

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

CONTOUR STRIPCROPPING (ACRE)

CODE 585

DEFINITION

Growing row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips on or near the contour of the field slope.

The practice is not well suited to **excessively** rolling topography having a high degree of slope irregularity.

PURPOSES

- To reduce sheet and rill erosion
- To reduce transport of sediment and other water-borne contaminants

CRITERIA

General Criteria Applicable to All Purposes

Alignment of Strips

Where more than one strip boundary will be placed on the hill slope, strip boundaries shall run parallel to each other as long as their grades meet the row grade criteria. If unachievable, establish a new baseline at a distance up or down the slope equal to some multiple of strip widths that will limit the number of correction strips (non-uniform width strips) to the minimum needed to keep all strip boundaries within row grade limits.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on sloping land where crops **and/or forages** are grown.

All tillage and planting operations will follow the contour line established.

Although this practice may be applicable on steeper slopes and/or in areas with higher 10-year-frequency **and** single storm EI values, it will be less effective in achieving the purpose(s) of the practice on slopes exceeding 15 percent and in areas with 10-year storm EI values greater than 140. (EI = total storm energy times the maximum 30-minute intensity.)

Where contour row curvature becomes too sharp to keep machinery aligned with rows during field operations, establish sod turn strips on sharp ridge points. On ridge tops, where grades are within row grade limits, row crops may be planted in these turn strip areas. Plant these areas last and harvest these areas first. When establishing grassed waterways in drainage ways, establish vegetation at least up to that point of sharp curvature. These strips shall be wide enough to allow the equipment to be lifted and/or turned and meet the same rows across the turn strip. Mow sod turn strips and grassed waterways at least once yearly after ground-nesting birds have hatched. Harvesting is optional.

The practice has the greatest impact where cropped or fallow strips having less than 10 percent cover are alternated with close grown and/or grass/legume strips (Cover-Management Condition 1-2), or strips of residue management, no/till/strip-till with 75 percent or greater surface cover (Cover-Management Condition 3). **Cover-Management conditions are described in Montana Conservation Practice Specification 585, TABLE 1.**

**NRCS, MT
April 2001**

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard contact the Natural Resources Conservation Service.

NOTE: This type of font (AaBbCcDdEe 123..) indicates NRCS National Standards.
This type of font (AaBbCcDdEe 123..) indicates Montana Supplement.

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Strip Width

Base strip widths on the slope length used for erosion prediction. Erosion-prone strip widths shall not exceed 50 percent of this slope length or 150 feet, whichever is less. The erosion-resistant and erosion-prone strips shall be of equal width, except for any correction strip needed to keep strip boundaries within prescribed row grade limits. The correction strip may vary in width but shall be no narrower than the widest working farm implement used to traverse the strip.

Minimum Row Grade

Row grades for soils with slow to very slow infiltration rates (Soil Hydrologic Groups C or D, **found in the Field Office Technical Guide (FOTG), Section II— Cropland Interpretations**), or for crops sensitive to ponded water conditions for periods of less than 48-hours, shall be designed with positive row drainage of not less than 0.2 percent on slopes where ponding is a concern.

Maximum Row Grade

The row grade shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction. The maximum grade of rows shall not exceed two percent or one-half of the up and down hill slope percent used for erosion prediction, whichever is less. Up to three percent row grade may be permitted within 150 feet of the approach to a grassed waterway, field border or other stable outlet.

Minimum Ridge Height

The ridge height shall be designed to reduce soil erosion compared to that of rows oriented up and down the slope. As a minimum, this practice shall be designed to achieve a 0.5–2 inch ridge height during the period of the rotation that is most vulnerable to soil erosion. Ridge height design will be determined using on site conditions and current erosion prediction technology approved for use.

The minimum ridge height criteria is not required for close-grown crops, such as small grains, when runoff is reduced compared to that of rows planted up and down the slope. As a minimum, plant height shall be at least six inches high and

the spacing between plants within the row shall not be greater than 2 inches.

The minimum ridge height criteria is not required where the practice residue management, no-till/strip-till is used on the contour if at least 50 percent surface residue is present between the rows after planting.

Critical Slope Length

The critical slope length for contour stripcropping is 1.5 times the critical slope length determined for contour farming. A contour stripcropping layout shall not occur on a slope longer than the critical slope length unless supported by other practices that reduce slope length below critical (e.g., diversions, terraces). The computation of critical slope length shall be determined using approved erosion prediction technology.

Where a field falls within a RUSLE R Climatic Zone, for Cover-Management Condition 1 and Hydrologic Soils groups A through D, the critical slope length is 1,000 feet. For Cover-Management Condition 2 and Hydrologic Soils Group A, the critical slope length is 1,000 feet. For the remaining combinations of cover-management conditions and hydrologic soil groups see Montana Conservation Practice Specification 585, TABLE 2—Contour Stripcropping Critical Slope Length.

Where a field falls within a RUSLE REQ Climatic Zone, for Cover-Management Conditions 1, 2, and VR (8), and Hydrologic Soils A through D, the critical slope length is 1,000 feet. Refer to FOTG, Section I—Erosion Prediction, Water Erosion, FIGURES 25–35, Critical Length, pages a-125 through a-135, for the remaining combinations of cover-management conditions and hydrologic soils groups.

Stable Outlets

All runoff from contour stripcropping shall be delivered to stable outlets, such as grassed waterways, field borders, water and sediment control basins, or underground outlets for terraces and diversions.

Headlands/End Rows

On fields where row crops and tillage are a part of the rotation, keep headlands/end rows in permanent sod where their grades would be steeper than the criteria set forth for strip boundaries.

Additional Criteria to Reduce Sheet and Rill Erosion

Arrangement and Vegetative Condition of Strips

Alternate strips of erosion-prone crops or fallow (Cropland Cover-Management Conditions 4–7) down the slope with strips of erosion-resistant cover (Cropland Cover-Management Conditions 1–3.) If Condition 3 is utilized as one of the erosion resistant strips, at least 75 percent surface residue cover shall be present. The erosion resistant cover shall be present during periods when erosion is expected to occur.

No two adjacent strips shall be in an erosion-prone condition at the same time during the year. However, two adjacent strips may be in erosion-resistant cover at the same time.

A vegetative cover shall be selected that is tolerant of the anticipated depth of sediment deposition and potential pesticide damage.

Additional Criteria to Reduce Transport of Sediment and Other Water-borne Contaminants

Arrangement and Vegetative Condition of Strips

Erosion-prone crop or fallow strips shall be managed as Cropland Cover-Management Conditions 3–5. Erosion-prone strips shall be alternated down the slope with strips of erosion-resistant cover that meet Cropland Cover-Management Conditions 1–2. The erosion resistant cover shall be present during periods when erosion is expected to occur.

No two adjacent strips shall be in an erosion-prone condition at the same time during the year. However, two adjacent strips may be in erosion-resistant cover at the same time.

A vegetative cover shall be selected that is tolerant of the anticipated depth of sediment deposition and potential pesticide damage.

CONSIDERATIONS

The conservation crop rotation on stripcropped fields should be consistent with the farm enterprise crop mix and/or associated livestock operation. These will influence the proportion of row crops, close growing crops, and meadow crops.

To avoid wide fluctuations in acreage of different crops from year to year, fields having identical crop rotations can be set up that are nearly equal in size and have offset years of rotation commencement. The number of fields needed to produce a nearly constant acreage of each crop for each year in the rotation is equal to one half of the years in the rotation. Even-year rotation lengths are preferable to odd-year rotation lengths for ease of design.

Protect areas of existing or potential concentrated flow erosion by any one or more suitable conservation practices, such as grassed waterways, water and sediment control basins, diversions, terraces, or underground outlets.

Design and install the strip layout to best facilitate operation of all machinery used on the strips. To avoid point rows and partial machine passes, lay out strip widths to have some multiple of full width passes by all farm implements, even at unavoidable constrictions.

Prior to design and layout, **obstruction removal** or changes in field boundaries or shape should be considered, where possible and feasible, to improve the effectiveness of the practice and the ease of performing field operations across the slope.

Prior to layout, inspect the field to find key points for commencing layout or getting a full strip width to pass by an obstruction or ridge saddle. Whenever possible, run the strip boundary parallel with fence lines or other barriers, as long as row gradient criteria are met. Account for access road widths when they must cross the field, and adjust the strip boundary on either side accordingly.

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When the slope length used in erosion prediction exceeds the critical slope length for the cover-management condition that best characterizes the field to be contour stripcropped, establish structures, such as diversions or terraces, to reduce slope length below the critical slope length.

If Cover Management Type 1–3 exist, sheet and rill erosion is generally not considered a resource concern and contour stripcropping would not be designed for this purpose.

When this practice is used in combination with diversions or terraces, coordinate the strip layout with the diversion or terrace grade and spacing so that strip boundaries will parallel terraces wherever possible within the criteria for row grade. Where grass-back or narrow-base terraces are used, allow for the uncropped width along the terrace so that the same strip width is maintained for all strips in the field.

Retaining as much crop residue as possible on the soil surface by using residue management practices can maximize critical slope lengths. Certain tillage practices, such as uphill plowing and deep tillage with heavy implements, can also be used to increase random roughness, allowing deposition to occur in depressions between soil clods and increase critical slope length. However, if the most erosion-prone strips of the field are kept very rough, in high ridges, or under heavy residue most of the year, there is little need for stripcropping as an erosion and sediment control practice. Little sediment will be delivered to the protective cover strips.

Contour stripcropping may need to be used in combination with other conservation practices to meet the goals of the conservation management system.

PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of Contour Stripcropping shall be prepared according to the Criteria, Considerations, and Operations and Maintenance described in this standard, and shall be recorded on specification sheets, job sheets, narrative statements in conservation plans, or other acceptable documentation.

A contour stripcropping establishment plan shall include the following information and documentation:

1. **Location map—field numbers and a map or sketch of the area to be established.**
2. **Measured acres.**
3. **Date practice scheduled and applied.**
4. **Operation and maintenance requirements.**
5. **Soil map unit information.**
6. **Row grades (%).**
7. **Runoff water disposal.**
8. **Map showing baseline location.**
9. **Treatment of end rows.**
10. **Date and signature of producer & NRCS.**
11. **Before and after RUSLE water erosion prediction results and all associated factor data.**
12. **The Montana Contour Stripcropping Specification 585.**
13. **Specifications of other applicable standards where required for establishment of this practice (i.e. grassed waterways, stable outlets, etc.)**

OPERATION AND MAINTENANCE

Conduct all farming operations parallel to the strip boundaries except on end rows that have gradients flatter than the criteria set forth in this standard unless the end rows are in Cover-Management Condition 3.

Plant odd areas and short rows to maximize adherence to the contour and protect sensitive areas. Using no-till in the odd areas and short rows or seeding close-grown crops rather than row crops increase options.

Substituting a crop different from one called for in the planned crop rotation, or adjusting the crop rotation due to failed crops or loss of stand, is acceptable, provided neither situation allows two adjacent erosion-prone strips.

Sediment accumulations along the upslope edge of protected strips may need to be smoothed or redistributed to maintain uniform sheet flow along the strip boundary.

When headlands/end rows are in permanent cover, renovate as needed to keep ground cover above 65 percent. No-till renovation of headlands/end rows is recommended but in any case should only include the immediate seedbed preparation and reseeding to a sod-forming crop with or without a nurse crop. Maintain full headland/end row width to allow turning of farm implements at the end of a tilled strip to double back on the same strip.

Mow vegetation of associate practices during non-critical periods for wildlife to encourage dense vegetative growth. Excess vegetation should be removed by baling or raking.

REFERENCES

USDA–Natural Resources Conservation Service, Field Office Technical Guide, Section I–Erosion Prediction, RUSLE, July 1995.

Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE). USDA–ARS. Ag. Handbook 703, 1997.

NATURAL RESOURCES CONSERVATION SERVICE
CONTOUR STRIPCROPPING (ACRE)
CODE 585

MONTANA CONSERVATION PRACTICE SPECIFICATION / JOB SHEET

PRODUCER _____

TRACT / FIELD NO. / CTU _____

SCOPE: Contour farming is preparing the soil, planting and cultivating crops around a hill rather than up and down the hill. Contour rows run around a slope nearly on the level. This specification provides guidelines for establishment and maintenance of contour stripcropping.

PURPOSE OF PLANTING:

- reduce sheet and rill erosion
- reduce transport of sediment and other water-borne contaminants
- other

	FIELD NO.					
Hydrologic Group						
Field Slope %						
Critical Slope Length (ft)						
Strip Width (ft)						
Minimum Row Grade %						
Maximum Row Grade %						
Soil Loss Prediction						
–Before (T/A/Y)						
–After (T/A/Y)						

SITE PREPARATION
When establishing perennial vegetation—i.e., grassed waterways, borders, etc.—prepare firm, weed-free seedbed. Apply fertilizer according to recommendations.
PLANTING METHODS
Drill grass/legume seed no more than 3/8 inch deep uniformly over area. Establish stand of vegetation according to recommended seeding rate. If necessary, mulch newly seeded area with _____tons per acre of mulch material. If a companion crop is necessary apply at _____pounds per acre. Clip companion crop or harvest before seed head development.
OPERATION & MAINTENANCE
Perform all tillage and planting operations parallel to contour baselines maintaining established strip widths provided the applicable row grade criteria are met. Where field operations begin to converge between two non-parallel contour strips, establish a correction area that is either permanent sod, established to an annual close-grown crop, or is in Cover-Management Condition 3. Where contour strips become too sharp to keep machinery aligned with rows during field operations, establish sod turn strips on sharp ridge point or other odd areas. Renovate field borders as needed to maintain at least 65 percent ground cover. Damaged areas should be repaired and/or revegetated. Sediment accumulations should be redistributed as needed to maintain uniform sheet flow through strip width.

TABLE 1. Cover–Management Conditions.

<u>COVER–MANAGEMENT CONDITION</u>	<u>DESCRIPTION</u>
CODE 1. Established meadow.	In this condition, the grass is dense and runoff is very slow, about the slowest under any vegetative condition. When mowed and baled, this condition is Condition 2.
CODE 2. 1st year meadow, hay.	In this condition, the hay is a mixture of grass and legume just before cutting. The meadow is a good stand of grass that is nearing the end of the first year. When mowed or baled, this condition becomes a Condition 4.
CODE 3. Heavy cover and/or very rough.	Ground cover for this condition is about 75 to 95%. Roughness would be like that left by a high clearance moldboard plow on a heavy textured soil. Roughness depressions would have the appearance of being 7 inches deep and deeper. Vegetative hydraulic roughness would be like that from a good legume crop—such as alfalfa—that has not been mowed.
CODE 4. Moderate cover and/or rough.	The ground cover for this condition is about 40 to 65%. The roughness is like that left by a moldboard plow in a medium textured soil. Depressions would have the appearance of being about 4 to 6 inches deep. Vegetative hydraulic roughness would be like that produced by winter small grain at full maturity.
CODE 5. Light cover and/or moderate roughness.	Ground surface cover is between 10 and 35% and the surface roughness is like that left by the first pass of a tandem disk over a medium texture soil that has been moldboard plowed. This roughness could also be much like that left after a chisel plow through medium textured soil at optimum moisture conditions for tillage. Roughness depressions would have the appearance of being on the order of 2 to 3 inches. In terms of hydraulic roughness produced by vegetation, this condition is much like that produced by spring grain at about 3/4 maturity.
CODE 6. No cover and/or roughness.	This condition is very much like the condition typically in row fields after the field has been planted and exposed to a moderately intense rainfall. Ground cover is less than about 5% and the roughness is that characteristic of a good seedbed for corn or soybeans. The surface is rougher than that of a finely pulverized seedbed for seeding vegetables.
CODE 7. Clean-tilled, smooth, fallow.	This condition is where the surface is essentially bare, 5% or less cover. The soil has not had a crop grown on it in the last six months or more such that much of the residual effects of previous cropping has disappeared. The surface is smooth, much like the seedbed exposed to several intense rainfalls. One would most likely find this condition in fallowed and vegetable fields.
CODE 8 (VR). Very rough w/stubble.	This code applies to the unique conditions of the Northwest Wheat and Range Region (REQ) where infiltration is strongly influenced by presence of frost. This represents the condition where plowing penetrates the frost layer, thereby reducing the impact of frost on infiltration. The soil roughness and the exposed stubble also serve to slow the flow and increase infiltration very rough.

TABLE 2. Contouring Critical Slope Length.

HYDROLOGIC GROUP "A"																	
Cover Management Type 7—Clean-tilled, smooth, fallow																	
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	988	930
	2%	1000	1000	1000	1000	1000	965	833	735	658	597	547	506	471	441	414	414
	3%	1000	1000	1000	890	717	601	529	458	410	372	341	315	294	275	258	258
	4%	1000	1000	843	637	513	430	371	328	293	266	244	226	210	196	185	185
	5%	1000	961	650	491	395	332	286	253	226	205	188	174	162	151	143	143
	6%	1000	777	526	397	320	268	232	204	183	166	152	141	131	123	115	115
	7%	1000	650	440	332	267	224	194	171	153	139	127	118	109	102	96	96
	8%	1000	556	376	284	229	192	166	146	131	119	109	101	94	87	83	83
	9%	905	485	328	248	200	168	145	128	114	104	95	88	82	77	72	72
	10%	801	430	291	220	177	148	128	113	101	92	84	78	72	68	64	64
HYDROLOGIC GROUP "A"																	
Cover Management Type 6—No cover or minimal roughness or both																	
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	983
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	965	864	784	717	661	613	613
	4%	1000	1000	1000	1000	1000	1000	1000	898	780	690	619	560	513	472	438	438
	5%	1000	1000	1000	1000	1000	989	816	693	602	532	477	432	395	364	338	338
	6%	1000	1000	1000	1000	1000	800	660	561	487	430	386	350	320	295	273	273
	7%	1000	1000	1000	1000	846	669	552	469	407	360	323	292	267	246	229	229
	8%	1000	1000	1000	975	725	573	473	402	349	308	276	250	229	211	196	196
	9%	1000	1000	1000	851	632	500	412	350	304	269	241	218	200	184	171	171
	10%	1000	1000	1000	753	560	443	365	310	269	238	213	195	177	163	151	151
HYDROLOGIC GROUP "A"																	
Cover Management Type 5—Clean-tilled, smooth, fallow																	
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	5%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	928	851	787	
	6%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	915	825	751	689	637	
	7%	1000	1000	1000	1000	1000	1000	1000	1000	980	860	766	690	627	576	532	
	8%	1000	1000	1000	1000	1000	1000	1000	975	840	737	656	591	538	493	456	
	9%	1000	1000	1000	1000	1000	1000	1000	851	733	643	572	515	469	430	398	
	10%	1000	1000	1000	1000	1000	1000	897	753	649	569	506	456	415	381	352	
HYDROLOGIC GROUP "A"																	
Cover Management Type 4—Moderate cover or rough or both																	
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	5%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	6%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	7%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	8%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	9%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	10%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	

TABLE 2. Contouring Critical Slope Length.

HYDROLOGIC GROUP "B"																
Cover Management Type 7—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	972	908	853	805	763
	2%	1000	1000	1000	964	808	699	618	556	507	467	433	404	380	359	340
	3%	1000	1000	752	601	503	436	385	347	316	291	270	252	237	224	212
	4%	1000	730	538	429	360	312	276	248	226	208	193	180	169	160	152
	5%	900	563	415	331	278	240	213	191	174	160	149	139	131	123	117
	6%	728	456	336	268	225	194	172	154	141	128	120	112	106	100	95
	7%	609	381	281	224	188	162	144	129	118	108	101	94	88	83	79
	8%	521	326	240	191	161	139	123	111	101	92	86	81	75	71	68
	9%	455	285	210	167	140	121	107	97	88	81	75	70	66	62	59
	10%	403	252	186	148	124	107	95	86	78	72	67	62	58	55	52
HYDROLOGIC GROUP "B"																
Cover Management Type 6—No cover or minimal roughness or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	961	882	816	760	712	671
	3%	1000	1000	1000	1000	1000	959	830	734	659	599	549	508	473	444	418
	4%	1000	1000	1000	1000	814	686	594	525	471	428	393	364	339	317	299
	5%	1000	1000	1000	776	628	529	458	405	363	330	303	280	261	245	231
	6%	1000	1000	825	628	508	428	370	327	294	267	245	227	211	198	186
	7%	1000	1000	690	525	425	358	310	274	246	223	205	189	177	166	156
	8%	1000	864	591	450	364	306	265	234	210	191	175	162	151	142	134
	9%	1000	754	515	392	317	267	231	204	184	167	153	142	132	124	116
	10%	1000	668	457	347	281	237	205	181	163	148	136	125	117	110	103
HYDROLOGIC GROUP "B"																
Cover Management Type 5—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	946
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	987	901	831	771	726	677
	5%	1000	1000	1000	1000	1000	1000	1000	943	842	761	695	641	595	556	521
	6%	1000	1000	1000	1000	1000	1000	869	763	681	616	562	518	481	450	422
	7%	1000	1000	1000	1000	1000	847	727	638	569	515	410	433	402	376	353
	8%	1000	1000	1000	1000	871	725	623	546	487	441	403	371	344	322	302
	9%	1000	1000	1000	1000	760	633	543	477	425	385	351	324	301	281	264
	10%	1000	1000	1000	844	673	560	481	422	377	340	311	287	266	249	233
HYDROLOGIC GROUP "B"																
Cover Management Type 4—Moderate cover or rough or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	5%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	6%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	7%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	933	874
	8%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	928	859	800	748
	9%	1000	1000	1000	1000	1000	1000	1000	1000	1000	970	883	810	749	698	653
	10%	1000	1000	1000	1000	1000	1000	1000	1000	955	859	781	717	663	617	578

TABLE 2. Contouring Critical Slope Length.

HYDROLOGIC GROUP "C"																
Cover Management Type 7—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	999	927	865	813	768	728	693
	2%	1000	1000	964	792	677	595	533	484	445	413	386	362	342	324	309
	3%	1000	783	601	494	422	378	332	302	278	257	240	226	213	202	192
	4%	833	560	430	353	302	265	238	216	199	184	172	161	152	145	138
	5%	642	432	332	272	232	204	183	167	153	142	132	124	118	112	106
	6%	520	349	268	220	188	165	148	135	123	115	107	101	95	90	86
	7%	434	292	224	184	157	138	124	113	104	96	90	84	79	75	72
	8%	372	250	192	157	135	118	106	96	89	82	77	72	68	65	61
	9%	325	218	167	137	118	103	92	84	77	72	67	63	59	56	54
	10%	287	193	148	122	104	91	82	75	68	63	59	56	53	50	47
HYDROLOGIC GROUP "C"																
Cover Management Type 6—No cover or minimal roughness or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	948	862	793	735	686	643	607	575
	3%	1000	1000	1000	1000	865	746	658	591	538	494	458	427	401	378	358
	4%	1000	1000	933	742	619	534	471	422	385	353	327	306	287	271	256
	5%	1000	986	720	572	477	411	363	326	297	272	253	236	221	209	198
	6%	1000	798	582	463	386	333	294	264	240	220	204	191	179	169	160
	7%	1000	667	487	387	323	278	245	221	201	184	171	159	150	141	134
	8%	926	571	417	331	276	238	210	189	172	158	146	136	128	121	114
	9%	808	498	364	289	241	208	184	165	150	138	128	119	112	105	100
	10%	715	441	322	256	214	184	163	146	133	122	113	105	99	93	88
HYDROLOGIC GROUP "C"																
Cover Management Type 5—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	944	883	832	787
	4%	1000	1000	1000	1000	1000	1000	1000	944	856	784	725	675	632	595	563
	5%	1000	1000	1000	1000	1000	928	814	728	660	605	559	520	487	459	434
	6%	1000	1000	1000	1000	876	751	659	589	534	489	452	421	394	371	351
	7%	1000	1000	1000	885	733	628	551	493	446	409	378	352	330	310	294
	8%	1000	1000	966	758	628	538	472	421	382	350	324	301	282	265	251
	9%	1000	1000	843	662	547	469	412	368	334	306	283	263	246	232	219
	10%	1000	1000	746	586	485	415	365	326	295	271	250	233	218	205	194
HYDROLOGIC GROUP "C"																
Cover Management Type 4—Moderate cover or rough or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	5%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	6%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	948	890	841
	7%	1000	1000	1000	1000	1000	1000	1000	1000	1000	990	912	848	792	745	703
	8%	1000	1000	1000	1000	1000	1000	1000	1000	928	848	782	726	679	638	602
	9%	1000	1000	1000	1000	1000	1000	1000	897	810	740	682	634	557	557	525
	10%	1000	1000	1000	1000	1000	1000	892	795	717	655	604	561	492	492	465

TABLE 2. Contouring Critical Slope Length.

HYDROLOGIC GROUP "D"																
Cover Management Type 7—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	928	864	810	764	723	687	656
	2%	1000	1000	847	707	612	543	490	448	413	385	361	340	322	306	292
	3%	958	671	528	441	381	338	305	279	257	240	225	212	201	191	182
	4%	685	480	378	315	273	242	218	199	184	171	161	151	144	136	130
	5%	528	370	291	243	210	186	168	154	142	132	124	117	111	105	100
	6%	427	299	235	196	170	151	136	124	115	107	100	94	90	85	81
	7%	357	250	197	164	142	126	113	104	96	89	84	79	74	71	68
	8%	306	214	168	140	122	108	97	89	82	76	72	68	64	61	58
	9%	267	187	147	122	106	94	85	78	72	67	62	59	56	53	51
	10%	236	165	130	108	94	83	75	69	63	59	55	52	49	47	45
HYDROLOGIC GROUP "D"																
Cover Management Type 6—No cover or minimal roughness or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	964	871	796	735	683	640	603	570	541
	3%	1000	1000	1000	918	776	675	601	543	496	458	426	399	375	355	337
	4%	1000	1000	813	657	555	483	430	388	354	328	305	285	269	254	241
	5%	1000	837	627	507	428	372	331	299	273	252	235	220	207	196	186
	6%	1000	678	507	410	346	301	268	242	221	204	190	178	168	158	150
	7%	879	567	424	343	289	252	224	202	185	171	159	149	140	132	126
	8%	753	485	363	293	248	216	192	173	158	146	136	127	120	113	108
	9%	657	423	317	256	216	188	167	151	138	128	118	111	104	99	94
	10%	582	375	280	227	191	167	148	134	122	113	105	98	93	88	83
HYDROLOGIC GROUP "D"																
Cover Management Type 5—Clean-tilled, smooth, fallow																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	989	919	859	808	763	725
	4%	1000	1000	1000	1000	1000	1000	932	840	767	707	657	614	578	546	518
	5%	1000	1000	1000	1000	934	810	719	648	592	545	507	474	446	421	400
	6%	1000	1000	1000	898	756	656	582	524	479	441	410	383	361	341	323
	7%	1000	1000	934	750	632	578	486	438	400	369	343	321	301	285	270
	8%	1000	1000	800	643	541	470	416	375	343	316	294	275	258	244	231
	9%	1000	940	698	561	472	410	363	327	299	276	256	240	225	213	202
	10%	1000	832	618	497	418	363	322	290	265	244	227	212	199	188	179
HYDROLOGIC GROUP "D"																
Cover Management Type 4—Moderate cover or rough or both																
10-yr. EI		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
SLOPE %	1%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	2%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	3%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	4%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	5%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	954
	6%	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	986	920	864	815	772
	7%	1000	1000	1000	1000	1000	1000	1000	1000	968	890	825	770	723	682	646
	8%	1000	1000	1000	1000	1000	1000	1000	912	830	762	707	659	619	584	553
	9%	1000	1000	1000	1000	1000	1000	886	796	724	665	616	575	540	509	482
	10%	1000	1000	1000	1000	1000	899	784	704	641	589	546	509	478	451	427