINA	D	GUNBARREL, DRAINED	A
GOLCONDA	C	GOTHIC	C	GRAVDEN	D	GRINDALL	D	GUND	C
GOLD CREEK	D	GOTHO	C	GRAVELTON	B/D	GRINDBROOK	C	GUNDY	C
GOLDBERG	D	GOTHO, MODERATELY	B	GRAVIER	B	GRINDSTONE	C	GUNLOCK	C
GOLDENDALE	B	WET		GRAYBERT	B	GRINK	C	GUNN	B
GOLDFINCH	D	GOTHO, COOL	B	GRAYCALM	A	GRINROD	C	GUNNEL	D
GOLDHEAD	B/D	GOULDING	D	GRAYFORD	B	GRISDALE	B	GUNSIGHT	B
GOLDHILL	D	GOULDSBORO	D	GRAYLAND	D	GRISWOLD	B	GUNSONE	D
GOLDHILL, LOAMY	C	GOURDIN	C	GRAYLAND, DRAINED	C	GRITNEY	C	GUNSTOCK	C
SUBSTRATUM		GOURLEY	C	GRAYLING	A	GRIVER	C	GUNTER	B
GOLDLAKE	B	GOVE	B	GRAYLOCK	A	GRIVER, WET	D	GUP	C
GOLDMAN	C	GOWEN	B	GRAYLOCK, STONY	B	GRIVER, DRAINED	B	GURDANE	C
GOLDMIRE	C	GOWKER	C	GRAYPOINT	B	GRIZZLY	B	GURDON	C
GOLDRIDGE	B	GOWTON	B	GRAYPOINT, WET	C	GROBUTTE	B	GURLEY	C
GOLDRUN	A	GOZEM	D	GRAYROCK	C	GROGAN	B	GURNEY	B
GOLDSBORO	B	GRABE	B	GRAYS	B	GRDOM	C	GUSTIN	D
GOLDSTON	C	GRABLE	B	GRAYSILL	C	GROSECLOSE	C	GUSTSPRING	B
GOLDSTREAM	D	GRACEMONT	C	GRAZER	C	GROSS	C	GUTHRIE	D
GOLDSTREAM, THAWED	B	GRACEMORE	C	GREAT BEND	B	GROSSWELL	C	GUY	B
GOLDUST	C	GRACEVILLE	B	GREDGE	D	GROTON	A	GUYAN	C
GOLDVALE	B	GRADCO	C	GREEN BLUFF	B	GROTTE	B	GUYANDOTTE	B
GOLDVALE, NONSTONY	C	GRADON	C	GREEN CANYON	B	GROTTO	A	GUYTON	D
GOLDVEIN	C	GRADY	D	GREEN RIVER	C	GROUSECREEK	B	GWENA	D
GOLDYKE	D	GRAFEN	B	GREEN RIVER,	B	GROUSEVILLE	C	GWIN	D
GOLETA	B	GRAFF	D	STRONGLY SALINE		GROVE	A	GWIN, GRAVELLY	C
GOLIAD	C	GRAHAM	D	GREEN RIVER,	B	GROVECITY	B	GWINLY	D
GOLLAHER	D	GRAIL	C	FLOODED		GROVENA	B	GWINNETT	B
GOLSUM	C	GRAINOLA	D	GREENBRAE	C	GROVER	B	GYMER	C
GOLTRY	A	GRALEY	D	GREENBRIAR	B	GROVETON	B	GYNELLE	A
GOLVA	B	GRALIC	B	GREENCREEK	B	GROWDEN	C	GYPNEVEE	B
GOMERY	B	GRAN	D	GREENDALE	B	GROWLER	B	GYSTRUM	C
GOMEZ	B	GRANATH	B	GREENE	B	GROWTON	B	HAAR	D
GONVICK	B	GRANBY	A/D	GREENFIELD	B	GRUBBS	D	HAARVAR	D
GONZAGA	C	GRANDE RONDE	D	GREENFIELD,	C	GRUBSTAKE	B	HACCKE	C
GOOCH	D	GRANDFIELD	B	HARDPAN		GRUENE	D	HACK	B
GOODING	D	GRANDMORE	B	SUBSTRATUM		GRULLA	D	HACKBERRY	B
GOODINGTON	D	GRANDPON	B	GREENHALGH	B	GRUMMIT	D	HACKERS	B
GOODLAND	B	GRANDVIEW	C	GREENHORN	D	GRUNDY	C	HACKROY	D
GOODLOW	B	GRANDVIEW, DRAINED	B	GREENLEAF	B	GRUVER	C	HACKWOOD	B
GOODMAN	B	GRANER	B	GREENLEE	B	GRYGLA	B/D	HADAR	B
GOODNIGHT	A	GRANGE	C	GREENMAN	C	GSCHWEND	B	HADENCREEK	C
GOODPASTER	D	GRANGEMONT	C	GREENOUGH	B	GUADALUPE	B	HADES	B
GOODRICH	B	GRANGEVILLE,	B	GREENSON	C	GUAJE	D	HADLEY	B
GOODSPRINGS	D	DRAINED, SLOPING		GREENTON	C	GUAM	D	HADSELVILLE	D
GOODWILL	B	GRANGEVILLE,	C	GREENVILLE	B	GUAMANI	B	HAFLINGER	A
GOODWIN	B	SALINE-ALKALI,		GREENVINE	D	GUANABANO	C	HAGEN	B
GOOLAWAY	C	WET		GREENWATER	A	GUANAJIBO	C	HAGENBARTH	B
GOOSE CREEK	B	GRANGEVILLE,	B	GREENWAY	B	GUANICA	D	HAGER	D
GOOSE CREEK, WET	C	SALINE-ALKALI		GREENWOOD	A/D	GUARD	C	HAGERMAN	C
GOOSE LAKE	D	GRANGEVILLE,	B	GREHALEM	B	GUARDLAKE	A	HAGERSTOWN	C
GOOSEBURY	B	MODERATELY WET		GRELL	D	GUAYABO	A	HAGGA	D

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

HAGGA, SALINE-ALKALI	C	HANIPOE, BEDROCK SUBSTRATUM	C	HARSHA	B	HAWI	B	HEIMDAL	B
HAGGERTY	B	HANIS	C	HARSLOW	C	HAWICK	A	HEINSAW	C
HAGSTADT	C	HANKINS	C	HARSTINE	C	HAWKEYE	A	HEISETON	B
HAGUE	A	HANKS	B	HARSTON	B	HAWKINS	C	HEISETON, STONY	C
HAIG	C/D	HANKSVILLE	D	HART	D	HAWKSBILL	B	HEISETON, SALINE-ALKALI	C
HAIGHTS	B	HANKSVILLE, NONFLOODED	C	HART CAMP	D	HAWKSNEST	C/D		
HAIKU	B			HARTER	C	HAWKSPRINGS	B	HEISLER	B
HAILMAN	B	HANLON	B	HARTFORD	A	HAWKSTONE	B	HEIST	B
HAIRE	C	HANLY	A	HARTIG	B	HAWLEY	B	HEITT	C
HAIRE, BEDROCK SUBSTRATUM	D	HANNA	B	HARTILL	C	HAWSLEY	A	HEIZER	D
HAKKER	C	HANNAHATCHEE	B	HARTLAND	B	HAXTUN	B	HELDT	C
HALACAN	D	HANNING	B	HARTLESS	B	HAYBOURNE	B	HELEMAND	B
HALAWA	B	HANO	C	HARTLETON	B	HAYCRIK	C	HELENA	C
HALBERT	D	HANOVER	C	HAPTNIT	C	HAYDEN	B	HELENDALE	B
HALCOTT	C/D	HANS	C	HARTSBURG	B/D	HAYESTON	B	HELLGATE	B
HALDER	C	HANSEL	C	HARTSELLS	B	HAYESVILLE	B	HELLMAN	C
HALE	D	HANSKA	B/D	HARTSHORN	B	HAYESVILLE, STONY	C	HELM	D
HALE, DRAINED	C	HANSON	B	HARTVILLE	C	HAYFIELD	B	HELMER	C
HALEDON	C	HANTHO	B	HARTWELL	D	HAYFORD	C	HELMER, GRAVELLY SUBSOIL	D
HALEIWA	B	HANTZ	D	HARVARD	B	HAYHOOK	B		
HALEY	B	HANTZ, DRY	C	HARVESTER	B	HAYMARKET	D	HELMER, THIN SURFACE	D
HALF MOON	B	HAP	B	HARVEY	B	HAYMOND	B		
HALFADAY	A	HAPGOOD	B	HARVEY, BEDROCK SUBSTRATUM, DRY	C	HAYMONT	B	HELMER, SEVERELY ERODED	D
HALFWAY	D	HAPJACK	D	HARWOOD	C	HAYNESS	B		
HALII	B	HAPNEY	C	HASKILL	B	HAYNIE	B	HELMICK	D
HALIIMAILE	B	HAPPLE	B	HASKINS	C	HAYPRESS	A	HELTER	B
HALL	B	HAPUR	D	HASSEE	D	HAYRACK	C	HELVETIA	C
HALL RANCH	C	HARAHAN	D	HASSELL	C	HAYSPUR	D	HELY	C
HALLANDALE	B/D	HARAHILL	C	HASTINGS	B	HAYSUM	B	HEMBRE	B
HALLANDALE, TIDAL	D	HARANA	B	HAT	C	HAYTER	B	HEMCROSS	B
HALLCREEK	A	HARBORD	B	HATBORO	D	HAYTI	D	HEMINGFORD	B
HALLECK	C	HARCANY	B	HATCH	C	HAYWIRE	C	HEMPSTEAD	B
HALLECK, GRAVELLY SUBSTRATUM	B	HARCO	B	HATCH, GRAVELLY	D	HAYWOOD	B	HENCO	B/D
		HARCOT	B/D	HATCHERY	C	HAZEL	C	HENDERSON	B
HALLETTSVILLE	D	HARDEMAN	B	HATCHET, OVERBLOWN, THICK SOLUM	B	HAZELAIR	D	HENDON	C
HALLISON	C	HARDESTY	B			HAZEN	B	HENDRICKS	B
HALLORAN	C	HARDHAT	B			HAZLEHURST	C	HENDY	C
HALSEY	C/D	HARDING	D	HATCHET, GRAVELLY	C	HAZLETON	B	HENEFER	C
HALSO	D	HARDISTER	B	HATCHET, OVERBLOWN	C	HAZTON	D	HENHOIT	B
HAMACER	A	HARDOL	B	HATCHET, COBBLY	C	HEADLEY	B	HENKIN	B
HAMAKUAPOKO	B	HARDSCRABBLE	D	HATCHIE	C	HEADQUARTERS	B	HENLEY	C
HAMAR	A/D	HARDTRIGGER	B	HATEPMUS	D	HEAKE	D	HENLINE	C
HAMBLEN	C	HARDY	C	HATERTON	D	HEALOTON	D	HENMEL	C
HAMBONE	B	HARGILL	B	HATHAWAY	B	HEALING	B	HENNEKE	D
HAMBRIGHT	D	HARGREAVE	C	HATLEY	C	HEARNE	C	HENNEPIN	B
HAMBURG	B	HARJO	D	HATLIFF	C	HEARNE, GRADED	D	HENNESSY	B
HAMBY	C	HARKERS	C	HATMAKER	C	HEATH	C	HENNEWAY	B
HAMDEN	B	HARKEY	B	HATPEAK	C	HEATHCOAT	C	HENNEY	B
HAMEL	C	HARKNESS	C	HATTIE	C	HEATLY	A	HENNINGS	B
HAMERLY	C	HARLAN	B	HATTON	C	HEATON	A	HENNINGSEN	C
HAMILTON	B	HARLEM	C	HATUR	C	HEBBRONVILLE	B	HENRIETTA	B/D
HAMLET	B	HARLEM, CHANNELED	D	HATWAI	D	HEBER	A	HENRIEVILLE	B
HAMLIN	B	HARLESTON	C	HAUBSTADT	C	HEBERT	C	HENRY	D
HAMMACK	B	HARLINGEN	D	HAUG	B/D	HEBO	D	HENSHAW	C
HAMMONTON	B	HARLOW	D	HAUGAN	B	HECETA	D	HENSLEY	D
HAMPSHIRE	C	HARMEHL	C	HAULINGS	D	HECHTMAN	D	HENSON	B
HAMPSON	C	HARMONY	C	HAUNCHEE	D	HECKER	B	HEPLER	C
HAMRE	C/D	HARNEY	B	HAUZ	C	HECKISON	D	HEPPSIE	D
HAMRUB	B	HAROL	B	HAVALA	B	HECLA	A	HERAKLE	D
HAMTAH	C	HARPER	D	HAVANA	B	HECTOR	D	HERBERT	B
HANA	A	HARPERSVILLE	D	HAVELOCK	B/D	HEDGE	D	HERBMAN	D
HANAGITA	D	HARPETH	B	HAVEN	B	HEDOES	C	HERD	C
HANAKER	C	HARPOLE	B	HAVERDAD	B	HEDOX	C	HEREFORD	B
HANALEI	C	HARPS	B/D	HAVERDAD, MODERATELY SALINE	C	HEDRICK	B	HERITO	C
HANAMAULU	B	HARPSTER	B/D			HEDSTROM	B	HERKIMER	B
HANCEVILLE	B	HARPT	B	HAVERHILL	C	HEDVILLE	D	HERLONG	D
HAND	B	HARQUA	C	HAVERLY	C	HEECHEE	B	HERM	C
HANDPAH	D	HARRAH	B	HAVERMOM	B	HEELY	B	HERMANTOWN	C
HANDRAN	A	HARRIET	D	HAVERSON	B	HEESER	B	HERMERING	B
HANDSBORO	D	HARRIMAN	B	HAVILAND	B	HEFED	B	HERMISTON	B
HANDY	C	HARRIMAN, WET	C	HAVILLAH	B	HEFLIN	B	HERMON	A
HANEY	B	HARRINGTON	C	HAVINGDON	C	HEGLAR	B	HERNANDEZ	B
HANFORD	B	HARRIS	D	HAVRE	B	HEGNE	D	HERNDON	B
HANGAARD	D	HARRISBURG	C	HAVRE, SALINE	C	HEIDEL	B	HERO	B
HANGDO	B	HARRISON	E	HAVRE, MODERATELY WET	C	HEIDEN	D	HERRICK	D
HANGTOWN	B	HARRISVILLE	C			HEIDTMAN	C	HERSH	B
HANIPOE	B	HARROUN	D	HAVRELON	B	HEIGHTS	B/D	HERSHAL	B
		HARSAN	B	HAW	B	HEIL	D	HERTY	D

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

HESCH	B	HILLSBORO	B	HOLDERMAN	C	HOODVIEW	B	HOWELL	C
HESPER	B	HILLSDALE	B	HOLDERNESS	C	HOOGDAL	C	HOWLAND	C
HESPERIA	B	HILLTO	B	HOLDINGFORD	C	HOOKS	B	HOWSON	C
HESPERUS	B	HILLWOOD	B	HOLDREGE	B	HOOKSAN	A	HOYE	B
HESSEL	B/D	HILMAR	D	HOLILLIPAH	A	HOOKTON	C	HOYLETON	C
HESSELBERG	D	HILMAR, DRAINED	B	HOLLAND	B	HOOLEHUA	B	HOYPUS	A
HESSELTINE	B	HILMOE	C	HOLLANDLAKE	B	HOOLY	C	HOYTVILLE	C/D
HESSING	B	HILO	A	HOLLINGER	B	HOOPAL	D	HUACHUCA	D
HESSLAN	C	HILOLO	D	HOLLIS	C/D	HOOPER	D	HUALAPAI	C
HESSON	C	HILT	B	HOLLISTER	D	HOOPESTON	B	HUB	B
HETERWA	C	HILTON	B	HOLLOMAN	D	HOOPLITE	D	HUBBARD	A
HETTINGER	C/D	HINCKLEY	A	HOLLOMEX	B	HOOSAN	B	HUBBARDTON	D
HEUSSER	C	HINDES	C	HOLLOW	C	HOOSEGOW	B	HUBBELL	B
HEUVELTON	C	HINESBURG	C	HOLLOWAY	B	HOOSIC	A	HUBERLY	D
HEWITT	D	HINKER	C	HOLLOWTREE	C	HOOSIERVILLE	C	HUBERT	B
HEXT	B	HINKLE	D	HOLLY	B/D	HOOSIMBIM	B	HUBLERSBURG	B
HEYDER	B	HINMAN	C	HOLLY, PONDED	D	HOOT	D	HUCKLEBERRY	C
HEYDLAUFF	B	HINSDALE	D	HOLLY SPRINGS	D	HOOTEN	D	HUCKLEBERRY, HIGH RAINFALL	B
HEYTOU	B	HIRAMSBURG	C	HOLLYWELL	B	HOPCO	C		
HEZEL	B	HIRIDGE	D	HOLLYWOOD	D	HOPDRAW	A	HUDNUT	B
HI VISTA	C	HIRSCHDALE	C	HOLMAN	A	HOPEKA	D	HUDSON	C
HIARC	C	HISEGA	C	HOLMDEL	C	HOPKINS	B	HUECO	C
HIBAR	C	HISKEY	B	HOLMES	B	HOPLAND	B	HUEL	A
HIBBARD	C	HISLE	D	HOLOHAN	B	HOPLEY	B	HUENEME	C
HIBBING	C	HITCHCOCK	B	HOLOMUA	B	HOPSONVILLE	C	HUENEME, MODERATELY WET	B
HIBERNIA	C	HITILO	A	HOLOPAW	B/D	HOQUIAM	B		
HIBRITEN	B	HITT	B	HOLOPAW, DEPRESSIONAL	D	HORD	B	HUENEME, DRAINED	B
HICKMAN	B	HIVAL	D			HOREB	C	HUERFANO	D
HICKORY	C	HIWAN	D	HOLOPAW, FREQUENTLY FLOODED	D	HOREB, GRAVELLY SUBSTRATUM	B	HUEY	D
HICKS	B	HIWASSEE	B					HUFFINE	B
HICKSVILLE	B	HIWOOD	A			HORNELL	D	HUFFMAN	B
HICKSVILLE, BEDROCK SUBSTRATUM	C	HIXTON	B	HOLSINE	B	HORNING	B	HUFFTON	B
		HOADLY	C	HOLSTEIN	B	HORNITOS	D	HUGGINS	C
		HOBACKER	B	HOLSTON	B	HORNSBY	C	HUGHES	B
HICOTA	B	HOBAN	B	HOLT	B	HORNSVILLE	C	HUGHESVILLE	C
HIDALGO	B	HOBBS	B	HOLTER	B	HORROCKS	B	HUGO	B
HIDATSA	B	HOBCAW	D	HOLTILE	B	HORSECAMP	D	HUGUS	B
HIDEAWAY	D	HOBE	A	HOLTON	C	HORSERIDGE	B	HUGUSTON	D
HIDEWOOD	B/D	HOBERG	C	HOLTVILLE	C	HORSESHOE	B	HUICHICA	C
HIERRO	B	HOBIT	C	HOLYOKE	C/D	HORSETHIEF	B	HUICHICA, PONDED	D
HIGGINS	D	HOBO	D	HOMA	C	HORSLEY	D	HUIKAU	A
HIGGINSVILLE	C	HOBOG	D	HOME CAMP	C	HORST	B	HUKILL	B
HIGH GAP	C	HOBONNY	D	HOMELAKE	B	HORTONVILLE	B	HULETT	B
HIGHAMS	D	HOBSON	C	HOMELAND	C	HOSKIN	C	HULLS	C
HIGHBANK	C	HOBUCKEN	D	HOMER	B	HOSKINNINI	D	HULLT	B
HIGHCAMP	B	HOCAR	D	HOMESTAKE	C	HOSLEY	D	HULUA	D
HIGHFIELD	B	HOCHHEIM	B	HOMESTEAD	B	HOSMER	C	HUM	B
HIGHHORN	B	HOCKINSON	D	HOMEWOOD	C	HOSSICK	B	HUMACAO	B
HIGHMORE	B	HOCKINSON,	C	HOMME	C	HOSTAGE	B	HUMATAS	C
HIGHPOINT	D	MODERATELY WET		HOMME, MODERATELY WET	B	HOT LAKE	C	HUMBARGER	B
HIGHROCK	D	HOCKINSON, DRAINED	B			HOTAW	C	HUMBIG	C
HIGHTOWER	C	HOCKLEY	C	HOMOSASSA	D	HOTCREEK	D	HUMBIRD	B
HIGHWOOD	C	HOCKLEY, GRADED	D	HONAUNAU	C	HOTEL	C	HUMBOLDT	D
HIHIMANU	B	HODA	C	HONCUT	B	HOTSPRINGS	B	HUMBOLDT,	B
HIIBNER	C	HODEDO	C	HONDALE	D	HOUDEK	B	MODERATELY WET, SALINE-ALKALI	
HIKO PEAK	B	HODENPYL	B	HONDOHO	B	HOUGH	B		
HIKO SPRINGS	B	HODGE	A	HONEOYE	B	HOUGHTON	A/D	HUMBOLDT,	B
HILAIRE	B	HODGINS	B	HONEYDEW	C	HOUGHTON, PONDED	D	MODERATELY WET, SALINE	
HILAND	B	HODGSON	C	HONEYGROVE	B	HOUGHTONVILLE	C		
HILDEBRECHT	C	HOEHNE	A	HONEYJONES	B	HOUK	C	HUMBOLDT, DRAINED, STRONGLY SALINE	B
HILDRETH	D	HOFFLAND	D	HONEYVILLE	C	HOULA	B		
HILEA	D	HOFFMANVILLE	C	HONKER	D	HOULKA	D	HUMBOLDT, DRAINED, NONSALINE	B
HILES	B	HOFFSTADT	B	HONLAK	C	HOURGLASS	B		
HILGER	B	HOFLY	C	HONLAK, DRAINED	B	HOUSE MOUNTAIN	D	HUMBOLDT,	B
HILGRAVE	B	HOGADERO	B	HONLU	B	HOUSER	D	MODERATELY WET	
HILIGHT	D	HOGANSBURG	B	HONN	B	HOUSEROCK	D	HUMBOLDT, DRAINED	B
HILINE	D	HOGBACK	C	HONOBIA	C	HOUSTAKE	C	HUMDUN	B
HILLBRICK	D	HOGG	C	HONOKAA	A	HOUSTON	D	HUME	C
HILLCO	B	HOGMALAT	D	HONOLUA	B	HOUSTON BLACK	D	HUMESTON	C/D
HILLEMANN	C	HOGRIS	B	HONOMANU	A	HOVDE	D	HUMKER	C
HILLERY	C	HOH	B	HONONEGAH	A	HOVEN	D	HUMMINGTON	C
HILLET	B/D	HOHMANN	C	HONOULIULI	B	HOVENWEEP	C	HUMPHREYS	B
HILLFIELD	B	HOKO	C	HONTAS	B	HOVERT	D	HUMPTULIPS	B
HILLGATE	D	HOLBORN	C	HONTOON	B/D	HOVEY	C	HUMSKEL	C
HILLIARD	B	HOLBROOK	B	HONUAULU	A	HOWARD	A	HUN	B
HILLIARD, MODERATELY WELL DRAINED	C	HOLCOMB	D	HOOD	B	HOWARDSVILLE	A	HUNCHBACK	D
		HOLDAWAY	D	HOODLE	B	HOWCAN	B	HUNDRAW	D
		HOLDEN	B	HOODOO	D	HOWCREE	C	HUNEWILL	B
HILLON	C	HOLDER	B	HOODSPORT	C	HOWE	C	HUNGRY	C

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HUNNTON	C	ILDECARB	B	IPISH	C	JACAGUAS	B	JEHEMY	D
HUNSINGER	B	ILDEFONSO	B	IPSON	B	JACANA	D	JEKLEY	C
HUNTERS	B	ILES	C	IPSWICH	D	JACEE	C	JELLICO	C
HUNTERSVILLE	B	ILIFF	C	IRA	C	JACINTO	B	JEMEZ	C
HUNTIMER	C	ILIILI	D	IPAAN	P	JACK CREEK	A	JENA	B
HUNTING	C	ILION	D	IREDELL	C/D	JACKET	C	JENKINS	C
HUNTINGTON	B	ILLABOT	C	IRELAND	C	JACKLAND	D	JENKINSON	D
HUNTMOUNT	B	ILLAHEE	B	IRENE	B	JACKMAN	B	JENKS	B
HUNTPOCK	B	ILLER	B	IPETEBA	B	JACKNIFE	C	JENNESS	B
HUNTSBURG	D	ILLITO	D	IRIGUL	D	JACKPORT	D	JENNINGS	C
HUNTSVILLE	B	ILTON	C	IRIM	C	JACKPOT	C	JENNY	D
HUPP	B	ILWACO	B	IRMULCO	B	JACKS	C	JENOR	C
HUROS	B	IMA	B	IROCK	C	JACKSON	B	JERAG	D
HURLBUT	C	IMBLER	B	IRON BLOSSOM	C	JACKTONE	D	JERAULD	D
HURLEY	D	IMLAY	D	IRON MOUNTAIN	D	JACOB	D	JERICHO	D
HURRICANE	C	INMIG	C	IRON RIVER	B	JACOBSEN	D	JEROME	D
HURRY BACK	B	IMMIGRANT	C	IRONCO	B	JACOBY	C	JERRY	C
HURRYBACK	B	IMMOKALEE	B/D	IRONDALE	C	JACOT	B	JERRYSLU	C
HURST	D	IMMOKALEE,	D	IRONDYKE	B	JACQUES	C	JERU	B
HURWAL	B	DEPRESSIONAL		IRONSPRINGS	B	JACQUITH	C	JERVAL	B
HUSE	D	IMOGENE	D	IRONTON	C	JACRATZ	D	JESREL	D
HUSKA	D	IMONIL	B	IROQUOIS	B/D	JACWIN	B	JESSE CAMP	B
HUSSA	D	IMPACT	A	IRRAWADDY	C	JADIS	B	JESSIETOWN	B
HUSSA, CLAYEY	C	IMPERIAL	D	IRRIGON	C	JAFA	B	JESSO	C
SUBSTRATUM		INARAJAN	D	IRSON	D	JAGUEYES	B	JESSUP	C
HUSSA, MODERATELY	C	INARAJAN,	C	IRVINE	D	JAL	B	JETCOP	D
WET		STRATIFIED		IRVINGTON	C	JALMAR	A	JETSTER	C
HUSSA, DRAINED	B	SUBSTRATUM		IRWIN	D	JAMES	D	JETT	B
HUSSELL	B	INAVALE	A	ISAAC	C	JAMES CANYON	C	JEVETS	C
HUSSMAN	D	INCELL	D	ISABELLA	B	JAMES CANYON,	B	JEWETT	B
HUSUM	B	INCHAU	C	ISAN	A/D	DRAINED		JIGGS	B
HUTCHINSON	C	INCHELIUM	B	ISANTI	A/D	JAMESTON	C/D	JIGSAW	C
HUTCHLEY	D	INCY	A	ISBELL	B	JANISE	C	JILSON	D
HUTSON	B	INDART	C	ISELLA	B	JANISE, OVERBLOWN,	B	JIM	C
HUTT	D	INDEX	A	ISHI PISHI	C	DRAINED		JIMBO	B
HUTTON	D	INDIAHOMA	D	ISHPEMING	A	JANSEN	B	JIMCREEK	C
HUXLEY	C	INDIAN CREEK	D	ISIDOR	D	JANUDE	B	JIMEK	C
HUYSINK	B	INDIANO	C	ISKNAT	C	JANUDE, CLAY	C	JIMENEZ	C
HYALL	C	INDIANOLA	A	ISKNAT, COOL	D	SUBSTRATUM		JIMLAKE	B
HYANNIS	B	INDID	B	ISLAND	B	JARAB	D	JIMMERSON	C
HYAS	B	INDLETON	B	ISLES	D	JARBOE	D	JIMSAGE	B
HYATTVILLE	C	INDUS	D	ISLES, SLOUGH	A/D	JARDIN	D	JIMTOWN	C
HYDABURG	D	INEZ	D	ISLOTE	B	JAREALES	D	JIPPER	B
HYDE	B/D	INFERNAL	D	ISMAY	B	JARITA	C	JIVAS	B
HYDER	D	INGALLS	B	ISMO	C	JARMILLO	B	JOACHEM	D
HYDRO	C	INGENIO	B	ISOLDE	A	JAROLA	C	JOB	C
HYE	B	INGERSOLL	B	ISOM	B	JAROSO	B	JOBOS	C
HYLOE	D	INGRAM	D	ISTER	C	JARRE	B	JOSPEAK	D
HYMAS	D	INKLER	B	ISTOKPOGA	B/D	JARRON	D	JOCAL	B
HYPRAIRIE	B	INKOM	D	ITANO	C	JARVIS	B	JOCITY	B
HYRUM	B	INKOM, DRAINED	C	ITASCA	B	JASCO	D	JOCITY, LOAMY	C
HYSHAM	D	INKOSR	D	ITAT	B	JASON	D	SURFACE	
HYSHOT	D	INKS	D	ITCA	D	JASPER	B	JOCKO	B
HYTOP	D	INKSTER	B	ITHACA	C	JAUCAS	A	JOCORO	B
HYZEN	D	INLOW	C	ITMANN	C	JAUCAS, SALINE	C	JOEL	B
IAD	B	INMACHUK	D	ITME	A	JAURIGA	B	JOEMRE	B
IBERIA	D	INMAN	C	ITSWOOT	B	JAVA	B	JOENEY	D
ICARIA	D	INMO	A	IUKA	C	JAWBONE	D	JOES	B
ICENE	D	INNINGER	C	IVA	C	JAY	C	JOEVAR	B
ICESLEW	D	INPENDENCE	B	IVAN	B	JAYAR	C	JOHNS	C
ICHBOD	D	INSAK	D	IVANELL	C	JAYBEE	D	JOHNSBURG	D
ICHETUCKNEE	D	INSIDERT	C	IVANHOE	D	JAYEL	D	JOHNSON	B
ICICLE	B	INSKIP	C	IVER	B	JAYEM	B	JOHNSTON	D
IDA	B	INSULA	D	IVERSEN	C	JAYNES	D	JOHNSTOWN	B
IDABEL	B	INTERIOR	B	IVES	B	JEAGER	C	JOHNSWOOD	B
IDAHOME	B	INTON	B	IVES, WET	D	JEAN	A	JOHNTOM	D
IDAMONT	B	INVERNESS	B	IVIE	A	JEAN LAKE	B	JOICE	D
IDEE	C	INVERSHIEL	C	IVINS	C	JEANERETTE	D	JOINER	B
IDLEWILD	D	INVILLE	B	IVYWILD	C	JEBE	B	JOKODOWSKI	D
IDLEWILD, DRAINED	C	IO	B	IXIAN	C	JEBO	B	JOLAN	C
IDMON	B	IOLEAU	C	IYERS	D	JEDBURG	C	JOLIET	D
IGDELL	C	IONA	B	IZAGORA	C	JEDD	C	JOLLY	C
IGERT	C	IONIA	B	IZAR	D	JEDDITO	C	JONALE	B
IGNACIO	C	IOSCO	B	IZEE	C	JEDDITO,	B	JONAS	B
IGO	D	IOSEPA	D	IZO	A	SALINE-ALKALI		JONATHAN	B
IGUALDAD	D	IOTLA	B	IZOD	D	JEDDO	C/D	JONCA	C
IHLEN	B	IPAGE	A	IZUSER	B	JEFFERS	B/D	JONDA	B
IJAM	D	IPANO	C	JABU	B	JEFFERSON	B	JONES	B
ILACHETOMEL	D	IPAVA	B	JABU, WET	C	JEFFREY	B	JONESVILLE	B

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JONNIC	C	KAHANA	B	KAPLAN	D	KEEI	D	KERMIT	A
JOPLIN	C	KAHANUI	D	KAPOD	B	KEEKEE	B	KERNAN	C
JOPPA	B	KAHLER	B	KAPOWSIN	D	KEEL	C	KERR	B
JORAIBI	B	KAHLOTUS	B	KAPTURE	B	KEELDAR	B	KERRDAM	C
JORDAN	D	KAHOLA	B	KAPUHIKANI	D	KEELE	B	KERRFIELD	D
JORGE	B	KAHUA	D	KARAMIN	A	KEELER	B	KERRICK	B
JORNAHAM	B	KAIDERS	B	KARANKAWA	D	KEELINE	B	KERRVILLE	C
JORY	B	KAIKLI	D	KARBANA	C	KEENE	C	KERSHAW	A
JORY, STONY	C	KAILUA	A	KARCAL	D	KEENO	C	KERSICK	D
JOSBURG	C	KAIMU	A	KARDE	B	KEESE	D	KERSTON	A/D
JOSEPH	C	KAINALIU	A	KARHEEN	D	KEESEHA	C	KERT	C
JOSEPHINE	B	KAIPOIOI	B	KARLAN	C	KEESIAN	B	KESSLER	C
JOSHUA	C	KAIWIKI	A	KARLIN	A	KEETER	C	KESSON	D
JOSIE	B	KALAE	B	KARLO	D	KEEWATIN	C	KESTERSON	D
JOSLIN	B	KALALOCH	B	KARLSBURG	B	KEG	B	KESWICK	C
JOSSET	C	KALAMA	C	KARLSRUHE	B	KEGEL	D	KETCHLY	B
JOURDANTON	B	KALAMAZOO	B	KARLSTAD	A	KEGEL, DRAINED	C	KETCHUM	B
JOWEC	D	KALAPA	B	KARLUK	D	KEGONSA	B	KETONA	D
JOY	B	KALAUPAPA	D	KARMA	B	KEHAR	D	KETTENBACH	C
JUAB	B	KALEETAN	B	KARNAK	D	KEHENA	C	KETTLE	B
JUANA DIAZ	B	KALEETAN, TILL	C	KARNES	B	KEHOE	B	KETTLEBELLY	B
JUBILEE	D	SUBSTRATUM		KAROC	B	KEIGLEY	B	KETTLEMAN	C
JUBILEE, DRAINED	B	KALIFONSKY	D	KAPPF	D	KEISER	B	KETTLEMAN,	B
JUDA	B	KALIGA	B/D	KARRO	B	KEITH	B	GRAVELLY	
JUDD	C	KALIGA, FLOODED	D	KARS	A	KEITHVILLE	C	KETTNER	D
JUDELL	B	KALIHI	D	KARSHNER	D	KEKAHA	B	KEUTERVILLE	B
JUDICE	D	KALISPELL	B	KARTA	C	KEKAKE	D	KEVANTON	C
JUDITH	B	KALKASKA	A	KARTAR	B	KEKAWAKA	B	KEVIN	C
JUDKINS	C	KALLIO	C	KASEBERG	D	KELK	C	KEWACH	C
JUDSON	B	KALMARVILLE	B/D	KASHWITNA	B	KELLER	C	KEWAUNEE	C
JUDY	C	KALMIA	B	KASKI	B	KELLERBUTTE	B	KEWEENAW	A
JUG	B	KALO	C	KASOTA	C	KELLY	D	KEYA	B
JUGET	D	KALOKO	D	KASSLER	A	KELSEY	B	KEYES	D
JUGHANDLE	B	KALONA	C	KASSON	C	KELSO	C	KEYESPOINT	D
JUGSON	C	KALSIN	D	KATAMA	B	KELTNER	B	KEYNER	D
JULES	B	KALSTED	B	KATEMCY	C	KELTYS	B	KEYPORT	C
JULESBURG	B	KAMACK	B	KATHER	C	KELVIN	C	KEYSTONE	A
JULIN	D	KAMAKOA	B	KATO	B/D	KEMAH	D	KEZAN	D
JUMBO	B	KAMAN	D	KATSEANES	D	KEMAN	B	KEZAR	C
JUMPCREEK	C	KAMAOA	B	KATULA	C	KEMMERER	C	KIAKUS	C
JUMPE	B	KAMAOLE	B	KATY	D	KEMOD	B	KIAN	C
JUMPER	C	KAMATO	C	KATYBLAY	B	KEMP	C	KIAWAH	B/D
JUMPMORE	B	KAMAY	D	KAUDER	D	KEMPSVILLE	B	KIBBIE	B
JUMPOFF	C	KAMELA	C	KAUFMAN	D	KENAI	C	KIBESILLAH	C
JUNALUSKA	B	KAMIE	B	KAUKAUNA	C	KENANSVILLE	A	KICKAPOO	B
JUNCAL	C	KAMPVILLE	C	KAUPO	A	KENDAIA	C	KICKERVILLE	B
JUNCOS	D	KAMRAR	B	KAUPPI	B	KENDALL	B	KIDD	D
JUNCTION	B	KANACKEY	D	KAVETT	D	KENDALLVILLE	B	KIDDER	B
JUNEAU	B	KANAKA	B	KAVON	B	KENDRICK	A	KIDMAN	B
JUNG	D	KANAPAHA	B/D	KAWAIHAE	C	KENEFICK	B	KIEHL	B
JUNGO	B	KANARANZI	B	KAWAIHAPAI	B	KENESAW	B	KIESEL	C
JUNIPERBUTE	A	KANARRA	D	KAWBAWGAM	C	KENMOOR	B	KIETZKE	D
JUNIPERO	B	KANASKAT	B	KAWICH	A	KENN	B	KIEV	B
JUNIUS	C	KANAWHA	B	KAWKAWLIN	C	KENNAN	B	KIKI	C
JUNKETT	C	KANDALY	A	KAYMINE	C	KENNEBEC	B	KIKONI	B
JUNO	A	KANDIK	B	KAYO	B	KENNER	D	KILAGA	C
JUNQUITOS	C	KANDOTA	B	KEAAU	D	KENNEWICK	B	KILARC	D
JUNTURA	D	KANE	B	KEAHUA	B	KENNEY	A	KILAUEA	B
JUPITER	B/D	KANEBREAK	C	KEALAKEKUA	A	KENNEY LAKE	C	KILBURN	B
JURA	D	KANEOHE	B	KEALIA	D	KENO	D	KILCHIS	D
JURVANNAH	C	KANEPUU	B	KEANSBURG	D	KENOMA	D	KILDOR	C
JUSTESEN	C	KANER	A	KEAPL	C	KENOTRAIL	C	KILFOIL	C
JUSTESEN, LOAMY	B	KANG	C	KEARNS	B	KENRAY	A	KILGORE	D
SUBSTRATUM		KANGAS	A	KEARSARGE	B	KENSAL	B	KILKENNY	B
JUSTIN	B	KANID	B	KEATING	C	KENSETT	B	KILLARNEY	C
JUVA	B	KANIKSU	B	KEAUKAHA	D	KENSPUR	B	KILLBUCK	C/D
JUVAN	D	KANIMA	C	KEAWAKAPU	B	KENT	D	KILLDUFF	B
KAALUALU	A	KANKAKEE	B	KEBLER	B	KENUSKY	D	KILLEY	D
KACHEMAK	B	KANLEE	C	KECH	D	KENYON	B	KILLEY, MODERATELY	C
KACHESS	B	KANONA	D	KECKO	B	KEO	B	WET	
KADE	D	KANOSH	C	KECKSROAD	C	KEOKUK	B	KILLINGTON	D
KADLETZ	B	KANTISHNA	D	KEDA	B	KEOMAH	C	KILLPACK	C
KADOKA	B	KANUTCHAN	D	KEDDIE	C	KEOTA	B	KILMANAGH	C
KAENA	D	KANZA	D	KEDRON	C	KEOWNS	B/D	KILMER	C
KAFING	B	KAPAA	B	KEE	B	KEPLER	C	KILMEROUE	C
KAGMAN	C	KAPAPALA	B	KEECHELUS	C	KERBER	B	KILN	D
KAGMAN, VERY	B	KAPAPALA, BEDROCK	C	KEECHI	C	KERBY	B	KILOA	A
GRAVELLY		SUBSTRATUM		KEEFA	B	KERHAYDEN	B	KILOHANA	A
KAHALUU	D	KAPIN	C	KEEFERS	C	KERL	B	KILOWAN	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

KILWINNING	D	KITTITAS	D	KODRA	C	KRESSON	C	LACONNER	C
KIM	B	KITTITAS, DRAINED	C	KOEHLER	C	KREYENHAGEN	B	LACODOCHEE	D
KIM, SALINE	C	KITTREDGE	B	KOELE	B	KRIER	D	LACOSTE	C
KIMAMA	B	KITTSON	C	KOEPKE	B	KRIEST	B	LACOTA	B/D
KIMBALL	D	KIVA	A	KOERLING	C	KRON	D	LACRESCENT	B
KIMBERLINA	B	KIWANIS	B	KOETHER	D	KROTO	B	LACROL	D
KIMBERLY	B	KIZHUYAK	E	KOFA	D	KRUBATE	B	LACY	D
KIMBROUGH	D	KJAR	D	KOFA, SALINE	C	KRUEGER	B	LADD	B
KIMMERLING	D	KLABER	D	KOFFGO	B	KRUM	D	LADELLE	B
KIMO	C	KLABER, DRAINED	C	KOGISH	D	KRUSE	B	LADERLY	C
KIMPER	B	KLADNICK	A	KOHALA	B	KUBE	B	LADNER	D
KINA	D	KLADNICK, STONY	B	KOKAN	A	KUBLER	C	LADOGA	B
KINAN	B	KLAMATH	D	KOKEE	B	KUBLI	D	LADRON	B
KINCHELOE	D	KLANELNEECHENA	D	KOKERNOT	C	KUCERA	B	LADUE	B
KINCO	A	KLANELNEECHENA,	C	KOKO	B	KUCK	C	LADYCOMB	D
KINDER	C	LACUSTRINE		KOKOKAHI	D	KUDLAC	D	LADYSMITH	D
KINDIG	B	SUBSTRATUM		KOKOKAHI, STONY	B	KUHL	D	LAFE	D
KINDY	C	KLAPATCHE	C	KOKOMO	B/D	KUKAIAU	A	LAFITTE	D
KINESAVA	B	KLAUS	C	KOLAR	D	KUKAIAU, BEDROCK	C	LAG	B
KINGDON	B	KLAWASI	D	KOLBERG	C	SUBSTRATUM		LAGITOS	C
KINGFISHER	B	KLAWASI,	E	KOLEKOLE	C	KULA	B	LAGLORIA	B
KINGHORN	D	LACUSTRINE		KOLIN	C	KULLIT	B	LAGNAF	B
KINGILE	C	SUBSTRATUM		KOLLS	D	KULSHAN	C	LAGONDA	C
KINGINGHAM	C	KLAWATTI	C	KOLLUTUK	D	KUNA	B	LAGRANGE	D
KINGMAN	D	KLAWHOP	B	KOLOA	C	KUNATON	D	LAGROSS	A
KINGMONT	B	KLAYENT	C	KOLOB	B	KUNAYOSH	A	LAGUNITA	A
KINGS	D	KLECKNER	C	KOLOB, STONY	C	KUNIA	B	LAGUNITA, WET	C
KINGSBURY	D	KLEINBUSH	C	KOLOKOLO	B	KUNUWEIA	B	LAHAINA	B
KINGSDOWN	B	KLEJ	B	KOLOMOKI	B	KUNZ	B	LAHONTAN	D
KINGSLAND	A/D	KLICKER	C	KOMO	B	KUNZLER	B	LAHRITY	C
KINGSLEY	B	KLICKITAT	B	KONA	D	KUPREANOF	B	LAIDIG	C
KINGSPOINT	B	KLICKSON	B	KONAWA	B	KUPREANOF,	C	LAIDLAW	C
KINGSTON	B	KLINE, COBBLY	B	KONERT	C	MODERATELY WET		LAIL	C
KINGSVILLE	A/D	KLINE, PROTECTED	C	KONERT, DRAINED	C	KURES	A	LAIRD	B
KINGTAIN	B	KLINESVILLE	C/D	KONNER	D	KURO	D	LAIRDSVILLE	D
KINKEAD	C	KLINGER	B	KONNER, DRAINED	C	KURTH	C	LAJARA	D
KINKEL	C	KLISKON	C	KONOCTI	C	KURTZ	C	LAJITAS	D
KINKEL, GRAVELLY	B	KLISTAN	B	KONOCTI, STONY	B	KUSHNEAHIN	D	LAKE	A
KINKORA	D	KLONDIKE	D	KONSIL	B	KUSKOKWIM	D	LAKE, CLAYEY	C
KINMAN	C	KLONE	B	KOOLAU	C	KUSLINA	D	SURFACE	
KINNEAR	B	KLOOCHMAN	C	KOONICH	A	KUTCH	C	LAKE CHARLES	D
KINNEY	B	KLOOTCH	C	KOONTZ	D	KUTLER	C	LAKE CREEK	C
KINROSS	A/D	KLOOTCHIE	B	KOOSHAREM	B	KUY	A	LAKE JANEE	B
KINSMAN	C	KLOTEN	D	KOOSKIA	C	KVICHAK	B	LAKEFIELD	B
KINSTON	B/D	KLUG	B	KOOTENAI	B	KWED	A	LAKEHELEN	C
KINTA	D	KLUM	E	KOPIE	D	KYBURZ	B	LAKEHURST	A
KINTON	C	KLUMP	B	KOPPERL	B	KYDAKA	D	LAKELAND	A
KINZEL	B	KLUTINA	B	KOPPES	A	KYDESTEA	D	LAKEMONT	D
KIOMATIA	A	KNAPKE	B	KORCHEA	B	KYLE	D	LAKEPORT	B
KIONA	B	KNAPPA	B	KORENT	C	KYLER	D	LAKESHORE	D
KIOTE	B	KNAPPTON	B	KORNMAN	B	KZIN	D	LAKESIDE	B
KIPER	B	KNEELAND	C	KORORAGO	C	LA BRIER	D	LAKESOL	B
KIPLING	D	KNEP	C	KORONIS	B	LA FARGE	B	LAKETON	C
KIPPEN	A	KNICKERBOCKER	A	KORTTY	B	LA FONDA	B	LAKEVIEW	C
KIPSON	D	KNIESLEY	C	KOSCIUSKO	B	LA GRANDE	C	LAKEWIN	B
KIRBY	A	KNIFFIN	C	KOSETH	B	LA HOGUE	B	LAKEWOOD	A
KIRBYVILLE	B	KNIGHT	B/D	KOSMOS	D	LA LANDE	B	LAKI	B
KIRK	D	KNIK	B	KOSSE	B	LA PALMA	C	LAKIN	A
KIRKENDALL	C	KNIKLIK	B	KOSSUTH	B/D	LA POSTA	B	LAKOA	B
KIRKHAM	C	KNIPPA	C	KOSZTA	B	LA PRAIRIE	B	LAKOMA	D
KIRKLAND	D	KNOB HILL	B	KOTO	D	LA ROSE	B	LAKRIDGE	C
KIRKSEY	C	KNOBTOP	C	KOTZMAN	B	LABENZO	B	LALAAU	A
KIRKVILLE	C	KNOCO	D	KOURY	C	LABETTE	C	LALINDA	B
KIRLEY	C	KNOKE	B/D	KOVICH	D	LABISH	D	LALLIE	D
KIRTLEY	C	KNOLLE	B	KOYEN	B	LABKEY	B	LALOS	B
KIRVIN	C	KNOSS	C	KOYNIK	D	LABORCITA	B	LAM	D
KIRVIN, GRADED	D	KNOTT	D	KOYUKUK	B	LABOU	D	LAMA	C
KISATCHIE	D	KNOWLES	B	KRACKLE	B	LABOUNTY	D	LAMANGA	C
KISHONA	B	KNOX	B	KRADE	E	LABRE	B	LAMAR	B
KISHONA, ALKALI	C	KNULL	B	KRAKON	D	LABSHAFT	D	LAMARSH	C
KISRING	C	KNUTSEN	B	KRAM	D	LABU	D	LAMARTINE	C
KISRING, WET	D	KOBAR	C	KRANSKI	B	LABUCK	B	LAMATH	D
KISSICK	C	KOBEH	B	KRANZBURG	B	LACAMAS	D	LAMAWA	B
KISTIRN	B	KOBEL	D	KRATKA	B/D	LACERDA	D	LAMBERT	B
KITCHELL	B	KOCH	D	KRAUSE	B	LACHAPELLA	D	LAMBETH	B
KITCHEN CREEK	B	KOCH, DRAINED	C	KREAMER	C	LACITA	B	LAMBMAN	D
KITI	D	KODAK	B	KREBS	E	LACKAWANNA	C	LAMBRING	B
KITSAP	C	KODAK, NONFLOODED	C	KREM	A	LACKS	C	LAMEDEER	B
KITTERLL	D	KODIAK	B	KREMLIN	B	LACLEDE	B	LAMINGTON	D

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LAMKIN	B	LARIAT	B	LAVINA	D	LEETONIA	C	LEW	B
LAMO	C	LARIM	B	LAVON	C	LEEVAN	C	LEWBEACH	C
LAMOILLE	B	LARIMER	B	LAWAI	B	LEFOR	B	LEWDLAC	D
LAMONDI	B	LARIOSCAMP	D	LAWEN	B	LEGALL	B	LEWIS	D
LAMONI	C	LARKIN	B	LAWET	B/D	LEGAULT	D	LEWISBERRY	B
LAMONT	B	LARKSON	C	LAWET, SALINE-ALKALI	B	LEGGETT	C	LEWISBURG	C
LAMONTA	D	LARMINE	C			LEGLER	B	LEWISTON	C
LAMOOSE	D	LAROQUE	B	LAWLER	B	LEGORE	B	LEWISVILLE	B
LAMOTTE	B	LAROSE	D	LAWNDALE	B	LEHEW	C	LEWKALB	C
LAMOURE	C	LARRUPIN	B	LAWNWOOD	B/D	LEHIGH	C	LEX	B
LAMPASAS	D	LARRY	D	LAWNWOOD, DEPRESSIONAL	D	LEHMANS	D	LEXINGTON	B
LAMPHIER	B	LARRY, DRAINED	C			LEHR	B	LEXTON	B
LAMPSHIRE	D	LARSON	D	LAWRENCE	C	LEICESTER	C	LEYBA	B
LAMSON	B/D	LARTON	A	LAWRENCEVILLE	C	LEIDL	C	LEYDEN	C
LANARK	B	LARUE	A	LAWSHE	D	LEIGHCAN	B	LIBBINGS	D
LANCASTER	B	LARUSH	B	LAWSON	C	LEILEHUA	B	LIBEG	B
LANCE	B	LARVIE	D	LAWTHER	D	LEISY	B	LIBERAL	D
LAND	C	LAS	C	LAWTON	C	LELA	D	LIBORY	A
LAND, DRAINED	B	LAS ANIMAS	C	LAWYER	B	LELAND	D	LIBRARY	D
LANDAVASO	B	LAS FLORES	D	LAX	C	LEMAH	A	LIBUSE	C
LANDCO	C	LAS LUCAS	B	LAXAL	B	LEMBOS	C	LICHA	B
LANDER	C	LAS POSAS	C	LAXTON	C	LEMCO	C	LICK	B
LANDES	B	LAS VEGAS	D	LAYCOCK	B	LEMERT	D	LICKDALE	D
LANDLOW	C	LASA	A	LAYOINT	C	LEMETA	D	LICKING	C
LANDMAN	B	LASALLE	D	LAYTON	A	LEMING	C	LICKSKILLET	D
LANDSEND	C	LASAUSES	D	LAYVIEW	D	LEMITAR	D	LIDAN	C
LANE	C	LASCO	B	LAZAN	D	LEMM	B	LIDDELL	B/D
LANESBORO	C	LASIL	D	LAZEAR	D	LEMOLO	D	LIDDIEVILLE	B
LANEXA	D	LASKA	B	LE BAR	B	LEMOND	B/D	LIDY	B
LANEY	B	LASSEL	C	LE SUEUR	B	LEMONEX	C	LIEBERMAN	B
LANG	C	LASSEN	D	LEA	C	LEMOORE	C	LIEN	D
LANGFORD	C	LASSITER	B	LEADER	B	LEMPIRA	B	LIESNOI	D
LANGHEI	B	LASTANCE	B	LEADORE	B	LEN	C	LIGGET	B
LANGLADE	B	LATAH	D	LEADPOINT	C	LENA	A/D	LIGHTNING	D
LANGLOIS	D	LATAH, HIGH RAINFALL, DRAINED	C	LEADVALE	C	LENA, FLOODED	D	LIGNUM	C
LANGOLA	B			LEADVILLE	B	LENAPAH	D	LIGON	D
LANGRELL	B	LATAH, DRAINED	C	LEAF	D	LENAWEE	B/D	LIGURTA	B
LANGSPRING	B	LATAHCO	C	LEAFRIVER	A/D	LENAWEE, PONDED	D	LIHEN	A
LANGSTON	B	LATAHCO, WET	D	LEAFU	C	LENBERG	C	LIHUE	B
LANGTRY	D	LATANIER	D	LEAGUEVILLE	B/D	LENNEP	C	LIKES	A
LANIER	A	LATCH	A	LEAKSVILLE	D	LENOIR	D	LILAH	A
LANIGER	B	LATENE	B	LEAL	B	LENZ	B	LILBERT	B
LANIGER, GRAVELLY	C	LATES	C	LEALANDIC	D	LENZ, STONY	C	LILBOURN	B
LANKBUSH	B	LATEX	C	LEANNA	D	LENZ, VERY STONY	C	LILLINGS	B
LANKIN	C	LATHAM	D	LEANTO	D	LENZBURG	B	LILLINGTON	B
LANKTREE	C	LATHER	D	LEAPS	C	LEO	A	LILLYLANDS	C
LANOAK	B	LATHROP	B	LEATHAM	C	LEOLA	B	LILTEN	C
LANONA	B	LATIGO	B	LEATHERMAN	D	LEON	B/D	LILY	B
LANSDALE	B	LATINA	D	LEAVENWORTH	C	LEONARD	D	LIM	C
LANSDOWNE	C	LATIUM	D	LEAVERS	B	LEONARDO	B	LIMA	B
LANSING	B	LATOM	D	LEAVITT	B	LEONARDTOWN	D	LIMBER	B
LANTERN	B	LATONIA	B	LEAVITTVILLE	B	LEONI	B	LIMEKILN	D
LANTIS	B	LATOUCHE	D	LEBAM	B	LEGUIEU	D	LIMERICK	C
LANTON	D	LATOUR	B	LEBANON	C	LERDAL	C	LIMERIDGE	D
LANTON, LOW PRECIPITATION	C	LATOURELL	B	LEBEAU	D	LERDO	C	LIMKING	B
		LATTAS	D	LEBEC	B	LEROY	B	LIMON	C
LANTONIA	B	LATTY	D	LEBO	B	LERROW	C	LIMON, WET	D
LANTRY	B	LAUDERDALE	D	LEBSACK	C	LESHARA	B	LIMONES	B
LANTZ	D	LAUDERHILL	B/D	LECK KILL	B	LESHO	C	LIMPIA	C
LANVER	C	LAUFER	D	LECRAG	D	LESLIE	D	LINCO	B
LANYON	C/D	LAUGENDUR, LOAMY SUBSTRATUM	C	LEDFORD	B	LESON	D	LINCOLN	A
LAP	D			LEDGEFORK	A	LESPATE	C	LINDAAS	C/D
LAPARITA	C	LAUGENDUR, SILTY SUBSTRATUM	B	LEDMOUNT	D	LESTER	B	LINDALE	C
LAPDUN	B			LEDOW	B	LESWILL	B	LINDELL	C
LAPED	D	LAUGENDUR, DRAINED	B	LEDRU	D	LETA	C	LINDEN	B
LAPEER	B	LAUGHLIN	C	LEDUB	B	LETCHER	D	LINDER	B
LAPHAM	A	LAUMAIA	B	LEDWITH	B/D	LETHA	C	LINDLEY	C
LAPINE	A	LAUREL	D	LEE	D	LETHENY	D	LINDRITH	B
LAPLATTA	C	LAURELWOOD	B	LEEBENCH	D	LETNEY	A	LINDSIDE	C
LAPON	D	LAUREN	B	LEEDS	C	LETON	D	LINDSTROM	B
LAPORTE	D	LAURENTZEN	B	LEEFIELD	C	LETORT	B	LINDY	C
LAPOSA	C	LAVACREEK	B	LEFEKO	C	LETRI	B/D	LINE	B
LAPWAI	B	LAVALLEE	B	LEEKO, WARM	B	LETTIA	B	LINEVILLE	C
LARAND	B	LAVATE	B	LEELANAU	A	LEVASY	C	LINGANORE	B
LARCHMOUNT	B	LAVEAGA	C	LEEMONT	D	LEVELTON	D	LINHART	A
LARDELL	C	LAVEEN	B	LEEPER	D	LEVELTON, DRAINED	C	LININGER	C
LAREDO	B	LAVENTANA	B	LEERAY	D	LEVERETT	C	LINKER	B
LARES	C	LAVERKIN	C	LEESBURG	B	LEVIATHAN	B	LINKUP	D
LARGO	B	LAVIC	B	LEESVILLE	B	LEVY	D	LINKVILLE	B

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LINLITHGO	B	LODI	B	LOPEZ	D	LOZANO	B	LYLES	B/D
LINNE	C	LODICO	D	LOPWASH	B	LOZIER	D	LYMAN	C/D
LINNET	C	LODO	D	LORACK	B	LUALUALEI	D	LYMANSON	C
LINNEUS	B	LOFFTUS	C	LORADALE	C	LUANA	B	LYME	C
LIND	B	LOFTON	D	LORAIN	C/D	LUAP	C	LYNCH	D
LINDYER	B	LOGAN	D	LORAN	B	LUBBOCK	B	LYNCHBURG	C
LINROSE	C	LOGDELL	B	LORAY	A	LUBRECHT	C	LYNDEN	B
LINSLAW	D	LOGGERT	B	LORDSTOWN	C	LUCAS	D	LYNN HAVEN	B/D
LINT	B	LOGHOUSE	B	LOREAUVILLE	C	LUCE	C	LYNNBOW	D
LINTON	B	LOGRING	D	LORELLA	C	LUCEDALE	B	LYNNDYL	A
LINVELDT	B	LOGY	B	LORENA	C	LUCERNE	B	LYNNE	B/D
LINVILLE	B	LOHLER	C	LORENZO	B	LUCERO	B	LYNNVILLE	C
LINWELL	C	LOHMILLER	C	LORETTO	B	LUCIEN	C	LYNNWOOD	A
LINWOOD	A/D	LOHNES	A	LORING	C	LUCILE, MODERATELY	C	LYNX	B
LIPAN	D	LOHSMAN	C	LORMAN	D	WET		LYNXCREEK	B
LIPKE	D	LOIRE	B	LORTA	B	LUCILE, DRAINED	B	LYONMAN	B
LIPPINCOTT	B/D	LOKEN	C	LOS ALAMOS	C	LUCKENBACH	C	LYONS	D
LIPPITT	C	LOKERN	C	LOS BANOS	C	LUCKIAMUTE	D	LYONSVILLE	B
LIRIOS	B	LOKERN,	D	LOS GATOS	C	LUCKY	C	LYRA	D
LISADE	B	SALINE-ALKALI,		LOS GUINEOS	C	LUCKY STAR	B	LYRE	B
LISAM	D	WET		LOS OSOS	C	LUCKYRICH	B	LYSTAIR	B
LISBON	B	LOKERN,	D	LOS ROBLES	B	LUCY	A	LYTELL	B
LISCO	C	SALINE-ALKALI		LOS TANOS	C	LUD	D	LYVILLE	B
LISCOMB	B	LOKOSEE	B/D	LOSANTVILLE	C	LUDDEN	D	LYX	B
LISK	B	LOLAK	D	LOSEE	B	LUDINGTON	B	MABANK	D
LISMAS	D	LOLALITA	B	LOSTBASIN	C	LUDLOW	C	MABEL	C
LISMORE	B	LOLEKAA	B	LOSTCREEK	B	LUEDERS	C	MABEN	C
LITCHFIELD	A	LOLETA	C	LOSTINE	F	LUFKIN	D	MABI	D
LITHGOW	C	LOLITE	D	LOSTPOINT	D	LUGERT	B	MABRAY	D
LITIMBER	B	LOLO	B	LOSTSPRING	B	LUGOFF	B	MACAR	B
LITLE	D	LOLON	B	LOSTVALLEY	C	LUHON	B	MACAREENO	D
LITRO	D	LOLOPEAK	A	LOSTWELLS	B	LUKE	C	MACE	B
LITTLE HORN	C	LOMA	C	LOSTWELLS, WET	C	LUKIN	C	MACEDONIA	B
LITTLE POLE	D	LOMAKI	B	LOTHAIR	C	LULA	B	MACFARLANE	B
LITTLE WOOD	B	LOMALTA	D	LOTT	C	LULING	D	MACHETE	C
LITTLEAXE	B	LOMART	B	LOTUS	C	LULUDE	C	MACHIAS	B
LITTLEBEAR	B	LOMAX	B	LOTUSPOINT	C	LUMBEE	B/D	MACHUELO	D
LITTLEJOHN	C	LOMETA	C	LOU	B	LUMBERLY	B	MACK	B
LITTLENAN	C	LOMILL	D	LOUDERBACK	C	LUMMER	B	MACK, LOAMY	C
LITTLETON	B	LOMIRA	B	LOUDON	C	LUMMI	D	SUBSTRATUM	
LITTSAN	C	LOMITAS	D	LOUDONVILLE	C	LUMMI, DRAINED	C	MACKEN	D
LITZ	C	LOMOINE	D	LOUELLA	B	LUMMUS	C	MACKERRICHER	A
LIV	D	LOMOND	B	LOUGHBORO	C	LUNA	C	MACKEY	C
LIVEOAK	B	LONCAR	B	LOUIE	C	LUNDBR	D	MACKSBURG	B
LIVERMORE	B	LONDO	C	LOUIECREEK	B	LUNDS	C	MACMEAL	B
LIVIA	D	LONDONDERRY	C/D	LOUIN	D	LUNDY	D	MACOMB	B
LIVINGSTON	D	LONE	C	LOUISA	B	LUNING	A	MACOMBER	C
LIVONA	B	LONE ROCK	B	LOUISBURG	B	LUNT	C	MACON	B
LIZE	B	LONEBEAR	D	LOUP	D	LUPE	B	MADALIN	D
LIZZANT	B	LONELY	C	LOUPLOUP	B	LUPINTO	B	MADAWASKA	B
LLANOS	C	LONEPINE	B	LOURDES	C	LUPINTO, SALINE	C	MADDEN	C
LOARC	B	LONERIDGE	C	LOUSCOT	C	LUPOYOMA	B	MADDOCK	A
LOBDELL	B	LONESTAR	B	LOUVIERS	D	LUPPINO	D	MADELIA	B/C
LOBELVILLE	C	LONETREE	A	LOVEJOY	C	LUPTON	A/D	MADELINE	D
LOBERG	C	LONEWOOD	B	LOVELACE	B	LUPTON, PONDED	D	MADERA	D
LOBERT	B	LONGCREEK	D	LOVELAND	C	LURA	C/D	MADGE	B
LOBITOS	C	LONGFORD	C	LOVELAND,	D	LURAY	C/D	MADILL	B
LOBO	D	LONGJIM	D	ELEVATION>6500		LURNICK	C	MADISON	B
LOBURN	D	LONGLOIS	B	LOVELL	D	LUSETTI	B	MADONNA	C
LOCANE	D	LONGMARE	D	LOVELOCK	D	LUSK	C	MADRAK	C
LOCEY	C	LONGMONT	C	LOVELOCK,	C	LUTA	B	MADRAS	C
LOCHLOOSA	C	LONGRIE	B	SALINE-ALKALI		LUTAK	B	MADRID	B
LOCHSA	B	LONGVAL	B	LOVELOCK, DRAINED	C	LUTE	D	MADRONE	C
LOCKE	B	LONGVIEW	C	LOVEWELL	B	LUTH	C	MADUREZ	B
LOCKERBY	C	LONIGAN	B	LOVLINE	C	LUTHER	B	MAES	B
LOCKERBY, COBBLY	D	LONIGAN, COBBLY	C	LOWELL	C	LUTIE	B	MAGALLON	B
LOCKHART	B	SUBSTRATUM		LOWERCREEK	A	LUTON	D	MAGDALENA	D
LOCKPORT	B	LONVON	B	LOWNDES	B	LUTZKOLOH	B	MAGGIE	B
LOCKTON	B	LONNA	B	LOWRY	B	LUVERNE	C	MAGGIN	C
LOCKWOOD	B	LONOKE	B	LOWS	B/D	LUXOR	D	MAGHILLS	B
LOCKWOOD, WET	C	LONTI	D	LOWVILLE	B	LUZENA	D	MAGIC	D
LOCO	C	LOOKINGGLASS	C	LOX	C	LYBROOK	D	MAGINNIS	D
LOCODA	D	LOOKOUT	C	LOXLEY	A/D	LYDA	D	MAGNA	D
LOCUST	C	LOOMER	D	LOYAL	B	LYDICK	B	MAGNET	C
LODALLEY	D	LOOMIS	D	LOYALTON	D	LYERLY	D	MAGNOR	C
LODAR	D	LOONY	C	LOYSVILLE	D	LYFORD	C	MAGNUS	C
LODE	B	LOPER	C	LOZA	D	LYKENS	C	MAGOTHA	D

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

MAGOTSU	D	MANAWA	C	MARGO	B	MARYSTOWN	C	MAY	B
MAGUAYO	C	MANBURN	D	MARIA	E	MASADA	C	MAY DAY	D
MAHALA	D	MANCELONA	A	MARIANA	C	MASARDIS	A	MAYACAMA	C
MAHALASVILLE	B/D	MANCHESTER	A	MARIAS	D	MASARYK	A	MAYBELL	A
MAHAN	C	MANDAN	B	MARIAVILLE	D	MASCAMP	D	MAYBERRY	D
MAHANA	B	MANDARIN	C	MARICAO	B	MASCARENAS	C	MAYBESO	D
MAHASKA	B	MANDERFIELD	B	MARICOPA	B	MASCHETAH	B	MAYBID	D
MAHOGAN	C	MANDEVILLE	B	MARIETTA	C	MASCOTTE	B/D	MAYOOL	D
MAHONING	D	MANDY	C	MARILLA	C	MASCOTTE, DEPRESSIONAL	D	MAYER	B/D
MAHOOSUC	A	MANET	B	MARIMEL	C			MAYES	D
MAHTOMEDI	A	MANFRED	D	MARIMEL, DRAINED	B	MASET	B	MAYFIELD	B
MAHTOWA	C/D	MANGUM	D	MARINA	B	MASHAM	D	MAYFLOWER	C
MAHUKONA	B	MANHATTAN	A	MARINE	C	MASHEL	B	MAYGER	C
MAIA	B	MANHEIM	C	MARION	D	MASHULAVILLE	B/D	MAYHEW	D
MAIDEN	C	MANI	C	MARIPO	B	MASKELL	B	MAYMEAD	B
MAILE	A	MANIKAN	B	MARIPOSA	C	MASON	B	MAYMEN	D
MAINSTAY	D	MANILA	C	MARISCAL	D	MASONFORT	D	MAYNARD LAKE	A
MAITLAND	B	MANISTEE	A	MARISSA	C	MASONTOWN	D	MAYO	B
MAJADA	B	MANITA	C	MARKES	D	MASSACK	C	MAYODAN	B
MAJUBA	C	MANITOWISH	B	MARKESAN	B	MASSACK, DRAINED	B	MAYOWORTH	C
MAKAALAE	B	MANLEY	B	MARKET	D	MASSADONA	D	MAYQUEEN	B
MAKAH	B	MANLIUS	C	MARKEY	A/D	MASSANETTA	B	MAYSDORF	B
MAKALAPA	D	MANN	B/D	MARKHAM	C	MASSANUTTEN	E	MAYSPRINGS	B
MAKAPILI	B	MANNING	B	MARKLAKE	D	MASSBACH	B	MAYTAG	D
MAKAWAO	B	MANOGUE	D	MARKLAND	C	MASSENA	C	MAYTOWN	C
MAKAWELI	B	MANOR	B	MARKLEPASS	D	MASSIE	D	MAYVILLE	B
MAKENA	B	MANSELO	B	MARKTON	C	MASTERSON	B	MAYWOOD	B
MAKI	C	MANSFIELD	D	MARLA	D	MATA	C	MAZARN	C
MAKIKI	B	MANSIC	B	MARLAKE	D	MATAGORDA	D	MAZASKA	C/D
MAKLAK	A	MANSKER	B	MARLBORO	B	MATAMOROS	C	MAZDALE	B
MAKOTI	B	MANSONIA	B	MARLEAN	B	MATANUSKA	B	MAZOURKA	C
MAL	C	MANTACHIE	C	MARLETTE	B	MATANZAS	E	MAZUMA	B
MALA	B	MANTECA	C	MARLOW	C	MATAPEAKE	B	MC CORT	B
MALABAR	B/D	MANTED	C/D	MARLTON	C	MATAWAN	C	MCAFEE	C
MALABAR, DEPRESSIONAL	D	MANTER	B	MARMARTH	B	MATCHER	A	MCALLEN	B
		MANTON	B	MARMARTH, COOL	C	MATFIELD	C	MCALLISTER	C
MALABAR, FREQUENTLY FLOODED	D	MANU	C	MARNA	C/D	MATGO	D	MCALPIN	C
		MANVEL	B	MAROSA	B	MATHENY	B	MCBEE	C
		MANVEL, SALINE	C	MAPOTZ	C	MATHERS	B	MCBETH	D
MALABON	C	MANZANAR	C	MARPA	C	MATHERTON	B	MCBETH, SALINE	C
MALACHY	B	MANZANITA	C	MARPLEEN	D	MATHESON	B	MCBETH, DRAINED	C
MALAGA	B	MANZANITA, GRAVELLY	E	MARQUETTE	A	MATHIAS	B	MCBIGGAM	C
MALAGA, STONY	A			MARQUEZ	C	MATHIS	C	MCBRIDE	B
MALAMA	A	MANZANO	B	MARR	B	MATHISTON	C	MCCAFFERY	A
MALARGO	B	MANZANOLA	C	MARRIOTT	B	MATHON	B	MCCAIN	C
MALAYA	D	MAPLE MOUNTAIN	E	MARROWBONE	C	MATLACHA	C	MCCALEB	B
MALBIS	B	MAPLECREST	B	MARSDEN	B	MATNEFLAT	B	MCCALL	B
MALCOLM	B	MAPLEHILL	C	MARSEILLES	B	MATOY	C	MCCALLY	D
MALDEN	A	MAPLETON	C	MARSELL	B	MATTAMUSKEET	D	MCCAMMON	C
MALEZA	B	MAPLETON, STONY	C/D	MARSHALL	B	MATTAN	D	MCCANN	B
MALHEUR	C	MARACK	C	MARSHAN	B/D	MATTAPEX	C	MCCAREY	C
MALIBU	D	MARAGUEZ	B	MARSHBROOK	D	MATTAPONI	C	MCCARRAN	B
MALIN	C	MARANA	B	MARSHDALE	D	MATUNUCK	D	MCCARTHY	B
MALJAMAR	B	MARATHON	B	MARSHDALE, DRAINED	C	MAU	C	MCCASH	B
MALLORY	C	MARBLE	A	MARSHFIELD	B/D	MAUBILA	C	MCCLAVE	C
MALM	C	MARBLECREEK	E	MARSING	E	MAUDE	B	MCCLEARY	D
MALMESA	D	MARBLEMOUNT	B	MART	B	MAUDLIN	B	MCCLELLAN	B
MALO	B	MARBLEMOUNT, CHANNERY	C	MARTEL	D	MAUGHAN	C	MCCLOUD	C
MALOTERRE	D			MARTELLA	C	MAUKEY	C	MCCLURE	C
MALOTT	B	MARCADO	D	MARTIN	C	MAUMEE	A/D	MCCOIN	D
MALOY	B	MARCELINAS	D	MARTIN PENA	D	MAUNABO	D	MCCOLL	D
MALPAIS	B	MARCELLON	C	MARTINECK	D	MAUPIN	C	MCCOLLUM	B
MALSTROM	B	MARCETTA	B	MARTINEZ	D	MAUREPAS	D	MCCONNEL	B
MALVERN	C	MARCIAL	D	MARTINI	B	MAURERTOWN	D	MCCONNEL, FLOODED	A
MAMALA	D	MARCLAY	D	MARTINSBURG	E	MAURICE	B	MCCOOK	B
MAMOU	C	MARCOLA	C	MARTINSDALE	B	MAURY	E	MCCORNICK	C
MANAHAA	C	MARCONI	C	MARTINSON	C	MAUVAIS	C	MCCORT	B
MANAHAWKIN	D	MARCOTT	C	MARTINSVILLE	B	MAVCO	C	MCCOY	C
MANANA	C	MARCOU	B	MARTINTON	C	MAVEPICK	C	MCCREE	B
MANARD	D	MARCUM	C	MARTIS	B	MAVIF	E/D	MCCRORY	D
MANARD, GRAVELLY SUBSTRATUM	C	MARCUS	B/D	MARTISCO	B/D	MAWAE	A	MCCROSKET	B
		MARCUSE	D	MARTY	B	MAWER	B	MCCULLOUGH	B
MANASSA	C	MARCY	D	MARUMSCO	C	MAX	B	MCCULLY	C
MANASSAS	B	MARDIN	C	MARVAN	D	MAXCREEK	B/D	MCCUMBER	B
MANASTASH	C	MARENGO	C/D	MARVELL	B	MAXEY	C	MCCUNE	D
MANATEE	B/D	MARESUA	B	MARVIN	C	MAXFIELD	B/D	MCCURDY	C
MANATEE, DEPRESSIONAL	D	MARGATE	B/D	MARVYN	B	MAXTON	E	MCCUTCHEN	D
		MARGERUM	B	MARY	C	MAXVILLE	B	MCDADE	C
MANATEE, FLOODED	D	MARGIE	C	MARYSLAND	B/D	MAXWELL	D	MCDANIEL	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

MCDERMOTT	B	MECKLENBURG	C	MERDEN	D	MIKIM, WET	C	MINNEOSA	B
MCDOLE	B	MECOSTA	A	MEREDITH	B	SUBSTRATUM		MINNEQUA	C
MCDONALD	C	MEDA	B	MERETA	C	MIKKALO	C	MINNETONKA	D
MCDONALDSVILLE	C/D	MEDANO	D	MERGEL	B	MILACA	C	MINNETONKA, SILTY	C/D
MCDUFF	C	MEDARY	C	MERIDIAN	B	MILAN	B	SUBSTRATUM	
MCELMO	C	MEDBURN	B	MERINO	D	MILBURY	C	MINNEWAUKAN	A/D
MCELROY	B	MEDCO	D	MERKEL	B	MILBY	B	MINNIECE	D
MCEWEN	B	MEDFORD	B	MERLIN	D	MILCAN	C	MINNIEPEAK	A
MCFADDEN	B	MEDFRA	D	MERMENTAU	D	MILDRED	C	MINNIEPEAK,	B
MCFAIN	C	MEDICINE	B	MCPHILL	B/D	MILES	B	OVERBLOWN,	
MCFARLAND	B	MEDLEY	B	MERNA	B	MILFORD	B/D	GRAVELLY	
MCFAUL	C	MEDLIN	D	MEROS	A	MILHAM	B	MINNIEPEAK,	B
MCGAFFEY	B	MEDOMAK	D	MERRICK	B	MILITARY	B	OVERBLOWN	
MCGARR	C	MEDORA	B	MERRILL	C	MILL HOLLOW	B	MINNIEVILLE	C
MCGARVEY	C	MEDWAY	B	MERRILLAN	C	MILLADORE	C	MINNIMAUD	C
MCGARY	C	MEEGERNOT	B	MERRIMAC	A	MILLARD	B	MINNITH	C
MCGEHEE	C	MEEGERO	B	MERRITT	C	MILLBORO	D	MINNYE	B
MCGILVERY	D	MEEHAN	B	MERRITT, CLAYEY	B	MILLBROOK	B	MINOA	C
MCGINNIS	C	MEEKS	B	SUBSTRATUM,		MILLBURNE	B	MINOCQUA	B/D
MCGINTY	B	MEETEETSE	D	DRAINED		MILLER	D	MINTER	D
MCGIRK	C	MEGALOS	D	MERRITT, DRAINED	B	MILLERLAKE	B	MINTO	C
MCGIRK, LOW	D	MEGGETT	D	MERSHON	C	MILLERLUX	D	MINU	D
PRECIPITATION		MEGONOT	C	MERTON	B	MILLERTON	D	MINVALE	B
MCGOWAN	B	MEGUIN	B	MERTZ	C	MILLERVILLE	A/D	MINVEND	D
MCGRATH	B	MEHLHORN	C	MERWIN	A/D	MILLETT	B	MINWELLS	C
MCGREW	B	MEIKLE	D	MESA	B	MILLGROVE	B/D	MION	D
MCGUFFEY	D	MEISS	D	MESABA	C	MILLHEIM	C	MIPPON	C
MCGUIRE	B	MEKINOCK	D	MESCAL	C	MILLHI	D	MIRABAL	C
MCHENRY	B	MELAKWA	C	MESCALERO	C	MILLHOPPER	A	MIRACLE	C
MCILWAINE	B	MELAND	C	MESEI	D	MILLICH	D	MIRAGE	C
MCINTOSH	B	MELBOURNE	B	MESPUN	A	MILLICOMA	C	MIRAMAR	B
MCINTYRE	B	MELBY	B	MESSER	C	MILLIGAN	C	MIRAND	D
MCIVEY	C	MELD	C	MET	B	MILLING	D	MIRANDA	D
MCKAMIE	D	MELDER	B	METAMORA	B	MILLINGTON	B/D	MIRES	A
MCKAY	C	MELGA	D	METCALF	D	MILLIS	C	MIRES, STONY	B
MCKEE	D	MELHOMES	D	METEA	B	MILLPAW	C	MIRKWOOD	D
MCKEETH	B	MELITA	A	METH	C	MILLPOT	B	MIRROR	C
MCKELVIE	A	MELLENTHIN	D	METIGOSHE	B	MILLRACE	B	MIRROR LAKE	A
MCKENNA	D	MELLOR	D	METOLIUS	B	MILLROCK	A	MISAD	B
MCKENNA, DRAINED	C	MELLOR, STRATIFIED	C	METRE	D	MILLSAP	D	MISENHEIMER	C
MCKENZIE	D	SUBSTRATUM		METZ	B	MILLSDALE	B/D	MISHAK	D
MCKINLEY	B	MELLOTT	B	MEXICO	D	MILLSHOLM	D	MISHAK, DRAINED	C
MCKINNEY	C	MELOCHE	D	MEXISPRING	D	MILLSITE	B	MISSION	D
MCKNIGHT	B	MELOLAND	C	MEYSTRE	B	MILLVILLE	B	MISSISQUOI	A
MCLAIN	C	MELROSE	C	MHOON	D	MILLWOOD	D	MISSLER	B
MCLAURIN	B	MELTON	D	MIAMI	B	MILNER	B	MISSOULA	D
MCLEOD	B	MELVILLE	B	MIAMIAN	C	MILOK	B	MITCH	B
MCLOUGHLIN	B	MELVIN	D	MICANOPY	C	MILPITAS	C	MITCH, RARELY	C
MCMEEN	C	MEMALOOSE	C	MICCO	B/D	MILREN	C	FLOODED	
MCMILLE	B	MEMPHIS	B	MICHELSON	B	MILTON	C	MITCHELL	B
MCMULLIN	D	MENAHGA	A	MICHIGAMME	C	MILVAR	C	MITIWANGA	C
MCMURDIE	C	MENARD	B	MICKEY	D	MIMBRES	B	MITKOF	D
MCMURRAY	D	MENASHA	D	MICROY	C	MIMOSA	C	MITKOF, MODERATELY	C
MCMURRAY, DRAINED	C	MENBO	C	MIDAS	C	MINA	B	WET	
MCNARY	D	MENDEBOURE	C	MIDCO	A	MINALOOSA	B	MITRE	C
MCNEAL	B	MENDELTNA	D	MIDDLE	C	MINAM	B	MITRING	C
MCNULL	C	MENDELTNA,	B	MIDDLEBURY	B	MINAT	B	MITTEN	B
MCNULTY	B	LACUSTRINE		MIDDLEMARCH	B	MINATARE	D	MIVIDA	B
MCPAUL	B	SUBSTRATUM		MIDDLETOWN	B	MINCHEY	B	MIZEL	D
MCPHIE	B	MENDENHALL	D	MIDDLEWOOD	D	MINCHUMINA	D	MOAB	B
MCQUARRIE	D	MENDI	B	MIDELIGHT	B	MINCO	B	MOAG	D
MCQUEEN	C	MENDOCINO	B	MIDESSA	B	MINDEGO	C	MOANO	D
MCRAE	B	MENDON	B	MIDFORK	B	MINDEN	B	MOAPA	C
MCRAVEN	C	MENDUTA	B	MIDLAND	D	MINE	B	MOAULA	A
MCTAGGART	B	MENEFEE	D	MIDMONT	C	MINEOLA	A	MOBATE	D
MCVEGAS	D	MENFRO	B	MIDNIGHT	D	MINER	D	MOBEETIE	B
MCVICKERS	C	MENLO	D	MIDO	A	MINERAL	C	MOBERG	B
MEAD	D	MEND	C	MIDRAW	D	MINERAL MOUNTAIN	C	MOBL	B
MEADIN	A	MENOKEN	C	MIDVALE	C	MINERSVILLE	B	MOBRIDGE	B
MEADLAND	C	MENOMINEE	A	MIDWAY	D	MINESINGER	C	MOCA	D
MEADOWBROOK	B/D	MENTO	C	MIERHILL	C	MINETA	C	MOCAREY	D
MEADOWCREEK	C	MENTOR	B	MIERUF	B	MINGO	C	MOCHO	B
MEADOWLAKE	C	MENZEL	B	MIESEN	C	MINGUS	D	MOCKLEP	B
MEADOWVILLE	B	MEQUON	C	MIFFLIN	B	MINIDOKA	C	MOCMONT	B
MEANS	C	MER ROUGE	B	MIGEEN	B	MINKLER	D	MOCTILEME	C
MEARES	D	MERCED	D	MIGUEL	D	MINLITH	D	MODA	D
MECAN	B	MERCEDES	D	MIKE	D	MINNEHA	C	MODALE	C
MECHANICSBURG	C	MERCER	C	MIKESELL	C	MINNEISKA	B	MODENA	B
MECKESVILLE	C	MERCEY	C	MIKIM	B	MINNEOPA	B	MODESTO	C

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MODJESKA	B	MONTCALM	A	MORTENSON	C	MUIR	B	MYOMA, WET	B
MODKIN	C	MONTE	B	MORTENSON, COBBLY	D	MUIRKIRK	B	MYRA	C
MODOC	C	MONTE CRISTO	D	MORTON	B	MUKILTEO	D	MYRICK	C
MODYDN	C	MONTECITO	B	MORVAL	B	MUKILTEO, DRAINED	C	MYRTLE	B
MOE	B	MONTEGRANDE	D	MOSBY	C	MULAT	D	MYSTEN	A
MOEN	C	MONTELL	D	MOSCA	B	MULDOON	B	MYSTIC	C
MOENKOPIE	D	MONTELLO	C	MOSCOW	C	MULDROW	D	NAALEHU	B
MOEPITZ	B	MONTEOCHA	D	MOSEL	C	MULETT	D	NAALEHU, BEDROCK SUBSTRATUM	C
MOFFAT	B	MONTEOLA	D	MOSES	B	MULGON	B		
MOGG	D	MONTEROSA	D	MOSES, BOULDERY	C	MULHALL	B	NABESNA	D
MOGLIA	C	MONTESA	C	MOSHANNON	B	MULHOLLAND	B	NACHES	B
MOGOLLON	B	MONTEVALLO	D	MOSHEIM	D	MULHOP	D	NACHUSA	B
MOGOTE	C	MONTEZ	B	MOSHER	D	MULKEY	C	NACIMIENTO	C
MOHALL	B	MONTGOMERY	D	MOSHERVILLE	C	MULLICA	C	NACLINA	D
MOHAVE	B	MONTICELLO	B	MOSHUP	C	MULLIG	B	NACOGDOCHES	B
MOHAWK	B	MONTIETH	B	MOSIDA	B	MULLINS	D	NADA	D
MOHOCKEN	C	MONTLID	C	MOSINEE	B	MULLYON	D	NADEAU	B
MOIESE	B	MONTMORENCI	B	MOSLANDER	D	MULSHOE	C	NADINA	D
MOINES	C	MONTNEVA	C	MOSMAN	D	MULSTAY	C	NADRA	D
MOINGONA	B	MONTOSO	B	MOSO	B	MULT	C	NAEGELIN	D
MOJO	C	MONTOUR	D	MOSQUET	D	MULTEY	B	NAFF	B
MOKELUMNE	D	MONTOYA	D	MOSROC	D	MULTNOMAH	B	NAGITSY	C
MOKENA	C	MONTPELLIER	C	MOSSYROCK	B	MULTORPOR	A	NAGLE	B
MOKIAK	B	MONTROSS	C	MOSWELL	D	MUNDAL	C	NAGROM	C
MOKINS	D	MONTVALE	D	MOTA	B	MUNDELEIN	B	NAHA	C
MOKO	D	MONTVERDE	B/D	MOTEN	C	MUNDEN	B	NAHATCHE	C
MOKULEIA	B	MONTWEL	C	MOTLEY	B	MUNDOS	B	NAHMA	B/D
MOLALLA	B	MONTWEL, ALKALI	B	MOTOQUA	D	MUNDT	C	NAHON	D
MOLAND	B	MONUE	B	MOTT	B	MUNI	D	NAHRUB	D
MOLAS	D	MONVERO	A	MOTTLAND	B	MUNISING	B	NAHUNTA	C
MOLCAL	B	MOODY	B	MOTTO	D	MUNJOR	B	NAIWA	B
MOLENA	A	MOOHOO	B	MOTTSVILLE	A	MUNK	C	NAKAI	B
MOLION	D	MOOLACK	A	MOULTON	C	MUNNELL	B	NAKARNA	B
MOLLICY	C	MOONLIGHT	B	MOULTRIE	D	MUNSET	D	NAKINA	B/D
MOLLMAN	B	MOONSHINE	D	MOUND	C	MUNSON	D	NAKNEK	D
MOLLVILLE	D	MOONSTONE	C	MOUNDHAVEN	A	MUNUSCONG	B/D	NAKOCHNA	D
MOLLY	B	MOONVILLE	B	MOUNDPRAIRIE	B/D	MURAD	B	NALAKI	C
MOLOKAI	B	MOOREVILLE	C	MOUNDPRAIRIE, PONDED	D	MURANCH	C	NALDO	B
MOLSON	B	MOOSE RIVER	D			MURDO	B	NALL	D
MOLYNEUX	B	MOOSED	C	MOUNDVILLE	A	MURDOCK	C	NAMBE	B
MOMOLI	B	MOOSELAKE	A/D	MOUNT HOME	B	MUREN	B	NAMELA	C
MONA	B	MOOSHAUNEE	C	MOUNT LUCAS	C	MURNEN	B	NAMEOKI	D
MONACAN	C	MOOSILAUKE	C	MOUNTADAMS	B	MUROC	D	NAMON	B
MONACHE	B	MOPANA	D	MOUNTAINBOY	D	MURPHY	C	NAMUR	D
MONAD	B	MOPANG	B	MOUNTAINBURG	D	MURRIETA	D	NANAMKIN	A
MONADNOCK	B	MOQUAH	B	MOUNTAINEER	C	MURRILL	B	NANCY	B
MONAHANS	B	MORA	C	MOUNTAINVIEW	C	MURTIP	B	NANIAK	D
MONARDA	D	MORADO	C	MOUNTAINVILLE	B	MURVILLE	A/D	NANKIN	C
MONASTERIO	C	MORALES	D	MOUNTMED	D	MUSCATINE	B	NANNY	B
MONAVILLE	B	MORAN	B	MOUNTMED, MODERATELY WET	C	MUSE	C	NANNYTON	B
MONBUTTE	C	MORANCH	B			MUSELLA	B	NANSEMOND	C
MONCHA	B	MORAPOS	C	MOUNTVIEW	B	MUSICK	B	NANSENE	B
MONDAMIN	C	MORD	C	MOUZON	D	MUSINIA	B	NANSEPSEP	C
MONDEY	C	MOREAU	D	MOVILLE	C	MUSKEGO	A/D	NANSUS	D
MONDOVI	B	MOREHEAD	C	MOWATA	D	MUSKEGO, MARSHY	D	NANTAHALA	B
MONEE	D	MOREHOUSE	D	MOWEBA	B	MUSKEGO, CLAY LOAM SUBSTRATUM	D	NANTUCKET	C
MONGAUP	C	MORELAND	D	MOWER	C			NANUM	B
MONICO	C	MORENO	C	MOWICH	D	MUSKELLUNGE	D	NAPA	D
MONIDA	C	MORET	D	MOXEE	D	MUSKINGUM	C	NAPIER	B
MONIERCO	D	MOREY	D	MOYERS	C	MUSKOGEE	C	NAPLENE	B
MONITEAU	C/D	MORFITT	B	MOYERSON	D	MUSOFARE	C	NAPOLEON	A/D
MONITOR	C	MORGALA	C	MOYINA	D	MUSQUIZ	C	NAPPANEE	C
MONJEAU	D	MORGANFIELD	B	MT. AIRY	A	MUSSEL	B	NAPTOWNE	B
MONOCLINE	C	MORIARTY	D	MT. CARROLL	B	MUSSELSHELL	B	NARANJITO	C
MONOGRAM	B	MORICAL	C	MT. HOOD	B	MUSSERHILL	C	NARANJO	C
MONONA	B	MORLEY	C	MT. OLIVE	C	MUSSEY	B/D	NARCISSE	C
MONONGAHELA	C	MORLING	D	MT. VERNON	C	MUSTANG	A/D	NARCOOSSEE	C
MONROE	B	MORMON MESA	D	MUCARA	D	MUTNALA	B	NARD	B
MONROEVILLE	C/D	MOROCCO	B	MUCKALEE	D	MUZZLER	D	NAREL	B
MONSE	B	MORONI	D	MUD SPRINGS	C	MYAKKA	B/D	NARGAR	B
MONSERATE	C	MOROP	C	MUDCO	D	MYAKKA, DEPRESSIONAL	D	NARK	C
MONSERATE, THIN SURFACE	D	MORPH	B/D	MUDLAVIA	B			NARLON	D
		MORRILL	B	MUDRAY	D	MYAKKA, TIDAL	D	NARNETT	B
MONSON	C/D	MORRIS	C	MUES	C	MYATT	D	NARON	B
MONTAGUE	D	MORRISON	B	MUFF	C	MYERS	D	NARRAGANSETT	B
MONTALTO	C	MORRISTOWN	C	MUG	D	MYERSVILLE	B	NARRAGUINNEP	D
MONTARA	D	MORROW	C	MUGGINS	C	MYFORD	D	NARROWS	D
MONTAUK	C	MORSE	D	MUGHOUSE	C	MYLREA	C	NARTA	D
MONTBORNE	C	MORSET	B	MUGHUT	C	MYOMA	A	NARU	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

NASER	B	NEHALEM, FLOODED	C	NEWALBIN, MUCK	D	NIKAL	B	NOONAN	D
NASH	B	NEHAR	B	SUBSTRATUM		NIKEY	B	NOPAH	C
NASHMEAD	B	NEHAR, STONY	C	NEWALBIN, PONDED	D	NIKFUL	D	NORA	B
NASHOBA	C	NEIBER	C	NEWALLA	D	NIKISHKA	B	NORAD	B
NASHVILLE	B	NEICE	B	NEWANNA	C	NIKLASON	B	NORBERT	D
NASHWAUK	C	NEILTON	A	NEWARK	C	NIKOLAI	D	NORBORNE	B
NASKEAG	C	NEISSENBERG	C	NEWARK, PONDED	D	NILAND	C	NORCAN	C
NASON	C	NEKIA	C	NEWARK, PONDED,	D	NILER	D	NORD	B
NASON, GRAVELLY	B	NEKKEN	B	COOL		NILRAP	B	NORDBY	B
NASS	D	NEKOMA	B	NEWAUKUM	B	NIMBRO	B	NORDEN	B
NASSAU	C	NELDORE	D	NEWAYGO	B	NIMERICK	C	NORDIC	B
NASSET	B	NELLA	B	NEWBELL	B	NIMMO	D	NORDICOL	B
NATAGA	A	NELLIS	B	NEWBERG	B	NIMROD	C	NORDNESS	B
NATAL	D	NELMAN	C	NEWBERG, WET	C	NIMS	C	NORFOLK	B
NATANK	C	NELSCOTT	C	NEWBERN	C	NIMUE	B	NORFORK	D
NATCHEZ	B	NELSE	B	NEWBERRY	C	NINCH	B	NORGE	B
NATCHITOCHES	D	NELSON	C	NEWBON	B	NINEKAR	D	NORGO	D
NATHALE	C	NEMADJI	B	NEWCO	D	NINEMILE	D	NORKA	B
NATHROP	C	NEMAH	D	NEWCOMB	A	NINEPIPE	B	NORKOOL	B
NATHROP, NONSTONY	B	NEMAH, DRAINED	C	NEWDALE	B	NINEVEH	B	NORLAND	B
NATHROP, COBBLY	B	NEMICO	D	NEWELL	B	NINIGRET	B	NORMA	D
NATI	C	NEMOTE	A	NEWELLTON	D	NIOBELL	C	NORMA, DRAINED	C
NATIONAL	B	NEMOURS	C	NEWFIELDS	B	NIOTA	D	NORMANGEE	D
NATKIM	B	NENANA	E	NEWFLAT	D	NIOTAZE	C	NORMANIA	B
NATOMAS	B	NENNO	C	NEWFORK	D	NIPE	B	NOROB	C
NATROY	D	NEOLA	D	NEWFOUND	C	NIPINTUCK	D	NORREST	C
NATUPITA	B	NEOTOMA	B	NEWGLARUS	B	NIPPT	B	NORRIS	D
NAUKATI	D	NEPALTO	A	NEWHAN	A	NIPSUM	C	NORRISTON	A
NAUMBURG	C	NEPESTA	B	NEWHOUSE	B	NIRA	B	NORTE	C
NAUVOO	B	NEPHI	C	NEWKIRK	D	NIRAC	C	NORTEZ	C
NAVACA	D	NEPONSET	C	NEWLANDS	B	NIRE	C	NORTH POWDER	C
NAVAJO	D	NEPPEL	B	NEWLANDS, WARM	C	NISENE	B	NORTHBORO	C
NAVAN	D	NEPTUNE	A	NEWLIN	B	NISHNA	C/D	NORTHCASTLE	B
NAVASAN	A	NERESON	B	NEWMAN	C	NISHNA, PONDED	D	NORTHCOTE	C/D
NAVIDAD	B	NESBITT	B	NEWNATA	C	NISHON	D	NORTHDALE	C
NAVINA	B	NESDA	E	NEWPASS	C	NISQUALLY	A	NORTHFIELD	D
NAVO	D	NESHAMINY	B	NEWPORT	C	NISULA	B	NORTHMORE	C
NAWNEY	D	NESHOBA	C	NEWRY	B	NITCHLY	B	NORTHRUP	C
NAWT	D	NESIKA	B	NEWSKAH	B	NITTAW	D	NORTHSTAR	C
NAXING	B	NESIUS	A	NEWSON	A/D	NIU	B	NORTHWATER	B
NAYE	C	NESKAHI	B	NEWSROCK	B	NIULII	C	NORTHWOOD	B/D
NAYPED	B	NESKOWIN	C	NEWSTEAD	C	NIWANA	B	NORTON	C
NAYRIB	D	NESO	D	NEWTON	A/D	NIWOT	C	NORTONVILLE	C
NAZ	B	NESPELEM	C	NEWTONIA	B	NIX	D	NORWELL	C
NAZATON	B	NESS	D	NEWTOWN	C	NIXA	C	NORWICH	D
NEABSCO	C	NESSEL	B	NEWULM	B	NIXON	B	NORWOOD	B
NEBAGO	C	NESTER	C	NEWVIENNA	B	NIXONTON	B	NOSRAC	B
NEBEKER	C	NESTORIA	C/D	NEWVILLE	D	NIZINA	A	NOTAL	D
NEBGEN	D	NESTUCCA	D	NEYGAT	D	NOARK	B	NOTCHER	B
NEBISH	B	NET	C	NEZ PERCE	C	NOBE	D	NOTI	D
NEBONA	D	NETARTS	B	NGARDMAU	B	NOBLE	B	NOTNED	B
NECANICUM	B	NETCONG	B	NGARDOK	B	NOBLETON	C	NOTSPIER	D
NECESSITY	C	NETO	B	NGATPANG	C	NOBOCO	B	NOTTAWA	B
NECHE	C	NETOMA	B	NGEDEBUS	A	NOBSCOT	A	NOTTER	B
NECONDA	C	NETRAC	A	NGERSUUL	C	NOBUCK	C	NOTUS	C
NECTAR	C	NETTLES	D	NGERUNGOR	D	NOCKEN	C	NOTUS, DRAINED	B
NEDA	C	NETTLETON	C	NIAGARA	C	NODAWAY	B	NOUQUE	D
NEDERLAND	B	NEUBERT	B	NIAPADA	B	NODEN	B	NOVACAN	D
NEEDLE	D	NEUNS	C	NIAPT	E	NODINE	B	NOVARK	B
NEEDLE PEAK	C	NEURALIA	C	NIOBS	B	NOELKE	D	NOVARY	D
NEEDLE PEAK, LOAMY	B	NEURALIA, SANDY	B	NIBLEY	C	NOGAL	C	NOVATO	D
SUBSTRATUM		SUBSTRATUM		NIBSON	D	NOHILI	D	NOVINA	B
NEEDLE PEAK,	B	NEUSKE	B	NICANOR	D	NOKASIPPI	B/D	NOWATA	B
OCCASIONALLY		NEVADANILE	C	NICHOLFLAT	D	NOKAY	C	NOWEN	B/D
FLOODED		NEVADOR	B	NICHOLIA	D	NOKHU	C	NOWOY	B
NEEDLETON	B	NEVARC	C	NICHOLS	B	NOLAM	B	NOYER	B
NEEDLEYE	C	NEVAT	B	NICHOLSON	C	NOLICHUCKY	B	NOYES	C/D
NEEDMORE	C	NEVEE	B	NICHOLVILLE	C	NOLIN	B	NOYO	C
NEELEY	B	NEVERSINK	D	NICKEL	B	NOLO	D	NOYSON	C
NEEN	C	NEVILLE	B	NICKIN	B	NOLTEN	C	NUAHS	B
NEEN, WET	D	NEVILLE, WET	C	NICKSVILLE	C	NOMARA	C	NUBY	D
NEEN, DRAINED	B	NEVIN	B	NICODEMUS	B	NOME	D	NUBY, DRAINED	C
NEENAH	C	NEVINE	B	NICODEMUS, FLOODED	C	NOMIE	B	NUBY, PROTECTED	C
NEER	B	NEVKA	C	NICOLAS	A	NONDALTON	B	NUC	C
NEESES	C	NEVOYER	D	NICOLLET	B	NONOPAHU	D	NUCKOLLS	B
NEESOPAH	B	NEVTAH	C	NIDO	C	NONPAREIL	D	NUCLA	B
NEFF	C	NEVU	C	NIELSEN	D	NOOK	C	NUECES	C
NEGLEY	B	NEW CAMBRIA	C	NIGHTHAWK	B	NOOKACHAMPS	D	NUEVA	B
NEHALEM	B	NEWALBIN	B/D	NIHILL	B	NOOKSACK	C	NUFF	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

NUGENT	A	OCONALUFTEE	B	OLD CAMP	D	OPENLAKE	D	OSAKIS	B
NUKRUM	D	OCONEE	C	OLDENBURG	B	OPEQUON	C	OSBORN	C
NULEY	B	OCONTO	B	OLDHAM	C/D	OPHIR	C	OSBORN, MODERATELY WET	D
NULLIGAM	B	OCOSTA	D	OLDS	D	OPIKIKAD	D		
NUMA	B	OCQUEOC	A	OLDSFERRY	C	OPLIN	C	OSCAR	D
NUNDA	C	OCQUEOC, MODERATELY WET	B	OLDSMAR	B/D	OPPID	D	OSCURA	C
NUNEMAKER	D			OLDSMAR, DEPRESSIONAL	D	OPPID, STONY	C	OSGOOD	C
NUNICA	C	OCRAIG	D			OQUAGA	C	OSHA	B
NUNN	C	OCTAGON	B	OLELO	B	OQUIN	C	OSHAWA	D
NUNN, MODERATELY WET	B	OCTAVIA	B	OLENO	D	ORA	C	OSHKOSH	C
		ODAS	D	OLENTANGY	A/D	ORACLE	D	OSHONE	D
NUNNSTON	C	ODELL	B	OLEQUA	B	ORAGRAN	D	OSHTEMO	B
NUPART	D	ODEM	A	OLETE	C	ORAID	C	OSIER	A/D
NUPPER	D	ODENSON	D	OLEX	B	ORAN	B	OSITO	C
NURKEY	B	ODERMOTT	C	OLF	D	ORANGE	D	OSKA	C
NUSS	D	ODERMOTT, STONY	B	OLGA	C	ORANGEBURG	B	OSMUND	B
NUTALL	D	ODESSA	D	OLI	B	ORANGEVALE	B	OSO	C
NUTIVOLI	A	ODIN	C	OLIAGA	C	ORCAP	C	OSOBB	D
NUTLEY	C	ODNE	D	OLICAL	B	ORCAS	D	OSOLL	D
NUTRAS	C	ODO	B	OLIN	B	ORCHARD	B	OSORIDGE	D
NUTRIOSO	B	ODONNELL	C	OLINDA	B	ORCKY	B	OSOTF	D
NUVALDE	B	OELOP	B	OLIPHANT	B	ORD	B	OSSIAN	B/D
NUYOBE	C	OEST	B	OLIVENHAIN	D	ORDNA	D	OSSIPEE	D
NYALA	B	OESTERLE	C	OLIVIER	C	ORDNANCE	C	OST	B
NYE	B	OFFENBACHER	C	OLJETO	A	ORDWAY	D	OSTLER	C
NYJACK	C	OFU	B	OLLEI	D	OREANA	B	OSTRANDER	B
NYMORE	A	OGARTY	C	OLLIERIVAS	D	OREANNA	B	OSWALD	D
NYSERVA	B	OGEECHEE	B/D	OLMITO	D	OREJAS	D	OTANYA	B
NYSSA	C	OGEMAW	C/D	OLMITZ	B	ORELIA	D	OTEEN	C
NYSSATON	B	OGILVIE	B/D	OLMOS	C	ORELLA	D	OTERO	B
NYSWONGER	D	OGLALA	B	OLMSTED	B/D	ORENDA	B	OTHELLO	C/D
O'BRIEN	B	OGLE	B	OLNES	B	ORENEVA	C	OTISCO	A
O'NEILL	B	OGLESBY	D	OLNEY	B	ORFORD	B	OTISVILLE	A
OAHE	B	OGRAL	B	OLOAVA	B	ORHOOD	D	OTLEY	B
OAK GLEN	B	OHACO	C	OLOKUI	D	ORICTO	B	OTOMO	D
OAK GROVE	B	OHANA	C	OLOMOUNT	C	ORIDIA	D	OTOOLE	C
OAKALLA	B	OHIA	A	OLOMPALI	D	ORIF	A	OTTER	B/D
OAKBORO	C	OHOP	C	OLOT	C	ORIGO	B	OTTERHOLT	B
OAKDALE	B	OHSCOW	B	OLOTANIA	B	ORINOCO	C	OTTERSON	A
OAKDEN	D	OIDEM	A	OLPE	C	ORIO	B/D	OTTMAR	B
OAKES	B	OJATA	D	OLSON	D	ORION	C	OTTOKEE	A
OAKHILL	B	OJIBWAY	C	OLTON	C	ORITA	B	OTTOSEN	B
OAKHURST	D	OJITO	C	OLUSTEE	B/D	ORIZABA	C	OTTUMWA	D
OAKLAND	C	OJITOS	B	OLYIC	B	ORIZABA, DRAINED	B	OTWAY	D
OAKLET	C	OKANOGAN	B	OLYMPIC	B	ORLA	B	OTWELL	C
OAKLIMETER	C	OKATON	D	OMADI	B	ORLAND	B	OTWIN	C
OAKVILLE	A	OKAW	D	OMAK	C	ORLANDO	A	OUACHITA	C
OAKWOOD	B	OKAY	B	OMEGA	A	ORLIE	C	OUARD	D
OANAPUKA	B	OKEE	B	OMENA	B	ORMAS	B	OULA	D
OASIS	B	OKEECHOBEE	B/D	OMIO	B	ORMISTON	C	OUPICO	C
OATLANDS	B	OKEELANTA	B/D	OMNI	C	ORMSBY	C	OURAY	B
OATMAN	B	OKEELANTA, DEPRESSIONAL	D	OMPO	D	ORNBAUN	B	OUSLEY	C
OATUU	D			OMSTOTT	C	ORO FINO	B	OUTERKIRK	B
OBAN	C	OKEELANTA, TIDAL	D	OMULGA	C	ORO GRANDE	D	OUTLET	C
OBANION	C	OKEELANTA, FLOODED	D	ONA	B/D	OROGNEN	D	OUTLOOK	D
OBARO	B	OKEETEE	D	ONAMIA	B	ORONOCO	B	OUTLOOK, DRAINED	C
OBEN	C	OKEMAH	C	ONAQUI	D	OROSE	C	OVALL	C
OBISPO	D	OKIOTA	D	ONARGA	B	OROVADA	B	OVAN	D
OBRAST	D	OKLARED	B	ONASON	D	ORPARK	C	OVANDO	A
OBRAY	D	OKLARK	B	ONAWA	D	ORPHA	A	OVERGAARD	C
OBSCURITY	B	OKLAWAHA	B/D	ONAWAY	B	ORPHANT	D	OVERLAND	C
OBSERVATION	C	OKO	D	ONDAWA	B	ORR	B	OVERLY	C
OBURN	D	OKO, STONY	C	ONECO	B	ORR, GRAVELLY SUBSTRATUM	C	OVERTON	D
OCALA	C	OKOBOJI	B/D	ONEIL	C			OVIATT	B
OCAMBEE	C	OKOBOJI, PONDED	D	ONEONTA	B	ORRUB	D	OVID	C
OCANA	B	OKOLONA	D	ONITA	C	ORRVILLE	C	OVINA	B
OCCOQU N	B	O REEK	D	NITE	B	O SA	A	OWANKA	C
OCCUM	B	OKRIST	B	ONKEYO	D	ORSET	B	OWEGO	D
OCEANET	D	OKTAHA	B	ONOTA	B	ORSIND	A	OWEN CREEK	C
OCEANO	A	OKTIBBEHA	D	ONSLOW	B	ORTEGA	A	OWENS	D
OCHEYEDAN	B	OLA	C	ONTARIO	B	ORTELLO	B	OWENTOWN	B
OCHLOCKONEE	B	OLAA	A	ONTEORA	C	ORTING	D	OWHI	B
OCHO	D	OLAC	D	ONTKO	D	ORTIZ	C	OWINZA	D
OCHOCO	C	OLANCHA	B	ONTONAGON	D	ORTON	B	OWLCAN	B
OCHOPEE	B/D	OLAND	B	ONYX	B	ORWASH	A	OWOSSO	B
OCIE	C	OLANTA	B	OOKALA	A	ORWET	A/D	OWSEL	B
OCILLA	C	OLASHES	B	OOSEN	A	ORWIG	B	OWYHEE	B
OCKLEY	B	OLATHE	D	OPAL	D	ORWOOD	B	OXBOW	C
OCOEE	B/D	OLBUT	D	OPELIKA	D	OSAGE	D	OXCOREL	D

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OXENDINE	D	PALIX	B	PAPALOTE	C	PATIO	C	PELEE	B
OXERINE	C	PALLS	C	PAPINEAU	C	PATIT CREEK	B	PELELIU	D
OXFORD	D	PALM BEACH	A	PAPOOSE	B	PATNA	B	PELHAM	B/D
OXHEAD	B	PALMA	B	PAPA	B	PATOS	C	PELIC	D
OXLEY	C	PALMAR	D	PARACHUTE	B	PATOUTVILLE	C	PELION	B/D
OXWALL	D	PALMAREJO	C	PARADISE	C	PATRICIA	B	PELKIE	A
OYHUT	C	PALMER CANYON	B	PARADOX	B	PATRICK	B	PELLA	B/D
OYLEN	C	PALMERDALE	B	PARANAT	C	PATROLE	C	PELLEJAS	B
OZAMIS	D	PALMETTO	B/D	PARANAT, DRAINED	B	PATTANI	D	PELLICER	D
OZAN	D	PALMETTO,	D	SALINE		PATTEE	B	PELONCILLO	D
OZAUKEE	C	DEPRESSIONAL		PARASOL	B	PATTENBURG	B	PELTIER	C
OZETTE	C	PALMICH	B	PARCELAS	D	PATTER	B	PEMBERTON	B
OZIAS	D	PALMS, OVERWASH	A/D	PARCHIN	D	PATTERSON	C	PEMBROKE	B
PAAIKI	B	PALMS, MAAT>50	A/D	PARCHIN, COOL	C	PATTON	B/D	PEMENE	B
PAALOA	B	PALMS, MAAT<50	A/D	PARDALOE	B	PAUL	B	PEMI	C
PAAUHAU	A	PALMS, PONDED	D	PARDEE	D	PAULDING	D	PENA	B
PABLO	D	PALMS, SANDY	A/D	PARDEEVILLE	B	PAULINA	D	PENAPON	B
PACHAPPA	B	SUBSTRATUM		PAREHAT	C	PAULSON	B	PENASCO	D
PACHECO	C	PALMS, GRAVELLY	A/D	PARENT	B/D	PAULVILLE	B	PENCE	B
PACHECO, DRAINED	B	SUBSTRATUM		PARIATO	D	PAUMALU	B	PEND OREILLE	B
PACIFICO	C	PALMYRA	B	PARIETTE	C	PAUNSAUGUNT	D	PENDANT	D
PACK	C	PALO	D	PARISA	C	PAUSANT	B	PENDARVIS	C
PACKARD	B	PALODURO	B	PARISIAN	D	PAUWELA	B	PENDEN	B
PACKER	B	PALOMARIN	B	PARKALLEY	B	PAVAIAI	C	PENDER	C
PACKHAM	B	PALOMAS	B	PARKAY	B	PAVANT	D	PENDERGRASS	D
PACKTRAIL	C	PALOMINO	D	PARKDALE	B	PAVER	B	PENDLETON	C
PACKWOOD	D	PALON	B	PARKE	B	PAVILLION	B	PENDPOY	D
PACO	C	PALOPINTO	D	PARKER	B	PAVO	B	PENELAS	D
PACOLET	B	PALOS VERDES	D	PARKFIELD	C	PAVOHROD	B	PENEY	D
PACTOLA	B	PALOUSE	B	PARKHILL	B/D	PAWCATUCK	D	PENGILLY	B/D
PACTOLUS	A	PALSGROVE	B	PARKINSON	B	PAWHUSKA	D	PENGRA	C
PADDOCK	C/D	PALUXY	B	PARKS	B	PAWLING	B	PENINSULA	B
PADEN	C	PAMISON	B	PARKVIEW	B	PAWNEE	D	PENISTAJA	B
PADILLA	C	PAMLICO	D	PARKVILLE	C	PAXICO	B	PENITENTE	B
PADINA	B	PAMOA	B	PARKWOOD	B/D	PAXTON	C	PENLAW	C
PADRES	B	PAMSDEL	C	PARLEYS	A	PAXVILLE	B/D	PENN	C
PADRONES	B	PAMUNKEY	B	PARLIN	C	PAYETTE	B	PENNEKAMP	A
PADUCAH	B	PANA	B	PARLO	B	PAYMASTER	B	PENNELL	D
PADUS	B	PANAEWA	D	PARMELE	C	PAYNE	C	PENNEY	A
PAESL	B	PANAK	B	PARMELOW	C	PAYNECREEK	B	PENNICHUCK	B
PAGARI	B	PANAMA	B	PARMENTER	B	PAYSON	D	PENNSUCO	D
PAGEBROOK	D	PANAMINT	B	PARMLEED	C	PEACHAM	D	PENO	C
PAGINA	C	PANASOFFKEE	C/D	PARNELL	C/D	PEACHLAND	D	PENOVER	B
PAGODA	C	PANCHERI	B	PARQUAT	B	PEARL	B	PENROSE	D
PAGOSA	C	PANDO	B	PARR	B	PEARL HARBOR	D	PENSORE	D
PAGUATE	C	PANDOAH	C	PARRAN	D	PEARSOLL	D	PENTHOUSE	D
PAHAKA	B	PANDORA	B/D	PARRISH	C	PEASLEY	D	PENTZ	D
PAHOKEE	B/D	PANDURA	D	PARRITA	D	PEASPEAR	D	PENWELL	A
PAHRANAGAT	C	PANE	B	PARSHALL	B	PEAVINE	C	PENWOOD	A
PAHRANAGAT, VERY POORLY DRAINED	D	PANGBORN	D	PARSIPPANY	C/D	PEAWICK	D	PENZANCE	C
		PANGUITCH	B	PARSONS	D	PEBBLEPOINT	C	PEOGA	C
PAHRANGE	C	PANHANDLE	B	PARTLOW	D	PECATONICA	B	PEOH	D
PAHREAH	C	PANHILL	B	PARTOV	D	PECKHAM	C	PEOH, DRAINED	C
PAHROC	D	PANIN	B	PARTRI	C	PECKISH	D	PEOLA	C
PAHRUMP	C	PANIOGUE	B	PARTRIDGE	A	PECOS	D	PEONE	D
PAHSIMEROI	B	PANIOGUE, WET	C	PASAGSHAK	D	PECTURE	B	PEONE, DRAINED	C
PAIA	B	PANITCHEN	B	PASCO	D	PEDCAT	D	PEORIA	D
PAICE	D	PANKY	C	PASCO, DRAINED	C	PEDEE	C	PEOTONE	B/D
PAILO	B	PANROD	C	PASO SECO	D	PEDERNALES	C	PEPAL	B
PAINESVILLE	C	PANOCHE	B	PASQUETTI	D	PEDIGO	C	PEPOON	D
PAINT	D	PANOCHE,	C	PASQUETTI,	C	PEDLEFORD	C	PEPPER	D
PAISLEY	D	SALINE-ALKALI,		MODERATELY WET		PEDOLI	B	PEPTON	D
PAIT	B	WET		PASQUETTI, DRAINED	C	PEDRICK	B	PEQUAMING	A
PAJARA	C	PANOLA	D	PASQUOTANK	B/D	PEDRO	C	PEQUEA	B
PAJARITO	B	PANOR	B	PASS CANYON	D	PEEBLES	C	PEQUOP	B
PAJUELA	B	PANORAMA	B	PASSAR	C	PEEKO	D	PERALTA	C
PAKA	B	PANOZA	B	PASSCREEK	C	PEEL	C	PERAZZO	B
PAKALA	B	PANSEY	D	PASTERN	D	PEELER	B	PERCETON	B
PAKINI	B	PANTANO	D	PASTIK	C	PEERLESS	B	PERCHAS	D
PALACIOUS	D	PANTEGO	B/D	PASTORIUS	B	PEETZ	A	PERCILLA	D
PALAFOX	C	PANTERA	B	PASTURA	D	PEEVER	C	PERCIVAL	C
PALANUSH	C	PANTHER	D	PATAHA	C	PEEVYWELL	C	PERCOUN	C
PALAPALAI	B	PANTON	D	PATCHIN	D	PEGLEG	C	PERCY	B/D
PALATINE	B	PAOLA	A	PATE	C	PEGLER	D	PERDIN	C
PALAU	B	PAOLI	B	PATELZICK	D	PEGRAM	B	PERELLA	B/D
PALAZZO	C	PAPAA	D	PATENT	C	PEKAY	C	PERELLA,	B
PALBOONE	B	PAPAC	C	PATHEAD	C	PEKIN	C	MODERATELY WET	
PALINOR	C	PAPAGUA	C	PATILLAS	B	PELAHATCHIE	C	PERHAM	B
PALISADE	B	PAPAI	A	PATILO	B	PELAN	B	PERICO	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

PERIDGE	B	PHILO	B	PINELLAS	B/D	PLASKETT	D	POKEGEMA	B
PERILLA	B	PHILOMATH	D	PINELLI	B	PLATA	B	POKEMAN	C
PERINDS	C	PHING	D	PINETOP	C	PLATEA	C	POKER	C
PERITSA	C	PHIPPS	C	PINETUCKY	B	PLATNER	C	POKERGAP	B
PERKINS	C	PHLISS	D	PINETUCKY, GRADED	C	PLATO	C	POKEY	C
PERKS	A	PHOEBE	B	PINEVAL	B	PLATORO	B	POLACCA	C
PERLA	C	PHOENIX	D	PINEVILLE	B	PLATTE	B	POLALLIE	C
PERLOR	D	PHYS	B	PINEZ	B	PLATTE, WET	D	POLAR	B
PERMA	B	PIANKESHAW	B	PINGREE	D	PLATTE, CHANNELED	D	POLATIS	C
PERN	B	PIASA	D	PINHOOK	B/D	PLATTVILLE	B	POLAVANA	A/D
PERNITAS	C	PIBLER	D	PINICON	B	PLAYCO	B	POLE	D
PERNOG	D	PICABO	C	PINITOS	B	PLAYER	D	POLECREEK	D
PERNTY	D	PICACHO	C	PINKEL	C	PLAYMOOR	C/D	POLELINE	B
PERQUIMANS	D	PICANTE	D	PINKHAM	A	PLAZA	C	POLEPATCH	A
PERREAU	B	PICAYUNE	B	PINKSTON	B	PLEASANT	C	POLEY	C
PERRIN	B	PICEANCE	C	PINNACLES	C	PLEASANT, PONDED	D	POLEY, COBBLY	D
PERRINE	D	PICKAWAY	C	PINNEBOG	A/D	PLEASANT GROVE	B	POLICH	C
PERRINTON	C	PICKENS	D	PINNOBIE	B	PLEASANT VALE	B	POLKING	D
PERRY	D	PICKETT	C	PINO	C	PLEASANT VIEW	B	POLLARD	C
PERRYPARK	B	PICKFORD	D	PINOLE	B	PLEASANTON	B	POLLASKY	B
PERRYVILLE	B	PICKNEY	A/D	PINON	D	PLEDGER	D	POLLUX	C
PERSANTI	C	PICKNEY, FLOODED	D	PINONES	D	PLEGOMIR	D	POLLY	B
PERSAYO	D	PICKRELL	D	PINRIDGE	B	PLEINE	D	POLO, MODERATELY	C
PERSHING	C	PICKTON	A	PINSPRING	C	PLEIOVILLE	C	SLOW PERM	
PERSIS	B	PICKUP	C	PINTAS	B	PLEITO	C	POLO, MODERATE	B
PERT	D	PICKWICK	B	PINTLAR	B	PLEVNA	D	PERMEABILITY	
PERU	C	PICO	B	PINTO	C	PLINCO	B	POLONIO	B
PERVINA	B	PICOSA	C	PINTURA	A	PLITE	B	POLSON	B
PERWICK	C	PIDCOKE	D	PINTWATER	D	PLOME	B	POLUM	B
PESCADERO	D	PIDINEEN	D	PIOCHE	D	PLOVER	C	POMADE	D
PESCAR	C	PIE CREEK	D	PIOPOLIS	C/D	PLUCK	C	POMAN	C
PESHASTIN	B	PIEGON	B	PIPELINE	D	PLUMAS	B	POMAT	C
PESHEKEE	D	PIERIAN	B	PIPEP	C	PLUMMER	B/D	POMAT, DRY	B
PESMO	C	PIERKING	D	PIPESTONE	B	PLUSH	B	POMELLO	C
PESMORE	C	PIERPONT	C	PIPPIN	A	PLUTOS	B	POMERENE	C
PESO	C	PIERRE	D	PIRD	B	PLYMOUTH	A	POMFRET	A
PESOWYO	C	PIERSONTE	A	PIRODEL	B	POALL	C	POMO	B
PETACA	D	PIERZ	B	PIROUETTE	D	POARCH	B	POMONA	B/D
PETAL	C	PIETOWN	B	PIRUM	B	POBER	C	POMONA,	D
PETAN	D	PIGTAIL	C	PISGAH	C	POCALLA	A	DEPRESSIONAL	
PETEETNEET	D	PIIHONUA	A	PISHKUN	B	POCAN	B	POMPANO	B/D
PETERMAN	D	PIKE	B	PISMO	D	POCASSET	B	POMPANO,	D
PETERMAN, SANDY	C	PIKEVILLE	B	PIT	D	POCATELLO	B	DEPRESSIONAL	
SUBSTRATUM,		PILABO	B	PITCHER	B	POCATY	D	POMPANO, FLOODED	D
ALKALI		PILCHUCK	C	PITCO	D	POCKER	C	POMPEII	D
PETERS	D	PILCHUCK,	A	PITNEY	C	POCOLA	D	POMPONIO	C
PETERSON	B	PROTECTED		PITTMAN	C	POCOMOKE, PONDED	B/D	POMPTON	B
PETESCREEK, STONY	B	PILINE	D	PITTSFIELD	B	POCOMOKE, DRAINED	B	POMROY	C
PETESCREEK,	C	PILLIKEN	B	PITTSTOWN	C	POCONO	B	PONCA	B
GRAVELLY		PILLOT	B	PITZER	C	PODEN	B	PONCENA	D
PETRIE	D	PILLSBURY	C	PIUTE	D	PODMOR	C	PONCHA	A
PETROLIA	C/D	PILOT PEAK	D	PIVOT	A	PODO	D	PONCIANO	C
PETROS	D	PILOT ROCK	C	PIXLEY	D	PODUNK	B	POND	D
PETSPRING	D	PILOTPEAK	D	PIZENE	B	PODUS	C	POND CREEK	B
PETTICOAT	B	PILTDOWN	B	PLACEDO	C	POE	C	PONDER	D
PETTIGREW	B/D	PILTZ	C	PLACENTIA	D	POGAL	C	PONIL	D
PETTUS	C	PIMA	B	PLACERITOS,	B	POGANEAB	C	PONINA	D
PETTY	B	PIMER	B	SALINE, DRAINED		POGANEAB, CLAYEY	D	PONOZZO	C
PEVETO	A	PINAL	D	PLACERITOS,	C	SUBSTRATUM		PONTO	B
PEWAMO	C/D	PINALENO	B	SALINE-ALKALI		POGANEAB, SALINE	D	PONTOTOC	B
PEYTON	B	PINANT	B	PLACERITOS,	B	POGANEAB, HIGH	D	PONZER	D
PFEIFFER	B	PINATA	C	MODERATELY WET		RAINFALL		POOCHAM	B
PHAGE	B	PINAVETES	A	PLACERITOS, WET	C	POGANEAB, STRONGLY	D	POOKU	B
PHALANX	B	PINBIT	B	PLACERITOS,	B	SALINE		POOLER	D
PHANTOM	C	PINCHER	C	DRAINED		POGANEAB,	D	POOLEVILLE	C
PHARO	B	PINCHOT	B	PLACID	B/D	FREQUENTLY		PODRCAL	B
PHARR	B	PINCKNEY	C	PLACID,	D	FLOODED		POORMA	B
PHEBA	C	PINCONNING	B/D	DEPRESSIONAL		POGANEAB,	D	PODSE	D
PHEENEY	C	PINE FLAT	B	PLACID, FREQUENTLY	D	SALINE-ALKALI		POOTATUCK	B
PHELAN	D	PINEAL	D	FLOODED		POGUE	B	POPASH	D
PHELPS	B	PINEBUTTE	B	PLACITAS	C	POHAKUPU	B	POPE	B
PHERSON	B	PINECREEK	B	PLACK	D	POIN	D	POPHERS	C
PHIFERSON	C	PINEDA	B/D	PLAINBO	A	POINDEXTER	B	POPLE	C/D
PHILBON	D	PINEDA,	D	PLAINFIELD	A	POINSETT	B	POPLIMENTO	C
PHILDER	D	DEPRESSIONAL		PLAISTED	C	POINT	C	POPOSHIA	B
PHILIPPA	C	PINEDALE	B	PLANK	D	POINT ISABEL	C	POPOTOSA	B
PHILIPSBURG	B	PINEGUEST	B	PLANKINTON	D	POISONCREEK	D	POPPLETON	A
PHILLCHER	B	PINEHURST	B	PLANO	B	POJO	C	POQUETTE	A
PHILLIPS	C	PINEISLE	B	PLANTATION	B/D	POJOAQUE	B	POQUITA	B

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POQUONOCK	C	PREMIER	B	PUNCHBOWL	D	QUINLIVEN	C	RAMROD	C
PORFIRIO	C	PRENTISS	C	PUNG	C	QUINN	B/D	RAMSDELL	D
PORRETT	D	PRESA	B	PUNGO	D	QUINNEY	C	RAMSDELL, DRAINED	C
PORRONE	B	PRESHER	B	PUNOHU	A	QUINTANA	B	RAMSEY	D
PORT	B	PRESTO	B	PUNSIT	C	QUINTO	D	RAMSHORN	B
PORT BYRON	B	PRESTON	A	PUNTA	B/D	QUINTON	C	RANA	D
PORTAGE	D	PREWITT	B	PUNTILLA	B	QUITERIA	B	RANCE	C
PORTAGEVILLE	D	PREY	C	PURCELLA	B	QUITMAN	C	RANCHOSECO	D
PORTALES	B	PRICE	B	PURCHES	C	QUIVERA	C	RANDADO	C
PORTALTO	B	PRIDA	C	PURDAM	C	QUONSET	A	RANDALL	D
PORTERFIELD	C	PRIDHAM	D	PURDY	D	QUOPANT	D	RANDCORE	D
PORTERS	B	PRIESTLAKE	B	PURETT	B	QUOSATANA	D	RANDMAN	D
PORTERVILLE	D	PRIETA	D	PURGATORY	C	RABBITEX	B	RANDOLPH	C
PORTHILL	D	PRIM	D	PURNER	D	RABER	C	RANDS	C
PORTIA	C	PRIMEAUX	C	PUROB	D	RABIDEUX	B	RANDSBURG	D
PORTINO	C	PRIMEN	D	PURSLEY	B	RABUN	B	RANGEE	D
PORTLAND	D	PRIMGHAR	B	PURVES	D	RACE	B	RANGER	C
PORTMOUNT	B	PRINCETON	B	PUSHMATAHA	C	RACINE	B	RANPUFF	D
PORTNEUF	B	PRINEVILLE	C	PUSTOI	B	RACKER	A	RANSLO	D
PORTOLA	B	PRING	B	PUTNAM	D	RACOMBES	B	RANSOM	B
PORTSMOUTH	B/D	PRINGLE	D	PUTNEY	B	RACOON	C/D	RANSTEIN	B
PORUM	D	PRITCHARD	C	PUTT	C	RAD	B	RANTOUL	D
POSANT	D	PRITCHETT	C	PUTTSTER	C	RAD, LACUSTRINE	C	RAPATEE	D
POSEN	B	PROCHASKA	A/D	PUU OO	A	SUBSTRATUM		RAPELJE	B
POSEY	B	PROCTOR	B	PUU OPAE	B	RAD, FLOODED	C	RAPH	B
POSEYVILLE	C	PROGRESSO	C	PUU PA	A	RADDLE	B	RAPHO	B
POSITAS	D	PROMISE	D	PUU PA, NONSTONY	B	RADER	D	RAPIDAN	B
POSKIN	C	PROMO	D	PUUKALA	D	RADERSBURG	B	RAPLEE	C
POSO	B	PRONG	C	PUUONE	C	RADFORD	B	RAPPAHANNOCK	D
POSOS	C	PROPHETSTOWN	B/D	PUYALLUP	B	RADLEY	B	RAPSON	B
POST	D	PROSPECT	B	PYBURN	D	RADNOR	C	RARDEN	C
POTAMUS	B	PROSPER	B	PYLE	B	RAFAEL	D	RARICK	C
POTCHUB	C	PROSSER	C	PYLON	D	RAFTON	D	RARITAN	C
POTEET	C	PROTIVIN	C	PYOTE	A	RAFTRIVER	C	RASBAND	B
POTELL	B	PROUT	C	PYRAMID	D	RAGLAN	B	RASILLE	B
POTH	C	PROUTY	C	PYRMONT	D	RAGNAR	B	RASSER	B
POTLATCH	C	PROVIDENCE	C	PYRMONT, BEDROCK	C	RAGNEL	B	RASSET	B
POTOMAC	A	PROVIG	C	SUBSTRATUM		RAGO	C	RASTUS	C
POTOSI	A	PROVO	D	PYWELL	D	RAGPIE	D	RATAKE	D
POTRATZ	C	PROVO BAY	D	QUAFEND	C	RAGSDALE	B/D	RATHBUN	C
POTSDAM	C	PROW	D	QUAKER	C	RAGSDALE, OVERWASH	B	RATHDRUM	B
POTTER	C	PRUDY	B	QUAKERTOWN	C	RAGTOWN	C	RATLAKE	D
POTTINGER	B	PRUE	B	QUAM	B/D	RAHAL	C	RATLEFLAT	B
POTTS	B	PRUITTON	B	QUAMON	A	RAHM	C	RATLIFF	B
POTTSBURG	B/D	PRUNIE	D	QUANAH	B	RAHWORTH	B	RATON	D
POUDRE	D	PRYOR	C	QUANDER	B	RAIL	D	RATSOW	C
POUJADE	D	PSUGA	B	QUANTICO	B	RAILCITY	A	RATTLEP	D
POULSBO	D	PTARMIGAN	C	QUARLES	D	RAINBOW	C	RATTO	C
POUNCEY	D	PUAPUA	D	QUARTZBURG	C	RAINEY	C	RATTO, STONY	D
POVERTY	D	PUAULU	A	QUARTZVILLE	B	RAINIER	C	RAUB	C
POVEY	B	PUCHYAN	B	QUARZ	C	RAINO	D	RAUGHT	B
POWDER	B	PUDDLE	B	QUATAMA	C	RAINS	B/D	RAUVILLE	D
POWDERHORN	C	PUERCO	D	QUAY	B	RAINS, FLOODED	D	RAUZI	B
POWDERWASH	C	PUERTA	D	QUAZO	D	RAINSBORO	C	RAVALLI	D
POWEEN	C	PUERTECITO	D	QUEALHAN	C	RAINSVILLE	B	RAVALLI, BEDROCK	B
POWELL	C	PUETT	D	QUEALY	D	RAIRDENT	B	SUBSTRATUM	
POWER	B	PUFFER	D	QUEBRADA	C	RAISIO	C	RAVEN	A
POWERLINE	C	PUGET	D	QUEENY	D	RAKANE	C	RAVENDALE	D
POWLEY	D	PUGET, PROTECTED	C	QUEETS	B	RAKE	D	RAVENELL	D
POWMENT	C	PUGSLEY	C	QUEMADO	C	RAKIED	C	RAVENNA	C
POWWAHKEE	B	PUHI	B	QUENZER	D	RALEIGH	D	RAVENSWOOD	C
POWWATKA	C	PUHIMAU	D	QUERC	C	RALLOD	D	RAVIA	C
POY	D	PUICE	C	QUERENCIA	B	RALLS	B	RAVOLA	B
POYGAN	D	PULA	C	QUETICO	D	RALPH	B	RAWAH	C
POYNOR	B	PULANTAT	C	QUICKSELL	C	RALPHSTON	B	RAWE	C
POZO	C	PULASKI	B	QUICKSILVER	D	RALSEN	D	RAWLES	B
POZO BLANCO	B	PULCAN	C	QUICKVERT	C	RAMADERO	B	RAWLINS	B
PRAG	C	PULEHU	B	QUIDEN	B	RAMBLA	C	RAWSON	B
PRAIRIEVILLE	B	PULEXAS	B	QUIENSABE	C	RAMBOUILLET	B	RAWSONVILLE	C
PRAMISS	C	PULLMAN	D	QUIETUS	C	RAMELLI	D	RAYBURN	D
PRATHER	C	PULPIT	C	QUIGLEY	B	RAMIRES	C	RAYEX	D
PRATLEY	C	PULS	D	QUIHI	C	RAMMEL	C	RAYFORD	C
PRATT	A	PULSIPHER	D	QUILCENE	C	RAMO	C	RAYLAKE	D
PREACHER	B	PULTNEY	C	QUILLAYUTE	B	RAMONA	B	RAYMONDVILLE	D
PREAKNESS	B/D	PUMEL	D	QUILOTOSA	D	RAMONA, HARD	C	RAYNE	B
PREATORSON	B	PUMEL, NONGRAVELLY	C	QUILT	D	SUBSTRATUM		RAYNESFORD	B
PREBISH	C/D	PUMPER	B	QUIMA	B	RAMPART	B	RAYNHAM	C
PREBLE	D	PUNA	A	QUINCY	A	RAMPARTER	B	RAYNOLDSON	B
PRELO	B	PUNALUU	D	QUINLAN	C	RAMPS	B	RAYOHILL	C

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RAYPOL	C	REDSTONE	A	RENOX	B	RICOT	C	RITIDIAN	D
RAZ	D	REDSUN	D	RENSHAW	B	RICREST	B	RITNER	C
RAZITO	A	REDTHAYNE	B	RENSLOW	B	RIDD	C	RITO	B
RAZOR	C	REDTOM	B	RENSSELAER	B/D	RIDDLES	B	RITTER	B
RAZORBA	B	REDVALE	C	RENSSELAER,	C	RIDENBAUGH	D	RITTMAN	C
RAZORT	B	REDVIEW	B	NONSTRATIFIED		RIDGE	B	RITZ	D
RAZSUN	D	REDVIEW, WET	C	SUBSTRATUM		RIDGEBURY	C	RITZ, DRAINED	C
READING	B	REDVINE	C	RENTILL	B	RIDGECREST	C	RITZCAL	B
READINGTON	C	REDWASH	D	RENTON	D	RIDGEDALE	B	RITZVILLE	B
READLYN	B	REE	B	RENTON, DRAINED	C	RIDGELAND	B/D	RIVALIER	B
REAGAN	B	REEBOK	D	RENTSAC	D	RIDGELAWN	B	RIVERDALE	A
REAKOR	B	REED	D	RENTZEL	C	RIDGELAWN, WET	D	RIVERHEAD	B
REAL	D	REED, DRAINED	C	REPARADA	D	RIDGELITE	D	RIVEROAD	B
REALLIS	B	REED, PROTECTED	C	REPP	B	RIDGEPORT	B	RIVERSIDE	A
REAP	D	REEDER	B	REPPART	B	RIDGEVIEW	D	RIVERTON	B
REARDAN	C	REEDER, COOL	C	REPUBLIC	B	RIDGEVILLE	B	RIVERVIEW	B
REAVILLE	C	REEDSBURG	C	RESCUE	B	RIDGEWOOD	C	RIVIERA	C/D
REAVIS	B	REEDSPORT	C	RESNER	B	RIDIT	C	RIVIERA,	D
REBA	C	REEDY	D	RESORT	D	RIDLEY	C	DEPRESSIONAL	
REBEL	B	REEFRIDGE	D	RESOTA	A	RIDOTT	C	RIVIERA, LIMESTONE	B/D
RECAPTURE	B	REELFOOT	C	RESTING	C	RIEDEL	C	SUBSTRATUM	
RECK	D	REEPO	C	RESTON	D	RIEDTOWN	C	RIVIERA, LIMESTONE	D
RECLUSE	B	REESE	C	RET	D	RIEPE	C	SUBSTRATUM,	
RED BAY	B	REESER	C	RETRIEVER	D	RIESEL	C	DEPRESSIONAL	
RED BLUFF	C	REESVILLE	C	RETROP	C	RIETBROCK	C	RIVRA	D
RED BLUFF,	B	REEVES	B	RETRYDE	C	RIFLE	A/D	RIXIE	C
GRAVELLY		REFLECTION	B	REVA	D	RIGA	D	RIXON	C
RED BUTTE	B	REFUGE	C	REVEL	C	RIGDON	C	RIZ	D
RED HILL	B	REGAL	B/D	REVENTON	B	RIGGINS	D	RIZNO	D
RED HOOK	C	REGAN	B/D	REVERE	B/D	RIGGS	D	RIZOZO	D
RED ROCK	B	REGENT	C	REVIT	C	RIGLEY	B	ROANE	C
RED SPUR	B	REGGAD	A	REWARD	B	RIGOLETTE	C	ROANHIDE	C
REDARROW	D	REGGEAR	D	REXBURG	B	RILEY	B	ROANOKE	D
REDBANK	B	REGGEAR, COOL	C	REXFORD	C	RILLA	B	ROARING	B
REDBELL	B	REGNAPS	C	REXMONT	D	RILLIND	B	ROB ROY	C
REDBIRD	B	REGNIER	D	REXOR	A	RILLITO	B	ROBANA	B
REDBOW	C	REHBURG	C	REYAB	B	RIMER	C	ROBBS	D
REDBY	B	REHFIELD	B	REYES	D	RIMINI	A	ROBCO	C
REDCAMERON	D	REHFIELD	C	REYNOSA	B	RIMROCK	D	ROBER	C
REDCAN	D	REHM	C	REYWAT	D	RIMTON	C	ROBERTSDALE	C
REDCAP	B	REICESS	B	REZAVE	D	RIN	B	ROBERTSVILLE	D
REDCHIEF	C	REICHEL	B	RHAME	B	RINCON	C	ROBIN	B
REDCLIFF	C	REIFF	B	RHEA	B	RINDA	D	ROBINETTE	B
REDCLOUD	B	REILLY	A	RHINEBECK	D	RINDGE	D	ROBINSONVILLE	B
REDCO	D	REINA	D	RHOADES	D	RINDGE, DRAINED	C	ROBOZO	C
REDCREEK	D	REINACH	B	RHOAME	C	RINEARSON	B	ROBROOST	B
REDDALE	D	REINER	B	RHOAMETT	C	RINEY	B	ROBSON	D
REDDICK	B/D	REKOP	D	RHOAMETT, STONY	D	RING	C	ROBY	C
REDDING	D	RELAN	B	RHONE	B	RINGLE	B	ROCA	D
REDEYE	B	RELAY	B	RIB	B/D	RINGLING	A	ROCHE	D
REDFEATHER	D	RELIANCE	C	RIBERA	C	RINGO	D	ROCHELLE	C
REDFIELD	B	RELIZ	D	RIBHILL	B	RINGWOOD	B	ROCHER	B
REDFIELD, WET	C	RELLEY	B	RICCO	D	RINKER	C	ROCHESTER	A
REDFLAME	B	RELSOB	B	RICEBORO	B/D	RIO	D	ROCIO	C
REDHOUSE	B	RELUCTAN	C	RICECROSS	B	RIO ARRIBA	D	ROCK CREEK	D
REDIG	B	REMBERT	D	RICERT	B	RIO DIABLO	C	ROCK RIVER	B
REDINGTON	D	REMEDIOS	C	RICETON	B	RIO GRANDE	B	ROCKABIN	C
REDLAKE	D	REMLAP	C	RICEVILLE	C	RIO LAJAS	A	ROCKAWAY	C
REDLANDS	B	REMLIK	A	RICH	C	RIO PIEDRAS	B	ROCKBRIDGE	B
REDLEVEL	C	REMMIT	B	RICH, WET	D	RIOBLANCHO	C	ROCKCASTLE	D
REDLODGE	D	REMNOY	D	RICHARDSON	B	RIOCONCHO	C	ROCKDALE	A
REDMANSON	B	REMOTE	B	RICHENS	C	RIOLINDA	C	ROCKDALE	B
REDMOND	C	REMSEN	D	RICHEY	C	RION	B	ROCKERS	C
REDMOUNT	B	REMUNDA	C	RICHFIELD	B	RIPEC	D	ROCKFIELD	B
REDNIK	B	REMUS	B	RICHFORD	A	RIPLEY	B	ROCKFORD	B
REDNIK, NONSTONY	C	RENBAC	D	RICHLAND	B	RIPLEY,	C	ROCKHOUSE	A
REDNUN	C	RENCALSON	C	RICHMOND	D	SALINE-ALKALI,		ROCKINCHAIR	C
REDOLA	B	RENCOT	D	RICHSUM	B	WET		ROCKLIN	D
REDONA	B	RENFROW	D	RICHTER	B	RIPON	B	ROCKLY	D
REDONDO	B	RENICK	D	RICHVALE	B	RIPPLE	B	ROCKOA	B
REDPOP	C	RENISH	C	RICHVIEW	C	RIPPOWAM	C	ROCKTON	B
REDPORT	B	RENNER	B	RICHVILLE	C	RIRIE	B	ROCKWELL	B/D
REDRIDGE	B	RENNIE	D	RICHWOOD	B	RISBECK	B	ROCKWOOD	C
REDRIVER	C	RENNIE, DRAINED	C	RICKER	A	RISLEY	D	ROCKY FORD	B
REDROB	C	RENNIE, PROTECTED	C	RICKETTS	C	RISLEY, STONY	C	ROCKYBAR	B
REDSPEAR	D	RENO	D	RICKMAN	C	RISUE	D	RODAD	D
REDSPRINGS	B	RENOHILL	C	RICKMORE	C	RISWOLD	B	RODELL	D
REDSPRINGS, GRADED	D	RENOL	C	RICKREALL	D	RITA	D	RODEO	D
REDSTOE	B	RENOVA	B	RICKS	A	RITCHEY	D	RODESSA	D

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

RODIE	B	ROSENDALE	C	RUBY	B	SABENYO	B	SAMINIEGO	C
RODMAN	A	ROSENWALL	D	RUBYHILL	C	SABINA	C	SAMISH	D
RODROF	D	ROSEVILLE	B	RUCH	B	SABINE	A	SAMMAMISH	D
ROEBUCK	D	ROSEWOOD	A/D	RUCKER	B	SABLE	B/D	SAMOIST	D
ROELLEN	D	ROSEWOOD, WET	D	RUCKLES	D	SAC	B	SAMOR	D
ROEMER	C	ROSEWORTH	D	RUCLICK	C	SACHEEN	A	SAMPSEL	D
ROETEX	D	ROSHE SPRINGS	D	RUDD	D	SACHETT	C	SAMPSON	B
ROFISS	B	ROSHE SPRINGS, DRAINED	C	RUDDLEY	D	SACO	D	SAMSIL	D
ROGAN	B			RUDEEN	C	SACRAMENTO	D	SAMSULA	B/D
ROGERSON	D	ROSHOLT	B	RUDYARD	D	SACTUS	D	SAN ANDREAS	B
ROGERT	D	ROSINE	B	RUEDLOFF	B	SACUL	C	SAN ANTON	B
ROGRUBE	B	ROSITAS	A	RUELLA	B	SADDLE	C	SAN ANTONIO	C
ROGUE	B	ROSITAS, CLAYEY	C	RUFUS	D	SADDLEBACK	C/D	SAN ARCACIO	C
ROHAN	D	SUBSTRATUM		RUGAR	C	SADDLEGAP	B	SAN BENITO	B
ROHNERVILLE	B	ROSITAS, LOAMY,	C	RUGG	B	SADDLEROCK	D	SAN EMIGDIO	B
ROHONDA	C	WET		RUGLES	B	SADER	D	SAN GERMAN	D
ROHRERSVILLE	D	ROSITAS, WET	C	RUHE	D	SADIE	C	SAN ISABEL	A
ROIC	D	ROSLYN	B	RUIDOSO	C	SADLER	C	SAN JOAQUIN	D
ROJO	C	ROSMAN	B	RUINPOINT	B	SAFFELL	B	SAN JON	C
ROLETTE	C	ROSNEY	B	RUIZ	A	SAG	B	SAN JOSE	B
ROLFE	C	ROSS	B	RUKO	D	SAGANING	A/D	SAN JUAN	A
ROLIE	D	ROSSBURG	B	RULE	B	SAGASER	B	SAN LUIS	C
ROLISS	B/D	ROSSFIELD	B	RUMBLECREEK	B	SAGE	D	SAN MATEO	B
ROLLA	C	ROSSMOOR	B	RUMBO	C	SAGECREEK	B	SAN MIGUEL	D
ROLLINGSTONE	C	ROSSMOYNE	C	RUMFORD	B	SAGEDALE	C	SAN SABA	D
ROLOC	D	ROSWELL	A	RUNLEY	B	SAGEHILL	B	SAN SEBASTIAN	B
ROLOFF	C	ROSY	B	RUNNEY	C	SAGEMOOR	B	SAN SIMEON	D
ROMBERG	B	ROTAMER	B	RUNPAH	D	SAGERS	B	SAN TIMOTEO	C
ROMBO	C	ROTAN	C	RUNPLE	C	SAGERTON	C	SAN YSIDRO	D
ROME	B	ROTHICAN	B	RUNUNG	C	SAGLE	C	SANCHEZ	D
ROMEO	D	ROTHIEMAY	C	RUNE	C	SAGO	D	SANCLEMENTE	D
ROMERO	D	ROTHSAY	B	RUNEBERG	C/D	SAGOUSPE	C	SANDALL	C
ROMGAN	C	ROTINOM	B	RUNGE	B	SAGOUSPE, DRAINED	B	SANDBRANCH	B
ROMIA	B	ROTO	C	RUNN	D	SAGUACHE	B	SANDCREEK	D
ROMINE	B	ROTTULEE	C	RUPLE	C	SAHALIE	B	SANDERSON	B
ROMINELL	C	ROUBIDEAU	C	RUPLEY	A	SAHUARITA	B	SANDHILL	B
ROMNELL	B/D	ROUEN	C	RUSCO	C	SAID	B	SANDIA	B
ROMSTOCK	B	ROUGHCREEK	D	RUSCO, PONDED	D	SAIDO	B	SANDOSE	A
ROMULUS	D	ROUGHLOCK	B	RUSE	D	SAILBOAT	C	SANDOVAL	D
RONAN	D	ROUGHMOUNT	C	RUSH	B	SAILBOAT, DRAINED	B	SANDRIDGE	A
ROND	C	ROUND BUTTE	D	RUSHMORE	B/D	SAIPAN	B	SANDSPRING	B
RONDEAU	A/D	ROUNDABOUT	C	RUSHTOWN	A	SAL	D	SANDUN	B
RONDELL	B	ROUNDBARN	E	RUSHVILLE	D	SALADAR	D	SANDUSKY	D
RONDOWA	B	ROUNDHEAD	B/D	RUSO	B	SALADON	D	SANDVIEW	B
RONNEBY	C	ROUNDOR	C	RUSON	C	SALAL	C	SANDWASH	C
RONSEL	B	ROUNDTOP	C	RUSS	B	SALAMATOF	D	SANDWICK	B
RONSON	B	ROUNDUP	C	RUSSELL	B	SALANDER	B	SANELI	D
RONEY	D	ROUNDY	C	RUSSIAN	B	SALAS	C	SANFORD	B
ROOSET	C	ROUSSEAU	A	RUSSLER	C	SALCHAKET	B	SANGER	D
ROOSEVELT	C	ROUTON	D	RUSTICO	B	SALCO	B	SANGO	C
ROOT	B/D	ROUTT	C	RUSTIGATE	C	SALEM	B	SANHEDRIN	B
ROOTEL	C	ROVAL	D	RUSTON	B	SALERATUS	C	SANIBEL	B/D
ROPER	B/D	ROWDEN	C	RUSTY	B	SALERNO	B/D	SANILAC	B
ROSALIE	B	ROWDY	B	RUTAB	B	SALGA	C	SANJE	B
ROSAMOND	B	ROWE	D	RUTERSVILLE	C	SALIDA	A	SANLOREN	B
ROSAMOND, SALINE-ALKALI, FLOODED	C	ROWEL	D	RUTHERFORD	C	SALINAS	B	SANPETE	B
		ROWENA	C	RUTLAND	C	SALISBURY	C	SANPITCH	C
		ROWLAND	C	RUTLEGE	B/D	SALIX	B	SANPOIL	D
ROSANE	D	ROWLEY	C	RYAN	D	SALKUM	B	SANSARC	D
ROSANKY	C	ROXAL	D	RYAN PARK	B	SALLISAW	B	SANTA	D
ROSARIO	C	ROXANA	B	RYARK	A	SALLYANN	C	SANTA CLARA	C
ROSCOE	D	ROXBURY	B	RYCO	D	SALMO	C/D	SANTA FE	D
ROSCOMMON	A/D	ROXER	B	RYDE	C	SALMON	B	SANTA ISABEL	D
ROSE CREEK	C	ROXTON	D	RYDER	C	SALONIE	D	SANTA LUCIA	C
ROSE CREEK, DRAINED	B	ROY	B	RYDOLPH	C	SALT CHUCK	A	SANTA MARTA	C
		ROYAL	B	RYEGATE	C	SALT LAKE	D	SANTA YNEZ	D
ROSE VALLEY	D	ROYCE	C	RYELL	B	SALTAIR	D	SANTANA	D
ROSEBERRY	D	ROYGORGE	D	RYELL, SALINE	D	SALTER	B	SANTANELA	D
ROSEBLOOM	D	ROYOSA	A	RYEPATCH	C	SALTERY	D	SANTAQUIN	A
ROSEBOROUGH	B	ROYST	C	RYER	C	SALTESE	D	SANTAROSA	B
ROSEBUD	B	ROYSTONE	B	RYKER	B	SALTINE	C	SANTEE	D
ROSEBURG	B	ROZA	C	RYMAN	C	SALTON	D	SANTIAGO	B
ROSEDHU	B/D	ROZELLVILLE	B	RYORP	C	SALUDA	C	SANTIAM	C
ROSEGLEN	B	ROZETTA	B	RYPDC	B	SALVISA	C	SANTO	B
ROSEHAVEN	B	ROZLEE	C	RYUS	B	SALZER	D	SANTO TOMAS	B
ROSEHILL	D	RUARK	B/D	SAAR	C	SALZER, PROTECTED	C	SANTONI	D
ROSELAND	B	RUBICON	A	SABANA	D	SAMBA	D	SANWELL	B
ROSELLA	D	RUBIO	C/D	SABANA SECA	D	SAMBRITO	B	SAPEHA	B
ROSELMS	D	RUBSON	B	SABE	B	SAMDAY	D	SAPELO	D

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

SAPINERO	B	SAWTOWN	C	SCOTCH	D	SEITZ	C	SHAKER	C
SAPKIN	C	SAWYER	C	SCOTCO	A	SEJITA	D	SHAKESPEARE	C
SAPPHIRE	C	SAXBY	D	SCOTIA	B	SEKIL	B	SHAKOPEE	C
SAPPINGTON	B	SAXON	C	SCOTY	D	SEKIU	D	SHALAKE	C
SARA	D	SAY	B	SCOTT LAKE	B	SELAH	C	SHALAKO	D
SARAGOSA	B	SAYBROOK	B	SCOTTCAS	B	SELBIT	B	SHALBA	D
SARAHSVILLE	D	SAYDAB	C	SCOTTIES	B	SELDEN	C	SHALCAR	D
SARALEGUI	B	SAYERS	A	SCOTTSVILLE	C	SELEVIN	D	SHALCAR, DRAINED	C
SARANAC	C/D	SAYLES	D	SCOUT	B	SELFRIDGE	B	SHALCLEAV	D
SARANAC, GRAVELLY SUBSTRATUM	C	SAYLESVILLE	C	SCRABBLERS	B	SELIA	C	SHALET	D
		SAYNER	A	SCRANTON	A/D	SELIGMAN	D	SHALONA	B
SARAPH	D	SAYPO	C	SCRAVO	B	SELKIRK	C	SHALPER	D
SARATON	C	SAZI	C	SCRIBA	C	SELLE	B	SHAM	D
SARAZAN	B	SCALA	B	SCRIBNER	C	SELLERS	B/D	SHAMBO	B
SARBEN	B	SCALADE	D	SCRIVER	B	SELMA	B/D	SHAMEL	B
SARCILLO	D	SCALFAR	B	SCROGGIN	C	SELMAC	D	SHAMOCK	C
SARDINIA	C	SCALLEY	B	SCULLIN	C	SELON	B	SHANAHAN	B
SARDIS	C	SCAMMAN	D	SCUPPERNONG	D	SELTI	B	SHANDEP	B/D
SARGEANT	D	SCANDARD	C	SEABROOK	C	SELWAY	B	SHANE	D
SARILDA	C	SCANTIC	D	SEAFIELD	B	SEMIAHMOO	D	SHANGHAI	C
SARITA	A	SCAPONIA	B	SEAFORTH	B	SEMIAHMOO, DRAINED	C	SHANGHAI, DRAINED	B
SARKAR	D	SCAR	B	SEAGATE	A/D	SEMINOLE	D	SHANKLER	A
SARNOSA	B	SCARBORO	D	SEAGOVILLE	D	SEMPER	C	SHANO	B
SARONA	B	SCARIBOU	B	SEALY	B	SEN	B	SHANTA	B
SARPY	A	SCARPER	C	SEAMAN	B	SENCHERT	C	SHARATIN	B
SARTELL	A	SCATLAKE	D	SEAMAN, STRONGLY SALINE	C	SENECAVILLE	B	SHARESNOUT	C
SARUCHE	D	SCAVE	C			SENSABAUGH	B	SHARKEY	D
SASABE	C	SCHAFFENAKER	A	SEAMAN, MODERATELY WET	C	SEQUATCHIE	B	SHARLAND	B
SASALAGUAN	C	SCHALLER	A			SEQUIM	A	SHARON	B
SASCO	B	SCHAMBER	A	SEAQUEST	C	SEQUOIA	C	SHARONDALE	B
SASKA	B	SCHAMP	C	SEAR	B	SERDEN	A	SHARPS	C
SASPAMCO	B	SCHAPVILLE	C	SEARING	B	SERENE	C	SHARPSBURG	B
SASSAFRAS	B	SCHATTEL	C	SEARLA	B	SEROCO	A	SHARROTT	D
SASSER	B	SCHAUSON	B	SEARLES	C	SERPEN	C	SHARVANA	C
SATAGO	D	SCHAWANA	D	SEARSPORT	D	SERPENTAND	B	SHASER	B
SATANKA	C	SCHENCO	D	SEARSVILLE	D	SERPOD	C	SHASKIT	C
SATANTA	B	SCHERRARD	D	SEASTRAND	D	SERRANO	D	SHASTA	B
SATATTON	D	SCHLEY	B	SEATON	B	SERVILLETA	D	SHASTINA	B
SATELLITE	C	SCHMUTZ	B	SEATTLE	D	SESAME	C	SHATRUCE	C
SATILLA	D	SCHNEBLY	D	SEATTLE, DRAINED	C	SESPE	C	SHATTA	C
SATIN	C	SCHNEIDER	B	SEAVERSON	D	SESSIONS	C	SHATTUCK	B
SATSOP	B	SCHNIPPER	C	SEAWILLOW	B	SESSUM	D	SHAUSON	B
SATT	C	SCHNOORSON	C	SEBAGO	D	SET	C	SHAVANO	B
SATTLEY	B	SCHNORBUSH	B	SEBASTIAN	D	SETH	C	SHAVASH	C
SATTRE	B	SCHODSON	C	SEBASTOPOL	C	SETTERS	D	SHAVER	B
SATURN	B	SCHOENS	A	SEBEWA	B/D	SETTLEMENT	D	SHAWA	B
SATUS	B	SCHOFIELD	C	SEBREE	D	SETTLEMEYER	C	SHAWANO	A
SAUCEL	D	SCHOHARIE	C	SEBRING	B/D	SETTLEMEYER, SALINE-ALKALI	D	SHAWMUT	B
SAUCIER	C	SCHOLLE	B	SEBUD	B			SHAY	D
SAUDE	B	SCHOODIC	D	SECCA	C	SETTLEMEYER, FLOODED	D	SHAYLA	D
SAUGATUCK	C	SCHOOLCRAFT	B	SECESH	B			SHEAR	C
SAUGUS	B	SCHOOLEY	D	SECONDSET	C	SETTLEMEYER, COOL CHANNELED	D	SHEAVILLE	D
SAUK	B	SCHOOLEY, DRAINED	C	SECRET CREEK	B		B	SHEBANG	D
SAULICH	D	SCHOOLEY, PROTECTED	C	SECURITY	C			SHEBEON	C
SAUM	B			SED	C	SEVAL	C	SHEDADO	C
SAUNDERS	D	SCHOOLHOUSE	D	SEDALE	D	SEVENMILE	B	SHEDD	C
SAURIN	C	SCHOONER	D	SEDGEFIELD	C	SEVERN	B	SHEDHORN	D
SAUTER	B	SCHRADER	D	SEDGWAY	E	SEVIER	D	SHEECAL	B
SAUVIE	D	SCHRAP	D	SEDILLO	B	SEVILLE	D	SHEEGE	D
SAUVIE, MODERATELY WET	C	SCHRIER	B	SEDMAR	D	SEVY	B	SHEEK	B
		SCHROCK	B	SEDROWOOLLEY	C	SEWANEE	B	SHEEP CREEK	C
SAUVIE, PROTECTED	B	SCHROON	B	SEDWELL	C	SEWARD	B	SHEEPCAN	B
SAUVOLA	C	SCHUELKE	C	SEEDSKADEE	D	SEWELL	C	SHEEPHEAD	C
SAUZ	B	SCHULINE	B	SEELEZ	A	SEXTON	C/D	SHEEPROCK	A
SAVAGE	C	SCHUMACHER	B	SEELOVERS	C	SEYMOUR	D	SHEEPSCOT	B
SAVAGETON	D	SCHUSTER	B	SEELYEVILLE	A/D	SEZNA	D	SHEETIRON	C
SAVANNAH	C	SCHUYLER	B	SEELYEVILLE, SLOPING	D	SHAAK	C	SHEFFIELD	D
SAVENAC	C	SCIO	B			SHABLISS	D	SHEFFIT	D
SAVO	C	SCIOTOVILLE	C	SEEPRID	B	SHACK	B	SHEFFLEIN	B
SAVOIA	B	SCISM	C	SEES	C	SHADELAND	C	SHELBIANA	B
SAVONA	C	SCITICO	C	SEEWEE	B	SHADELEAF	C	SHELBURNE	C
SAWABE	D	SCITUATE	C	SEFFNER	C	SHADOW	B	SHELBY	B
SAWATCH	B/D	SCLOME	B	SEGIDAL	D	SHADYGROVE	C	SHELBYVILLE	B
SAWBUCK	B	SCOAP	B	SEGNO	C	SHAFFTON	B	SHELD	B
SAWCREEK	C	SCOBEY	C	SEGUIN	B	SHAFTER	D	SHELL	B
SAWDUST	B	SCOGGIN	D	SEGURA	D	SHAGEL	D	SHELLABARGER	B
SAWMILL	B/D	SCOON	D	SEHOME	C	SHAGNASTY	C	SHELLBLUFF	B
SAWTELL	C	SCOOTENEY	B	SEHORN	D	SHAKAMAK	C	SHELLCREEK	C
SAWTELPEAK	D	SCORUP	C	SEIS	C	SHAKAN	C	SHELLDRAKE	A

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SHELLROCK	A	SHOTGUN	C	SIMON	B	SKYHIGH	C	SNOWDANCE,	C
SHELMADINE	D	SHOTWELL	D	SIMONA	D	SKYKOMISH	B	MODERATELY WET	
SHELOCTA	B	SHOUNS	B	SIMONIN	B	SKYLICK	B	SNOWDON	D
SHELTON	C	SHOWALTER	C	SIMONTON	B	SKYLINE	D	SNOWLIN	B
SHENA	D	SHOWALTER, STONY	B	SIMPARK	D	SKYMOR	D	SNOWMORE	C
SHENANDOAH	D	SHOWLOW	C	SIMPATICO	B	SKYROCK	D	SNOWSHOE	B
SHENKS	B/D	SHREE	B	SIMPSON	C	SKYVILLAGE	D	SNOWSLIDE	B
SHENON	B	SHREWDER	B	SIMS	D	SKYWAY	B	SNOWVILLE	D
SHENVAL	B	SHREWSBURY	C/D	SINAI	C	SLAB	D	SNUFFUL	C
SHEP	B	SHRINE	B	SINAMOX	B	SLABTOWN	B	SOAKPAK	B
SHEPAN	C	SHROE	C	SINCLAIR	C	SLACKS	C	SOAPCREEK	C
SHEPPARD	A	SHROUTS	D	SINGATSE	D	SLAGLE	C	SOAPLAKE	D
SHEPSTER	D	SHUBUTA	C	SINGERTON	B	SLAPJACK	B	SOAR	D
SHERANDO	B	SHUE	C	SINGLETREE	C	SLATERY	C	SOBEGA	C
SHERAR	C	SHUKASH	A	SINGSAAS	B	SLAUGHTER	C	SOBOBA	A
SHERBURNE	C	SHUKSAN	C	SINKER	C	SLAUGHTERVILLE	B	SOBOL	C
SHERIDAN	B	SHULE	C	SINKSON	B	SLAVEN	C	SOBRANTE	B
SHERLESS	B	SHULLSBURG	C	SINLOC	C	SLAW	C	SOBSON	C
SHERLOCK	B	SHUMLA	C	SINNICE	B	SLAYTON	D	SOCORRO	C
SHERM	D	SHUMWAY	D	SINNIGAM	D	SLEEPER	C	SODA	B
SHERMORE	B	SHUPERT	C	SINTON	B	SLEETH	C	SODA LAKE	B
SHERRY	B/D	SHURLEY	A	SINUK	D	SLICKROCK	B	SODA LAKE, WET	C
SHERRY, STONY	D	SHUSTER	C	SION	B	SLIDECREEK	B	SODABAY	B
SHERRYL	B	SHUTTLE	B	SIOUX	A	SLIDELL	D	SODASPRING	B
SHERWOOD	B	SI	C	SIOUXON	B	SLIGHTS	C	SODERVILLE	A
SHEVLIN	C	SIBELIA	B	SIPPLE	B	SLIGTING	C	SODHOUSE	D
SHIDLER	D	SIBLEY	B	SIPSEY	B	SLIKOK	D	SODUS	C
SHIELDS	C	SIBLEYVILLE	B	SIPSPAK	A	SLIMBUTTE	B	SOELBERG	B
SHIFFER	C	SICKLES	B/D	SIRI	B	SLINGER	B	SOEN	C
SHILLY	C	SICKLESTEETS	B	SIROCO	C	SLIPBACK	B	SOFIA	C
SHILOH	B/D	SIDDOWAY	A	SIRREF	D	SLIPMAN	B	SOFTSCRABBLE	C
SHIMA	C	SIDELL	B	SIRRETTA	C	SLOAN	B/D	SOFTSCRABBLE,	B
SHIMMON	C	SIDLAKE	C	SISK	C	SLOCAVE	D	RARELY FLOODED	
SHINAKU	D	SIDON	C	SISKIYOU	B	SLOCUM	C	SOGI	C
SHINBARA	D	SIEBEN	B	SISSETON	F	SLUICE	C	SOGN	D
SHINDLER	C	SIEBERT	A	SISSON	F	SLUKA	C	SOGO	B
SHINER	C	SIECHE	C	SISTERS	A	SLY	B	SOGZIE	B
SHINGLE	D	SIELO	D	SITAR	B	SMACKOUT	B	SOHAPPY	B
SHINGLEMILL	D	SIEROCLIFF	C	SITDOWN	A	SMALL	C	SOJUR	D
SHINGLETOWN	C	SIERRA	B	SITES	C	SMALLCONE	D	SOLAK	D
SHINKEE	C	SIERRAVILLE	B	SIWELL	C	SMARTS	B	SOLAND	D
SHINNPEAK	D	SIESTA	D	SIXBEACON	B	SMAUG	B	SOLDATNA	B
SHINROCK	C	SIEVERS	C	SIXMILE	C	SMEDLEY	D	SOLDIER	C
SHIOCTON	C	SIFTON	B	SIZER	B	SMELTER	C	SOLDUC	B
SHIOYA	A	SIG	D	SKAGGS	C	SMILEY	B/D	SOLEDAD	B
SHIPLEY	B	SIGNAL	C	SKAGIT	D	SMILEYVILLE	D	SOLIER	D
SHIPLEY,	C	SIGURD	B	SKAGWAY	C	SMILO	C	SOLIS	C
SALINE-ALKALI		SIKESTON	B/D	SKAHA	A	SMITHBORO	D	SOLLEKS	C
SHIPPA	D	SILAS	B	SKALAN	C	SMITHDALE	B	SOLLER	D
SHIPROCK	B	SILAS, WET	C	SKAMANIA	B	SMITHNECK	C	SOLO	C
SHIPS	D	SILAS, GRAVELLY	C	SKAMO	C	SMITHNECK, DRAINED	B	SOLOMON	D
SHIPSHE	B	SUBSTRATUM		SKANEE	C	SMITHTON	D	SOLONA	C
SHIRK	C	SILAWA	B	SKANID	D	SMITHVILLE	B	SOLWAY	B
SHIRLEY	B	SILCOX	B	SKATE	B	SMITHWICK	D	SOMBORDORD	D
SHIRO	C	SILENT	D	SKEDADDLE	D	SMOCREEK	C	SOMBRERO	C
SHIRTTAIL	B	SILER	B	SKEIN	D	SMOKEY	C	SOMERS	B
SHIVELY	B	SILERTON	B	SKELLOCK	B	SMOLAN	C	SOMERVELL	B
SHIVIGNY	B	SILHOUETTE	C	SKELON	C	SMYRNA	B/D	SOMSEN	C
SHIVLUM	B	SILI	C	SKELTON	B	SNAG	B	SONAHNPIL	B
SHOALS	C	SILKIE	D	SKERRY	C	SNAHOPISH	B	SONDOA	B
SHOAT	D	SILSTID	A	SKIBO	B	SNAKE	C	SONLET	D
SHOBA	D	SILVA	C	SKIDMORE	B	SNAKE HOLLOW	A	SONOCAN	C
SHOEPEG	C	SILVER	C	SKINNER	B	SNAKELUM	B	SONOITA	B
SHOESTRING	B	SILVER CREEK	D	SKIPANON	B	SNAKER	D	SONOMA	C
SHOKEN	D	SILVERADO	B	SKIPOPA	D	SNAPP	C	SONOMA, MODERATELY	B
SHONKIN	D	SILVERBELL	C	SKIYOU	B	SNEAD	D	WET, SALINE	
SHONTIK	C	SILVERBOW	D	SKOKOMISH	D	SNEFFELS	C	SONOMA, SALINE,	B
SHOOFLIN	D	SILVERCHIEF	C	SKOKOMISH, DRAINED	C	SNELL	C	DRAINED	
SHOOFLY	D	SILVERCLIFF	B	SKOLY	B	SNELLING	B	SONOMA, STRATIFIED	D
SHOOK	C	SILVERDALE	A	SKOOKUM	C	SNELLMAN	B	SUBSTRATUM	
SHOOKER	C	SILVERN	A	SKOS	D	SNIDER	C	SONOMA, DRAINED,	B
SHOREEK	C	SILVERTON	C	SKOWHEGAN	B	SNOHOMISH	D	SLIGHTLY SALINE	
SHOREWOOD	C	SILVIES	D	SKULL CREEK	C	SNOMO	C	SONOMA, DRAINED,	B
SHORIM	C	SIMAS	C	SKULLGULCH	C	SNOOK	D	FLOODED	
SHORT CREEK	C	SIMCOE	C	SKULLWAK	D	SNOPOC	B	SONOMA, DRAINED	B
SHORTCUT	C	SIMEON	A	SKUMPAH	D	SNOQUALMIE	C	SONORA	B
SHORTHORN	D	SIMEROI	B	SKUTUM	C	SNOTOWN	B	SONTAG	D
SHORTYORK	C	SIMMONT	C	SKYBERG	C	SNOW	B	SOOLAKE	B
SHOSHONE	C	SIMODA	C	SKYHAVEN	C	SNOWDANCE	D	SOONAHBE	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

SOONAKER	C	SPINEKOP	B	STABLER	B	STEUBER	B	STRELNA, SILTY	B
SOOSAP	C	SPINEKOP, SALINE	C	STADY	B	STEVENS	B	SUBSTRATUM	
SOPER	C	SPINEKOP,	C	STAFFORD	C	STEVENSON	B	STREVELL	B
SOQUEL	B	MODERATELY WET		STAGECOACH	B	STEWART	D	STRICKER	B
SORENSEN	B	SPINKS	A	STAHL	C	STEWVAL	D	STRICKLAND	C
SORF	C	SPINLIN	C	STAKE	C	STICKNEY	C	STRINGAM	B
SORRENTO	B	SPINNEY	B	STALEY	B	STIDHAM	B	STRINGTOWN	B
SORTER	D	SPIRES	D	STALLINGS	C	STIEN	B	STRINGTOWN, GRADED	C
SORUM	D	SPIRIT	C	STAMBAUGH	B	STIGLER	D	STROLE	C
SOSA	C	SPIRO	B	STAMFORD	D	STILES	C	STROM	C
SOSTIEN	D	SPIVEY	B	STAMP	D	STILGAR	B	STROMAL	B
SOTIM	B	SPLAWN	C	STAMPEDE	D	STILL	B	STRONGHOLD	B
SOUGHE	D	SPLENDORA	C	STAN	B	STILLMAN	B	STRONGHURST	B
SOULAJULE	C	SPLITEN	D	STANDLEY	C	STILLWATER	D	STROUPE	C
SOUTHACE	B	SPLITRO	D	STANDUP	B	STILSKIN	C	STROZI	C
SOUTHAM	D	SPLITTOP	C	STANEY	D	STILSON	B	STRYCH	B
SOUTHFORK	D	SPOFFORD	D	STANFIELD	C	STIMCA	B	STRYKER	C
SOUTHGATE	D	SPOFMORE	C	STANISLAUS	C	STIMSON	D	STUBBLEFIELD	C
SOUTHMOUNT	C	SPOKANE	C	STANISLAUS, WET	D	STINES	B	STUBBS	C
SOUTHRIDGE	B	SPOKEL	B	STANROD	C	STINGAL	B	STUCKY	B
SOUTHWICK	C	SPONSELLER	B	STAPALOOP	B	STINGDORN	D	STUDEBAKER	B
SOWCAN	B	SPOOL	D	STAPLES	B/D	STIPE	C	STUKEL	D
SOWCAN, SOMEWHAT	C	SPOONER	C/D	STAPLETON	B	STIRK	D	STUMBLE	A
POORLY DRAINED		SPOTSYLVANIA	C	STAPP	C	STIRRUP	B	STUMPP	D
SPAA	D	SPOTTSWOOD	B	STARBUCK	D	STIRUM	B/D	STUMPTOWN	B
SPACE CITY	A	SPRABAT	B	STARGO	B	STIRUM, PONDED	D	STUNNER	B
SPADE	B	SPRAY	B	STARHOPE	D	STISSING	C	STUNTZ	C
SPADRA	B	SPRECKELS	C	STARICHKOF	D	STIVERSVILLE	B	STURGEON	B
SPAGER	D	SPRIGGS	C	STARKEY	C	STOCKADE	B/D	STURGILL	D
SPALDING	D	SPRING	C	STARKS	C	STOCKBRIDGE	C	STURKIE	B
SPANA	D	SPRINGDALE	A	STARLEY	D	STOCKEL	D	STUTTGART	D
SPANAWAY	A	SPRINGDALE, STONY	B	STARMAN	D	STOCKLAND	B	STUTZMAN	C
SPANEL	D	SPRINGER	B	STARR	C	STOCKPEN	D	STUTZMAN, WET	D
SPANG	B	SPRINGERVILLE	D	STARVEOUT	B	STODA	B	STUTZVILLE	C
SPANGENBURG	C	SPRINGFIELD	D	STASER	B	STODICK	D	STYERS	D
SPANGENBURG,	D	SPRINGGULCH	B	STATE	B	STOHLMAN	D	STYX	B
PONDED		SPRINGLAKE	A	STATELINE	D	STOKES	D	SUAK	C
SPANGLER	C	SPRINGMEYER	B	STATLER	B	STOKLY	B	SUBACO	D
SPARANK	D	SPRINGSTEEN	C	STATZ	D	STOMAR	C	SUBLETTE	B
SPARHAM	D	SPRINGWATER	C	STAVELY	B	STONEBERGER	D	SUBLIGNA	B
SPARKHULE	D	SPROUL	D	STAYTON	D	STONEBURG	B	SUBWELL	B
SPARMO	B	SPRUCEDALE	D	STEARNS	D	STONEHAM	B	SUCARNOOCHEE	D
SPARR	C	SPUD	C	STECOAH	B	STONEHEAD	C	SUCCESS	A
SPARTA, SILTY CLAY	B	SPUDROCK	C	STECUM	C	STONELICK	B	SUCCOR	D
LOAM SUBSTRATUM		SPUKWUSH	B	STEED	A	STONELL	B	SUCHES	B
SPARTA, LOAMY	A	SPUR	B	STEEDMAN	D	STONER	B	SUDBURY	B
SUBSTRATUM		SPURGER	C	STEEDMAN, STONY	C	STONEVILLE	B	SUDDUTH	C
SPARTA, MAAT>50	A	SPURLOCK	B	STEEKEE	C	STONEWALL	C	SUDLEY	B
SPARTA, MAAT<50	A	SQUALICUM	B	STEELE	C	STONEWELL	A	SUDWORTH	B
SPARTA, BEDROCK	A	SQUALLY	B	STEENS	C	STONO	B/D	SUEPERT	C
SUBSTRATUM		SQUAW	B	STEEPCAN	D	STONYFORD	D	SUEY	B
SPASPREY	C	SQUAWCREEK	D	STEESE	B	STOOKMOOR	C	SUFFIELD	C
SPEAKER	C	SQUAWROCK	C	STEEVER	B	STORDEN	B	SUFFOLK	B
SPEAKS	A	SQUAWTIP	C	STEFF	C	STORLA	B	SUGAKOOL	B
SPEARFISH	D	SQUIRES	C	STEGALL	C	STORMITT	B	SUGARBOWL	B
SPEARHEAD	B	ST. ALBANS	B	STEIGER	A	STOTT	C	SUGARDEE	B
SPEARMAN	B	ST. ANTHONY	B	STEILACOOM	C	STOUGH	C	SUGARLOAF	B
SPEARVILLE	C	ST. AUGUSTINE	C	STEINAUER	B	STOUT	D	SUGLO	B
SPECIE	B	ST. AUGUSTINE,	B	STEINBECK	B	STOVHO	C	SUISUN	D
SPECK	D	ORGANIC		STEINSBURG	C	STOWE	C	SULA	B
SPECTACLE	C	SUBSTRATUM		STEIWER	C	STOWELL	D	SULLIVAN	B
SPECTER	C	ST. CHARLES	B	STELLA	C	STOY	C	SULLY	B
SPEELYAI	D	ST. CLAIR	D	STELLAR	C	STRABER	C	SULOAF	B
SPEER	B	ST. ELMO	A	STEMBER	C	STRAHAN	B	SULPHURA	D
SPEIGLE	B	ST. GEORGE	B	STEMILT	B	STRAIGHT	C	SULSAVAR	B
SPENARD	D	ST. GEORGE, SALINE	C	STEMLEY	C	STRANDLINE	B	SULTAN	C
SPENCER	B	ST. GEORGE, WET	D	STEMPLE	B	STRANDQUIST	B/D	SUMAN	B/D
SPENLO	B	ST. HELENS	B	STENDAL	C	STRAT	B	SUMAS	D
SPENS	A	ST. IGNACE	D	STEPHEN	C	STRATFORD	B	SUMATRA	B
SPERRY	C/D	ST. JOHNS	B/D	STEPHENVILLE	B	STRATTON	C	SUMINE	C
SPEXARTH	C	ST. JOHNS,	D	STEPROCK	B	STRAW	B	SUMMERFIELD	D
SPHINX	D	DEPRESSIONAL		STEPSTONE	B	STRAWN	B	SUMMERS	B
SPICER	B/D	ST. LUCIE	A	STEPTOE	B	STREATOR	B/D	SUMMERTON	B
SPICERTON	D	ST. MARTIN	D	STERLING	B	STRELNA	C	SUMMERVILLE	D
SPICEWOOD	C	ST. MARYS	B	STERLINGTON	B	STRELNA,	B	SUMMIT	C
SPIKE	B	ST. NICHOLAS	D	STERRETT	D	LACUSTRINE		SUMMITVILLE	C
SPILLCO	B	ST. ONGE	B	STETSON	B	SUBSTRATUM		SUMPF	D
SPILLVILLE	B	ST. PAUL	B	STETTER	D	STRELNA, TILL	B	SUMTER	C
SPILOCK	D	ST. THOMAS	D	STEUBEN	B	SUBSTRATUM		SUMTERVILLE	C

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

SUHYA	D	SWANTOWN	D	TACOMA	D	TANQUE	B	TEHAMA	C
SUN	D	SWANVILLE	C	TACONIC	C/D	TANSEM	B	TEHRAN	A
SUNAPEE	B	SWANWICK	D	TACOOSH	B/D	TANTALUS	B	TEIGEN	C
SUNBURG	B	SWAPPS	C	TADLOCK	B	TANTILE	C/D	TEJA	D
SUNBURST	C	SWARTSWOOD	C	TAFFOM	B	TANWAX	D	TEJABE	D
SUNBURY	B	SWARTZ	D	TAFOYA	C	TANWAX, DRAINED	C	TEJANA	B
SUNCITY	D	SWASEY	D	TAFT	C	TANYARD	C	TEKENINK	B
SUNCOOK	A	SWASTIKA	C	TAFTOWN	B	TAOPI	B	TEKISON	C
SUND	C	SWAUK	D	TAFUNA	A	TAPCO	D	TEKLANIKA	A
SUNDANCE	B	SWAYNE	C	TAGGART	C	TAPIA	B	TEKOA	C
SUNDAY	A	SWEATMAN	C	TAGLAKE	B	TAPICITOES	D	TEKOA, EXTREMELY	B
SUNDELL	B	SWEDE	B	TAHKENITCH	B	TAPPAN	B/D	STONY	
SUNDOWN	A	SWEEN	C	TAHOMA	B	TARA	B	TELA	B
SUNEV	B	SWEENEY	B	TAHOULA	D	TARBORO	A	TELCHER	B
SUNFIELD	B	SWEET	C	TAHQUATS	B	TARGHEE	C	TELECAN	B
SUNLIGHT	D	SWEETAPPLE	B	TAINTOR	C/D	TARKINGTON	C	TELEFONO	C
SUNNYHAY	D	SWEETGRASS	B	TAJO	C	TARKIO	D	TELEMON	D
SUNNYSIDE	B	SWEETWATER	D	TAKEUCHI	C	TARKLIN	C	TELEPHONE	D
SUNNYVALE	C	SWEITBERG	C	TAKILMA	B	TARLOC	B	TELESCOPE	A
SUNRAY	B	SWEITING	C	TAKOTNA	B	TARNACH	D	TELFER	A
SUNRISE	C	SWEM	C	TAKPOCHAO	D	TARNAV	B	TELFERNER	D
SUNSET	B	SWENODA	B	TALAG	D	TARPLEY	D	TELL	B
SUNSHINE	C	SWIFT	B	TALAMANTES	B	TARR	A	TELLER	B
SUNSWEET	C	SWIFT CREEK	B	TALANTE	D	TARRANT	D	TELLICO	B
SUNUP	D	SWIFTON	B	TALAPUS	B	TARRETE	D	TELLMAN	B
SUNY	D	SWIMLEY	C	TALBOTT	C	TARRYALL	C	TELLURA	C
SUOMI	C	SWIMS	B	TALCO	D	TARRYTOWN	C	TELOS	C
SUP	B	SWINGLER	B	TALCOT	B/D	TASAYA	C	TELSTAD	C
SUPAN	B	SWINGLER, WET,	C	TALIHINA	D	TASCOSA	B	TEMAN	B
SUPERIOR	D	STRONGLY SALINE		TALKEETNA	B	TASSEL	D	TEMBLOR	D
SUPERSTITION	A	SWINGLER, WET	C	TALLA	C	TASSELMAN	D	TEMESCAL	D
SUPERVISOR	C	SWINK	D	TALLAC	B	TASSO	B	TEMO	C
SUPPLEE	B	SWINOMISH	C	TALLADEGA	C	TATAI	C	TEMPLE	C
SUR	C	SWINT	B	TALLAPOOSA	C	TATE	B	TEMPLETON	B
SURFSIDE	D	SWISBOR	D	TALLEYVILLE	B	TATERHEAP	B	TEMVIK	B
SURGEM	C	SWISSHELM	B	TALLOWBOX	C	TATIYEE	C	TENABO	D
SURGH	B	SWISSTAG	B	TALLS	B	TATLUM	D	TENAHA	B
SURNUF	B	SWISSVALE	D	TALLULA	B	TATOUCHE	B	TENAS	C
SURPLUS	C	SWITCHBACK	C	TALLY	B	TATTON	D	TENCEE	D
SURPRISE	B	SWITZERLAND	B	TALMAGE	B	TATUM	B	TENDOY	D
SURRENCY	D	SWOPE	C	TALMO	A	TAUNTON	C	TENERIFFE	A
SURRETT	C	SWORMVILLE	C	TALMOON	C	TAVARES	A	TENEX	B
SURVEYORS	B	SWYGERT	C	TALOKA	D	TAWAH	B	TENINO	C
SURVYA	C	SYBLON	D	TALPA	D	TAWAS	A/D	TENMILE	C
SUSANNA	C/D	SYCAMORE,	B	TALQUIN	B/D	TAWCAW	C	TENNO	D
SUSANVILLE	D	MODERATELY WET,		TALUCE	D	TAYLOR	C	TENORIO	B
SUSIE CREEK	C	SALINE		TAMA	B	TAYLOR CREEK	C	TENOT	C
SUSITNA	B	SYCAMORE,	C	TAMAHA	D	TAYLORSFLAT	B	TENPIN	D
SUSQUEHANNA	D	MODERATELY WET,		TAMALCO	D	TAYLORSFLAT,	C	TENRAG	B
SUTA	B	CLAYEY SUBSTRATUM		TAMALPAIS	C	SALINE-ALKALI		TENSAS	D
SUTCLIFF	B	SYCAMORE,	C	TAMANEEN	B	TAYLORSVILLE	C	TENSED	C
SUTHER	C	MODERATELY WET		TAMBA	D	TAZLINA	A	TENSLEEP	B
SUTHERLAND	D	SYCAMORE, DRAINED	B	TAMELY	B	TEAGULF	C	TENSNOIR	B
SUTHERLIN	C	SYCAMORE, FLOODED	C	TAMFLAT	D	TEAKEAN	B	TENVORRO	D
SUTKIN	B	SYCAMORE, CLAY	B	TAMFORD	D	TEALSON	D	TEO	B
SUTLEY	B	SUBSTRATUM		TAMMANY CREEK	B	TEALWHIT	D	TEOCULLI	B
SUTPHEN	D	SYCAN	A	TAMMING	B	TEANAWAY	B	TEPETE	D
SUTRO	C	SYCLE	B	TAMP	B	TEAPO	C	TEQUESTA	B/D
SUTTLER	B	SYCOLINE	D	TAMPICO	B	TEASDALE	B	TERADA	B
SUTTON	B	SYENITE	C	TANAMA	D	TEASPOON	D	TERBIES	B
SUVER	D	SYLACAUGA	D	TANANA	D	TEBAY	B	TERENCE	B
SUWANEE	B	SYLCO	C	TANANA, THAWED	B	TEBBS	B	TERESA	D
SVEA	B	SYLVAN	B	TANANA, MODERATELY	C	TEBO	B	TERINO	D
SVENSEN	B	SYLVANIAM	C	WET		TECHADO	D	TERLAN	D
SVERDRUP	B	SYLVESTER	B	TANASEE	B	TECHICK	B	TERLCO	B
SWAGER	C	SYLVIA	C	TANAZZA	B	TECO	B	TERLINGUA	D
SWAINOW	B	SYMCO	C	TANBARK	D	TECOLOTE	B	TERMINAL	D
SWAKANE	D	SYMERTON	B	TANDY	D	TECOMAR	D	TERMO	D
SWALER	D	SYNAREP	B	TANEUM	B	TECOPA	D	TEROMOTE	B
SWALESILVER	D	SYRACUSE	B	TANEY	C	TEDROW	B	TEROUGE	D
SWAMPYDRAW	B	SYRENE	B/D	TANGAIR	C	TEEL	B	TERRA CEIA	B/D
SWAN	D	SYRETT	C	TANGI	C	TEELER	B	TERRA CEIA, TIDAL	D
SWANBOY	D	TABECHEDING	C	TANGLE	C	TEEMAT	B	TERRA CEIA,	D
SWANDAD	B	TABERNASH	B	TANNA	D	TEESTO	D	FREQUENTLY	
SWANLAKE	B	TABLE MOUNTAIN	B	TANNAHILL	B	TEETERS	C	FLOODED	
SWANNER	D	TABLER	D	TANNER	C	TEEWINOT	D	TERRAD	C
SWANSEA	D	TABOR	D	TANNER, LOW	D	TEFTON	C	TERRETON	D
SWANSON	C	TACAN	B	PRECIPITATION		TEGURD	D	TERRETON, STONY	C
SWANTON	C/D	TACHI	D	TANOB	B	TEHACHAPI	C	TERRIL	B

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TERRO	C	THURLONI	C	TINTON	A	TOLTEC	C	TORSIDO	D
TERRY	C	THURLOW	B	TINYTOWN	B	TOLUCA	B	TORTUGAS	D
TERT	D	THURMAN	A	TIOCANO	D	TOLVAR	B	TORULL	D
TERWILLIGER	C	THURMONT	B	TIOGA	B	TOMAH	B	TOSCA	B
TESAJO	B	THWOOP	C	TIPPAH	C	TOMAHAWK	A	TOSSER	B
TESSFIVE	D	TIAGOS	B	TIPPECANOE	B	TOMALES	D	TOSTON	C
TETHRICK	B	TIAK	C	TIPPER	C	TOMASAKI	C	TOTAVI	A
TETON	C	TIBAN	B	TIPPERARY	A	TOMAST	C	TOTELAKE	B
TETONIA	B	TIBBITTS	B	TIPPIPAH	B	TOMBAP	C	TOTEM	B
TETONKA	C/D	TIBS	C	TIPPO	C	TOMBSTONE	B	TOTIER	C
TETONVIEW	D	TIBSON	B	TIPTON	B	TOME	B	TOTO	B/D
TETONVILLE	D	TIBURONES	D	TIPTONVILLE	B	TOMEL	D	TOTTEN	C/D
TETONVILLE, GRAVELLY	C	TICA	D	TIPTOP	B	TOMERA	C	TOUCHET	C
		TICE	B	TIRO	C	TOMERA, CEMENTED SUBSTRATUM	D	TOUHEY	B
TETOTUM	C	TICELL	D	TISBURY	B			TOULA	C
TEVIS	B	TICHNOR	D	TISCH	D	TOMICHI	A	TOULON	B
TEW	C	TICINO	C	TISDALE	C	TOMOKA	B/D	TOURN	C
TEWA	B	TICKAPOO	D	TISHAR	B	TOMOTLEY	B/D	TOURNQUIST	B
TEX	B	TICKASON	B	TISONIA	D	TOMS	C	TOURS	B
TEXANA	D	TIDINGS	B	TISWORTH	C	TOMSHERRY	C	TOUTLE	A
TEXARK	D	TIDWELL	D	TITUS	E/D	TOMTY	D	TOUTLE, FLOODED	B
TEXLINE	B	TIERRA	D	TITUSVILLE	C	TONALEA	C	TOVAR	C
TEXROY	B	TIERRANEGRE	B	TIVOLI	A	TONASKET	B	TOWAVE	B
TEZUMA	C	TIESIDE	D	TIVY	C	TONATA	D	TOWHEE	D
THACKER	D	TIETON	B	TOA	B	TONCANA	B	TOWNER	B
THACKERY	B	TIFFANY	B/D	TOADLAKE	B	TONEY	D	TOWNLEY	C
THADEN	C	TIFTON	B	TOAND	B	TONGUE RIVER	C	TOWNSEND	C
THAGE	C	TIGER CREEK	B	TOANO	E	TONIO	B	TOWOSAHGY	B
THATCHER	B	TIGERON	B	TOBICO	A/D	TONKA	C/D	TOXAWAY	B/D
THATUNA	C	TIGIT	C	TOBIN	B	TONKAVAR	A	TOY	D
THAYNE	B	TIGIWON	B	TOBISH	C	TONKAWA	A	TOYAH	B
THEBES	B	TIGLEY	B	TOBLER	B	TONKEY	B/D	TOYUSKA	B
THEBO	D	TIGON	D	TOBOSA	C	TONKIN	B	TOZE	B
THEDALUND	C	TIGUA	D	TOBY	B	TONKIN, MODERATELY WET	C	TRABUCO	C
THEEDLE	C	TIJERAS	B	TOCAL	C			TRACHUTE	B
THENAS	C	TIKI	D	TOCALOMA	C	TONKS	C	TRACK	D
THEODOR	D	TILFER	B/D	TOCAN	B	TONOPAH	A	TRACK, DRAINED	C
THEON	D	TILFORD	B	TOCCOA	B	TONOR	C	TRACOSA	D
THERESA	B	TILLEDA	B	TOCK	C	TONOWEK	B	TRACY	B
THERIOT	D	TILLICUM	B	TOCOI	B/D	TONRA	B	TRADEDOLLAR	B
THERMO	D	TILLMAN	C	TODDLER	B	TONSINA	B	TRAER	B/D
THERMOPOLIS	D	TILLMONT	B	TODDSTAV	D	TONTI	C	TRAG	B
THESS	B	TILLOU	C	TODDVILLE	B	TONUCO	D	TRAG, COOL	C
THETFORD	A	TILMA	C	TODOS	C	TOOLES	D	TRAHAM	C
THETIS	B	TILSIT	C	TOEHEAD	B	TOOLESBORO	B	TRAIL	A
THIEFRIVER	B/D	TILTON	E	TOEJA	B	TOOMES	D	TRAILAMP	D
THIEL	B	TIMBALIER	D	TOEM	C	TOONE	C	TRAILCREEK	C
THIESSEN	C	TIMBERG	C	TOGCHA	B	TOONE, LOAMY SUBSTRATUM, STONY	B	TRAILHEAD	B
THIKE	D	TIMBERHEAD	B	TOGNONI	D			TRAINER	B
THIOKOL	B	TIMBERLY	B	TOGO	B	TOP	C	TRAITORS	D
THIRST	D	TIMBERVILLE	B	TOGUS	D	TOPEKI	D	TRAMPAS	C
THISTLEBURN	B	TIMBLIN	D	TOHONA	C	TOPEMAN	D	TRAMWAY	B
THISTLEDEW	B	TIMBUCTOO	C	TOIMI	C	TOPIA	D	TRANQUILAR	C
THOENY	D	TIMENTWA	B	TOINE	B	TOPLIFF	B	TRANSYLVANIA	B
THOMAS	B/D	TIMHILL	D	TOISNOT	B/D	TOPONCE	C	TRAPPER	B
THOMHILL	B	TIMHUS	B	TOISNOT, PONDED	D	TOPPENISH	D	TRAPPIST	C
THOMS	D	TIMKEN	D	TOIYABE	C	TOPPENISH, DRAINED	C	TRAPPS	B
THORNBURGH	B	TIMMERMAN	B	TOKAY	B	TOPPER	B	TRASK	C
THORNDALE	D	TIMMONS	B	TOKEEN	C	TOPSEY	C	TRAVELERS	D
THORNDIKE	C/D	TIMPAHUTE	C	TOKLAT	D	TOQUERVILLE	D	TRAVER	B
THORNOCK	D	TIMPANOGOS	B	TOKOPER	D	TOQUI	D	TRAVERTINE	C
THORNTON	D	TIMPANOGOS, MODERATELY WELL DRAINED	C	TOKUL	C	TOQUOP	A	TRAVESSILLA	D
THOROUGHFARE	B			TOLANY	B	TOP	D	TRAVIS	C
THORP	C/D			TOLEY	B	TORBOY	A	TRAYSON	D
THOUT	C	TIMPER	D	TOLEDO	D	TORCHLIGHT	C	TRAWICK	B
THOW	B	TIMULA	B	TOLEX	D	TORDIA	D	TRAY	C
THOWSON	B	TINA	C	TOLICHA	D	TOREX	B	TREADWAY	D
THRASH	B	TINAJA	B	TOLKE	B	TORHUNTA	C	TREATY	B/D
THREADGILL	B	TINAMOU	C	TOLL	A	TORNEY	D	TREBLE	B
THREECHOP	B	TINDAHAY	B	TOLLGATE	B	TORNILLO	B	TREBLOC	D
THREEDOT	D	TINDAHAY, GRAVELLY	A	TOLLHOUSE	D	TORNING	B	TREBOR	C
THREEK	C	TINE	A	TOLMAN	D	TORODA	B	TREEKOR	D
THREEMILE	B	TINEMAN	B	TOLNA	E	TORONTO	C	TREEKOR, NONSTONY	C
THREETOP	C	TINEMAN, WET	C	TOLO	B	TORPEDO LAKE	D	TREEN	D
THROCK	C	TINGEY	B	TOLONIER	B	TORREON	C	TREGO	C
THULEPAH	C	TINKER	C	TOLSONA	D	TORREON, COBBLY	D	TREHARNE	C
THUMBERLAND	B	TINN	D	TOLSONA, TILL SUBSTRATUM	B	TORRES	A	TRELK	B
THUNDERBIRD	D	TINNIN	A			TORRO	B	TRELONA	D
THURBER	D	TINSLEY	A	TOLSTOI	D	TORRY	B/D	TREMANT	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

TREMBLES	B	TRUSCREEK	B	TURSON	C	UHLAND	B	UTABA	A
TREMBLES, MODERATELY WET	C	TRUSSEL	C	TURTON	D	UHLIG	B	UTALINE	B
TREMONA	C	TRUVAR	D	TUSAYAN	C	UHLORN	C	UTE	D
TREMPE	A	TRYON	D	TUSCAN	D	UINTA	B	UTICA	B
TREMPEALEAU	B	TSALI	C	TUSCARAWAS	C	UKIAH	D	UTLEY	B
TRENARY	B	TSCHICOMA	B	TUSCAWILLA	D	ULA	C	UTSO	B
TRENHOLM	D	TSIRKU	C	TUSCOLA	B	ULEN	B	UTUADO	B
TRENT	B	TSOSIE	B	TUSCOSSO	B	ULIDA	D	UVADA	D
TRENTON	D	TUBAC	C	TUSCUMBIA	D	ULLOA	B	UVALDE	B
TREON	D	TUBERET	C	TUSEL	B	ULM	C	UVI	B
TREP	B	TUCANNON	C	TUSIP	B	ULRANT	B	UWALA	B
TRES HERMANOS	B	TUCKAHOE	B	TUSK	B	ULRIC	C	UWHARRIE	B
TRESANO	B	TUCKER	C	TUSKAHOMA	D	ULRICHER	B	UZONA	D
TRESED	C	TUCKERMAN	D	TUSKEEGO	C/D	ULTRA	D	VABEM	D
TRESTLE	B	TUCSON	B	TUSLER	B	ULUPALAKUA	B	VABUS	C
TRETTEN	B	TUCUMCARI	B	TUSQUITEE	B	ULY	B	VACHERIE	C
TREVINO	D	TUFFIT	C	TUSSY	D	ULYSSES	B	VADAHO	D
TREVLAC	B	TUFFO	D	TUSTELL	C	UMA	A	VADER	B
TREY	A	TUGHILL	D	TUSTIN	B	UMAPINE	D	VADNAIS	C
TRIANGLE	D	TUJUNGA	A	TUSTUMENA	B	UMAPINE, DRAINED	C	VADO	B
TRIBBEY	C	TUKEY	C	TUTHILL	B	UMATILLA	B	VAEDA	D
TRICON	C	TUKUHNIK	C	TUTNI	B	UMBARG	C	VAIDEN	D
TRID	C	TUKWILA	D	TUTTLE	C	UMBERLAND	D	VAILTON	B
TRID, NONSTONY	B	TUKWILA, DRAINED	C	TUTUILLA	C	UMIAT	D	VAIVA	D
TRIDELL	B	TULA	C	TUTWILER	B	UMIKOA	B	VALBY	C
TRIGGER	D	TULANA, DRAINED	B	TUWEEP	B	UMIL	D	VALCO	C
TRIGO	D	TULANA, NONFLOODED	C	TUXEKAN	B	UMPA	B	VALCREEK	B
TRIMAD	B	TULARE	D	TWEBA	D	UMPCOOS	D	VALCREST	C
TRIMBLE	B	TULARGO	B	TWEBA, MODERATELY WET	B	UMPUMP	B	VALDEZ, CLAYEY SUBSTRATUM	D
TRIMMER	C	TULAROSA	B	TWEBA, DRAINED	C	UNA	D	VALDEZ, SALINE	D
TRINIDAD	D	TULASE	B	TWEEDY	C	UNADILLA	B	VALDEZ, CLAYEY SUBSTRATUM, SALINE	C
TRINITY	D	TULCH	B	TWEENER	D	UNAKA	B	VALDEZ, DRAINED	C
TRIO	D	TULECAN	C	TWICK	D	UNAKWIK	D	VALDOSTA	A
TRIOMAS	B	TULELAKE	D	TWIG	D	UNAWEEP	B	VALE	B
TRIPIT	C	TULIA	B	TWILIGHT	B	UNCAS	D	VALENCIA	B
TRIPLEN	B	TULIK	B	TWIN CREEK	B	UNCOMPAHGRE	D	VALENT	A
TRIPOLI	B/D	TULLAHASSEE	C	TWINING	C	UNDERWOOD	B	VALENTINE	A
TRIPP	B	TULLER	D	TWINSI	C	UNDUSK	B	VALERA	C
TRISTAN	B	TULLOCK	C	TWISSELMAN	C	UNGERS	B	VALHALLA	A
TRITON	D	TULLY	C	TWISSELMAN, SALINE-ALKALI, WET	D	UNICOI	B	VALKARIA	B/D
TRIX	B	TULOSO	D	TWISSELMAN, SALINE-ALKALI		UNIONTOWN	B	VALKARIA, DEPRESSIONAL	D
TROCKEN	B	TUMAC	B			UNIONVILLE	B		
TROJAN	B	TUMALO	C			UNISON	B		
TROMP	C	TUMARION	D	TWISSELMAN, SALINE-ALKALI	D	UNIUS	D		
TRONSEN	B	TUMBLETON	C			UNIVEGA	D	VALLAN	D
TROOK	B	TUMTUM	D	TWOMILE	C/D	UNLIC	B	VALLE	B
TROOK, SALINE	C	TUNBRIDGE	C	TWOTOP	C	UNSEL	B	VALLECITOS	D
TROPAL	D	TUNEHILL	D	TYBO	D	UNSON	B	VALLEONO	B
TROPIC	B	TUNICA	D	TYEE	D	UPDEGRAFF	B	VALLERS	C
TROSI	D	TUNIS	D	TYGART	D	UPDIKE	D	VALLEYCITY	D
TROSKY	B/D	TUNITAS	C	TYGH	C	UPSATA	B	VALMAR	C
TROUGHS	D	TUNK	A	TYLER	D	UPSHUR	D	VALMONT	C
TROUP	A	TUNKHANNOCK	A	TYNDALL	C	UPSON	B	VALMY	B
TROUT CREEK	C	TUNNEL	B	TYNDALL, DRAINED	B	UPSON, STONY	C	VALNOR	C
TROUT RIVER	A	TUNNISON	D	TYNER	A	UPSPRING	D	VALOIS	B
TROUTDALE	C	TUOMI	B	TYONEK	D	UPSTEER	B	VALPAC	C
TROUTER	C	TUPELO	D	TYRE	A/D	UPTMOR	C	VALSETZ	C
TROUTVILLE	B	TUPUKNUK	D	TYRONE	C	UPTON	C	VALTO	D
TROVE	B	TUQUE	B	TYSON	B	UPVILLE	B	VALTON	B
TROXEL	B	TURBEVILLE	C	TYZAK	D	URACCA	B	VALVERDE	B
TRUAX	B	TURBOTVILLE	C	UANA	D	URBANA	C	VAMER	D
TRUBLE	C	TURBYFILL	B	UBANK	B	URBO	D	VAMONT	D
TRUCE	C	TURK	C	UBAR	D	UREAL	D	VAMP	C
TRUCHOT	C	TURKEYSPRINGS	B	UBEHEBE	C	URICH	C/D	VAN DUSEN	B
TRUCKEE	C	TURLEY	B	UBIK	B	URIPNES	D	VAN HORN	B
TRUCKEE, DRAINED	B	TURLIN	B	UBLY	B	URIPNES, GRAVELLY	C	VAN NOSTERN	C
TRUCKTON	B	TURLOCK	D	UCHEE	A	URLAND	C	VAN WAGONER	D
TRUDAU	B	TURMOUND	D	UCOLO	D	URNE	B	VANAJO	D
TRUDE	A	TURNBACK	C	UCOPIA	B	URNESS	B/D	VANANDA	D
TRUEFISSURE	B	TURNBULL	D	UDAHO	B	URSA	C	VANBRUNT	C
TRUESDALE	C	TURNER	B	UDEL	D	URSINE	D	VANCE	C
TRUHOY	D	TURNERCREST	C	UDELOPE	D	URTAH	C	VANDA	D
TRULAE	D	TURNERVILLE	B	UDOLPHO	B/D	URWIL	C	VANDALIA	D
TRULON	C	TURNEY	B	UFFENS	B	USAL	C	VANDAMME	B
TRUMAN	B	TURRAH	C	UFFENS, FLOODED	C	USAL, GRAVELLY	B	VANDAMORE	B
TRUMBULL	D	TURRET	B	UGAK	D	USHAR	B	VANDERGRIFT	C
TRUMP	D	TURRIA	B	UHALDI	B	USINE	A	VANDERHOFF	C
TRUNK	D	TURRIA, WET	C	UHL	B	USK	C	VANDERLIP	A

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

VANEPPS	C	VERDE	C	VILLY, DRAINED	B	WABASSO	B/D	WALES, OVERBLOWN	C
VANET	D	VERDEL	D	VILOT	C	WABASSO,	D	WALFORD	B/D
VANG	B	VERDICO	D	VIMVILLE	D	DEPRESSIONAL		WALHALLA	B
VANGUARD	C	VERDIGRIS	B	VINA	B	WABBASEKA	D	WALKE	C
VANMETER	C	VERDUN	D	VINCENNES	C/D	WABEK	A	WALKNOLLS	D
VANNI	B	VERENDRYE	B/D	VINCENT	C	WABEN	B	WALKON	C
VANNOY	C	VERGAS	C	VINCOM	C	WABUSKA	C	WALL	B
VANOCKER	B	VERGENNES	C	VINDICATOR	D	WACA	B	WALLA WALLA	B
VANOSS	B	VERHALEN	D	VINEGARROON	C	WACAHOOTA	D	WALLACE	B
VANPETTEN	B	VERICK	C	VINEYARD	C	WACOTA	B	WALLEN	B
VANSICKLE	D	VERITAS	B	VINGO	B	WACOUSTA	B/D	WALLER	B/D
VANSON	B	VERJELES	D	VINING	C	WADAMS	B	WALLINGTON	C
VANSTEL	B	VERLAND	D	VININI	D	WADDOUPS	B	WALLKILL	C/D
VANTAGE		VERLOT	D	VINITA	C	WADELL	B	WALLKILL,	B/D
VANVOR	B	VERMEJO	D	VINJE	B	WADENA	B	NONFLOODED	
VANWYPER	C	VERMILLION	C	VINLAND	D	WADENILL	B	WALLOWA	C
VANZANDT	C	VERMISA	D	VINSAD	C	WADER	C	WALLROCK	C
VAQUERO	D	VERNADO	D	VINSON	B	WADESPRINGS	C	WALLSBURG	D
VARCO	D	VERNAL	B	VINT	B	WADLEIGH	D	WALLSON	B
VARDEN	B	VERNALIS	B	VINT, WET	C	WADMALAW	D	WALLUSKI	C
VARELUM	B	VERNDALE	B	VINTAS	A	WADSWORTH	C	WALNETT	C
VARELUM, CLAY LOAM	C	VERNIA	A	VINTON	B	WAGES	B	WALONG	B
SUBSTRATUM		VERNON	D	VIOLA	D	WAGNER	D	WALPOLE	C
VARGAS	C	VERNONIA	B	VIPONT	C	WAGONBOX	D	WALREES	C
VARICK	D	VERO	B/D	VIRATON	C	WAGONTIRE	D	WALSH	B
VARINA	C	VERO, DEPRESSIONAL	D	VIRDEN	B/D	WAGRAM	A	WALSTEAD	B
VARNA	C	VERSHIRE	C	VIRGELLE	C	WAHA	C	WALTERS	B
VARNEY	B	VERSON	C	VIRGIL	B	WAHATOYA	C	WALTERSHON	B
VARRO	B	VERTEL	D	VIRGIN PEAK	D	WAHEE	D	WALTI	D
VARYSBURG	B	VERTREES	B	VIRGIN RIVER	C	WAHGUYHE	D	WALUM	B
VASA	B	VES	B	VIRKULA	C	WAHIAWA	B	WALVAN	B
VASHTI	C	VESEY	B	VIRTUE	C	WAHIKULI	C	WALVILLE	B
VASQUEZ	C	VESPER	D	VISTA	B	WAHKEENA	B	WAMBA	D
VASSALBORO	D	VESSER	C	VITALE	C	WAHLUKE	B	WAMBA, DRAINED	C
VASSAR	B	VESSILLA	D	VITZTHUM	D	WAHOO	D	WAMDUSKA	A
VASSETT	B	VESTA	B	VIUDA	D	WAHPETON	C	WAMEGO	C
VASTINE	C	VESTABURG	A/D	VIUM	D	WAHREKDAM	C	WAMIC	B
VASTINE,	D	VESTON	D	VIVES	B	WAHSTAL	D	WAMPOO	D
SALINE-ALKALI		VETA	B	VIVI	B	WAHTIGUP	B	WAMPSVILLE	B
VAUCLUSE	C	VETAL	B	VIXEN	B	WAHTUM	D	WANAGAN	B
VAUGHAN	D	VETEADO	C	VIZCAINO	D	WAHWEAP	D	WANBLEE	D
VAUGHNSVILLE	C	VEYO	D	VIZCAPOINT	D	WAIAHA	D	WANDA	B
VAY	B	VIA	B	VLASATY	C	WAIAKOA	C	WANDO	A
VAYAS	D	VIAN	B	VLECK	D	WAIALEALE	D	WANETTA	B
VEAL	B	VIBLE	A	VLY	C	WAIALUA	B	WANILLA	C
VEATCH	B	VIBO	B	VOATS	B	WAIAWA	D	WANN	B
VEATCH, STONY	C	VIBORAS	D	VOCA	C	WAIHUNA	C	WANNACOTT	B
VEAZIE	B	VIBORG	B	VODERMAIER	B	WAIKALOA	B	WANOGA	B
VEBAR	B	VICEE	B	VOIGHT	B	WAIKANE	B	WANOMIE	C
VECONT	D	VICK	C	VOLADORA	B	WAIKAPU	B	WANSER	D
VEEDUM	D	VICKERY	C	VOLASH	B	WAIKOMO	D	WANSER, DRAINED	B
VEET	B	VICKING	B	VOLBORG	D	WAILUKU	B	WAPAL	A
VEGA	C	VICKING, DRY	D	VOLCO	D	WAIMEA	B	WAPAL, BEDROCK	B
VEGA ALTA	B	VICKSBURG	B	VOLENTE	C	WAINEE	B	SUBSTRATUM	
VEGA BAJA	C	VICKTON	B	VOLINIA	B	WAINOLA	B	WAPAL, BEDROCK	B
VEKOL	D	VICTINE	D	VOLKMAR	B	WAIPAHU	C	SUBSTRATUM	
VEKOL, COOL	C	VICTOR	B	VOLNEY	B	WAISKA	B	WAPATO	D
VELASCO	D	VICTORIA	D	VOLPERIE	C	WAITS	B	WAPELLO	B
VELDA	B	VICTORVILLE	B	VOLTA	D	WAKE	D	WAPI	D
VELDKAMP	B	VICTORY	B	VOLTAGE	B	WAKEEN	B	WAPINITIA	B
VELMA	B	VICU	C	VOLTAIRE	D	WAKEFIELD	B	WAPPING	B
VELOW	B	VIDA	C	VOLTAIRE, DRAINED	C	WAKELAND	C	WAPPINGER	B
VELVA	B	VIDAURI	D	VOLTAIRE, GRAVELLY	C	WAKEPISH	B	WAPPO	D
VENA	C	VIDRINE	D	SUBSTRATUM		WAKITA	D	WAPSHILLA	B
VENABLE	D	VIEJA	D	VOLUSIA	C	WAKONDA	B	WAPSIE	B
VENADITO	D	VIENNA	B	VONA	B	WAKONDA, TILL	C	WAPTUS	C
VENANGO	C	VIEQUES	B	VONALEE	B	SUBSTRATUM		WARBA	B
VENAPASS	D	VIGAR	C	VONASON	B	WAKULLA	A	WARDBORO	A
VENATOR	C	VIGIA	D	VOORHIES	C	WALCAN	C	WARDELL	C
VENETA	D	VIGNOLO	C	VORE	B	WALCOTT	B	WARDEN	B
VENEZIA	D	VIGO	D	VOSBURG	B	WALDBILLIG	B	WARDENOT	A
VENICE	C	VIGUS	B	VOSS	B	WALDECK	C	WARDWELL	C
VENLO	D	VIKING	D	VOSSET	B	WALDEN	D	WARE	B
VENTRIS	D	VIL	D	VULCAN	C	WALDO	D	WAREAGLE	B
VENTURE	D	VILAS	A	VYLACH	D	WALDORF	C/D	WAREHAM	C
VENUM	D	VILLA	B	WAAS	B	WALDPORT	A	WARM SPRINGS	D
VENUS	B	VILLA GROVE	B	WABANICA	C	WALDRON	D	WARM SPRINGS,	C
VERBOORT	D	VILLEGREEN	C	WABASH	D	WALDROUP	D	DRAINED, CLAY	
VERCLIFF	C	VILLY	D	WABASHA	D	WALES	B	SUBSTRATUM	

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

WARM SPRINGS, DRAINED, ALKALI	C	WAUPECAN	B	WELD	C	WETTERHORN	C	WIBAUX	B
		WAUQUIE	B	WELDA	C	WETZEL	D	WICHITA	C
WARM SPRINGS, DRAINED	C	WAURIKA	D	WELLER	C	WEVERTON	B	WICHUP	D
		WAUSEON	B/D	WELLINGTON	D	WEWELA	B	WICKAHONEY	D
WARM SPRINGS, COOL	C	WAUTOMA	B/D	WELLMAN	B	WEWOKA	C	WICKENBURG	D
WARMAN	B/D	WAVELAND	B/D	WELLS	B	WEYERS	C/D	WICKERSHAM	B
WARMAN, GRAVELLY SUBSOIL	A/D	WAVELAND, DEPRESSIONAL	D	WELLSBORO	C	WEYMOUTH	B	WICKETT	C
				WELLSCREEK	B	WHAKANA	B	WICKHAM	B
WARNEKE	D	WAVERLY	B/D	WELLSED	C	WHALAN	B	WICKIUP	C
WARNERS	C/D	WAWASEE	B	WELLSTON	B	WHALEY	D	WICKSBURG	B
WARNOCK	B	WAWINA	A	WELLSVILLE	B	WHARTON	C	WICUP	C
WARRENTON	D	WAX	C	WELLTON	B	WHATCOM	C	WIDEMAN	A
WARSAW	B	WAXPOOL	D	WELOY	C	WHATELY	D	WIDEN	C
WARSING	B	WAYAH	B	WELRING	D	WHEATLEY	A/D	WIDTSOE	B
WARWICK	A	WAYBE	D	WELSUM	D	WHEATRIDGE	B	WIEHL	C
WASA	D	WAYCUP	B	WELTER	D	WHEATVILLE	B	WIELAND	C
WASATCH	A	WAYDEN	D	WEMPLE	B	WHEELER	B	WIERGATE	D
WASCO	B	WAYLAND	C/D	WENAS	D	WHEELERVILLE	B	WIFFO	B
WASDA	B/D	WAYMOR	B	WENAS, DRAINED	C	WHEELING	B	WIGGLER	D
WASEPI	B	WAYNECO	D	WENATCHEE	C	WHEELON	D	WIGGLETON	B
WASHBURN	D	WAYNESBORO	B	WENDANE	C	WHETROCK	C	WIGTON	A
WASHINGTON	B	WAYNETOWN	C	WENDANE, DRAINED	B	WHETSTONE	C	WILAHA	B
WASHINGTON, WET SUBSTRATUM	C	WEA	B	WENDOVER	D	WHICHMAN	B	WILBANKS	D
		WEASH	C	WENDTE	D	WHIDBEY	C	WILBRAHAM	C
WASHOE	B	WEATHERFORD	B	WENONA	C	WHILPHANG	D	WILBUR	B
WASHOUGAL	B	WEAVER	C	WENTWORTH	B	WHIPPANY	C	WILBURTON	B
WASHTENAW	C/D	WEAVERVILLE	B	WEOGUFKA	C	WHIPPLE	D	WILCO	C
WASILLA	D	WEBB	C	WEPO	C	WHIPSTOCK	C	WILCOX	D
WASIOJA	B	WEBBRIDGE	B	WERELD	B	WHIRLO	B	WILCOXSON	C
WASKISH	D	WEBBTOWN	C	WERLOG	C	WHISKEYDICK	C	WILDALE	C
WASKOM	C	WEBER	B	WERNER	D	WHISPERING	C	WILDCAT	D
WASPO	D	WEBILE	C	WERNOCK	B	WHISTLE	B	WILDERNESS	C
WASSAIC	B	WEBSTER	B/D	WESCONNETT	D	WHIT	B	WILDGEN	B
WASSIT	D	WEDEKIND	D	WESDY	C	WHITAKER	C	WILDHORSE	A
WATAB	C	WEDERTZ	B	WESFIL	D	WHITE HOUSE	C	WILDORS	C
WATAMA	C	WEDGE	A	WESIX	D	WHITE STORE	D	WILDWOOD	D
WATAUGA	B	WEDLAR	C	WESKA	D	WHITE SWAN	D	WILE	C
WATCHABOB	C	WEDOWEE	B	WESLEY	B	WHITECAP	D	WILEY	B
WATCHAUG	B	WEED	B	WESO	B	WHITECLOUD	B	WILHITE	C/D
WATCHUNG	D	WEEDING	D	WESPAC	D	WHITECOW	B	WILHOIT	B
WATERBURY	D	WEEDMARK	B	WESPAC, SANDY SUBSTRATUM	C	WHITECROSS	D	WILKES	C
WATERCANYON	B	WEEKIWACHEE	D			WHITEFISH	B	WILKESON	B
WATEREE	B	WEEKS	C	WESSEL	C	WHITEFORD	B	WILKINS	D
WATERMAN	D	WEEKSVILLE	B/D	WESTBROOK	D	WHITEHALL	B	WILL	B/D
WATERTOWN	A	WEENA	D	WESTBURY	C	WHITEHILLS	C	WILLABY	C
WATERVILLE	B	WEEPAH	C	WESTBUTTE	C	WHITEHORN	D	WILLACY	B
WATKINS	B	WEESATCHE	B	WESTCAMP	C	WHITEHORSE	B	WILLAKENZIE	C
WATKINS RIDGE	B	WEGA	B	WESTCREEK	B	WHITEKNOB	B	WILLAMAR	B
WATO	B	WEHADKEE	D	WESTE	C	WHITELAKE	B	WILLAMETTE	B
WATONGA	D	WEIGANG	C	WESTERVILLE	B	WHITEMAN	D	WILLAMETTE, WET	C
WATOOPAH	B	WEIGLE	D	WESTFORK	D	WHITEPEAK	D	WILLANCH	D
WATROUS	B	WEIKERT	C/D	WESTHAVEN	B	WHITERIVER	C	WILLAPA	C
WATSEKA	B	WEIMER	D	WESTHAVEN, SALINE-ALKALI	C	WHITEROCK	D	WILLARD	B
WATSON	C	WEINBACH	C			WHITESBORO	C	WILLETTE	A/D
WATSONIA	D	WEINGART	D	WESTINDIAN	C	WHITESBURG	C	WILLHILL	C
WATSONVILLE	D	WEINGARTEN	C	WESTLAKE	D	WHITESON	D	WILLHO	D
WATT	D	WEIR	D	WESTLAND	B/D	WHITESTONE	B	WILLIAMS	B
WATTON	C	WEIRMAN	C	WESTMORE	C	WHITETHORN	B	WILLIAMSBURG	B
WATUSI	C	WEIRMAN, WET	D	WESTMORELAND	B	WHITEWATER	D	WILLIAMSON	C
WAUBAY	B	WEIRMAN, NONFLOODED	A	WESTON	D	WHITEWOLF	A	WILLIAMSPORT	C
WAUBEEK	B			WESTOVER	B	WHITEWOOD	C/D	WILLIAMSTOWN	C
WAUBERG	D	WEISBURG	C	WESTPHALIA	B	WHITEWOOD, NONFLOODED	B/D	WILLIAMSVILLE	C
WAUBONSIE	B	WEISER	B	WESTPLAIN	D			WILLIMAN	B/D
WAUCEDAH	D	WEISHAUPT	D	WESTPORT	A	WHITEWRIGHT	C	WILLIS	C
WAUCHULA	B/D	WEISSENFELS	C	WESTPORT, THIN SURFACE	B	WHITING	B	WILLISTON	C
WAUCHULA, DEPRESSIONAL	D	WEITAS	B			WHITINGER	C	WILLOW CREEK	B
		WEITCHPEC	C	WESTSHORE	D	WHITLEY	B	WILLOWDALE	B
WAUCOBA	D	WEKODA	D	WESTVACO	C	WHITLOCK	B	WILLOWEMOC	C
WAUCOMA	B	WELAKA	A	WESTVIEW	B	WHITMAN	D	WILLOWMAN	B
WAUCONDA	B	WELBY	B	WESTVILLE	B	WHITNEY	C	WILLOWS	D
WAUKEE	B	WELCH	D	WESTWEGO	D	WHITORE	B	WILLWOOD	A
WAUKEGAN	B	WELCH, GRAVELLY SUBSTRATUM, DRAINED	B	WESWIND	C	WHITSOL	B	WILMA	B
WAUKENA	D			WESWOOD	B	WHITSON	D	WILMER	C
WAUKON	B			WETA	D	WHITTIER	B	WILMINGTON	D
WAULD	C	WELCH, RARELY FLOODED, DRAINED	B	WETHERSFIELD	C	WHITWELL	C	WILMONT	B
WAUMAC	B			WETHEY	C	WHOBREY	C	WILMONTON	B
WAUMBEK	B	WELCH, DRAINED	C	WETHEY, DRAINED	A	WHOLAN	B	WILPAR	C
WAUNA	C	WELCHLAND	B	WETMORE	D	WHORLED	C	WILPOINT	D
WAUPACA	B/D	WELCOME	B	WETSAW	C	WHY	B	WILSHIRE	A

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

WILSON	D	WISHARD	C	WOODS CROSS	D	WYNOOSE	D	YEGEN	B
WILSONGULCH	B	WISHBONE	B	WOODSEYE	D	WYOCENA	B	YEGUAS	C
WILSONVILLE	D	WISHEYLU	C	WOODSFIELD	C	WYOMING	A	YELJACK	B
WILSOR	B	WISHKAH	D	WOODSIDE	B	WYRENE	B	YELLOWBAY	B
WILST	C	WISHKAH, DRAINED	C	WOODSLAKE	D	WYSOCKING	C/D	YELLOWHOUND	B
WILTON	B	WISKAN	C	WOODSON	D	XANA	B	YELLOWROCK	A
WINADA	C	WISKIFLAT	B	WOODSTOCK	C/D	XANADU	B	YELLOWSTONE	D
WINBERRY	C	WISNER	B/D	WOODSTOWN	C	XAVIER	B	YELM	C
WINCHESTER	A	WISTER	C	WOODTELL	D	XENIA	B	YEMASSEE	C
WINCHUCK	C	WITBECK	B/D	WOODVILLE	D	XEND	B	YENCE	C
WIND RIVER	B	WITEFELS	B	WOODWARD	B	XERTA	C	YENLO	B
WINDCOAT	D	WITHAM	D	WOODWEST	D	XERXES	D	YENRAB	A
WINDER	B/D	WITHEE	C	WOOFUS	D	XICA	C	YEDMAN	B
WINDER,	D	WITHERBEE	A/D	WOOLPER	C	XINE	C	YEOPIM	B
DEPRESSIONAL		WITHERELL	D	WOOLSEY	B	XIPE	D	YERINGTON	A
WINDHAM	B	WITHERS	C	WOOLSTALF	B	XIPE, MODERATELY	C	YERMO	B
WINDICREEK	A	WITT	B	WOOLSTED	B	WET		YESUM	B
WINDHILL	B	WITTEN	D	WOONSOCKET	B	XMAN	D	YETTEM	B
WINDSOR	A	WITTENBERG	B	WOOSLEY	C	YACOLT	B	YETULL	A
WINDTHORST	C	WITZEL	D	WOOSTER	C	YAGO	C	YIGO	B
WINDWHISTLE	C	WIX	C	WORCESTER	C	YAHANA	C	YIPOR	B
WINDWHISTLE, WARM	B	WIXOM	B	WORDEN	C	YAHARA	C	YLIG	C
WINDY	B	WOCKLEY	C	WORF	D	YAHNE	C	YOBE	C
WINDYPOINT	B	WODA	D	WORFKA	D	YAHOLA	B	YOCHUM	C
WINEG	B	WODEN	B	WORFMAN	D	YAHOO	D	YOCKEY	C
WINEMA	C	WODSKOW	C	WORFSTONE	C	YAINAX	B	YODER	B
WINETTI	B	WODSKOW, DRAINED	B	WORK	C	YAKI	D	YODY	C
WINEVADA	C	WOHLY	B	WORK, GRAVELLY	B	YAKIMA	B	YOHURT	D
WINFALL	B	WOLCO	C	WORLAND	C	YAKUS	D	YOKAYO	D
WINFIELD	B	WOLCOTT	B/D	WORLEY	D	YAKUTAT	A	YOKOHL	D
WING	D	WOLDALE	D	WORMSER	C	YALELAKE	B	YOKUT	B
WINGATE	B	WOLDALE, DRAINED	C	WOROCK	B	YALESVILLE	C	YOLLABOLLY	D
WINGER	B/D	WOLF	B	WORSHAM	D	YALLANI	B	YOLO	B
WINGINAW	D	WOLF POINT	C	WORTH	C	YALMER	B	YOLOGO	D
WINGVILLE	D	WOLFCREEK	B	WORTHEN	B	YAMAC	B	YOMBA	B
WINIFRED	C	WOLFESON	C	WORTHING	D	YAMHILL	C	YOMONT	B
WINK	B	WOLFESON, WET	D	WORTMAN	D	YAMO	B	YONGES	D
WINKEL	D	WOLFEY	C	WORTMAN, SANDY	A	YAMSAY	D	YONNA	D
WINKLEMAN	C	WOLFPEN	A	WOVOKA	D	YANA	B	YORBA	D
WINKLEMAN, WET	D	WOLFTEVER	C	WRANGELL	D	YANCY	D	YORK	C
WINKLER	B	WOLLARD	C	WRANGO	A	YANKEE	D	YORKTOWN	D
WINLER	D	WOLLENT	D	WRAYHA	D	YANKTON	B	YORKTREE	C
WINLO	D	WOLOT	B	WREDAH	B	YANUSH	B	YORKVILLE	D
WINN	C	WOLVERINE	A	WRENCOE	D	YAP	B	YOST	D
WINNEBAGO	B	WOMACK	C	WRENMAN	C	YAPOAH	B	YOST, DRAINED	C
WINNECONNE	C	WOO	B	WRENTHAM	C	YAQUI	B	YOUD	D
WINNECOOK	C	WOO, OVERWASH	C	WRIGHT	C	YAQUINA	D	YOUGA	B
WINNEMUCCA	B	WOO, WET	C	WRIGHTMAN	C	YAQUINA, DRAINED	C	YOUGA, SANDY	D
WINNESHIEK	B	WOOD RIVER	D	WRIGHTSBORO	C	YARCO	D	SUBSTRATUM	
WINNETT	D	WOODBECK	B	WRIGHTSVILLE	D	YARDLEY	C	YOUJAY	D
WINNSBORO	D	WOODBINE	B	WRIGHTWOOD	B	YARTS	B	YOUMAN	C
WINOM	D	WOODBRIDGE	C	WUKOKI	B	YATAHONEY	C	YOUNGSTON	B
WINONA	D	WOODBURN	C	WUKSI	A	YATAHONEY, STONY	D	YOUNGSTON, WET	C
WINOOSKI	B	WOODBURY	D	WULFERT	D	YATES	D	YOURAME	B
WINOPEE	B	WOODCOCK	B	WUNJEY	B	YAUCO	C	YOUTLKUE	D
WINRIDGE	D	WOODFORD	D	WUPATKI	D	YAUHANNAH	B	YOVIMPA	D
WINSHIP	C	WOODGULCH	A	WURNO	C	YAUPON	D	YPSI	C
WINSPECT	B	WOODHALL	C	WURSTEN	B	YAWDIM	D	YRIBARREN	D
WINSTON	B	WOODHURST	C	WURTSBORO	C	YAWHEE	B	YSIDORA	C
WINT	D	WOODIN	C	WYALUSING	D	YAWKEY	B	YTURBIDE	A
WINTERFIELD	A/D	WOODINGTON	B/D	WYANDOTTE	D	YAXON	B	YTURRIA	A
WINTERHAVEN	B	WOODINVILLE	D	WYANT	C	YEAGER	A	YUBA	D
WINTERIDGE	B	WOODINVILLE,	C	WYARD	B	YEARY	C	YUKO	D
WINTERS	C	DRAINED		WYARNO	B	YEATES HOLLOW	B	YUKON	D
WINTERSBURG	C	WOODLAWN	B	WYATT	C	YEATES HOLLOW,	C	YULEE	D
WINTERSET	C	WOODLEAF	C	WYCOLO	C	LOAMY SUBSTRATUM,		YUNES	D
WINTHROP	A	WOODLY	B	WYE	B	STONY		YUNQUE	C
WINTLEY	B	WOODLYN	D	WYEAST	D	YEATES HOLLOW,	C	YURM	D
WINTON	C	WOODMANSIE	B	WYETH	B	LOAMY SUBSTRATUM		YUTRUE	D
WINTONER	B	WOODMERE	B	WYEVILLE	C	YEATES HOLLOW,	C	YUVAS	D
WINU	C	WOODMONT	C	WYICK	D	STONY		ZAAR	D
WINZ	D	WOODPASS	B	WYKEHAM	B	YEATES HOLLOW,	C	ZABA	B
WIOTA	B	WOODROCK	C	WYKOFF	B	NONSTONY		ZACA	D
WIPPLE	C	WOODROW	B	WYMAN	B	YEATES HOLLOW, DRY	C	ZACHARIAS	B
WIRT	B	WOODROW,	C	WYMORE	D	YEATES HOLLOW,	C	ZACHARY	C
WISCON	D	SALINE-ALKALI		WYNDMERE	B	COBBLY		ZACK	D
WISE	C	WOODROW,	C	WYNN	B	YEATON	C	ZADOG	A/D
WISEMAN	A	OCCASIONALLY		WYNNVILLE	C	YECROSS	A	ZADVAR	D
WISFLAT	D	FLOODED		WYNONA	C	YEDLICK	B	ZAFRA	B

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Exhibit A-1, continued: Hydrologic soil groups for United States soils

ZAGG	C	ZOHNER	D				
ZAHILL	C	ZOLA	C				
ZAHL	B	ZOLFO	C				
ZAIDY	C	ZOLTAY	C				
ZAKME	D	ZOOK	C/D				
ZALCO	A	ZOOK, SILTY	C				
ZALDA	D	SUBSTRATUM					
ZALLA	A	ZORRA	D				
ZAMORA	B	ZORRAVISTA	A				
ZAMSCAN	B	ZOYER	D				
ZANBUR	B	ZUBER	C				
ZANE	B	ZUFELT	C				
ZANEIS	B	ZUKAN	D				
ZANESVILLE	C	ZULCH	D				
ZANGO	D	ZUMAN	D				
ZAPA	C	ZUMAN, PROTECTED	C/D				
ZAPATA	C	ZUMBRO	A				
ZARK	C	ZUMWALT	C				
ZATOVILLE	C	ZUNDELL	C				
ZAU	C	ZUNHALL	C				
ZAVALA	B	ZUNI	D				
ZAVCO	C	ZURICH	B				
ZAYANTE	A	ZWICKER	C				
ZAZA	D	ZWIEFEL	C				
ZEALE	B	ZWINGLE	D				
ZEB	B	ZYGORE	B				
ZEBA	B	ZYME	D				
ZECANYON	C	ZYMER	B				
ZEEBAR	B	ZYNBAR	B				
ZEEKA	C	ZYNBAR, TILL	C				
ZEELNOT	B	SUBSTRATUM					
ZEESIX	C	ZYPLAR	D				
ZEGRO	C	ZYZYL	B				
ZEIBRIGHT	B	ZYZZI	D				
ZELL	B	ZYZZUG	D				
ZEN	C						
ZENDA	C						
ZENI	C						
ZENIFF	B						
ZENITH	B						
ZENKER	B						
ZENOD	B						
ZENOR	B						
ZENORIA	C						
ZEOMONT	A						
ZEONA	A						
ZEORELY	B						
ZEPHAN	C						
ZEPHYR	D						
ZEPP	B						
ZER	B						
ZERK	B						
ZERKER	B						
ZEVADEZ	C						
ZIA	B						
ZIBATE	D						
ZIEGENFUSS	D						
ZIEGLER	C						
ZIGWEID	B						
ZILABOY	D						
ZILLAH	D						
ZILLAH, DRAINED	C						
ZILLION	B						
ZILLMAN	B						
ZIMMERMAN	A						
ZINEB	B						
ZING	C						
ZINZER	B						
ZINZER, SALINE	C						
ZION	C						
ZIPP	D						
ZIPPEL	B/D						
ZIRAM	D						
ZITA	B						
ZITTAU	C						
ZOAR	C						
ZOATE	D						
ZOE	D						
ZOESTA	D						

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Appendix B: Synthetic rainfall distributions and rainfall data sources

The highest peak discharges from small watersheds in the United States are usually caused by intense, brief rainfalls that may occur as distinct events or as part of a longer storm. These intense rainstorms do not usually extend over a large area and intensities vary greatly. One common practice in rainfall-runoff analysis is to develop a synthetic rainfall distribution to use in lieu of actual storm events. This distribution includes maximum rainfall intensities for the selected design frequency arranged in a sequence that is critical for producing peak runoff.

Synthetic rainfall distributions

The length of the most intense rainfall period contributing to the peak runoff rate is related to the time of concentration (T_c) for the watershed. In a hydrograph created with SCS procedures, the duration of rainfall that directly contributes to the peak is about 170 percent of the T_c. For example, the most intense 8.5-minute rainfall period would contribute to the peak discharge for a watershed with a T_c of 5 minutes; the most intense 8.5-hour period would contribute to the peak for a watershed with a 5-hour T_c.

Different rainfall distributions can be developed for each of these watersheds to emphasize the critical rainfall duration for the peak discharges. However, to avoid the use of a different set of rainfall intensities for each drainage area size, a set of synthetic rainfall distributions having "nested" rainfall intensities was developed. The set "maximizes" the rainfall intensities by incorporating selected short duration intensities within those needed for longer durations at the same probability level.

For the size of the drainage areas for which SCS usually provides assistance, a storm period of 24 hours was chosen for the synthetic rainfall distributions. The 24-hour storm, while longer than that needed to determine peaks for these drainage areas, is appropriate for determining runoff volumes. Therefore, a single storm duration and associated synthetic rainfall distribution can be used to represent not only the peak discharges but also the runoff volumes for a range of drainage area sizes.

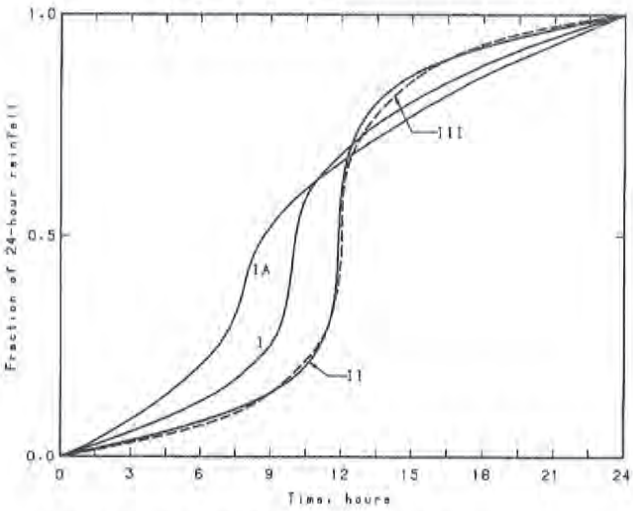

Figure B-1.—SCS 24-hour rainfall distributions.

The intensity of rainfall varies considerably during a storm as well as over geographic regions. To represent various regions of the United States, SCS developed four synthetic 24-hour rainfall distributions (I, IA, II, and III) from available National Weather Service (NWS) duration-frequency data (Hershfield 1961; Frederick et al., 1977) or local storm data. Type IA is the least intense and type II the most intense short duration rainfall. The four distributions are shown in figure B-1, and figure B-2 shows their approximate geographic boundaries.

Types I and IA represent the Pacific maritime climate with wet winters and dry summers. Type III represents Gulf of Mexico and Atlantic coastal areas where tropical storms bring large 24-hour rainfall amounts. Type II represents the rest of the country. For more precise distribution boundaries in a state having more than one type, contact the SCS State Conservation Engineer.

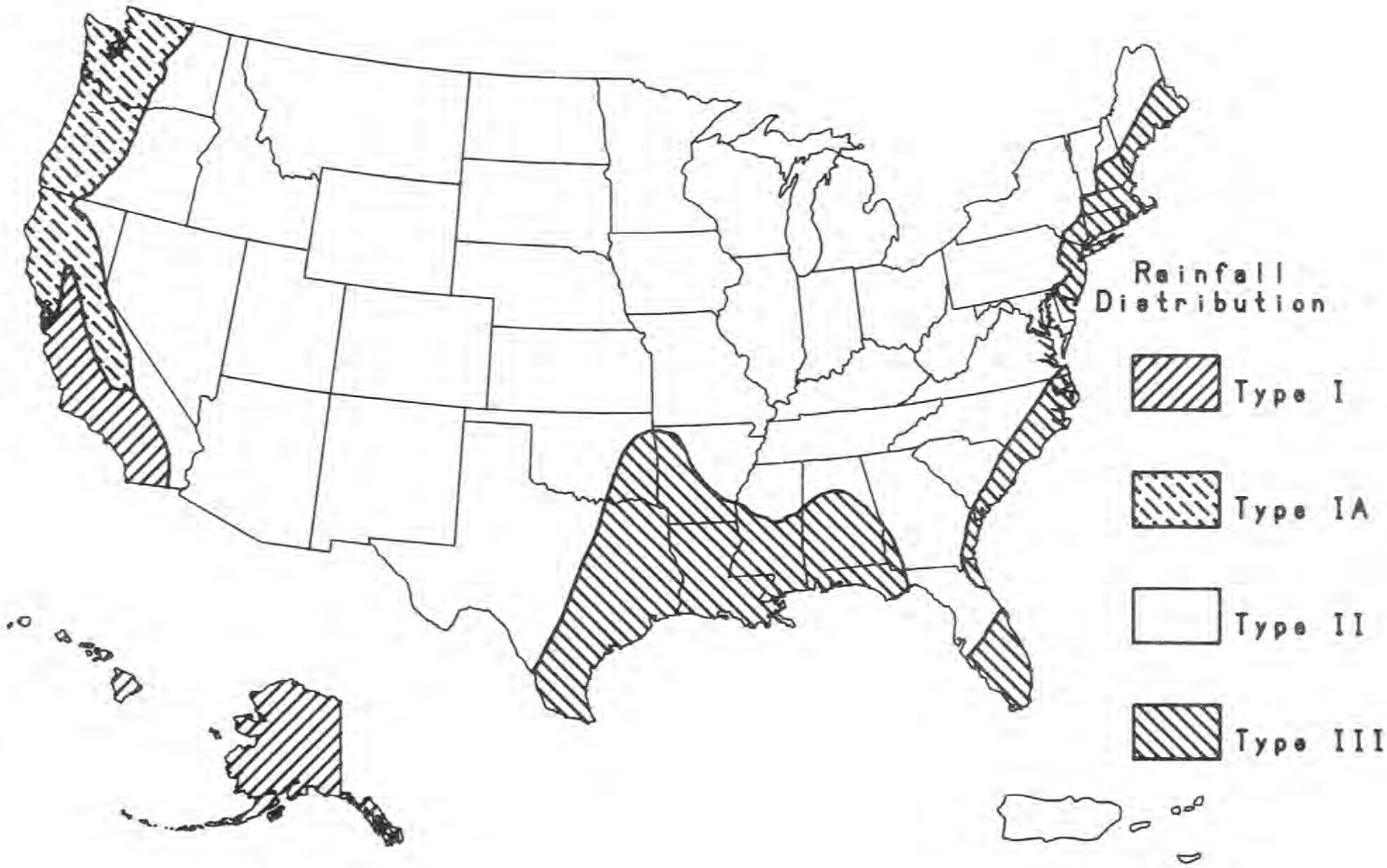

Figure B-2.—Approximate geographic boundaries for SCS rainfall distributions.

Rainfall data sources

This section lists the most current 24-hour rainfall data published by the National Weather Service (NWS) for various parts of the country. Because NWS Technical Paper 40 (TP-40) is out of print, the 24-hour rainfall maps for areas east of the 105th meridian are included here as figures B-3 through B-8. For the area generally west of the 105th meridian, TP-40 has been superseded by NOAA Atlas 2, the Precipitation-Frequency Atlas of the Western United States, published by the National Oceanic and Atmospheric Administration.

East of 105th meridian

Hershfield, D. M. 1961. Rainfall frequency atlas of the United States for durations from 30 minutes to 24 hours and return periods from 1 to 100 years. U.S. Dep. Commerce, Weather Bur. Tech. Pap. No. 40. Washington, DC. 115 p.

West of 105th meridian

Miller, J.F., R.H. Frederick, and R.J. Tracey. 1973. Precipitation-frequency atlas of the Western United States. Vol. I, Montana; Vol. II, Wyoming; Vol. III, Colorado; Vol. IV, New Mexico; Vol. V, Idaho; Vol. VI, Utah; Vol. VII, Nevada; Vol. VIII, Arizona; Vol. IX, Washington; Vol. X, Oregon; Vol. XI, California. U.S. Dep. Commerce, National Weather Service, NOAA Atlas 2. Silver Spring, MD.

Alaska

Miller, John F. 1963. Probable maximum precipitation and rainfall-frequency data for Alaska for areas to 400 square miles, durations to 24 hours and return periods from 1 to 100 years. U.S. Dep. Commerce, Weather Bur. Tech. Pap. No. 47. Washington, DC. 69 p.

Hawaii

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Puerto Rico and Virgin Islands

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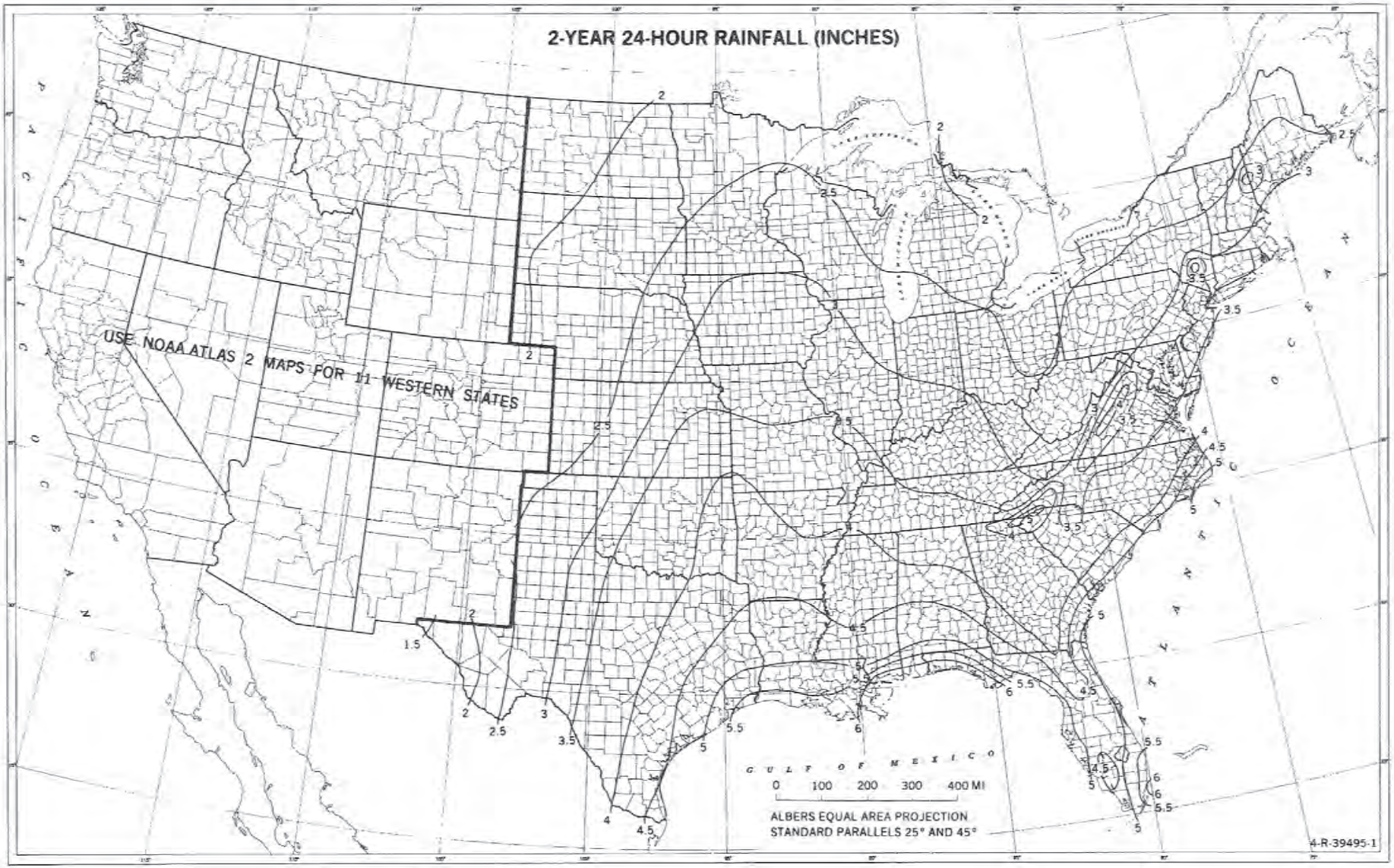


Figure B-3.—Two-year, 24-hour rainfall.

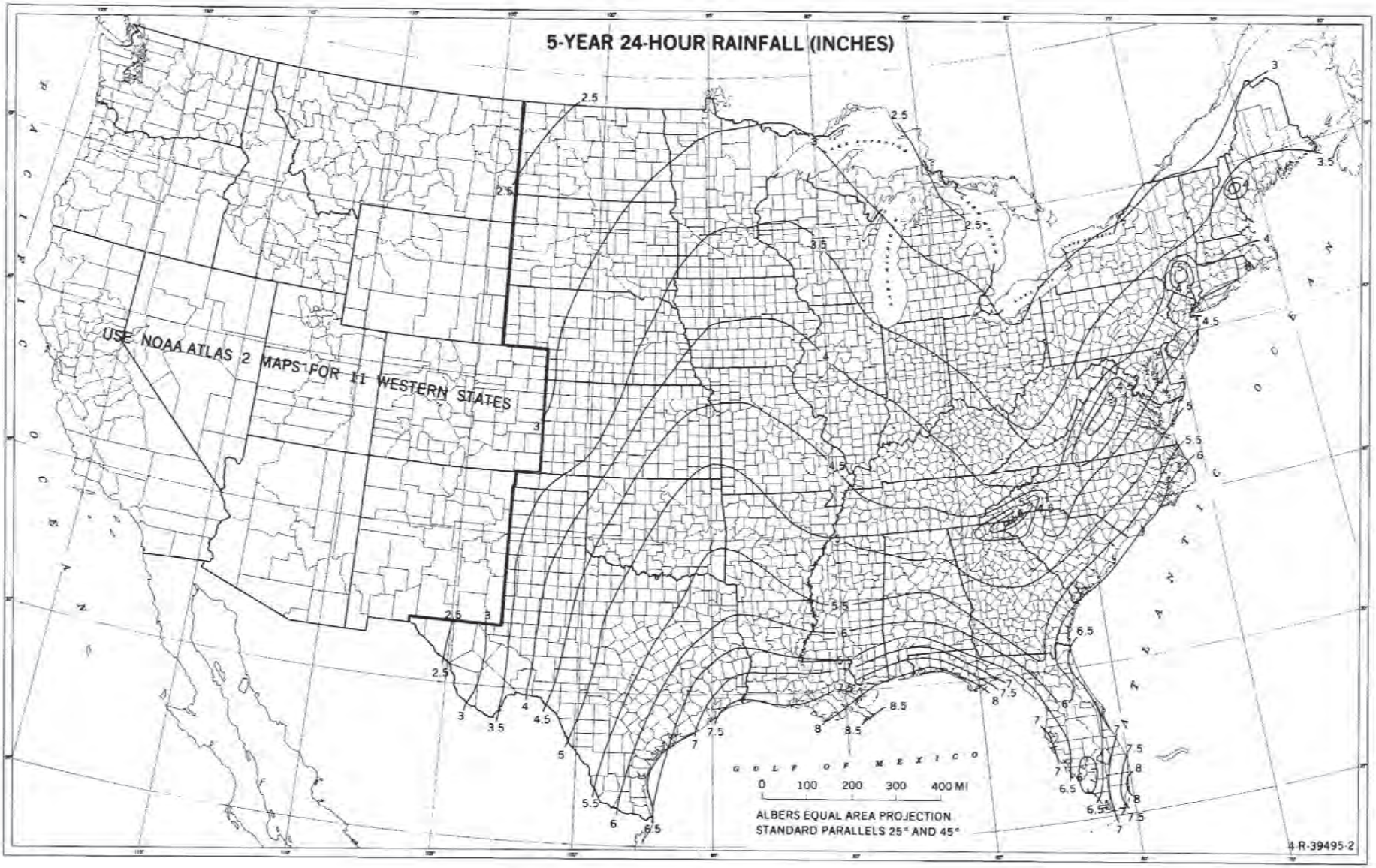


Figure B-4.—Five-year, 24-hour rainfall.

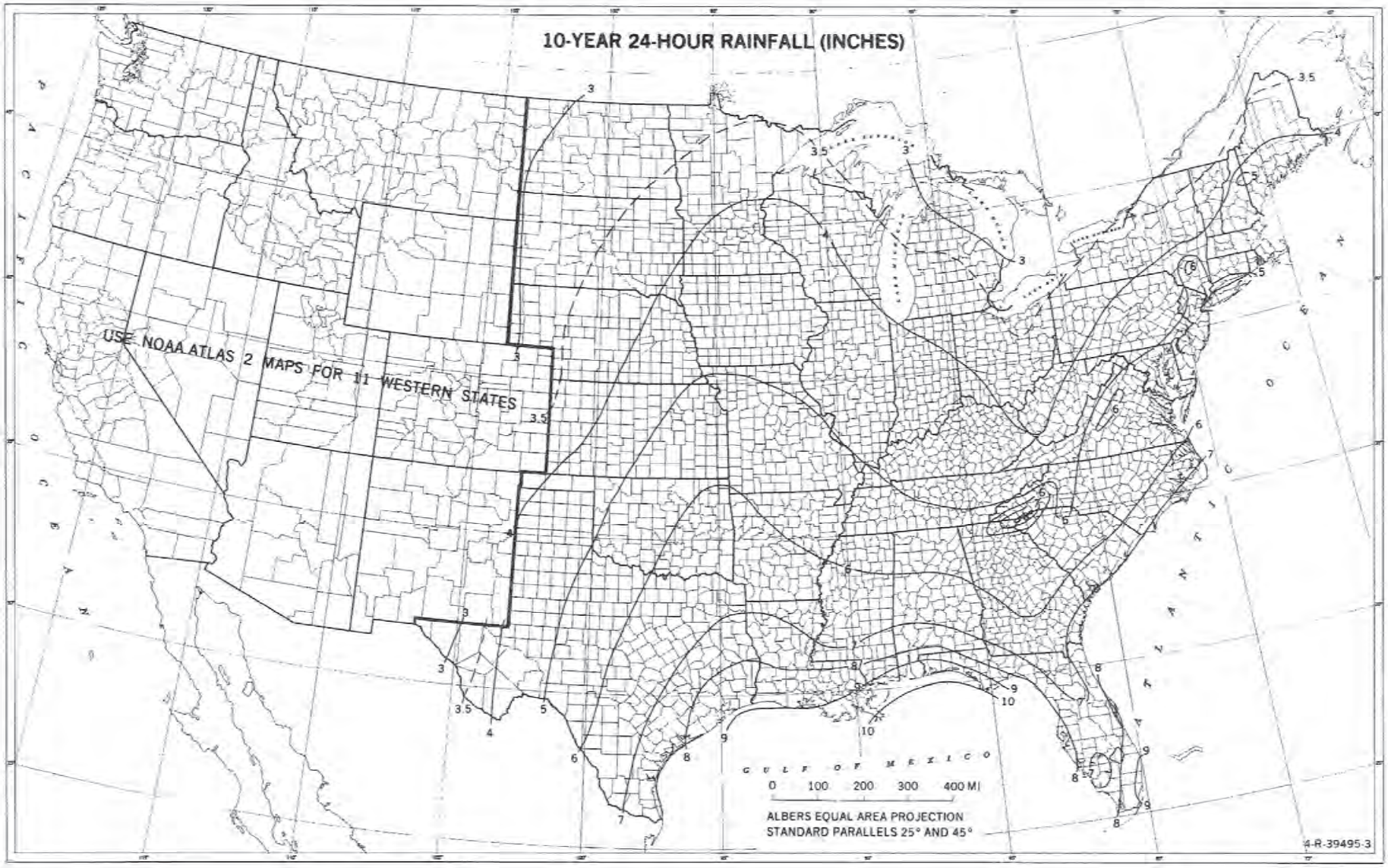


Figure B-5.—Ten-year, 24-hour rainfall.

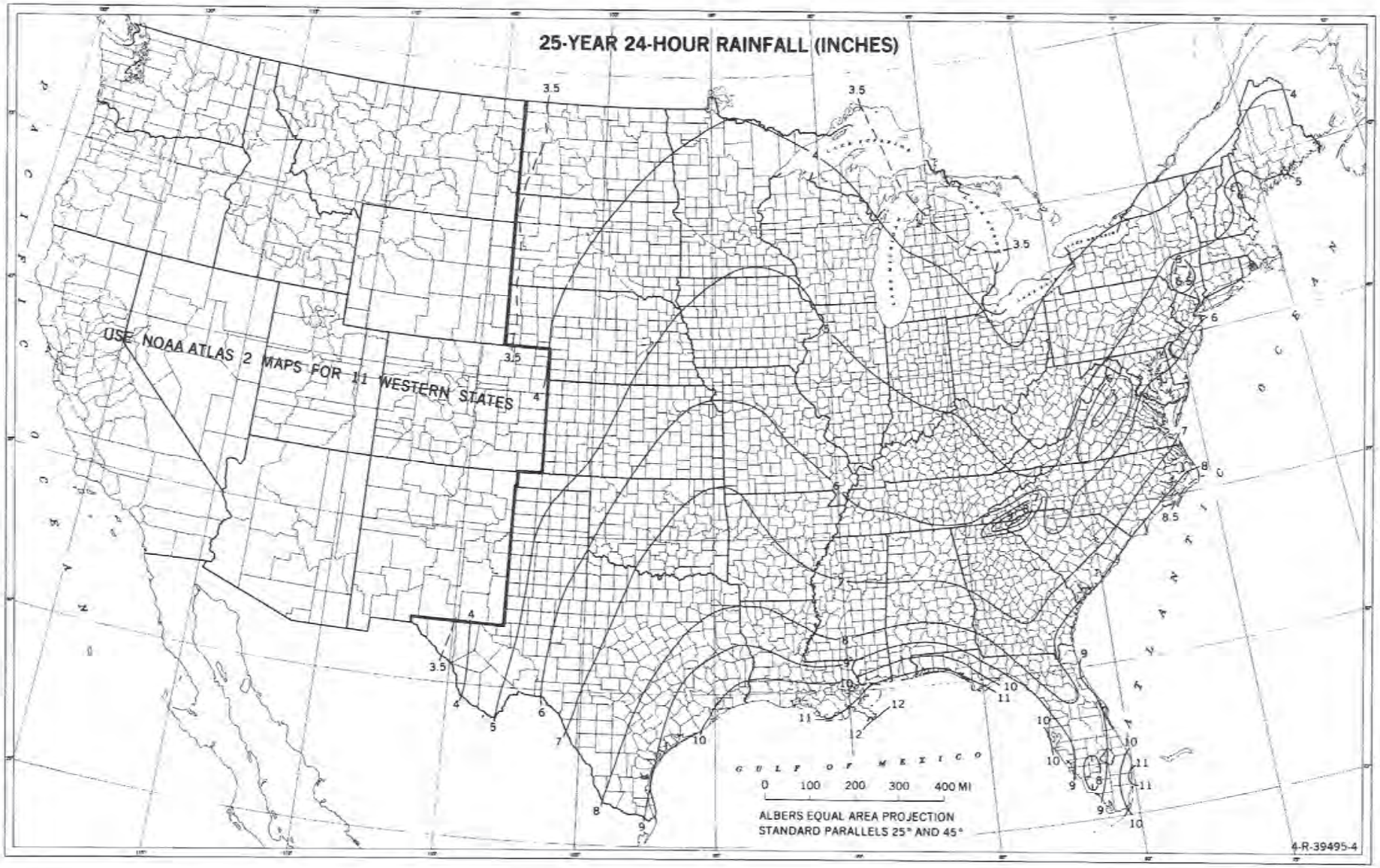


Figure B-6.—Twenty-five-year, 24-hour rainfall.

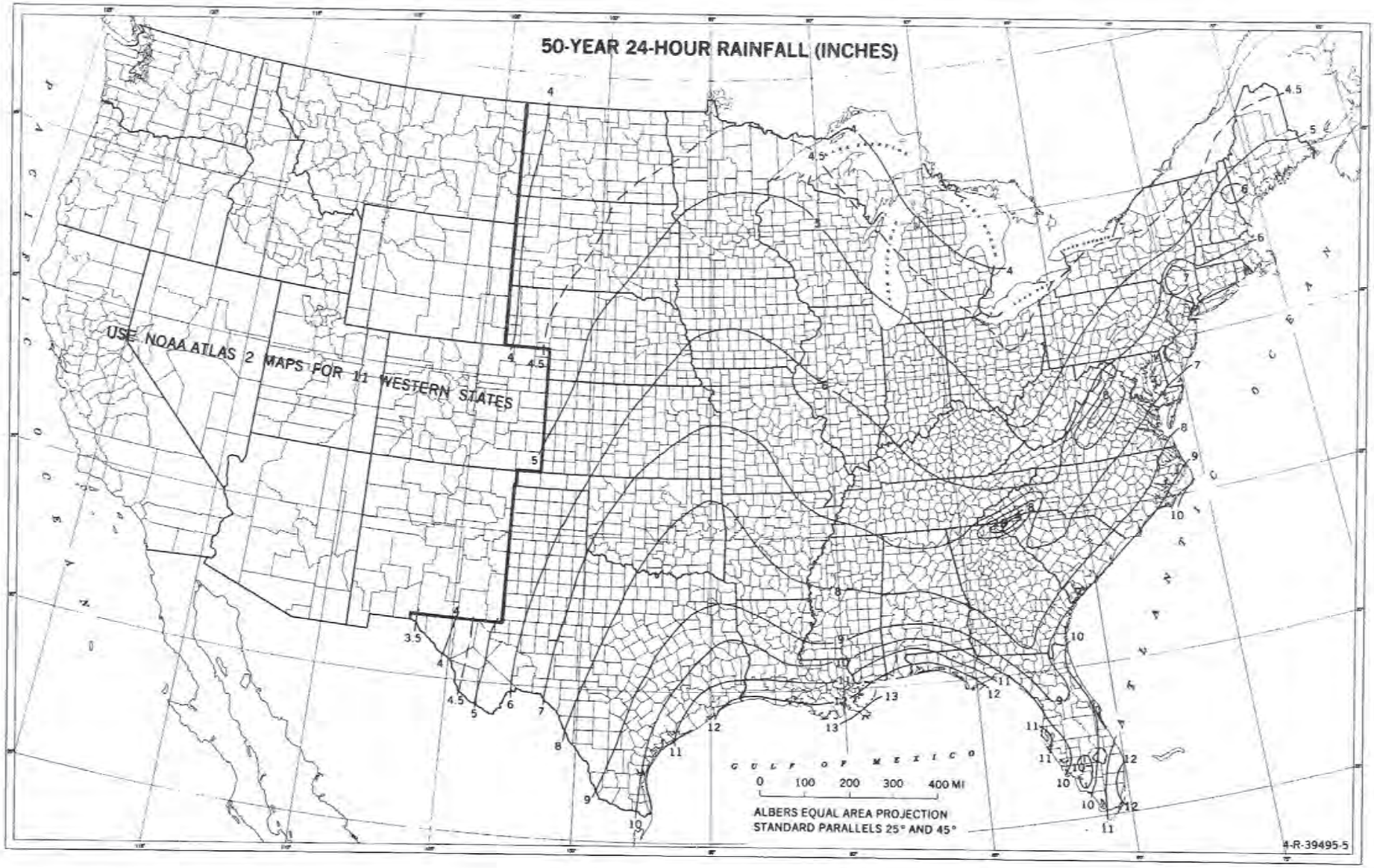


Figure B-7.—Fifty-year, 24-hour rainfall.

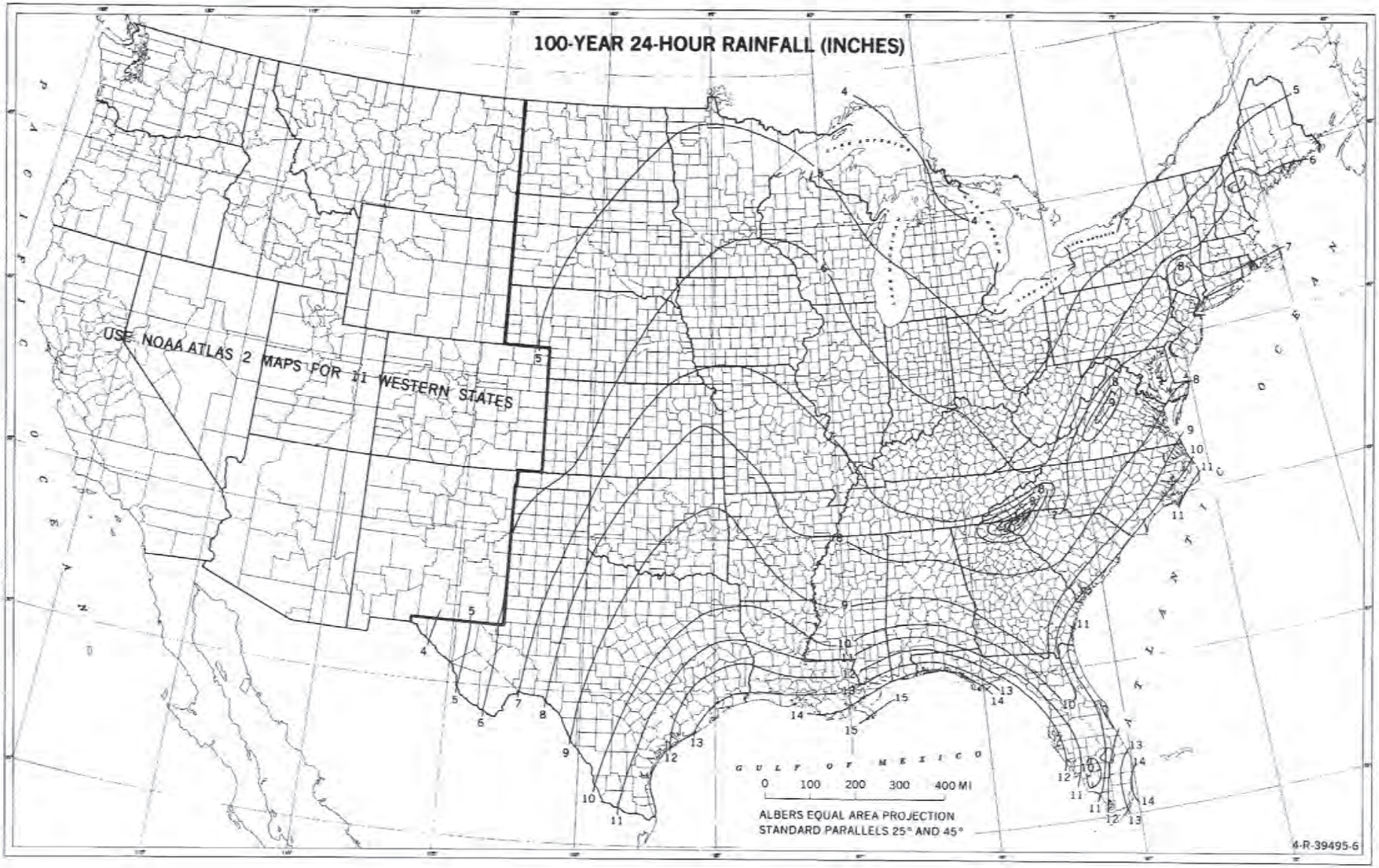


Figure B-8.—One-hundred-year, 24-hour rainfall.

Appendix C: Computer program

The TR-55 procedures have been incorporated in a computer program. The program, written in BASIC, requires less than 256K memory to operate and was developed for an MS-DOS operating system. Users of the program, however, still need to be familiar with the procedures in this TR. Features of the program include the following:

- The full screen (24 lines, 80 columns) is used to enter data. Flexibility of coding allows movement about the screen for quick data modifications.
- Function keys provide menu power to move to different modules (TR-55 chapters) within the program. Some keys are permanently defined while others vary by module.
- "Help" screens provide pertinent information to the user depending on location in the program. Two types of information are included: (1) define system operation and (2) describe input parameters.
- User files provide for optional entry of local data, such as rainfall-frequency, graphic peak discharge equation coefficients, and tabular hydrographs for other rainfall distributions.

Copies of the program can be obtained from—

National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
Telephone (703) 487-4650

Appendix D: Worksheets

This appendix contains seven worksheets that can be reproduced for use with chapters 2 through 6. There is no worksheet for chapter 1.

Chapter	*Worksheet*
2	2
3	3
4	4
5	5a, 5b
6	6a, 6b

Worksheet 2: Runoff curve number and runoff

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area ☐ acres ☐ mi^2 ☐ %	Product of CN x area
	Totals =					

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = _____ = _____; Use CN = ☐

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr			
Rainfall, P (24-hour) ..... in			
Runoff, Q ..... in (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)			

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____

Circle one: T_c T_t through subarea _____

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)		Segment ID		
1. Surface description (table 3-1)				
2. Manning's roughness coeff., n (table 3-1) ..				
3. Flow length, L (total L $\leq$ 300 ft)	ft			
4. Two-yr 24-hr rainfall, P_2	in			
5. Land slope, s	ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr		+	=

Shallow concentrated flow		Segment ID		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure 3-1)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	=

Channel flow		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			

Worksheet 4: Graphical Peak Discharge method

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____

1. Data:

   Drainage area ..... A_m = _____ mi^2 (acres/640)

   Runoff curve number .... CN = _____ (From worksheet 2)

   Time of concentration .. T_c = _____ hr (From worksheet 3)

   Rainfall distribution type = _____ (I, IA, II, III)

   Pond and swamp areas spread throughout watershed ..... = _____ percent of A_m (____ acres or mi^2 covered)

			Storm #1	Storm #2	Storm #3
2.	Frequency	yr			
3.	Rainfall, P (24-hour)	in			
4.	Initial abstraction, I_a ..... (Use CN with table 4-1.)	in			
5.	Compute I_a/P				
6.	Unit peak discharge, q_u ..... (Use T_c and I_a/P with exhibit 4-____)	csm/in			
7.	Runoff, Q ..... (From worksheet 2).	in			
8.	Pond and swamp adjustment factor, F_p .... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area.)				
9.	Peak discharge, q_p ..... (Where $q_p = q_u A_m Q F_p$)	cfs			

Worksheet 5a: Basic watershed data

Project _____ Location _____ By _____ Date _____

Circle one: Present Developed _____ Frequency (yr) _____ Checked _____ Date _____

Subarea name	Drainage area A_m (mi^2)	Time of concentration T_c (hr)	Travel time through subarea T_t (hr)	Downstream subarea names	Travel time summation to outlet ΣT_t (hr)	24-hr Rainfall P (in)	Runoff curve number CN	Runoff Q (in)	$A_m Q$ (mi^2-in)	Initial abstraction I_a (in)	I_a/P

↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ From worksheet 3

↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ From worksheet 2

↑ ↑ ↑ ↑ From table 5-1

Worksheet 5b: Tabular hydrograph discharge summary

Project _____ Location _____ By _____ Date _____

Circle one: Present Developed _____ Frequency (yr) _____ Checked _____ Date _____

Subarea name	Basic watershed data used 1/				Select and enter hydrograph times in hours from exhibit 5- 2/											
	Sub-area T_c (hr)	ΣT_t to outlet (hr)	I_a/P	$A_m Q$ (mi^2-in)	Discharges at selected hydrograph times 3/ -(cfs)-											
Composite hydrograph at outlet																

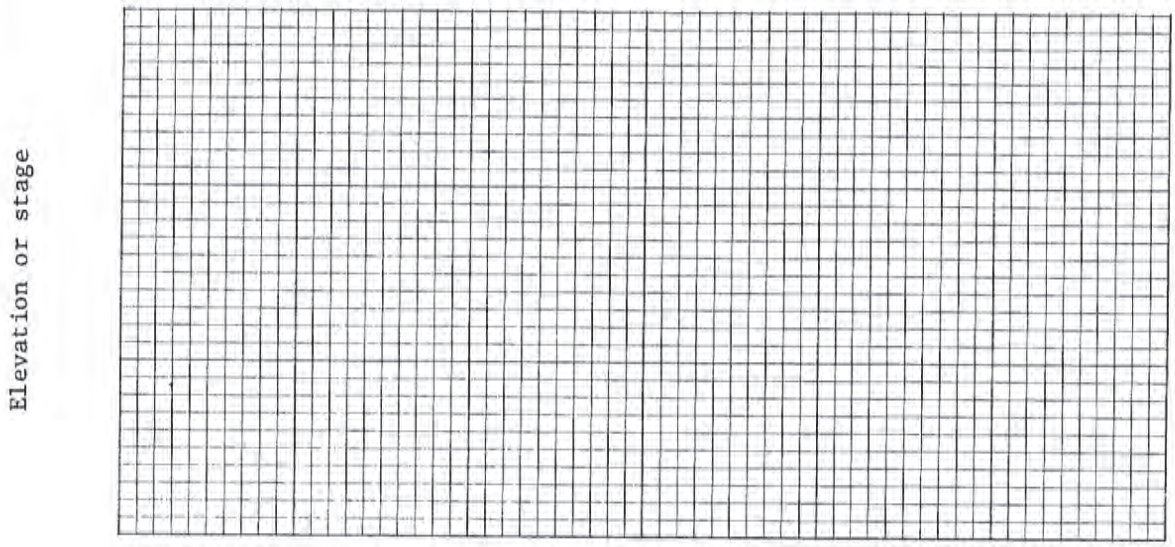
1/ Worksheet 5a. Rounded as needed for use with exhibit 5.
2/ Enter rainfall distribution type used.
3/ Hydrograph discharge for selected times is $A_m Q$ multiplied by tabular discharge from appropriate exhibit 5.

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____



Detention basin storage

1. Data:
   Drainage area ..... A_m = _____ mi^2
   Rainfall distribution type (I, IA, II, III) = _____

	1st stage	2nd stage
2. Frequency ..... yr		
3. Peak inflow discharge, q_i .... cfs (From worksheet 4 or 5b)		
4. Peak outflow discharge, q_o .... cfs 1/		
5. Compute $\frac{q_o}{q_i}$		

6. $\frac{V_s}{V_r}$ ..... _____ (Use $\frac{q_o}{q_i}$ with figure 6-1)

7. Runoff, Q ..... in _____ (From worksheet 2)

8. Runoff volume, V_r ..... ac-ft _____ ($V_r = QA_m 53.33$)

9. Storage volume, V_s ..... ac-ft _____ ($V_s = V_r(\frac{V_s}{V_r})$)

10. Maximum stage, E_{max} _____ (From plot)

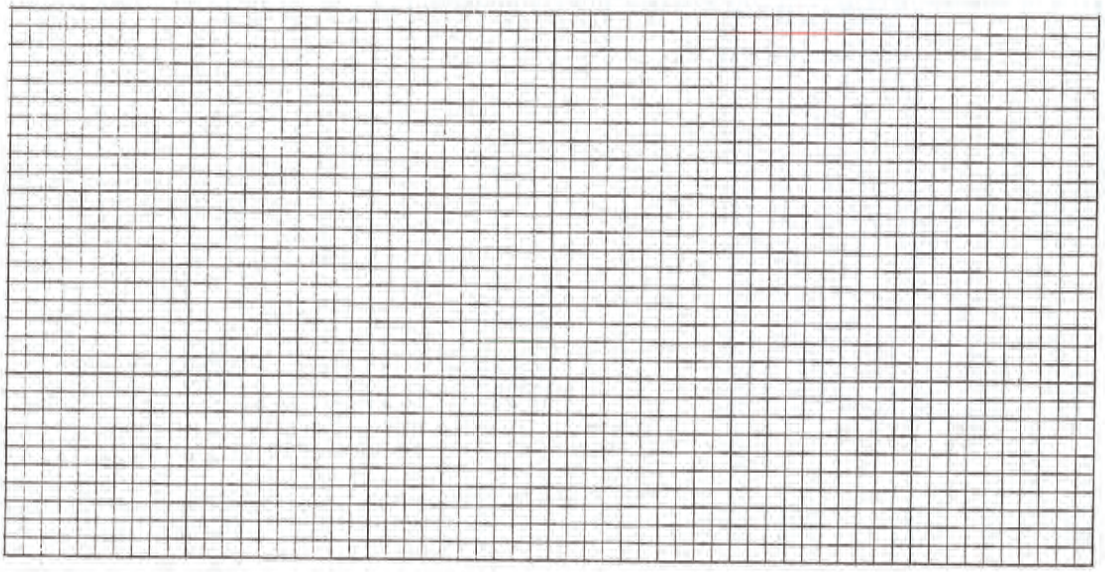
1/ 2nd stage q_o includes 1st stage q_o.

Worksheet 6b: Detention basin peak outflow, storage volume (V_s) known

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____



Detention basin storage

1. Data:
   Drainage area ..... A_m = _____ mi^2
   Rainfall distribution type (I, IA, II, III) = _____

	1st stage	2nd stage
2. Frequency ..... yr		
3. Storage volume, V_s ..... ac ft		
4. Runoff, Q ..... in (From worksheet 2)		
5. Runoff volume, V_r ..... ac-ft ($V_r = QA_m 53.33$)		

6. Compute $\frac{V_s}{V_r}$ ..... | | |

7. $\frac{q_o}{q_i}$ ..... in | | |
   (Use $\frac{V_s}{V_r}$ and figure 6-1)

8. Peak inflow discharge, q_i .... cfs | | |
   (From worksheet 4 or 5b)

9. Peak outflow discharge, q_o .... cfs 1/ | | |
   ($q_o = q_i(\frac{q_o}{q_i})$)

10. Maximum stage, E_{max} | | |
    (From plot)

1/ 2nd stage q_o includes 1st stage q_o.

Appendix E: References

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Appendix F: Equations for figures and exhibits

This appendix presents the equations used in procedure applications to generate figures and exhibits in TR-55.

Figure 2-1 (runoff equation):

$$Q = \frac{\left[P - 0.2\left(\frac{1000}{CN} - 10\right)\right]^2}{P + 0.8\left(\frac{1000}{CN} - 10\right)}$$

where

Q = runoff (in),
P = rainfall (in), and
CN = runoff curve number.

Figure 2-3 (composite CN with connected impervious area):

$$CN_c = CN_p + (P_{imp}/100)(98 - CN_p)$$

where

CN_c = composite runoff curve number,
CN_p = pervious runoff curve number, and
P_{imp} = percent imperviousness.

Figure 2-4 (composite CN with unconnected impervious areas and total impervious area less than 30%):

$$CN_c = CN_p + (P_{imp}/100)(98 - CN_p)(1 - 0.5R)$$

where R = ratio of unconnected impervious area to total impervious area.

Figure 3-1 (average velocities for estimating travel time for shallow concentrated flow):

Unpaved $V = 16.1345\ (s)^{0.5}$
Paved $V = 20.3282\ (s)^{0.5}$

where

V = average velocity (ft/s), and
s = slope of hydraulic grade line (watercourse slope, ft/ft).

These two equations are based on the solution of Manning's equation (Eq. 3-4) with different assumptions for n (Manning's roughness coefficient) and r (hydraulic radius, ft). For unpaved areas, n is 0.05 and r is 0.4; for paved areas, n is 0.025 and r is 0.2.

Exhibit 4 (unit peak discharges for SCS type I, IA, II, and III distributions):

$$\log(q_u) = C_0 + C_1 \log(T_c) + C_2 [\log(T_c)]^2$$

where

q_u = unit peak discharge (csm/in),
T_c = time of concentration (hr) (minimum, 0.1; maximum, 10.0), and
C_0, C_1, C_2 = coefficients from table F-1.

Figure 6-1 (approximate detention basin routing through single- and multiple-stage structures for 24-hour rainfalls of the indicated type):

$$V_s/V_r = C_0 + C_1 (q_o/q_i) + C_2 (q_o/q_i)^2 + C_3 (q_o/q_i)^3$$

where

V_s/V_r = ratio of storage volume (V_s) to runoff volume (V_r),
q_o/q_i = ratio of peak outflow discharge (q_o) to peak inflow discharge (q_i), and
C_0, C_1, C_2, C_3 = coefficients from table F-2.

Table F-1.—Coefficients for the equation used to generate exhibits 4-I through 4-III

Rainfall type	I_a/P	C_0	C_1	C_2
I	0.10	2.30550	-0.51429	-0.11750
	0.20	2.23537	-0.50387	-0.08929
	0.25	2.18219	-0.48488	-0.06589
	0.30	2.10624	-0.45695	-0.02835
	0.35	2.00303	-0.40769	0.01983
	0.40	1.87733	-0.32274	0.05754
	0.45	1.76312	-0.15644	0.00453
	0.50	1.67889	-0.06930	0.0
IA	0.10	2.03250	-0.31583	-0.13748
	0.20	1.91978	-0.28215	-0.07020
	0.25	1.83842	-0.25543	-0.02597
	0.30	1.72657	-0.19826	0.02633
	0.50	1.63417	-0.09100	0.0
II	0.10	2.55323	-0.61512	-0.16403
	0.30	2.46532	-0.62257	-0.11657
	0.35	2.41896	-0.61594	-0.08820
	0.40	2.36409	-0.59857	-0.05621
	0.45	2.29238	-0.57005	-0.02281
	0.50	2.20282	-0.51599	-0.01259
III	0.10	2.47317	-0.51848	-0.17083
	0.30	2.39628	-0.51202	-0.13245
	0.35	2.35477	-0.49735	-0.11985
	0.40	2.30726	-0.46541	-0.11094
	0.45	2.24876	-0.41314	-0.11508
	0.50	2.17772	-0.36803	-0.09525

Table F-2.—Coefficients for the equation used to generate figure 6-1

Rainfall distribution (appendix B)	C_0	C_1	C_2	C_3
I, IA	0.660	-1.76	1.96	-0.730
II, III	0.682	-1.43	1.64	-0.804

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