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TECHNICAL REPORT NO. 3-753

TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS

by

M. P. Meyer

January 1967

Sponsored by

Advanced Research Projects Agency
Directorate of Remote Area Conflict

Service Agency

U. S. Army Materiel Command

Conducted by

U. S. Army Engineer Waterways Experiment Station
CORPS OF ENGINEERS
Vicksburg, Mississippi

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Advanced Research Projects Agency
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Order No. 400

Service Agency

U. S. Army Materiel Command
Project No. 1-V-0-21701-A-046
Task 02

Conducted by

U. S. Army Engineer Waterways Experiment Station
CORPS OF ENGINEERS
Vicksburg, Mississippi

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FOREWORD

The study reported herein constitutes a portion of the Mobility Environmental Research Study (MERS), sponsored by the Office, Secretary of Defense, Advanced Research Projects Agency (ARPA), Directorate of Remote Area Conflict, for which the U. S. Army Engineer Waterways Experiment Station (WES) is the prime contractor, and the U. S. Army Materiel Command (AMC) is the service agent. The broad mission of Project MERS is to determine the effects of the various features of physical environment on the performance of cross-country, ground-contact vehicles and to provide therefrom data which can be used to improve both the design and employment of such vehicles. One criterion of the project is that the data be interpretable in terms of vehicle requirements for Southeast Asia. Most of the funds employed for this study were allocated to WES through AMC under ARPA Order No. 400. The remaining funds were provided by the Directorate of Research and Development, AMC, as part of Department of the Army Project No. 1-V-0-21701-A-046, "Trafficability and Mobility Research," Task 1-V-0-21701-A-046-02, "Surface Mobility."

The study was performed by personnel of WES during the period August 1964-May 1966. The study was assigned to the Army Mobility Research Branch (AMRB), Mobility and Environmental (M&E) Division. Mr. M. P. Meyer had the primary responsibility for the general conduct of the study including the preparation of this report. Mr. J. G. Kennedy programmed the data for computer analysis. Mr. G. T. Ellis compiled the data and assisted in the analysis. Mr. C. A. Blackmon wrote the appendix. Others assisting in the study include Messrs. S. M. Hodge, J. E. Lee, and H. D. Molthan. All phases of the study were under the direct supervision of Mr. E. S. Rush, Chief of the Trafficability Section, AMRB, and the general supervision of

Dr. D. R. Freitag, Chief, AMRB; Mr. A. A. Rula, Chief, MERS Branch; Messrs. W. G. Shockley and S. J. Knight, Chief and Assistant Chief, respectively, M&E Division; and Mr. W. J. Turnbull, Technical Assistant for Soils and Environmental Engineering.

Directors of the WES during the conduct of this study and the preparation of this report were Col. Alex G. Sutton, Jr., CE, and Col. John R. Oswalt, Jr., CE. Technical Director was Mr. J. B. Tiffany.

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SUMMARY

The study reported herein consisted of a statistical analysis of the principal factors that influence soil trafficability and the application of the analysis to the development of a scheme for classifying soils under generally wet conditions in Thailand. The scheme is essentially a listing of soil types (in terms of the Unified Soil Classification System and the U. S. Department of Agriculture textural classification system) in decreasing order of median rating cone index. Means and ranges are given for each soil type in high- and low-topography positions for average and highest soil-moisture conditions during the wet season. The probability of successful negotiation of a soil type by military vehicles can be ascertained by comparing vehicle cone indexes with the frequency distribution of rating cone indexes for the soils. Results of the studies performed in the development of the trafficability scheme are summarized as follows:

a. The probability of "go" for a given vehicle over a given soil type is higher on high topographic positions than on low topographic positions; on low topographic positions the probability of "go" is lowest during times of maximum soil-moisture conditions. For a given topography-moisture condition the probability of "go" decreases for USCS soils in the following order: clean, coarse-grained soils, coarse-grained soils with fines, fine-grained soils, and organic soils.

b. Soils in Thailand have slightly higher strengths under wettest soil-moisture conditions and slightly lower strengths under average soil-moisture conditions during the wet season than do soils in humid-temperate areas of the United States.

TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS

PART I: INTRODUCTION

Background

1. The study reported herein is a part of an extensive investigation conducted to develop techniques and procedures for determining off-road soil conditions in Thailand and a graphic means of presenting these conditions which will show the relations between vehicle mobility, soil type and moisture content, and slope. This study consisted of a statistical analysis of the principal factors that influence soil trafficability and the application of the analysis in developing a scheme for classifying Thailand soils under generally wet conditions. The scheme presented herein is essentially the same as that reported in a previous WES publication.[1] The major differences are that this scheme is applied to a more restricted area, and some refinement of analytical procedures has been made.

Purpose

2. The purpose of this study was to develop a scheme for classifying the trafficability of Thailand soils in the wet season based on identification of the soils in terms of the Unified Soil Classification System (USCS) and the U. S. Department of Agriculture (USDA) textural classification system, general topographic data, and two general levels of soil-moisture content.

Scope

3. Trafficability data collected at 846 sites in Thailand on coarse-grained soils with fines and fine-grained soils of the 0- to 6- and 6- to 12-in. soil layers were statistically analyzed in the development of a trafficability classification scheme. In 1964 data from 238 sites were collected specifically for this study. Other data used were collected in various Mobility Environmental Research Study (MERS) programs including:

a preliminary survey of environmental factors affecting ground mobility in Thailand,[2] performed in 1962; the study of a quantitative method for describing terrain for ground mobility, surface composition,[3] performed in 1964-1965; a study of soil moisture-strength characteristics of selected soils in Thailand,[4] performed in 1963-1965; a study of selected airphoto patterns of terrain features,[5] performed in 1964-1965 by the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL); and tests to develop an analytical model for predicting cross-country vehicle performance,[6] performed in 1965. Most of these data came from the Chiang Mai, Nakhon Sawan, Khon Kaen, Lop Buri, Chanthaburi, and Pran Buri study areas. Analyses were made of cone index, remolding index, rating cone index, surface shear strength, moisture content, density, and specific gravity of soils of low and high topography identified according to the USCS and the USDA textural classification system.

General Approach

4. A soil trafficability classification scheme, if it is to be practicable, must first name or identify the soils according to some recognized system of soil classification, then establish trafficability limits for each soil type, and finally, if feasible, collect the various soil types into a small number of groups, each exhibiting a discrete trafficability behavior. The ideal scheme would be one that provides for consideration and evaluation of all aspects of the environment (pedologic, geologic, hydrologic, physiographic, climatic, and vegetative) that affect the trafficability of the soil. The scheme reported herein considers the soil type under very general space and time conditions in a tropical climate. Further refinement according to the environmental characteristics mentioned previously must await the collection of additional data and further analysis.

5. Because their trafficability behavior is not materially affected by moisture content, clean sands and gravel have been given a distinct place in the soil trafficability classification scheme and have been excluded from the various statistical analyses that are presented in this report.

6. The soil trafficability classification scheme presented in this report may be considered a composite classification scheme because it uses two well-known systems of soil identification and is based on two moisture levels. The two soil classification systems used are the USCS[7] (fig. 1) and the USDA soil textural classification system[8] (fig. 2). The USCS employs soil texture, plasticity, and organic content to name or type soils, whereas the USDA system is based solely on grain size distribution. Because the USCS characterizes soils on the basis of their engineering behavior, it is considered to be more applicable to the development of a soil trafficability classification scheme than the USDA system. However, since many areas in Thailand and other areas in Southeast Asia are mapped in USDA terms, it was also considered desirable to develop a scheme in USDA terms.

UNIFIED SOIL CLASSIFICATION
(Including Identification and Description)

1 Major Divisions	2		3 Group Symbols	4 Typical Names	5 Field Identification Procedures (Excluding particles larger than 3 in. and basing fractions on estimated weights)			6 Information Required for Describing Soils
Coarse-grained Soils. More than half of material is larger than No. 200 sieve size.	Gravels. More than half of coarse fraction is larger than No. 4 sieve size. (For visual classification, the 1/4-in. size may be used as equivalent to the No. 4 sieve size)	Clean Gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	Wide range in grain sizes and substantial amounts of all intermediate particle sizes.			For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions, and drainage characteristics.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.	Predominantly one size or a range of sizes with some intermediate sizes missing.			
		Gravels with Fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixture.	Nonplastic fines or fines with low plasticity (for identification procedures see ML below).			Give typical name; indicate approximate percentages of sand and gravel, maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbol in parentheses.
			GC	Clayey gravels, gravel-sand-clay mixtures.	Plastic fines (for identification procedures see CL below).			
	Sands. More than half of coarse fraction is smaller than No. 4 sieve size.	Clean Sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines.	Wide range in grain size and substantial amounts of all intermediate particle sizes.			
			SP	Poorly graded sands or gravelly sands, little or no fines.	Predominantly one size or a range of sizes with some intermediate sizes missing.			
		Sands with Fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.	Nonplastic fines or fines with low plasticity (for identification procedures see ML below).			Example: Silty sand, gravelly; about 20% hard, angular gravel particles 1/2-in. maximum size; rounded and subangular sand grains, coarse to fine; about 15% nonplastic fines with low dry strength; well compacted and moist in place; alluvial sand; (SM).
			SC	Clayey sands, sand-clay mixtures.	Plastic fines (for identification procedures see CL below).			
					Identification Procedures on Fraction Smaller than No. 40 Sieve Size			
					Dry Strength (Crushing characteristics)	Dilatancy (Reaction to shaking)	Toughness (Consistency near PL)	
Fine-grained Soils. More than half of material is smaller than No. 200 sieve size. The No. 200 sieve size is about the smallest particle visible to the naked eye.	Silts and Clays. Liquid limit is less than 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	None to slight	Quick to slow	None	For undisturbed soils add information on structure, stratification, consistency in undisturbed and remolded states, moisture and drainage conditions.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	Medium to high	None to very slow	Medium	
			OL	Organic silts and organic silty clays of low plasticity.	Slight to medium	Slow	Slight	Give typical name; indicate degree and character of plasticity; amount and maximum size of coarse grains; color in wet condition; odor, if any; local or geologic name and other pertinent descriptive information; and symbol in parentheses.
	Silts and Clays. Liquid limit is greater than 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	Slight to medium	Slow to none	Slight to medium	
			CH	Inorganic clays of high plasticity, fat clays.	High to very high	None	High	
			OH	Organic clays of medium to high plasticity, organic silts.	Medium to high	None to very slow	Slight to medium	Example: Clayey silt, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (ML).
Highly Organic Soils			Pt	Peat and other highly organic soils.	Readily identified by color, odor, spongy feel and frequently by fibrous texture.			

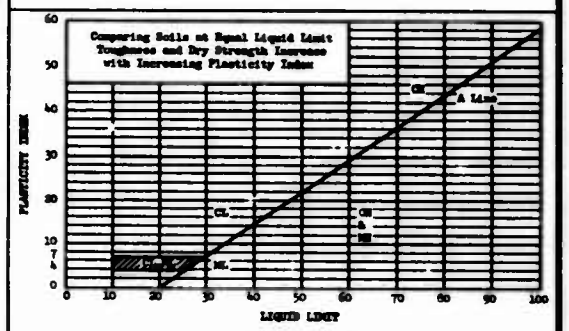
Laboratory Classification Criteria (7)

Use grain-size curve in identifying the fractions as given under field identification.

Determine percentages of gravel and sand from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size) coarse-grained soils are classified as follows:

Less than 5% - GW, GP, SW, SP.
More than 12% - GM, GC, SM, SC.
5% to 12% - Borderline cases requiring use of dual symbols.

$C_u = \frac{D_{60}}{D_{10}}$ Greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
Not meeting all gradation requirements for GW	
Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
Atterberg limits above "A" line with PI greater than 7	
$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
Not meeting all gradation requirements for SW	
Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols.
Atterberg limits above "A" line with PI greater than 7	



PLASTICITY CHART

For laboratory classification of fine-grained soils

(1) Boundary classifications: Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well-graded gravel-sand mixture with clay binder. (2) All sieve sizes on this chart are U. S. standard.

FIELD IDENTIFICATION PROCEDURES FOR FINE-GRAINED SOILS OR FRACTIONS

These procedures are to be performed on the minus No. 40 sieve size particles, approximately 1/64 in. For field classification purposes, screening is not intended, simply remove by hand the coarse particles that interfere with the tests.

Dilatancy (reaction to shaking)

After removing particles larger than No. 40 sieve size, prepare a pat of moist soil with a volume of about one-half cubic inch. Add enough water if necessary to make the soil soft but not sticky.

Place the pat in the open palm of one hand and shake horizontally, striking vigorously against the other hand several times. A positive reaction consists of the appearance of water on the surface of the pat which changes to a livery consistency and becomes glossy. When the sample is squeezed between the fingers, the water and gloss disappear from the surface, the pat stiffens, and finally it cracks or crumbles. The rapidity of appearance of water during shaking and of its disappearance during squeezing assist in identifying the character of the fines in a soil.

Very fine clean sands give the quickest and most distinct reaction whereas a plastic clay has no reaction. Inorganic silts, such as a typical rock flour, show a moderately quick reaction.

Dry Strength (crushing characteristics)

After removing particles larger than No. 40 sieve size, mold a pat of soil to the consistency of putty, adding water if necessary. Allow the pat to dry completely by oven, sun, or air-drying, and then test its strength by breaking and crumbling between the fingers. This strength is a measure of the character and quantity of the colloidal fraction contained in the soil. The dry strength increases with increasing plasticity.

High dry strength is characteristic for clays of the CH group. A typical inorganic silt possesses only very slight dry strength. Silty fine sands and silts have about the same slight dry strength, but can be distinguished by the feel when powdering the dried specimen. Fine sand feels gritty, whereas a typical silt has the smooth feel of flour.

Toughness (consistency near plastic limit)

After particles larger than the No. 40 sieve size are removed, a specimen of soil about one-half inch cube in size, is molded to the consistency of putty. If too dry, water must be added and if sticky, the specimen should be spread out in a thin layer and allowed to lose some moisture by evaporation. Then the specimen is rolled out by hand on a smooth surface or between the palms into a thread about one-eighth inch in diameter. The thread is then folded and rerolled repeatedly. During this manipulation the moisture content is gradually reduced and the specimen stiffens, finally loses its plasticity, and crumbles when the plastic limit is reached.

After the thread crumbles, the pieces should be lumped together and a slight kneading action continued until the lump crumbles.

The tougher the thread near the plastic limit and the stiffer the lump when it finally crumbles, the more potent is the colloidal clay fraction in the soil. Weakness of the thread at the plastic limit and quick loss of coherence of the lump below the plastic limit indicate either inorganic clay of low plasticity, or materials such as kaolin-type clays and organic clays which occur below the A-line.

Highly organic clays have a very weak and spongy feel at the plastic limit.

Adopted by Corps of Engineers and Bureau of Reclamation, January 1952.

021260A

Fig. 1. Unified Soil Classification System

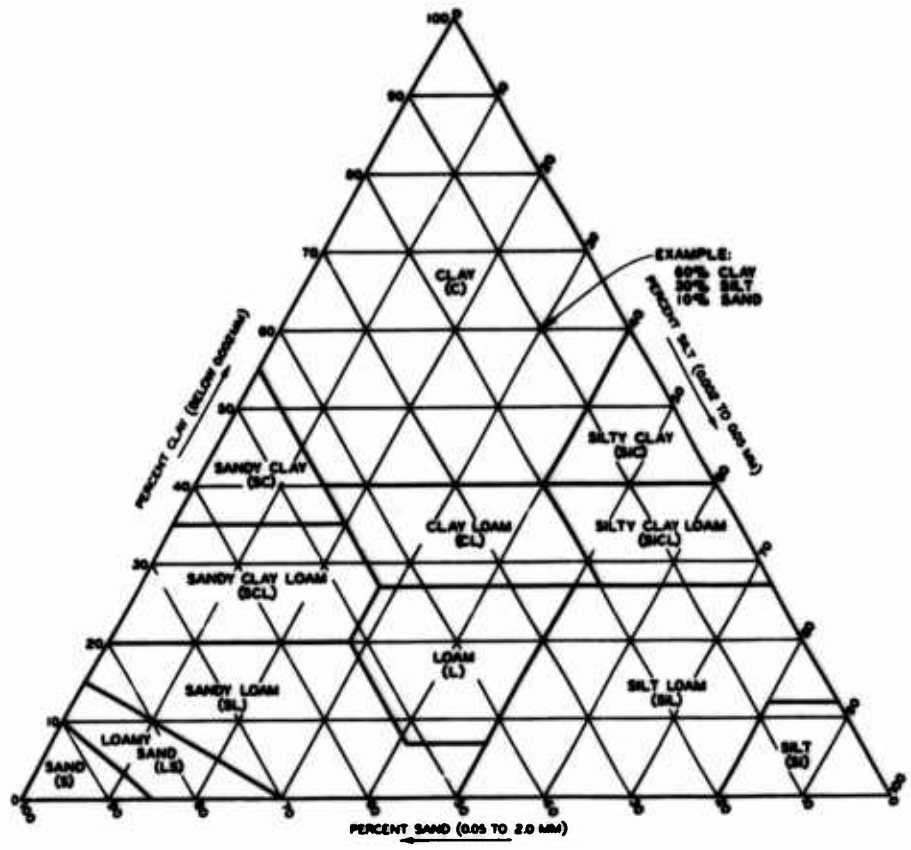


Fig. 2. USDA soil textural classification system

PART II: TRAFFICABILITY FACTORS

7. Trafficability is defined as the capacity of a soil to withstand traffic by vehicles. It is an important aspect of cross-country movement which may be defined as the ability of terrain to permit the movement of vehicles. The factors that influence cross-country movement are numerous. They include not only the many variables which combine to determine the strength and other physical properties of soils, but also slope and other natural obstacles such as drainageways, scarps, vegetation, and microrelief features, as well as man-made obstacles such as railroad embankments, canals, paddy dikes, etc. The investigation reported herein deals mainly with the trafficability of soils. However, the effects of slope are also considered.

Soil Bearing and Traction Capacities

8. Bearing and traction capacities are primarily functions of strength (or shearing resistance) of a soil. Bearing capacity is the ability of a soil to support a vehicle without undue sinkage; traction capacity is the ability of a soil to provide sufficient resistance between the propulsion element of a vehicle and the soil for the necessary thrust to move the vehicle forward. The trafficability of a soil is considered adequate for a given vehicle if the soil has sufficient bearing capacity to support the vehicle and sufficient traction capacity to enable the vehicle to develop the forward thrust necessary to overcome its rolling resistance.

Methods of Measuring and Evaluating Soil Trafficability

9. The soil strength measurements used in the WES system for predicting vehicle performance were used in developing the soil trafficability classification scheme discussed in this report. It has been demonstrated that the effect of soil on the performance of vehicles in terms of "go"*

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* In this report "go" means that 50 vehicles can pass in straight-line traffic or one vehicle can execute severe maneuvers without becoming immobilized.

and "no go," slope-climbing ability, drawbar pull, and force required to tow the vehicle can be predicted with reasonable accuracy if the mass and surface soil strengths are not vastly different. If the mass soil strength is high and the surface is wet or consists of a thin, soft soil layer, the vehicle will sink very little, but forward motion may be denied because of loss of traction. Present methods for predicting the performance of vehicles on such soils are not entirely satisfactory. Previous investigations have also shown that the change in strength of a soil which will be developed under vehicular traffic differs significantly for fine-grained and coarse-grained soils; therefore, the measurement and evaluation methods differ somewhat. These differences are discussed in the following paragraphs.

Soil strength measurements used for determining trafficability

10. Fine-grained soils and sands with fines, poorly drained. In fine-grained soils and in sands with fines, poorly drained, cone index (CI) and remolding index (RI) measurements are necessary to define soil trafficability. The CI provides an index of the in-situ or undisturbed shear strength of the soil prior to vehicular traffic. It, by itself, is inadequate for predicting the soil strength after repeated traffic by a vehicle because repetitive traffic invariably remolds the soil, thus altering its strength. The probable effect of vehicular traffic on soil strength is obtained from the RI, which indicates the direction and magnitude of the strength change that can be anticipated under vehicular traffic. An RI less than 1.00 denotes a strength loss as a result of remolding; an RI greater than 1.00 indicates a gain in strength. For example, a wet silt may retain only 25% of its undisturbed strength once it is subjected to repetitive vehicular traffic.

11. The trafficability of fine-grained soils and sands with fines, poorly drained, is therefore defined in terms of a value called the rating cone index (RCI), which is the product of the CI and the RI for the same soil layer. In general, the soil layer between the 6- and 12-in. depths is critical for most military vehicles operating in such soils. However, the depth of the critical layer varies with the strength profile of the soil and the vehicle type and weight.[9,10]

12. Various instruments are currently being tested to determine their utility for predicting surface traction for soil trafficability purposes. One instrument (sheargraph) used in this study provides a measure of the ultimate cohesion and ultimate angle of internal friction for soil-to-soil and rubber-to-soil shear failures. In this study a normal load of 10 psi was arbitrarily selected as a constant in determining the surface shear strength of a soil. The equipment and procedures used in taking sheargraph measurements and in reducing and evaluating the data are described in references 11 and 12.

13. Coarse-grained soils. For coarse-grained soils or clean sands, CI measurements alone are adequate to quantify trafficability. Usually, the strength of clean sands is not altered significantly by changes in moisture content. Clean sands possess adequate strength to support vehicles without critical sinkage. In clean sands the first pass is the most critical, and subsequent passes are made with less difficulty. The 0- to 6-in. layer is considered the critical layer for most military vehicles.

Evaluation of soil trafficability

14. Fine-grained soils and sands with fines, poorly drained. The ability of a given vehicle to complete 40 to 50 passes traveling in a straight-line path over a level area or to execute severe maneuvers in fine-grained soils or sands with fines, poorly drained, is assured if the RCI of the soil in the critical layer in that area is equal to or greater than the vehicle cone index (VCI) assigned to that vehicle. In general, an RCI equal to 50% of the VCI indicates sufficient soil strength to permit one or two straight-line passes of the vehicle.[13] If the RCI is greater than the VCI of a given vehicle, the additional traction resulting from the excess soil strength can be used to accelerate the vehicle, negotiate slopes, or tow a load.

15. The VCI's for most military vehicles are tabulated in several publications.[9,10] The referenced publications also contain formulas for computing mobility indexes, means of relating these indexes to VCI's, and the relation of drawbar pull, slope, and force required to tow the vehicle to soil strength.

16. Coarse-grained soils. Studies being conducted on clean sands

have not yet progressed to the point of quantifying trafficability. Results thus far indicate that tracked vehicles usually experience little or no difficulty traversing level, clean-sand areas. The effect of soil strength on vehicle performance (in terms of drawbar pull and slope-climbing ability) of a given tracked vehicle is small; however, a significant difference in performance exists among vehicles having different types of track systems. A wide range in wheeled-vehicle performance occurs as a result of changes in tire pressure, number of tires, and tire size.

Soil Moisture

17. The principal factor influencing the strength of a given soil is its moisture content. Any soil in a comparatively dry state may be trafficable to all military vehicles; but at high moisture content, its strength and consequently its trafficability may be such that only certain vehicles can pass. It is apparent that moisture conditions must be taken into account in any evaluation of the trafficability of soils and, further, that soils must be at similar or equivalent conditions of moisture in order that they can be rated fairly in comparison with each other.

18. Moisture is added to the soil through precipitation, a rising water table, flooding, or irrigation. Moisture is generally depleted from the soil by runoff, gravitational percolation, evaporation, or transpiration through plants. The rate and magnitude of moisture gain or loss and the capacity of the soil to hold water are controlled primarily by the soil and by site characteristics that determine the porosity and permeability of the soil. These characteristics, for the most part, are influenced by the plastic, organic, and textural properties of the soil that are defined in terms of the USCS and the USDA soil classification system.

Climate and season

19. Climate must be considered in any type of soil-moisture analysis. The principal elements of climate consist of precipitation, temperature, atmospheric humidity and pressure, and wind velocity. Of these, precipitation and temperature are the two most important factors controlling the gain and loss of soil moisture. Similar soils within a specific climatic

area will have qualitatively similar seasonal soil-moisture conditions; and conversely, similar soils of different climates will have dissimilar seasonal soil-moisture regimes. Soils in hot, humid climatic areas, for example, generally approach minimum moisture levels more rapidly than soils in cool, humid climatic areas because of higher rates of evapotranspiration.

20. For purposes of this study, a wet season and a dry season are considered, based on the qualitative moisture conditions of the soil. The wet season is defined as the period of the year when generally high soil-moisture contents prevail; it corresponds to the period of maximum precipitation. The dry season is defined as the period of generally low soil-moisture contents, although maximum moisture contents may occur for short periods immediately after several days of heavy rain.

21. Soil-moisture studies conducted at specific sites in various sections of Thailand for continuous periods of almost two years have been used to refine a system for predicting the effects of meteorological factors on the trafficability of soils. The studies show, among other things, that the top 12 in. or so of soil attain relatively high moisture contents during the monsoon season beginning in May or June and continuing through October or November. The distribution of high-rainfall months wherein the rainfall exceeds 100 mm (3.94 in.) a month is recorded in the following tabulation for nine weather stations in Thailand that are located in areas that include most of the study sites.

Location of Weather Station	Years of Record	Percent of Years of Record with Rainfall Exceeding 100 mm (3.94 in.) per Month											
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Chiang Mai	19-1/2	0	0	0	20	80	75	89	100	100	63	11	0
Khon Kaen	17	0	0	12	35	100	76	76	100	100	35	0	0
Nakhon Sawan	15	0	7	0	13	53	53	67	93	100	73	0	0
Lop Buri	17-1/2	0	0	24	29	71	82	94	89	100	61	6	0
Bangkok	23-2/3	0	4	4	35	87	87	79	92	100	96	17	0
Chanthaburi	23	4	9	26	70	100	100	100	100	100	96	26	0
Sattahip (Chanthaburi Area)	23	0	17	17	48	74	26	30	35	87	96	52	4
Hua Hin (Pran Buri Area)	20-1/3	5	0	0	15	55	40	25	40	67	81	43	0
Songkhla (Hat Yai Area)	22-2/3	61	17	22	43	57	57	45	33	55	96	100	91

Space and time factors
affecting soil-moisture content

22. In order to estimate the trafficability of a site more accurately, consideration must be given not only to its soil type but also to its topographic position and its general relative moisture-content level. From a study of the data available, certain arbitrary "space" and "time" factors have been designated that are considered essential for optimum accuracy in estimating trafficability on the basis of existing knowledge and available data. Additional data and further study may produce more explicit criteria for estimating the trafficability at a site. However, at the present time, two space factors (low and high topography) and two time factors (wet-season and high-moisture conditions) will be used. These are illustrated in fig. 3 and explained in the following paragraphs.

23. Space factors. The depth to the water table has been found to be a significant factor in determining how wet a site may become. Sites which have a water table within 4 ft of the surface become wetter in the top foot than do sites with the water table below the top 4 ft, even though all other conditions appear to be the same.

a. Low topography. A site of low topography is one at which a water table is known to exist within 4 ft of the surface, perennially or at some time during the year. Such sites usually occur as bottomlands, lower terraces, depressions, or bottoms of slopes, or occasionally as upland flats associated with impervious subsurface layers or pans. They are generally characterized by poor to fair external drainage and moderately poor to very poor internal drainage. If the water table is actually observed at depths of less than 4 ft from the surface at a site at least once, the site automatically qualifies as a low-topography site. If observed data on water-table depth are not available, sites which appear, from observation, likely to have high water tables on the basis of their topographic position, drainage characteristics, proximity to surface water bodies, or soil coloring (gray or blue mottled soils usually indicate the presence of a consistent water table) are judged to be low-topography sites.

b. High topography. Sites of high topography have water tables at depths greater than 4 ft from the surface at all times. These sites are characterized by soils with no impervious layers or pans and with moderate to good internal and external drainage. They are usually located on ridges or upper

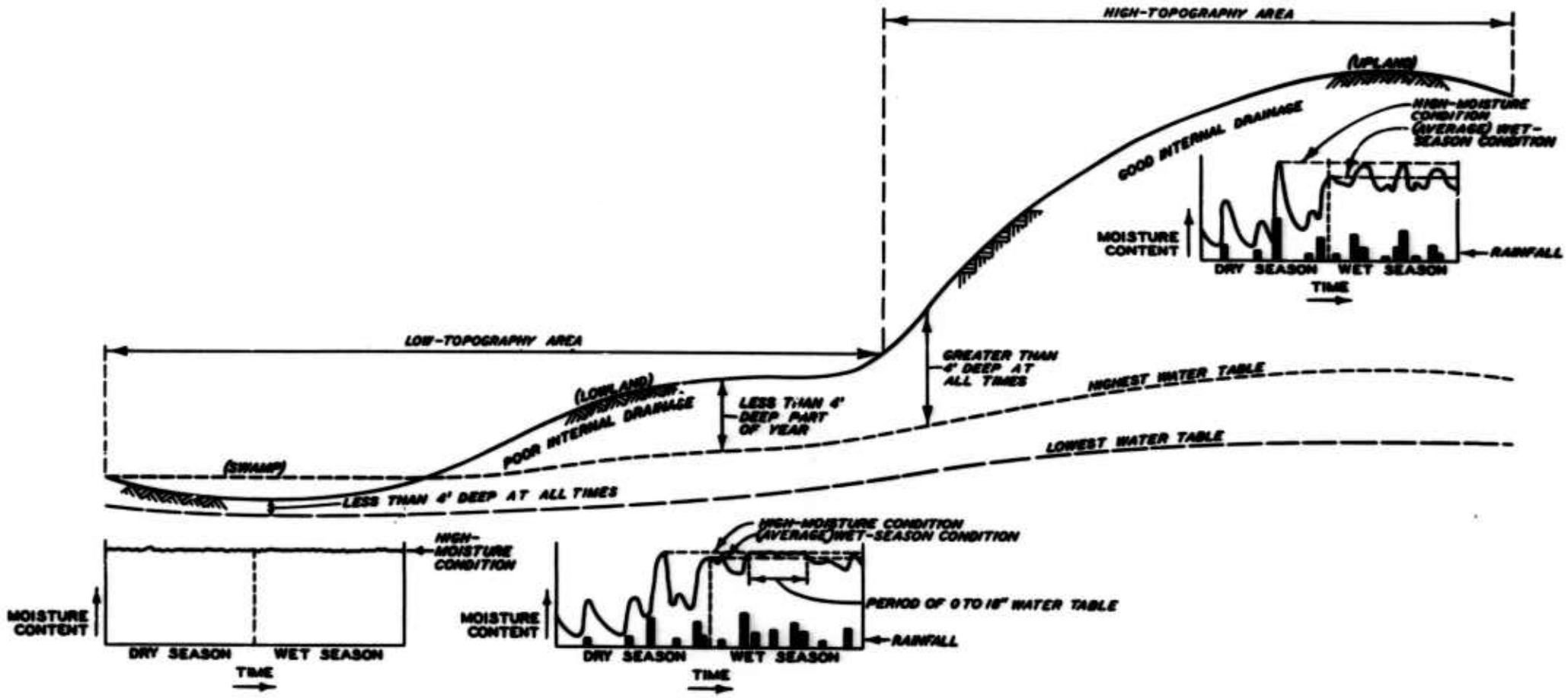

Fig. 3. Profile of a typical area showing various topography-moisture conditions during year

slopes. If information on the water table is not available, it is usually possible to determine whether a site is one of high topography through a study of the topographic position and other environmental data available.

24. Time factors. While for this study it would have been desirable to have examined the means and ranges of pertinent soil values measured at a time when the moisture content was at rigorous reference levels, such as field maximum or field capacity, this was not feasible because only a few sites (the prediction-development sites) were known to have been tested when the moisture content was at these levels. In order to realize the benefit of values derived from large masses of data, less rigorous moisture levels, wet-season and high-moisture conditions, were selected. These conditions, or time factors as they are called in this report, are discussed in the following subparagraphs.

a. Wet-season condition. The wet-season condition is intended to represent the average moisture condition prevailing in soils during the wet season. Data from some of the drier sites were not utilized because the soil was too firm to obtain the necessary data for a determination of rating cone index. Exclusion of these data tended to bias the averages toward wetter-than-average conditions.

b. High-moisture condition. The high-moisture condition represents the worst trafficability condition that can occur at sites that undergo seasonal changes. Marshes, bogs, swamps, and other perennially wet, soft, spongy areas are prime examples of low-topography areas under a high-moisture condition at all times. Low-lying areas with fluctuating water tables and upland areas with seasonal perched water tables are typical examples of low-topography areas where a high-moisture condition occurs intermittently. Low- and high-topography areas that have been subjected to moderate or heavy rainfall are normally under a high-moisture condition during and immediately following rain periods. In this study a high-moisture condition at high-topography sites could not be identified from the collected data. Consequently, an analysis was not made for this topography-moisture condition and the classification scheme does not include data for this category. Only one set of high-moisture data (cone index, remolding index, rating cone index, sheargraph, and moisture content) was used in the analysis for a given low-topography site. At sites where high-moisture data were collected on more than one day, the set of data selected was for the day of lowest rating cone index. The moisture content for this day was usually, but not

necessarily, the highest recorded at the site. In analyzing the data, a high-moisture condition was considered to have been prevalent at a low-topography site when it was known that the water table was within the top 18 in. of soil. (This 18-in. criterion is based on studies in the United States[14] that show that the strength of a soil decreases at a logarithmic rate with a decrease in depth to the water table and a relatively small rate of change of strength per unit change in depth to the water table when the water table is above a depth of 18 in.)

Slope

25. Vehicles that can traverse certain soils on level surfaces often become immobilized when climbing slopes on similar soils. These immobilizations can be attributed primarily to a downhill force, a function of the vehicle's weight and the angle of slope, which opposes the vehicle's forward thrust. In this report slope is expressed in terms of percent (vertical rise divided by horizontal distance, multiplied by 100).

Slope index

26. The adverse effect of slope on vehicle performance can be expressed by an increase in rating cone index requirements above the vehicle's requirements for level terrain. These excess RCI points, called slope index, may be added to the vehicle cone index and the determination of "go" or "no go" is made by comparing this value with the measured RCI. Detailed procedures are available for determining slope effects and for estimating the maximum slopes negotiable by various vehicle types.[9,10] Three slope index values, one for tracked vehicles with grousers longer than 1-1/2 in., another for tracked vehicles with grousers shorter than 1-1/2 in., and the third for wheeled vehicles, can be obtained for a given slope from the three respective curves shown in plate 1. If, for example, the slope is 30%, the slope indexes for the three vehicle classes would be 13, 15, and 20, respectively.

Effective rating cone index (ERCI)

27. The ERCI is a combined soil strength-slope value which rates the trafficability of a sloping soil. The index is computed by subtracting the slope index from the rating cone index. For example, if the RCI of a soil

is determined to be 50 and the slope is 30%, the ERCI would be 37 (50 minus 13) for tracked vehicles with grousers longer than 1-1/2 in.; 35 (50 minus 15) for tracked vehicles with grousers shorter than 1-1/2 in.; and 30 (50 minus 20) for wheeled vehicles. The determination of "go" or "no go" on sloping terrain is based on a comparison of the vehicle cone index with the ERCI for the vehicle class. If the VCI is greater than the ERCI, vehicles of this type will not be able to climb the slope; if the VCI is less than the ERCI, the slope is considered negotiable. The ERCI can also be applied and, if desired, mapped in regard to level terrain. In this case, the slope index is zero for all vehicle classes and the ERCI is equal to the RCI of the soil.

PART III: ANALYSIS OF DATA

28. The data were classified and analyzed in terms of both USCS and USDA soil types under a high-topography, wet-season condition, a low-topography, wet-season condition, and a low-topography, high-moisture condition. The following studies were conducted:

a. A determination of means and standard deviations of cone index, remolding index, rating cone index, moisture content, dry density, and specific gravity for the 6- to 12-in. soil layer; cone index and moisture content for the 0- to 6-in. soil layer; and sheargraph shear strength for surface soils.

b. A cumulative frequency analysis of rating cone index for the 6- to 12-in. soil layer for each USCS and USDA soil type and for all soils.

Basic Data

29. The data used in these analyses were obtained from 846 sites, 701 of which were located in six MERS study areas, including 103 sites in Chiang Mai, 117 in Khon Kaen, 77 in Nakhon Sawan, 160 in Lop Buri, 182 in Chantheburi, and 62 in Pran Buri. The remainder of the test sites were located in other sections of Thailand. The general locations of the sites are shown in fig. 4. The data were derived from six different test programs conducted for MERS during the period June 1962 through October 1965. The number of sites from each program which provided data for this study and for each analysis is shown in the following tabulation. The procedures

	Preliminary Survey	Trafficability Classification	Surface Composition	Soil Moisture-Strength	CRREL Airphoto Pattern	Terrain-Vehicle Tests	Total
Number of sites	165	238	224	75	121	23	846
Mean and standard deviation							
Wet-season condition							
CI, 0-6 in.	160	238	224	75	105	23	825
CI, 6-12 in.	157	238	224	75	105	23	822
RI and RCI,* 6-12 in.	91	193	146	70	69	14	583
Sheargraph shear strength	--	227	197	50	--	22	496
Moisture content, 0-6 in.	145	238	106	75	105	22	691
Moisture content, 6-12 in.	130	238	105	75	104	20	672
Dry density, 6-12 in.	116	193	29	75	--	10	423

(Continued)

* Also used in analysis of cumulative frequency.

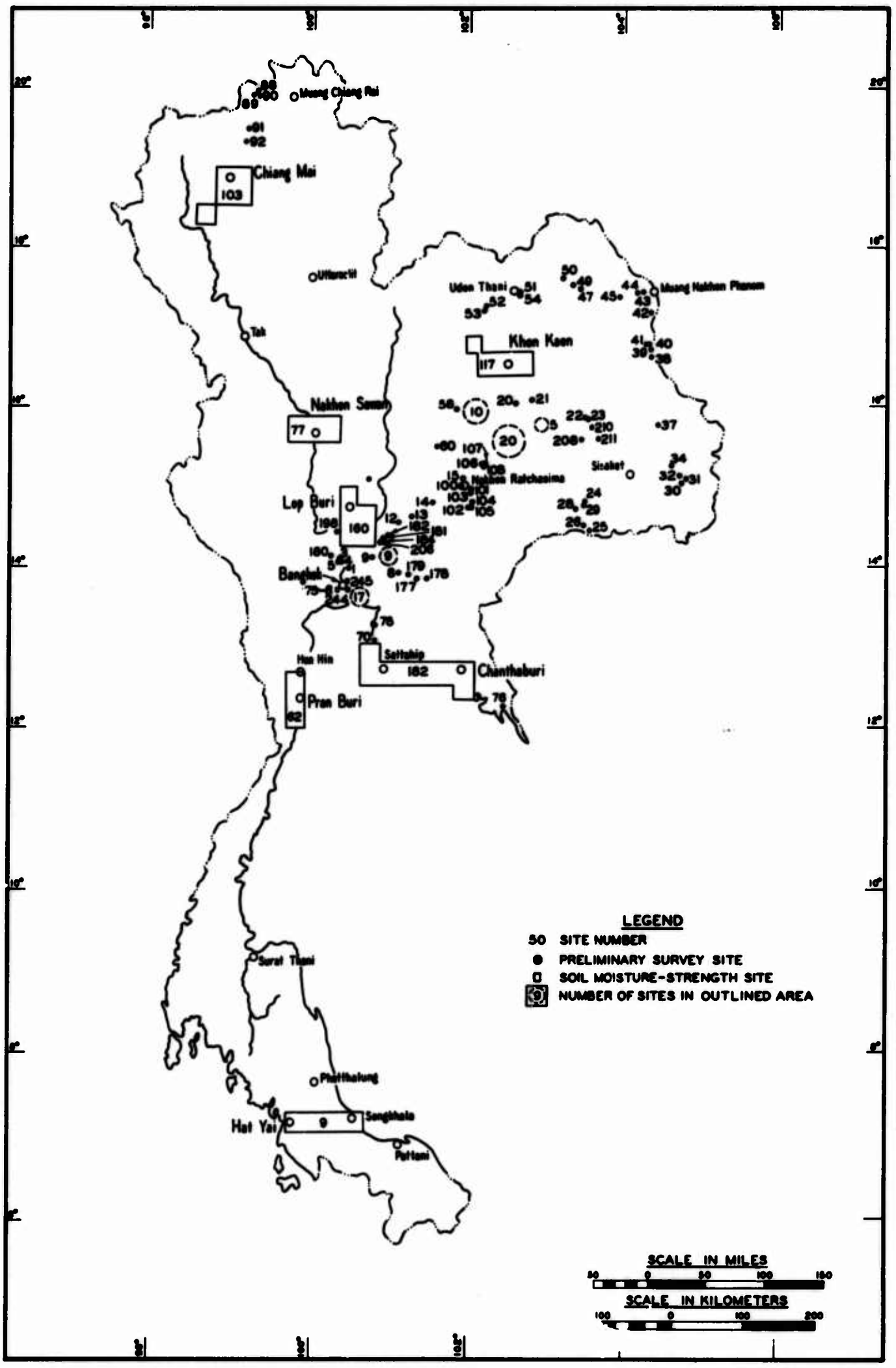

Fig. 4. General location of study sites

	Preliminary Survey	Trafficability Classification	Surface Composition	Soil Moisture-Strength	CRREL Airphoto Pattern	Terrain-Vehicle Tests	Total
Number of sites	165	238	224	75	121	23	846
Mean and standard deviation							
High-moisture condition							
CI, 0-6 in.	70	72	64	40	7	15	268
CI, 6-12 in.	69	72	63	40	7	15	266
RI and RCI,* 6-12 in.	55	67	49	38	7	14	230
Sheargraph shear strength	--	43	30	4	--	15	92
Moisture content, 0-6 in.	63	72	50	40	--	15	240
Moisture content, 6-12 in.	61	72	50	40	--	14	237

* Also used in analysis of cumulative frequency.

used in obtaining data in each program are discussed in Appendix A; the data are presented in tables A1-A6.

Method of Computation

30. The General Electric 225 electronic digital computer was employed in computations for this study. Two computer programs were required, one to compute the mean and standard deviation values and one to determine the frequency of occurrence of rating cone index. Data for these programs were supplied to the computer by means of punched IBM cards. These cards form a data retrieval system containing for each site the characteristics of the site (e.g. geographic location, topography class, topographic position, slope, land use, vegetation, etc.), soil data (e.g. percent grain sizes, Atterberg limits, USCS and USDA soil type, specific gravity, organic content, etc.), trafficability data (including CI, RI, RCI, sheargraph measurements, moisture content, and density for wet-season and high-moisture conditions, etc.), and climatological data (e.g. longtime average annual rainfall and temperature, etc.). For a given site, eight IBM cards are required to store approximately 125 pieces of information describing the site, soil, trafficability conditions, and climate.

Mean and Standard Deviation Values of Soil Properties

31. This study establishes the statistical mean and standard deviation values of cone index and moisture content for the 0- to 6- and

6- to 12-in. soil layers; remolding index, rating cone index, dry density, and specific gravity for the 6- to 12-in. soil layer; and sheargraph shear strength for the surface soil. Values for the dynamic soil properties, including moisture content, cone index, remolding index, rating cone index, and sheargraph shear strength, were computed for each of the three topography-moisture condition categories. Values for the static soil properties, including density and specific gravity, were computed only for a wet-season condition (high and low topography, respectively). Data are presented for each of the soil types in the USCS and USDA system in tables 1-7. The mean values in each table, except those for moisture content (table 5), are arranged from top to bottom in decreasing order; the moisture contents are arranged in increasing order. Where data are presented for both the 0- to 6- and 6- to 12-in. layers (tables 1 and 5), the soil types are arranged in order of mean values of the 6- to 12-in. layer. Where data are presented for soil-to-soil shear and soil-to-rubber shear (table 4), the soil types are arranged in order of mean values of soil-to-soil shear.

32. The data were analyzed in terms of mean ($\bar{x}$) and standard deviation (s) because these are probably the most widely used and most readily understood statistical measures. The mean (commonly termed arithmetic mean or average) is computed by summing the individual measurements and dividing by the total number of measurements. The standard deviation is a measure of the dispersion of the data around the mean. The standard deviation for less than 30 measurements was computed by means of the formula

$$s = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}}$$

where

Σ = the sum of

$(x - \bar{x})$ = the deviation of an individual measurement from the mean of all measurements

n = the number of measurements

The -1 was omitted from the denominator of the formula when 30 or more

measurements were used in the computation. When the number of measurements for the specific condition exceeds 30, the interval defined by +1 and -1 standard deviation from the mean will usually contain approximately 68% of the data. Assuming the data are universally valid, if three additional measurements were taken, the values of two would usually fall within this interval. Mean and standard deviation values of a condition with fewer than 30 measurements, and especially of a condition with fewer than 5 measurements, should be viewed with skepticism.

33. The data in table 5 show that mean moisture contents for a given soil type are generally highest under a low-topography, high-moisture condition, intermediate under a low-topography, wet-season condition, and lowest under a high-topography, wet-season condition. If data had been developed for a high-topography, high-moisture condition, the mean moisture content would probably lie between those for the low-topography, wet-season condition, and the low-topography, high-moisture condition. This consistent pattern for all soil types (except a few with mean values that are based on relatively few observations and are therefore questionable) is presumed to be evidence in support of the proper identification of site data into the three arbitrary space-time categories used in this report.

Analysis of strength

34. Cone index. The results of the analysis of CI are given in table 1. The data show mean cone indexes that are generally highest for the USCS coarse-grained soils with fines and USDA gravelly and sandy soils, intermediate for the USCS fine-grained soils and USDA loamy soils, and lowest for the USCS organic soil (OH) and USDA silty and clayey soils. Exceptions are the USCS low-plasticity soils (CL-ML and ML) of the 6- to 12-in. layer which have the highest mean cone indexes of all soils under low-topography, wet-season and high-moisture conditions. (The maximum mean value, for GC, is based on one sample and, therefore, is not reliable.) The data also show higher cone indexes for the 6- to 12-in. soil layer than for the 0- to 6-in. layer; the mean cone indexes for all soils under each of the three topography-wetness conditions range from 57 to 78 units higher in the 6- to 12-in. layer than in the 0- to 6-in. layer.

35. The mean and standard deviation values for each of the soil

types and for all soils of a wetness condition are higher than those reported for temperate climates.[1] This apparent difference can be accounted for by differences in the procedures used in the two studies for measuring cone index. In the temperate-soil study, the capacity of the cone penetrometer was 300 (0.5-in. cone), whereas in this study the capacity of the instrument was extended to 750 (0.2-in. cone) in order to satisfy the needs for soil strength data for other engineering purposes. The average cone index for firm soil is higher when measured with the 0.2-in. cone. For example, the soil tested with the 0.5-in. cone may give several 300+ readings, whereas the same soil tested with the 0.2-in. cone may give readings of 420, 480, etc.

36. Remolding index. The results of the analysis of RI are given in table 2. A comparison of the mean RI's for all soils shows lower average RI's for the low-topography positions. The data show an average RI of 1.03 for soils under high-topography, wet-season condition, an average RI of 0.76 for soils under low-topography, wet-season condition, and an average RI of 0.66 for soils under low-topography, high-moisture condition. Under each topography-moisture condition, the mean remolding indexes are generally highest for the USCS silty, coarse-grained and highly plastic, fine-grained soils and USDA sandy soils, lowest for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and intermediate for the remaining soils. For the moisture levels considered in this report, relatively few soil types have mean RI's greater than 1.0.

37. Rating cone index. The results of the analysis of RCI are given in table 3. Like those for cone index, the data generally show rating cone indexes that are highest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the fine-grained soils, and lowest for the USCS organic soil (OH). The mean RCI for all soils under wet-season condition is about 60 units higher for high-topography than for low-topography position (i.e. 180 versus 121 RCI), and the mean RCI for low-topography position is 35 units higher under the wet-season condition than under the high-moisture condition (i.e. 121 versus 86 RCI). Because of test procedures that provide higher cone indexes in this study, the rating cone indexes are higher and the means and standard deviations are

appreciably greater than those for comparable soils in a temperate climate (see paragraph 35 for an explanation).

38. Sheargraph shear strength. The results of the analysis of sheargraph shear strength of the surface soil for a normal load of 10 psi are given in table 4. The soil types are those for the 0- to 6-in. layer. A comparison of the mean values for a given topography-moisture condition shows little difference between most soil types. The mean shear strengths for soil-to-soil and soil-to-rubber shear appear to be the highest for the high-plasticity and lowest for the low-plasticity USCS soils. A comparison of the mean values for all soils shows a decrease in strength with an increase in the moisture level of the soil for soil-to-soil shear. Only a slight decrease in strength is associated with an increase in moisture level for soil-to-rubber shear. Because the number of samples for most soil types was insufficient for proper statistical analysis, and because the soil type of the 0- to 6-in. layer may, in some cases, be different from that of the surface soil, the results and conclusions drawn from this analysis should be viewed with caution.

Analysis of moisture content

39. The results of the analysis of moisture content are given in table 5. The moisture content is inversely proportional to the soil strength. The data show mean moisture contents to be lowest for the USCS coarse-grained soils with fines and USDA gravelly and sandy soils, intermediate for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and highest for the USCS high-plasticity and organic soils and USDA clayey soils. The mean moisture contents for all soils of the 0- to 6- and 6- to 12-in. layers are about 5% higher for low-topography than for high-topography, wet-season condition and those for low-topography position are about 4% higher for high-moisture than for wet-season condition. Also, mean moisture contents of all soils are about 2% higher for the 0- to 6-in. layer than for the 6- to 12-in. layer.

Analysis of dry density

40. The results of the analysis of dry density are given in table 6. Experience has indicated that changes in dry density of surface soils do not significantly affect their trafficability properties. However, the

density data, along with specific gravity and moisture content data, can be used to estimate the percent saturation of a soil, which is an indicator of the degree of wetness. In this study the density data were analyzed for high- and low-topography, wet-season conditions. The data show densities that are generally highest for the USCS coarse-grained soils with fines and low-plasticity, fine-grained soils and USDA gravelly and sandy soils, intermediate for the USCS moderately plastic, fine-grained soils and USDA loamy soils, and lowest for the USCS highly plastic and organic soils and USDA clayey soils. The mean density for all soils is about 2 lb per cu ft higher under a high-topography condition than under a low-topography, wet-season condition. A comparison of individual USCS soil types shows the density of all soils except CL and SM to be higher for the high-topography position than for the low-topography position. The CL and SM soil densities are slightly less in high positions than they are in low positions.

Analysis of specific gravity

41. The results of the analyses of specific gravity are given in table 7. The specific gravity is a static soil property that does not vary with moisture content; consequently, the data were analyzed only for a wet-season condition. The mean specific gravity for all soils of high topography is 0.04 higher than that for all soils of low topography. Specific gravities are highest for the USCS plastic soils and USDA gravelly and clayey soils, and lowest for the USCS low-plasticity and organic soils and USDA silty and sandy soils.

Cumulative Frequency Analysis of Rating Cone Index

Procedures and presentation of data

42. The data used in this analysis are the same that were used in the mean and standard deviation analyses of RCI under wet-season and high-moisture conditions, respectively. The only difference between this and the previous analysis is in the statistical treatment of the data.

43. RCI's for each soil type under each topography-moisture condition were grouped into intervals of 10 RCI's from 1 to 300 and 300+, i.e. 1 to 10, 11 to 20, 21 to 30...291 to 300, and 300+. The measurements in

each class for the group of 300+ observations were tallied and their percentage of the total number was computed. The percentages were added cumulatively, starting with the percentage of 300+ observations and progressing in order of decreasing RCI. Thus, the 300+ or the larger value of the highest RCI increment for which data were available always was 0% frequency, and the smaller value for the lowest RCI increment for which data were available was 100% frequency. The RCI at 50% frequency is the median value.

44. The data are plotted in cumulative frequency graphs in plates 2-5 for the USCS soil types and in plates 6-9 for the USDA soil types. Graphs for three moisture conditions are usually shown for each soil type. Data were not available for sandy clay (USDA type) and OL and Pt (USCS types), nor were data available for analysis of one or more of the wetness conditions in some of the other soil types. The number of samples (sites) used in each analysis is indicated on its graph.

45. It is noted that where an appreciable number of samples were available for analysis, the three curves drawn for each soil type seldom cross each other. Also, the general range of RCI increases from the high-moisture graph through that for low-topography, wet-season, to the high-topography, wet-season graph. This is taken to be evidence of proper categorization of the basic field data into the three general moisture conditions.

46. Graphs are used to show the manner in which RCI varied. For example, the solid-line curve for CL soils in plate 4 shows that 10% of the CL soils under a low-topography, high-moisture condition had RCI's greater than 127, 20% had values greater than 100, and 30% had values greater than 90, etc.

Estimating probability of vehicle "go"

47. The graphs can be used for estimating the probability of "go" for military vehicles. A soil for which the RCI is greater than the VCI will permit 50 vehicles to pass in straight-line echelon or one vehicle to execute severe maneuvers. Thus, the cumulative frequency corresponding to the VCI indicates the probability of a vehicle's success in a given

soil type under a given general moisture condition. For example, if it is known that the soil type is CL and that the water table is within 18 in. of the surface so that the soil is under a low-topography, high-moisture condition (but specific data on strength cannot be obtained), it can be hypothesized from plate 4 that the M48 tank (VCI = 49) would have a 76% probability of "go."

Analysis for all soils

48. An analysis was made of the cumulative frequency of RCI for all soils under wet-season and high-moisture conditions. The procedures of analysis were the same as those used in the analysis of each soil type (see paragraph 43). The curves developed from the analysis may be used to estimate the percentage of areas trafficable for a given vehicle under a given condition of moisture. A discussion of the curves and their use is presented in paragraph 73.

PART IV: SOIL TRAFFICABILITY CLASSIFICATION SCHEME AND RELATED STUDIES

49. The soil trafficability classification scheme shown in tables 8 and 9 is essentially a listing of soil types in descending order of their median rating cone indexes under three conditions of moisture: high and low topography under wet-season conditions, and low topography under a high-moisture condition. Information for a high-topography, high-moisture condition was not included in the scheme because data were too few to permit proper analysis. Soil types according to both the USCS and the USDA soil classification system are employed. Thus the scheme can be considered a sixfold scheme for the classification of soils from a trafficability standpoint. The scheme considers the strength of soils in the 6- to 12-in. layer.

50. This part of the report summarizes the vehicle classification categories developed in an earlier study, and describes the soil trafficability classification scheme and its possible application in detail. Tables 10 and 11 supplement the classification scheme by providing specific data on the percent probability of "go" for military vehicles on level and sloping terrain for each of the three general moisture conditions and the two soil classification systems.

Vehicle Categories

51. Different military vehicles require different minimum soil strengths for operation. A soil condition that is easily trafficable for one vehicle may be impassable for another. Therefore, in order to make the soil trafficability classification meaningful, it was necessary to incorporate vehicle requirements into the scheme for estimating the probability of vehicle "go."

52. In an earlier study[15] a system was developed for classifying vehicles on the basis of the minimum soil strength each required for 50 straight-line passes or one severe maneuver on level ground. This system is condensed and repeated here.

Category	VCI Range	Vehicle and Vehicle Types
1	20-29	M29C weasel, M76 otter, Canadian snowmobile, and some lightweight experimental vehicles. Example: VCI of M29C weasel = 25
2	30-49	Engineer and high-speed tractors with comparatively wide tracks and low contact pressures. Examples: VCI of D7 engineer tractor = 40; VCI of M114 armored personnel carrier = 37
3	50-59	Tractors with average contact pressures, tanks with comparatively low contact pressures, and some trailed vehicles with very low contact pressures. Example: VCI of M48 medium tank = 52
4	60-69	Most medium tanks, tractors with high contact pressures, and all-wheel-drive trucks and trailed vehicles with low contact pressures. Example: VCI of M135, 2-1/2-ton truck = 62.
5	70-79	Most all-wheel-drive trucks, a great number of trailed vehicles, and heavy tanks. Example: VCI of 1-1/2-ton, 4x4 dump truck = 73
6	80-99	A great number of all-wheel-drive and rear-wheel-drive trucks, and trailed vehicles intended primarily for highway use. Example: VCI of 1/2-ton, 4x2 pickup truck = 88
7	100 or greater	Rear-wheel-drive vehicles and others that generally are not expected to operate off roads, especially in wet soils. Example: VCI of 5-ton, 4x2 dump truck = 119

The vehicle cone indexes for individual vehicles within the categories are included in Appendix A of reference 15.

Soil Trafficability Classification Scheme, Level Terrain

53. The soil trafficability classification scheme for level terrain is presented in USCS terms in table 8 for high and low topography under wet-season conditions, and for low topography under a high-moisture condition. The scheme is presented in USDA terms in table 9 for the same set of moisture conditions. Information presented in the scheme for each soil type includes a general estimate of the probability of "go" on level terrain for vehicles of various categories. Measurements of soil strength are also included.

Classification of vehicle "go"

54. For the sake of simplicity of presentation, the percent probabilities of vehicle "go" have been arbitrarily classified as follows:

Excellent	greater than 90% probability of "go"
Good	76 to 90% probability of "go"
Fair	50 to 75% probability of "go"
Poor	10 to 49% probability of "go"
No "go"	less than 10% probability of "go"

The probability-of-"go" information is illustrated in tables 8 and 9 by a series of bar graphs, one for each soil type.

Procedures for deriving "go" information

55. The vehicle cone indexes corresponding to 10, 50, 75, and 90% probability of "go," the limiting values of the vehicle "go" groupings, were derived from the cumulative frequency rating cone index graphs (plates 2-9). For example, from the CL soil graph for a low-topography, high-moisture condition (plate 4) it can be seen that the RCI's at 10, 50, 75, and 90% cumulative frequency are 128, 74, 50, and 39, respectively. This means that the soil strength will be greater than 128 RCI 10 times out of 100, greater than 74 RCI 50 times out of 100, greater than 50 RCI 75 times out of 100, and greater than 39 RCI 90 times out of 100. Table 8 shows that vehicles with a VCI greater than 128 will have less than a 10% probability of "go"; those with a VCI ranging from 74 to 128 will have 50% probability of "go"; those with a VCI ranging from 50 to 74 will have a 50 to 75% probability of "go"; those with a VCI ranging from 39 to 50 will have a 76 to 90% probability of "go"; and those with a VCI less than 39 will have greater than 90% probability of "go."

Reliability of "go" information

56. The probability lines delineating the vehicle "go" groupings on the bar graphs in tables 8 and 9 are solid where the data were based on more than four samples and the information shown was considered to be reliable. The lines are broken where less than five samples were used in the analysis or the data were otherwise questionable. The positioning of these

broken lines was based on an assumed RCI estimated from the textural, plasticity, and organic properties of the soil.

57. It should be noted particularly that the occurrence of obstacles was not considered in the probability of "go" estimates for level or sloping terrain. Obstacle components of terrain, such as trees, hedges, dikes, and streams, that present a definite deterrent or obstruction to mobility of vehicles would certainly decrease the probability of "go."

Soil strength information

58. The mean CI, RI, surface sheargraph shear strength for a load of 10 psi, and RCI, and the range of RCI (discussed in Part III) are presented again in tables 8 and 9. It may be noted that the mean RCI for a soil generally is greater than its median RCI, which is the same value as the VCI at 50% probability of "go."

Probability of Vehicle "Go" on Level and Sloping Terrain

59. The percent probabilities of vehicle "go" on level and sloping soils classified in terms of the USCS are presented in table 10 for both high and low topography under wet-season conditions, and for low topography under a high-moisture condition; these data on soils classified in terms of the USDA system are presented in table 11. The data for each soil type-moisture condition include the probabilities of negotiation of level terrain (0% slope) and slopes of 15, 30, and 45% by vehicles in each of the seven vehicle categories. The probabilities were established for the median VCI within vehicle categories 1 through 6 (i.e. 25 VCI for category 1, 40 VCI for category 2, etc.) and for the minimum VCI (100) in category 7, for tracked vehicles with grousers shorter than 1-1/2 in. and for wheeled vehicles. Tracked vehicles with grousers longer than 1-1/2 in. would have a slightly better probability of "go" on sloping soils than that computed for tracked vehicles with shorter grousers. For all practical purposes, however, the difference is insignificant, and the probabilities of "go" listed under the "tracked" column in tables 10 and 11 may be applied to both types of tracked vehicles. The probability of "go" established for a vehicle with a median VCI of a category will closely approximate and may

be used to estimate the probabilities of "go" for other vehicles within the same category.

Procedure for deriving "go" information

60. The probability data were obtained from the cumulative frequency rating cone index graphs presented in plates 2-9. If VCI is substituted for RCI and probability of "go" for cumulative frequency, an estimate of the probability of "go" on level terrain can be made for any vehicle for which a VCI has been computed (discussed in paragraph 47). In order to determine the probability of "go" for a given slope, the slope index, derived from the curve of the vehicle type shown in plate 1, was added to the VCI and the probability of "go" for the soil type-moisture condition was based upon the cumulative frequency reading for this new VCI value. For example, the probabilities of "go" for tracked and wheeled vehicles of 55 VCI (median VCI of category 3) on 0, 15, 30, and 45% slopes of a silt loam soil area under low-topography, wet-season condition were derived as follows. The VCI was substituted for RCI in the abscissa, and the probability of "go" was substituted for cumulative frequency in the ordinate of the silt loam low-topography, wet-season condition graph shown in plate 8. At 55 VCI the probability of "go," read from the graph, was 87%. This value applies to tracked and wheeled vehicles at 0% slope. The slope index at 15% slope, read from the curves of plate 1, was 7 for tracked vehicles with grousers shorter than 1-1/2 in. and 9 for wheeled vehicles. This index was added to the VCI to provide values of 62 (55 plus 7) for the tracked vehicles and 64 (55 plus 9) for the wheeled vehicles. The probabilities of "go" for the VCI values of 62 and 64, read from the graph in plate 8 for silt loam, low topography, and the wet season, were 80 and 79%, respectively. At 30% slope, the slope indexes were 15 and 20, the VCI's became 70 and 75, and the resulting probabilities of "go" were 74 and 68% for the two vehicle types, respectively; at 45% slope, the slope indexes were 27 and 40, the VCI's became 82 and 95, and the probabilities of "go" read from the graph were 60 and 49%, respectively. The probability of "go" can be estimated for any slope and for any vehicle for which a VCI has been computed by using data read from the proper soil type-moisture condition graph and

slope index curve, and following the procedures discussed above.

Reliability of "go" information

61. The probability values for a wet-season condition are undoubtedly influenced by the high-moisture, low-strength bias associated with the basic data (previously discussed in paragraph 24a); thus, the actual probability of "go" would be somewhat higher than that indicated.

62. The number of samples used in the analysis of a particular soil type-moisture condition provides a rough estimate of its reliability. Analyses based on more than 30 samples would generally have a small plus and minus probability error, i.e. the true probability based on an infinite number of the same type of samples would not vary by more than plus or minus a small standard error of estimate. The probabilities of "go," therefore, are considered to be of good reliability. An analysis based on fewer than 30 samples and especially fewer than 15 samples, but more than 4 samples, would have a moderate standard error of estimate (estimated at ±10 to ±25% probability of "go"). Probabilities based on an analysis of this number of samples are considered to be of only fair reliability and should be viewed with skepticism. Five was arbitrarily chosen as the minimum number of samples needed to provide a reasonably reliable probability value; probabilities of "go" were only estimated for the analyses based on fewer than 5 samples. The estimations were based on assumed strengths estimated from the textural, plasticity, and organic properties of the soil.

Application of Information for Estimating Trafficability Conditions

63. The information presented in the trafficability classification scheme and probability of "go" tables should be especially useful in military intelligence, military-operations planning, and vehicle-design work. The information may be applied in quantitative or qualitative terms to military problems or to studies of a tactical or strategic nature.

64. The information can be used to estimate trafficability conditions for areas in Southeast Asia that, in most cases, will not be accessible for measurement. Information needed for proper analysis includes

climate and weather, topographic position or water-table conditions, and soil type. Climatological and weather data can be obtained from meteorological records; data on topographic position (and slope if desired) are available from large-scale topographic maps, and information on soil type can be obtained from engineering or pedological reports. It may be reasoned that trafficability-prediction information would not be needed for accessible areas because direct strength measurements with the cone penetrometer could be taken where and when desired. The information, however, could be used in these areas to facilitate a particular study, e.g. the speedy selection of one of several possible access routes, the selection of possible barrier areas (mine fields, etc.) that normally would have good to excellent probabilities of "go," or the selection of broad areas providing the best positions for offensive or defensive operations.

Use of trafficability classification scheme

65. The following paragraphs explain by means of examples how the classification scheme can be used.

66. Season, soil type, and topography. If it is known that the season is the wet season, the soil type is CL, and the topography is low topography, the data in table 8 for low-topography, wet-season condition would be used to determine trafficability. In this case, the probability of "go" on the CL soil would be less than 10% for vehicles with VCI's greater than 185, between 10 and 50% for vehicles with VCI's between 89 and 185, between 50 and 75% for vehicles with VCI's between 58 and 89, between 76 and 90% for vehicles with VCI's between 42 and 58, and greater than 90% for vehicles with VCI's less than 42.

67. Season, soil type, topography, plus rainy weather or high-water-table condition. If, in addition to the knowledge of the season, soil type, and topography, it is known that the soil has been subjected to several days of rain, or if a high water table is known to exist, the low-topography, high-moisture condition data presented in table 8 (or table 9 for USDA soils) would be used. The probability of vehicle "go" on CL soils under these conditions would be less than 10% for vehicles with VCI's greater than 128, between 10 and 50% for vehicles with VCI's between 74 and

128, between 50 and 75% for vehicles with VCI's between 50 and 74, between 76 and 90% for vehicles with VCI's between 39 and 50, and greater than 90% for vehicles with VCI's less than 39.

68. Probability of one straight-line pass for a vehicle. For clayey soils, an RCI equal to about 50% of the VCI usually will permit one straight-line pass of the vehicle.[13] The probability of a successful operation may be derived from the classification scheme (tables 8 and 9) by projecting a line down from the VCI value multiplied by one-half and reading the probability at its intersection with the particular graph of soil type-wetness condition under consideration. For example, a vehicle with a VCI of 100 would have a recomputed index of 50 (100 x 0.50). The probability of its making one straight-line pass on a CL soil under low-topography, wet-season condition (from table 8) would be 76 to 90% (estimated at 83%).

Use of probability of "go" tables

69. The following paragraphs explain how the probability tables (tables 10 and 11) can be used. The particular data to be used, like that for the soil trafficability classification scheme, will depend upon the amount and type of information known, i.e. the topography, moisture condition, and the soil type and system in which the soil is classified.

70. Probability of "go" for vehicles within specific VCI categories. The probability of "go" on sloping ground may be estimated for tracked or wheeled vehicles within VCI categories. If, for example, a low-topography, high-moisture condition prevails and the soil is a CL with a 15% slope, the probability of "go" for tracked vehicles in category 3 (VCI 50 to 59) would be 63% (from table 10).

71. Comparison of probabilities between two vehicle categories. The probabilities of "go" can be compared for vehicles in two different categories to estimate the advantage that vehicles in one category would have over vehicles in another. For example, under the same set of conditions as those stated in the preceding paragraph, tracked vehicles in category 5 (VCI 70 to 79) would have a 40% probability of "go" (table 10). Since the table shows the probability of "go" for vehicles in category 3 to be 63%, the difference, 23% (63 minus 40), indicates the advantage in performance of vehicles in category 3.

72. Comparison of probabilities for different soil types and slopes. The probabilities of "go" for vehicles within a given category can be compared for two or more different soil types and slopes in order to determine quantitatively the advantage that one route would have over another. For example, if tracked vehicles in category 3 were being considered for use in a low-topography area under a high-moisture condition (table 10), the probability of "go" along route A, a CH soil with maximum slopes of 30%, would be 40%; the probability of "go" along route B, a CL soil with maximum slopes of 15%, would be 63%. Thus, from the standpoint of soil type and slope, route B would have a decided advantage of 23% (63 minus 40) over route A.

Estimation of Percentage of Area Trafficable

73. Cumulative frequency curves of the RCI data for all fine-grained soils and coarse-grained soils with fines tested in Thailand are shown for wet-season (high and low topography) and high-moisture (low topography) conditions in plate 10. For purposes of comparison, a similar set of curves is also shown for humid-temperate soils of the United States. The cumulative frequency of RCI, in percent, is plotted for a 10-300 range of RCI. The curves in plate 10 permit one to estimate the percentage of area trafficable for a given vehicle under a wet-season or high-moisture condition. Because the data are biased toward wetter-than-average conditions, estimates of percentages of trafficable areas made from the curves will be smaller than actual, i.e. on the conservative side. Examination of the data reveals that in Thailand a vehicle with a VCI of 80 can make 50 passes in 60% of the soil areas under average conditions in the wet season, and in 40% of the low-lying soil areas under poorest trafficability conditions (high-moisture condition). The same vehicle can make 1 pass (vehicle cone index is 80 × 0.50 or 40 for 1 pass) in 89% of the area under average conditions in the wet season and in 79% of the low-lying areas under poorest trafficability conditions. It should be emphasized that passable areas are considered strictly in terms of the bearing strength of soils on level surfaces. The presence and orientation of slopes and obstacles and

consideration of the extent of areas of sand would affect the percentage of area trafficable. A comparison of the curves for Thailand and U. S. soils shows that the Thailand soils have slightly higher strengths (68 median RCI for the Thailand soils versus 63 for the U. S. soils) under high-moisture conditions and slightly lower strengths (97 median RCI for the Thailand soils versus 107 for the U. S. soils) under wet-season conditions.

PART V: CONCLUSIONS AND RECOMMENDATIONS

Conclusions

74. Based on the data and discussions presented herein, it is concluded that the scheme for classifying trafficability of Thailand soils has the following advantages:

a. It rates soil types (both USCS and USDA) according to their median rating cone index under high- and low-topography, wet-season conditions, and under low-topography, high-moisture condition.

b. From a consideration of cumulative frequency of occurrence of rating cone index, it permits a ready estimate of the chances of successful travel of any military vehicle (whose vehicle cone index is known) on any soil type under three space-time moisture conditions.

75. The conclusions that follow are based on the soil information derived from the various analyses of the basic data.

a. Soil strength.

(1) Soils in low-lying positions (low topography) generally have lower strengths than those in high-lying positions (high topography). (Paragraphs 34-38 and tables 1-4.)

(2) The initial strength (cone index) of the 6- to 12-in. soil layer ranges from 57 to 78 units higher than that of the 0- to 6-in. layer. (Paragraph 34 and table 1.)

(3) The remolding indexes are generally highest for the silty coarse-grained soils and highly plastic fine-grained soils and lowest for the low-plasticity and loamy fine-grained soils. (Paragraph 36 and table 2.)

(4) The remolding index of a soil decreases with an increase in the moisture level. Under highest moisture level (poorest trafficability condition) the soils retain an average of two-thirds of their initial strength after remolding. (Paragraph 36 and table 2.)

(5) The initial and remolded strengths of soils (cone index and rating cone index) are highest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the fine-grained soils, and lowest for the organic soils. The rating cone index averages 60 units higher for high-topography than for low-topography position, and that for low-topography positions averages 35 units higher under wet-season condition than under

high-moisture condition. (Paragraphs 34 and 37 and tables 1 and 3.)

(6) Soils in Thailand have slightly higher strengths under high-moisture condition and slightly lower strengths under wet-season condition than do soils in humid-temperate areas of the United States. (Paragraph 73 and plate 10.)

b. Soil-moisture content.

(1) For a given topography-moisture level the moisture contents are lowest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and highest for the USCS high-plasticity and organic soils and USDA clayey soils. (Paragraph 39 and table 5.)

(2) The average moisture contents in the wet season are about 5% higher for low-topography than for high-topography positions, and those in low-topography positions are about 4% higher under high-moisture than under wet-season conditions. (Paragraph 39 and table 5.)

c. Density.

(1) The densities are generally highest for the USCS coarse-grained soils with fines and low-plasticity fine-grained soils and USDA gravelly and sandy soils, and lowest for the USCS highly plastic and organic soils and USDA clayey soils. (Paragraph 40 and table 6.)

(2) The average density is about 2 lb per cu ft higher under high-topography than under low-topography, wet-season condition. (Paragraph 40 and table 6.)

d. Specific gravity.

(1) Specific gravities are highest for the USCS plastic soils and USDA gravelly and clayey soils, and lowest for the USCS low-plasticity and organic soils and USDA silty and sandy soils. (Paragraph 41 and table 7.)

(2) The specific gravity of soils on high-topography position averages 0.04 more than that on low-topography position.

e. Probability of "go."

(1) The probability of "go" for a given vehicle on a given soil type is highest for high-topography, wet-season condition, intermediate for low-topography, wet-season condition, and lowest for low-topography, high-moisture condition. For a given topography-moisture condition, the probability of "go" decreases for soils in the

following order: clean, coarse-grained soils, coarse-grained soils, coarse-grained soils with fines, fine-grained soils, and organic soils. (Table 8.)

(2) On a basis of soil strength only, vehicles with vehicle cone indexes less than 80 (i.e. practically all military vehicles except those intended primarily for highway use) can negotiate at least 60% of the soil areas during average wet-season conditions and at least 40% of the areas during poorest trafficability conditions. (Paragraph 73 and plate 10.)

Recommendations

76. It is recommended that:

a. In order to improve the reliability of the probability-of-"go" information that has been derived from a statistical analysis of existing data, new or additional rating cone index information should be collected on USCS soil type-moisture conditions with fewer than 15 observations. This information should include data from all soil types except SM and CL under high-topography, wet-season condition; SP-SM, SM-SC, and organic soil types under low-topography, wet-season condition; and SP-SM, SC, CL-ML, and organic soil types under low-topography, high-moisture condition.

b. Sheargraph measurements should be incorporated in the trafficability classification scheme if investigations in progress show that these measurements can be related to vehicle traction.

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Table 1

Mean and Standard Deviation Values for USCS and USDA Soil Types

Cone Index, 0- to 6-in. and 6- to 12-in. Layers

USCS							USDA						
	0- to 6-in. Layer			6- to 12-in. Layer				0- to 6-in. Layer			6- to 12-in. Layer		
Type	n	$\bar{x}$	s	n	$\bar{x}$	s	Type	n	$\bar{x}$	s	n	$\bar{x}$	s
High-Topography, Wet-Season Condition													
GC	--	--	--	1	617	--	GL	2	137	76	4	617	188
GM	--	--	--	2	462	407	GSCL	1	171	--	2	524	320
SP-SM	1	273	--	--	--	--	SC	--	--	--	2	511	338
SM-SC	3	163	71	10	378	238	GSL	1	273	--	7	340	258
ML	13	197	115	11	304	259	LS	17	290	164	22	301	226
SC	7	155	85	17	286	187	CL	9	204	162	8	278	207
SM	42	243	149	59	269	209	SL	35	184	129	49	264	189
CL	8	100	63	23	258	221	SiC	2	127	83	2	252	27
CH	8	168	185	15	205	163	L	19	149	106	28	218	206
MH	17	128	66	14	179	76	SiL	10	98	42	6	210	261
CL-ML	3	89	18	8	135	41	SCL	6	145	63	9	199	133
							GCL	--	--	--	2	198	33
							SiCL	1	126	--	4	188	121
							C	3	142	79	6	171	51
							S	5	215	72	6	153	37
							GSiL	--	--	--	1	125	--
All soils	102	188	132	160	258	200	All soils	111	185	129	158	263	205
Low-Topography, Wet-Season Condition													
GC	--	--	--	1	430	--	GCL	1	98	--	4	522	293
CL-ML	12	156	103	41	313	188	GL	--	--	--	2	385	198
ML	51	192	151	50	303	206	GSiCL	--	--	--	1	371	--
SM	61	239	160	95	282	176	GSL	3	246	150	5	349	216
SC	10	181	145	35	264	190	GSCL	--	--	--	2	290	198
SM-SC	7	248	134	20	250	183	SL	84	218	155	140	252	171
CL	84	155	152	241	209	160	LS	28	186	116	40	250	143
SP-SM	1	100	--	9	193	103	S	5	233	289	14	240	146
CH	57	74	49	119	134	90	CL	14	100	55	51	229	159
MH	28	99	44	35	125	73	L	57	145	125	122	221	172
OH	8	52	45	6	31	13	SiL	83	142	123	98	210	172
							SCL	3	104	45	34	195	139
							C	25	63	35	43	184	141
							SiCL	32	114	129	51	154	144
							Si	4	300	299	2	141	5
							SiC	23	63	58	39	97	51
All soils	319	158	142	652	217	168	All soils	362	152	138	648	216	166
Low-Topography, High-Moisture Condition													
CL-ML	7	119	117	20	266	209	GSL	--	--	--	1	311	--
ML	28	124	109	21	257	221	Si	2	337	392	--	--	--
SM-SC	1	249	--	4	249	259	LS	9	145	102	13	208	144
SM	19	171	159	32	201	114	S	4	259	327	6	207	134
SC	2	68	8	12	167	82	GCL	1	103	--	--	--	--
CL	38	74	30	98	127	55	SiL	23	85	40	26	190	180
MH	13	91	34	16	116	66	SL	30	126	75	46	178	141
SP-SM	1	78	--	2	100	35	L	31	83	36	58	167	139
CH	29	47	24	53	94	57	CL	12	76	39	22	158	76
OH	4	30	17	4	35	14	SCL	--	--	--	15	123	54
							C	16	61	35	18	122	60
							SiCL	15	63	37	30	105	58
							SiC	20	48	27	27	76	43
All soils	142	95	91	262	152	123	All soils	163	93	87	262	152	123

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 2

Mean and Standard Deviation Values for USCS and USDA Soil Types

Remolding Index, 6- to 12-in. Layer

USCS				USDA			
Type	n	$\bar{x}$	s	Type	n	$\bar{x}$	s
			High-Topography, Wet-Season Condition				
SM	32	1.32	0.79	LS	12	1.62	0.96
CH	11	1.[illegible]	0.16	CL	5	1.19	0.12
MH	9	1.02	0.36	SiC	2	1.16	0.06
SM-SC	4	0.98	0.22	SL	29	1.04	0.57
SC	10	0.94	0.27	S	4	1.03	0.48
CL-ML	7	0.83	0.28	SCL	8	0.95	0.26
CL	16	0.82	0.27	SiL	5	0.92	0.29
ML	7	0.69	0.33	C	3	0.90	0.18
GM	1	0.51	--	SiCL	3	0.89	0.26
GC	1	0.45	--	L	23	0.83	0.28
				GSiL	1	0.71	--
				GSL	1	0.51	--
				GCL	1	0.51	--
				GL	1	0.45	--
All soils	98	1.03	0.55	All soils	98	1.03	0.55
			Low-Topography, Wet-Season Condition				
SP-SM	6	1.31	0.68	S	9	1.34	0.69
SM	55	0.89	0.57	GSL	2	1.14	0.02
CH	101	0.88	0.24	LS	22	1.07	0.59
MH	34	0.79	0.28	C	32	0.87	0.25
SC	23	0.77	0.29	Si	1	0.86	--
CL	187	0.71	0.23	SiL	72	0.83	0.3[illegible]
OH	5	0.62	0.12	SiCL	47	0.77	0.26
CL-ML	24	0.57	0.21	GSCL	1	0.77	--
ML	35	0.51	0.27	SiC	39	0.76	0.19
SM-SC	13	0.51	0.22	CL	38	0.75	0.20
				L	98	0.69	0.28
				SL	97	0.65	0.39
				SCL	26	0.64	0.16
				GCL	1	0.51	--
All soils	483	0.76	0.34	All soils	485	0.76	0.34
			Low-Topography, High-Moisture Condition				
SP-SM	2	1.22	0.56	S	5	1.32	0.69
CH	50	0.79	0.24	LS	9	0.86	0.65
MH	16	0.66	0.21	SiL	21	0.78	0.29
CL	91	0.65	0.20	C	15	0.75	0.14
OH	4	0.65	0.11	CL	21	0.73	0.22
SC	11	0.64	0.30	SiCL	29	0.71	0.27
SM	20	0.53	0.31	SiC	27	0.68	0.17
ML	17	0.43	0.22	SCL	15	0.60	0.15
CL-ML	12	0.42	0.13	L	50	0.59	0.22
SM-SC	3	0.34	0.21	SL	38	0.47	0.27
All soils	226	0.66	0.31	All soils	230	0.66	0.31

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 3

Mean and Standard Deviation Values for USCS and USDA Soil Types

Rating Cone Index, 6- to 12-in. Layer

USCS				USDA			
Type	n	$\bar{x}$	s	Type	n	$\bar{x}$	s
High-Topography, Wet-Season Condition							
GC	1	253	--	LS	12	325	268
SM	32	227	197	SiC	2	274	16
SC	10	221	165	GL	1	253	--
SM-SC	4	170	45	CL	5	245	69
CH	11	169	81	SCL	8	221	193
CL	16	150	125	SL	29	171	108
MH	9	148	83	S	4	145	69
CL-ML	7	118	62	C	3	145	69
ML	7	104	89	SiCL	3	136	124
GM	1	89	--	L	23	124	91
				SiL	5	99	47
				GSiL	1	89	--
				GCL	1	89	--
				GSL	1	53	--
All soils	98	180	148	All soils	98	180	147
Low-Topography, Wet-Season Condition							
SP-SM	6	234	184	S	9	301	267
SM	55	197	170	GSL	2	293	94
SC	23	144	102	LS	22	230	164
CL-ML	24	108	74	C	32	141	129
CH	100	108	90	SL	97	121	123
CL	187	102	60	L	98	119	116
ML	34	101	91	Si	1	118	--
MH	33	90	57	CL	38	117	53
SM-SC	13	85	53	GSCL	1	116	--
OH	5	22	13	SiL	71	111	64
				GCL	26	91	56
				SiCL	46	84	52
				SiC	39	78	54
				GCL	1	53	--
All soils	480	121	111	All soils	483	120	111
Low-Topography, High-Moisture Condition							
SP-SM	2	132	98	S	5	315	332
SM	22	129	114	LS	9	134	75
SC	11	113	106	CL	21	102	44
ML	17	100	98	SiL	21	94	46
CL	91	79	40	C	15	87	42
CH	50	70	44	L	50	85	69
MH	16	67	36	SCL	15	79	42
CL-ML	12	65	36	SL	38	75	82
SM-SC	3	47	37	SiCL	29	66	33
OH	4	24	14	SiC	27	53	35
All soils	228	86	81	All soils	230	86	81

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 4

Mean and Standard Deviation Values for USCS and USDA Soil Types

Sheargraph Shear Strength in psi at 10-psi Normal Pressure

USCS							USDA						
	Soil-to-Soil Shear			Rubber-to-Soil Shear				Soil-to-Soil Shear			Rubber-to-Soil Shear		
Type	n	$\bar{x}$	s	n	$\bar{x}$	s	Type	n	$\bar{x}$	s	n	$\bar{x}$	s
High-Topography, Wet-Season Condition													
CL	4	8.88	1.23	4	7.45	0.85	SiL	1	9.00	--	1	7.10	--
MH	4	8.88	1.90	4	6.43	1.11	CL	4	8.98	1.09	5	6.56	1.86
CH	2	8.40	0.28	3	4.30	1.21	L	8	8.94	1.45	8	6.49	0.88
ML	4	8.33	1.36	4	6.00	0.59	SiC	1	8.60	--	1	5.70	--
CL-ML	3	8.13	1.95	3	6.70	0.96	SiCL	1	8.20	--	1	5.60	--
SM	11	7.61	1.00	11	5.24	0.76	SL	7	7.80	0.97	7	5.91	0.61
SC	2	7.20	0.99	2	5.90	1.13	LS	6	7.18	0.85	6	4.88	0.79
							SCL	1	6.50	--	1	5.10	--
							C	1	6.20	--	1	5.00	--
All soils	30	8.12	1.30	31	5.87	1.19	All soils	30	8.12	1.30	31	5.87	1.19
Low-Topography, Wet-Season Condition													
CH	18	8.07	1.24	18	5.73	1.45	SCL	1	10.00	--	1	6.90	--
CL	46	7.77	2.13	42	6.24	1.58	GCL	1	9.40	--	1	6.60	--
SM-SC	5	7.46	1.16	5	5.16	0.86	CL	10	8.36	1.99	8	6.43	1.13
SC	3	7.27	0.65	3	5.83	0.76	SiL	35	7.75	1.62	34	5.87	1.58
SM	31	7.23	1.46	31	5.25	1.04	SL	42	7.59	1.32	42	5.37	1.02
SP-SM	1	7.10	--	1	5.70	--	L	24	7.15	2.22	23	5.51	1.27
ML	18	7.06	1.95	17	5.26	1.09	S	1	7.10	--	1	5.70	--
CL-ML	8	6.76	2.39	7	5.34	1.28	SiCL	17	7.04	2.28	15	6.25	1.65
MH	10	6.02	1.88	7	5.31	1.01	C	5	6.98	2.26	3	5.83	0.97
							LS	12	6.33	0.64	12	4.98	0.63
							GSL	1	4.00	--	1	4.40	--
							SiC	2	3.65	2.33	1	3.30	--
All soils	140	7.39	1.88	131	5.66	1.35	All soils	151	7.37	1.84	142	5.64	1.32
Low-Topography, High-Moisture Condition													
CH	4	8.85	0.82	4	6.43	0.13	GCL	1	8.20	--	1	7.40	--
CL-ML	4	7.00	3.36	3	5.57	2.61	SiL	10	7.53	2.66	9	6.02	1.66
SM	6	6.68	1.35	6	4.90	0.49	SL	5	6.86	1.36	5	4.62	0.92
CL	16	6.67	3.11	12	5.68	1.81	CL	5	6.84	3.54	3	5.17	3.00
ML	5	4.84	2.03	4	4.35	1.49	C	3	6.33	3.00	1	6.40	--
MH	3	3.80	1.85	--	--	--	LS	4	5.93	0.77	4	4.73	0.51
							L	11	5.93	2.06	10	4.68	0.92
							SiCL	4	5.23	4.09	2	6.70	0.42
							SiC	1	2.00	--			
All soils	38	6.47	2.68	29	5.43	1.57	All soils	44	6.43	2.52	35	5.31	1.46

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 5

Mean and Standard Deviation Values for USCS and USDA Soil Types

Moisture Content, % Dry Weight, 0- to 6-in. and 6- to 12-in. Layers

USCS							USDA						
	0- to 6-in. Layer			6- to 12-in. Layer				0- to 6-in. Layer			6- to 12-in. Layer		
Type	n	$\bar{x}$	s	n	$\bar{x}$	s	Type	n	$\bar{x}$	s	n	$\bar{x}$	s
High-Topography, Wet-Season Condition													
SP-SM	1	11.0	--	--	--	--	LS	16	9.1	3.8	19	11.1	4.6
SM-SC	3	16.5	2.6	8	13.0	3.1	S	5	8.5	1.0	5	12.2	6.7
SM	39	12.9	6.5	49	13.4	7.3	GL	2	18.3	0.4	1	14.0	--
GC	--	--	--	1	14.0	--	SC	--	--	--	2	14.1	8.5
CL-ML	3	15.9	1.1	8	15.8	3.3	GSL	1	11.0	--	5	14.6	3.3
SC	7	20.5	5.1	14	18.0	4.5	GSCL	1	17.4	--	--	--	--
ML	13	19.0	5.9	11	18.6	8.2	SL	34	19.7	9.7	43	16.9	9.1
CL	8	22.7	5.0	20	18.8	4.6	GSiL	--	--	--	1	17.2	--
GM	--	--	--	1	22.4	--	SCL	5	19.9	9.8	8	18.8	4.4
CH	7	31.4	6.0	14	30.9	5.4	GCL	--	--	--	2	19.4	4.2
MH	17	41.6	8.5	14	39.1	8.3	L	17	27.5	13.6	27	23.8	11.5
							SiL	10	33.4	10.2	6	24.5	8.2
							C	2	23.3	10.3	6	28.6	8.3
							CL	8	28.5	11.3	7	29.1	9.7
							SiC	2	31.8	4.5	2	31.1	3.4
							SiCL	1	35.4	--	4	37.3	6.1
All soils	98	21.5	12.2	140	19.6	10.4	All soils	104	21.1	12.0	138	19.5	10.3
Low-Topography, Wet-Season Condition													
GC	--	--	--	1	12.6	--	LS	28	15.5	5.7	37	14.6	4.7
SM	58	15.5	6.5	90	15.6	6.1	GSCL	--	--	--	2	15.4	4.0
CL-ML	11	19.9	3.6	40	16.1	5.1	GSiCL	--	--	--	1	15.7	--
SM-SC	7	17.5	10.2	20	16.2	4.4	GSL	2	16.9	2.1	4	16.1	4.2
SP-SM	1	18.5	--	9	16.4	7.3	GL	--	--	--	1	17.5	--
SC	10	17.1	5.9	34	18.5	9.9	GCL	1	17.4	--	4	18.0	8.4
ML	52	22.2	10.0	49	18.5	6.9	S	4	15.5	11.8	14	18.3	7.3
CL	81	23.4	7.0	231	22.5	7.3	SL	83	18.0	8.5	139	18.3	12.0
CH	50	36.6	10.8	113	35.5	15.8	SCL	3	25.2	16.3	34	18.5	4.5
MH	26	46.0	20.4	34	45.8	20.5	L	56	25.9	16.2	118	22.7	12.5
OH	8	66.2	20.1	6	93.4	11.9	SiL	79	28.5	12.7	93	27.1	12.8
							CL	14	31.6	15.3	51	27.5	19.6
							C	22	39.0	13.4	39	32.6	7.9
							Si	4	23.8	8.0	2	33.5	12.6
							SiCL	32	31.7	10.6	50	34.9	17.7
							SiC	19	48.7	18.2	35	42.5	19.4
All soils	304	26.5	15.2	627	24.5	15.0	All soils	347	26.4	14.8	624	24.6	15.0
Low-Topography, High-Moisture Condition													
CL-ML	7	21.2	4.6	16	17.9	4.7	LS	8	18.3	6.9	12	18.3	5.1
SM	16	16.6	6.1	30	18.0	5.5	SCL	--	--	--	15	18.3	5.0
SM-SC	1	16.6	--	4	20.0	5.0	GCL	1	17.4	--	--	--	--
SC	2	20.0	7.0	12	20.7	3.8	GSL	--	--	--	1	20.4	--
ML	25	24.2	7.7	17	22.0	8.3	SL	25	19.9	5.3	41	22.6	16.9
SP-SM	1	16.8	--	2	24.6	2.3	Si	1	17.7	--	--	--	--
CL	35	26.4	5.5	93	24.8	7.0	S	3	17.0	13.4	6	23.1	5.9
CH	18	44.3	12.8	44	39.6	15.7	L	30	24.4	6.0	53	24.3	11.7
MH	13	46.9	19.9	14	52.7	27.3	SiL	18	27.9	7.9	21	26.0	9.0
OH	4	69.6	12.9	4	92.3	14.9	CL	12	33.2	13.7	22	28.4	12.5
							C	14	41.3	15.4	16	34.0	7.1
							SiCL	12	38.1	13.4	26	39.4	21.7
							SiC	16	52.7	18.1	23	49.0	21.8
All soils	122	30.3	15.7	236	28.5	16.8	All soils	140	30.3	15.1	236	28.5	16.8

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 6

Mean and Standard Deviation Values for USCS and USDA Soil Types

Dry Density, lb per cu ft, 6- to 12-in. Layer

USCS				USDA			
Type	n	$\bar{x}$	s	Type	n	$\bar{x}$	s
High-Topography, Wet-Season Condition							
SM-SC	5	112.2	8.2	GSL	3	109.5	13.2
GC	1	104.8	--	GL	1	104.8	--
ML	3	102.0	2.7	SL	27	102.7	5.8
CL-ML	8	101.3	5.8	S	5	96.1	8.8
SM	37	98.3	6.5	L	14	98.7	5.0
CL	13	96.6	6.7	SCL	8	95.3	11.5
SC	9	95.8	11.1	GCL	1	94.6	--
GM	1	94.6	--	LS	14	94.4	3.0
CH	5	82.4	6.6	SiL	1	91.8	--
MH	7	75.1	10.9	C	2	85.6	2.0
				SiCL	4	79.1	10.7
				CL	6	78.9	12.1
				SiC	2	75.5	1.7
All soils	89	96.2	10.9	All soils	88	96.0	10.6
Low-Topography, Wet-Season Condition							
SM-SC	12	101.9	5.1	GSiCL	1	117.3	--
SC	13	100.3	7.5	GCL	1	110.4	--
SM	48	99.5	7.7	GSCL	1	107.9	--
CL-ML	23	99.4	8.4	GSL	2	103.4	13.5
ML	29	97.7	7.9	SCL	23	100.5	7.2
CL	135	97.1	8.2	SL	72	99.9	7.6
SP-SM	6	92.0	5.7	LS	22	98.9	5.0
CH	54	80.5	10.3	L	73	97.3	10.4
MH	8	69.9	10.5	CL	26	96.5	6.5
OH	4	47.7	4.7	SiL	22	94.2	7.9
				S	10	90.9	5.4
				SiCL	21	85.4	15.4
				C	25	79.6	7.5
				SiC	32	77.4	14.2
All soils	332	93.9	12.4	All soils	331	93.9	12.4

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 7

Mean and Standard Deviation Values for USCS and USDA Soil Types

Specific Gravity, 6- to 12-in. Layer

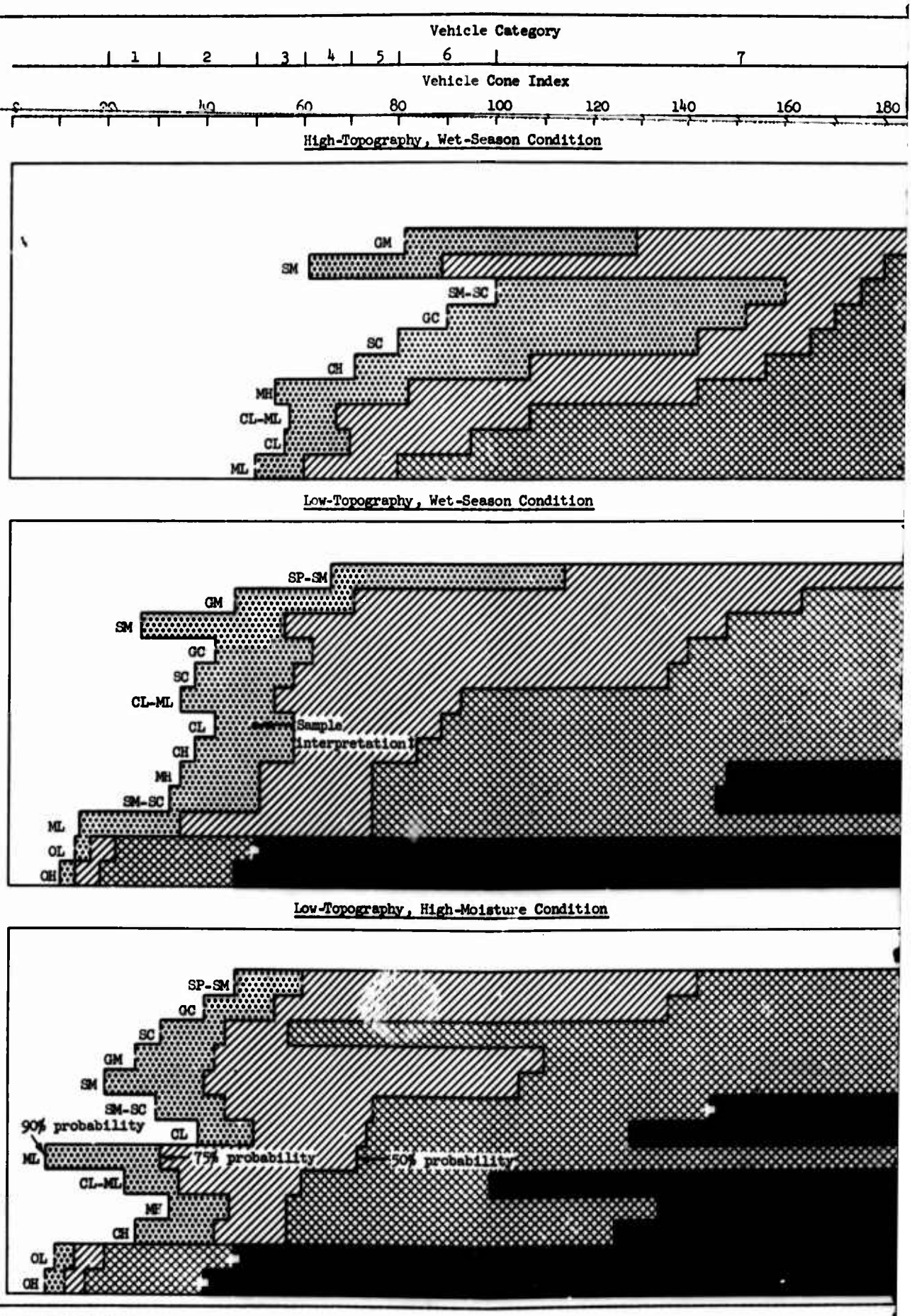
USCS				USDA			
Type	n	$\bar{x}$	s	Type	n	$\bar{x}$	s
High-Topography, Wet-Season Condition							
GM	2	3.10	0.28	GL	5	2.97	0.28
GC	1	2.96	--	GSCL	2	2.91	0.37
MH	12	2.77	0.11	GSL	8	2.90	0.30
SC	15	2.77	0.24	GCL	2	2.81	0.15
SM-SC	12	2.71	0.20	SiCL	2	2.77	0.11
CH	12	2.69	0.06	CL	7	2.75	0.11
CL	18	2.68	0.03	L	19	2.69	0.06
SM	40	2.65	0.10	GSiL	1	2.68	--
ML	7	2.64	0.02	SiC	2	2.68	0.02
CL-ML	3	2.64	0.02	SiL	5	2.67	0.08
				SL	39	2.65	0.07
				C	6	2.65	0.05
				S	1	2.64	--
				LS	18	2.63	0.02
				SCL	5	2.63	0.03
All soils	122	2.70	0.14	All soils	122	2.70	0.14
Low-Topography, Wet-Season Condition							
CH	86	2.68	0.07	GSiCL	1	3.00	--
SC	20	2.67	0.11	GL	2	2.98	0.23
MH	34	2.66	0.08	GSL	5	2.79	0.11
CL	128	2.66	0.06	GCL	3	2.76	0.05
CL-ML	24	2.65	0.04	GSCL	1	2.73	--
SM	65	2.65	0.07	Si	2	2.71	0.03
SP-SM	4	2.65	0.06	SiC	25	2.71	0.04
SM-SC	8	2.65	0.05	CL	26	2.68	0.05
ML	33	2.64	0.05	C	26	2.67	0.07
OH	6	2.61	0.18	SCL	13	2.65	0.03
				SiCL	36	2.65	0.08
				SiL	79	2.65	0.07
				L	65	2.65	0.07
				S	8	2.64	0.05
				LS	28	2.64	0.02
				SL	87	2.64	0.04
All soils	408	2.66	0.07	All soils	407	2.66	0.07

Note: n = number of samples; $\bar{x}$ = mean or average; s = one standard deviation.

Table 8

Soil Trafficability Classification in USCS Terms

Soil Type Symbol	Strength Measurements: Mean CI	Mean RI	Surface Shear Strength* S/R	Surface Shear Strength* S/S	Mean RCI	Range RCI**
High-Topography, Wet-Season Condition						
GW, GP SW, SP	--	--	--	--	--	--
SP-SM	--	--	--	--	--	195-205†
GM	462††	0.51††	--	--	89††	81-274†
SM	269	1.32	5.24	7.61	227	61-300+
SM-SC	378	0.98††	--	--	170††	100-198†
GC	617††	0.45††	--	--	253††	90-234†
SC	286	0.94	5.90	7.20	221	80-300+
CH	205	1.04	4.30	8.40	169	71-278
MH	179	1.02	6.43	8.88	148	54-291
CL-ML	135	0.83	6.70	8.13	118	57-243
CL	258	0.82	7.45	8.88	150	56-300+
ML	304	0.69	6.00	8.33	104	50-293†
Low-Topography, Wet-Season Condition						
GW, GP SW, SP	--	--	--	--	--	--
SP-SM	193	1.31	5.70	7.10	234	66-300+
GM	--	--	--	--	--	46-300+†
SM	282	0.89	5.25	7.23	197	27-300+
GC	430††	--	--	--	--	42-269†
SC	264	0.77	5.83	7.27	144	38-300+
CL-ML	313	0.57	5.34	6.76	108	35-300+
CL	209	0.71	6.24	7.77	102	42-185
CH	134	0.88	5.73	8.07	108	38-185
MH	125	0.79	5.31	6.02	90	35-148
SM-SC	250	0.51	5.16	7.46	85	33-146
ML	303	0.54	5.26	7.06	131	15-300+
OL	--	--	--	--	--	14-50†
OH	31	0.62	--	--	22	11-46
Low-Topography, High-Moisture Condition						
GW, GP SW, SP	--	--	--	--	--	--
SP-SM	100††	1.22††	--	--	132††	46-274†
GC	--	--	--	--	--	40-269†
SC	167	0.64	--	--	113	31-210
GM	--	--	--	--	--	26-217†
SM	201	0.73	4.90	6.68	160	20-300+
SM-SC	249††	0.34††	--	--	47††	30-145†
CL	127	0.65	5.68	6.67	79	39-128
ML	257	0.43	4.35	4.84	100	8-300+
CL-ML	266	0.42	5.57	7.00	65	24-99
MH	116	0.66	--	3.80	67	33-134
CH	94	0.79	6.43	8.85	70	26-125
OL	--	--	--	--	--	10-46†
OH	35††	0.65††	--	--	24††	8-40†



Note: Vehicle category and cone index range are given in paragraph 52.
* Sheargraph soil-to-rubber (S/R) and soil-to-soil (S/S) strength in psi for a normal load of 10 psi.
** Excluding lowest 10% and highest 10% of all RCI values.
† Estimated from textural, plasticity, and organic properties of soil under given moisture condition.
†† Based on analysis of less than five samples.
‡ A vehicle with a vehicle cone index of 50 would have a 75-90% chance of "go" on a CL soil of low-topography, wet-season condition.

Table 8

Soil Trafficability Classification in USCS Terms

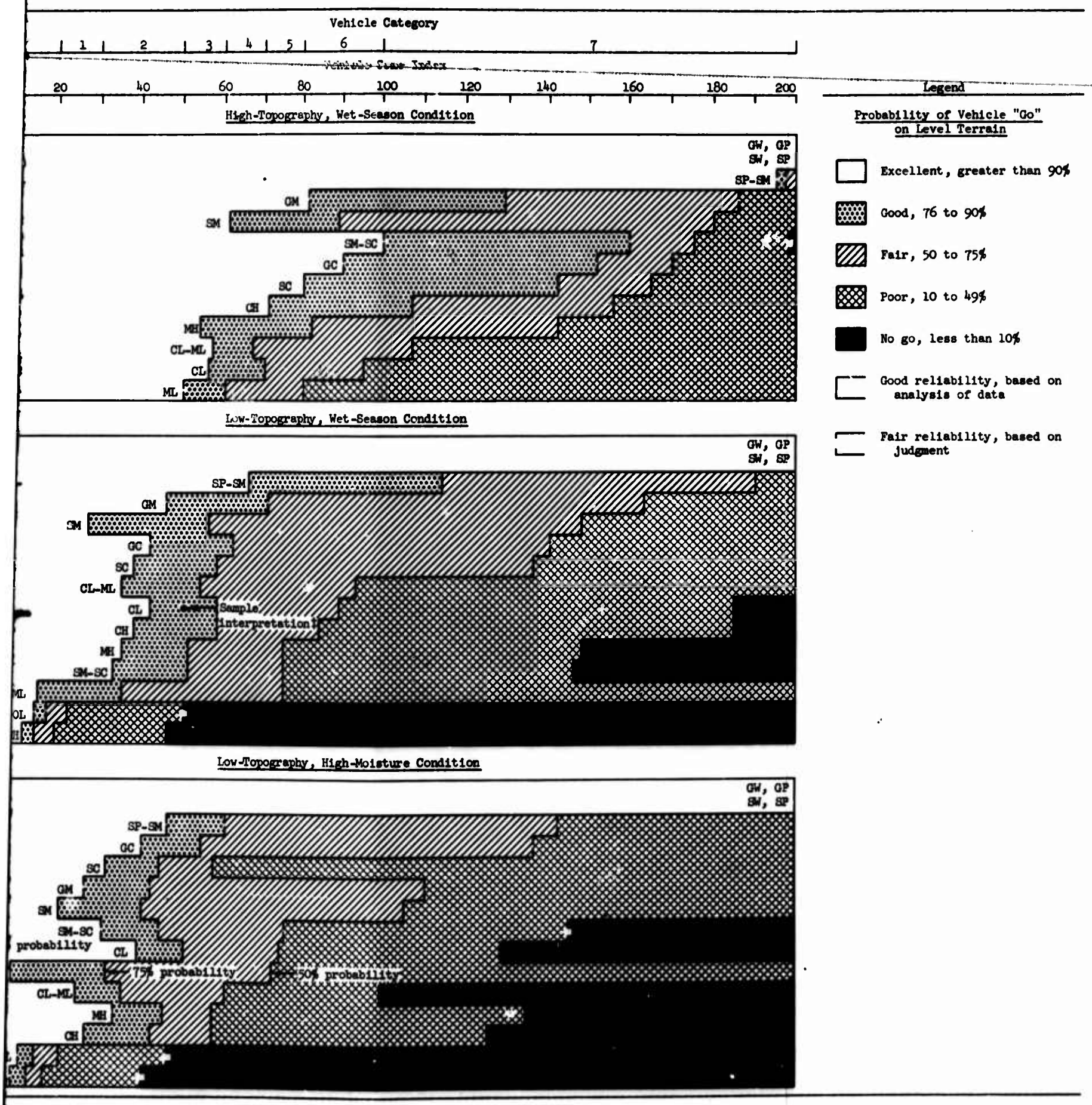


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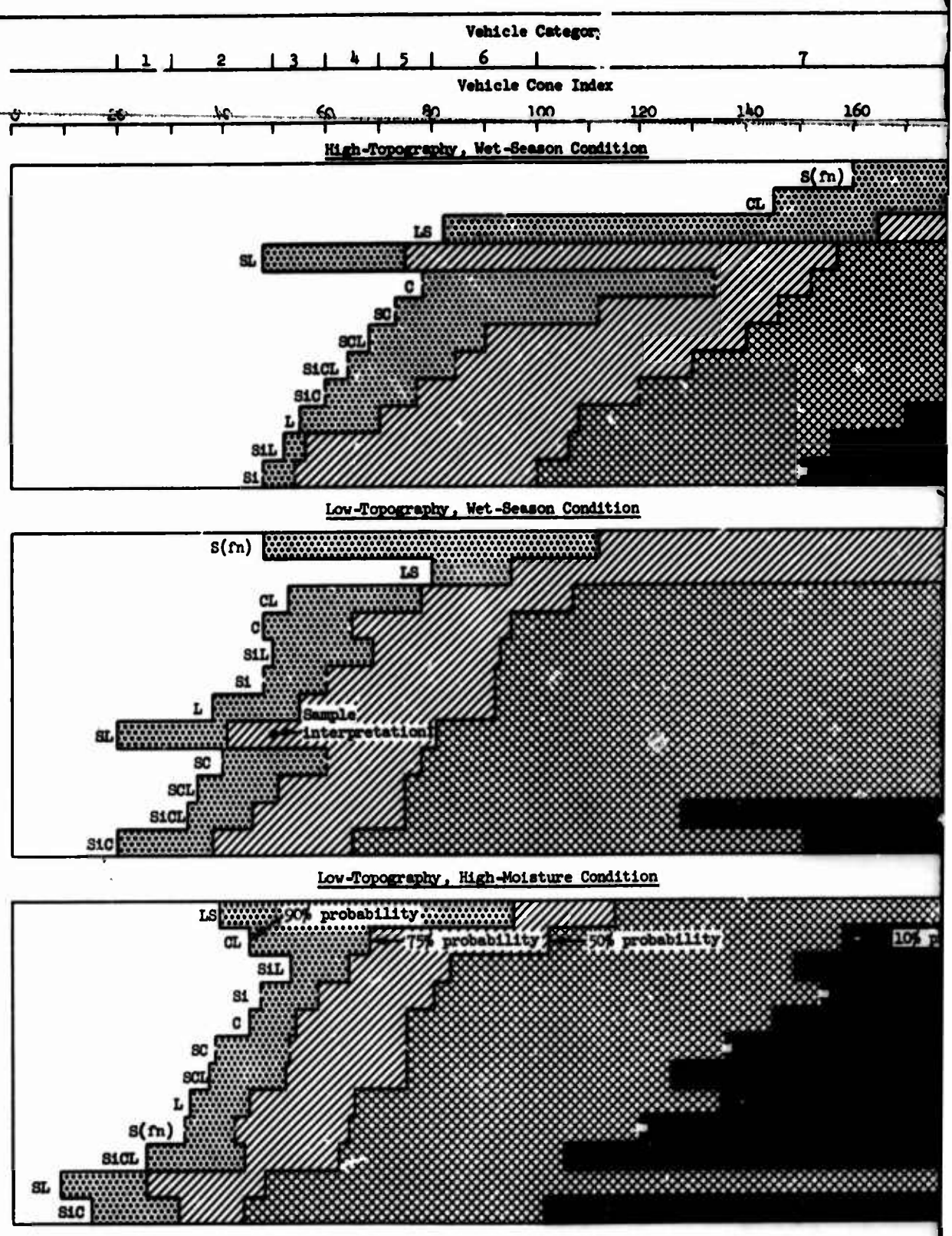
Table 9

Soil Trafficability Classification in USDA Terms

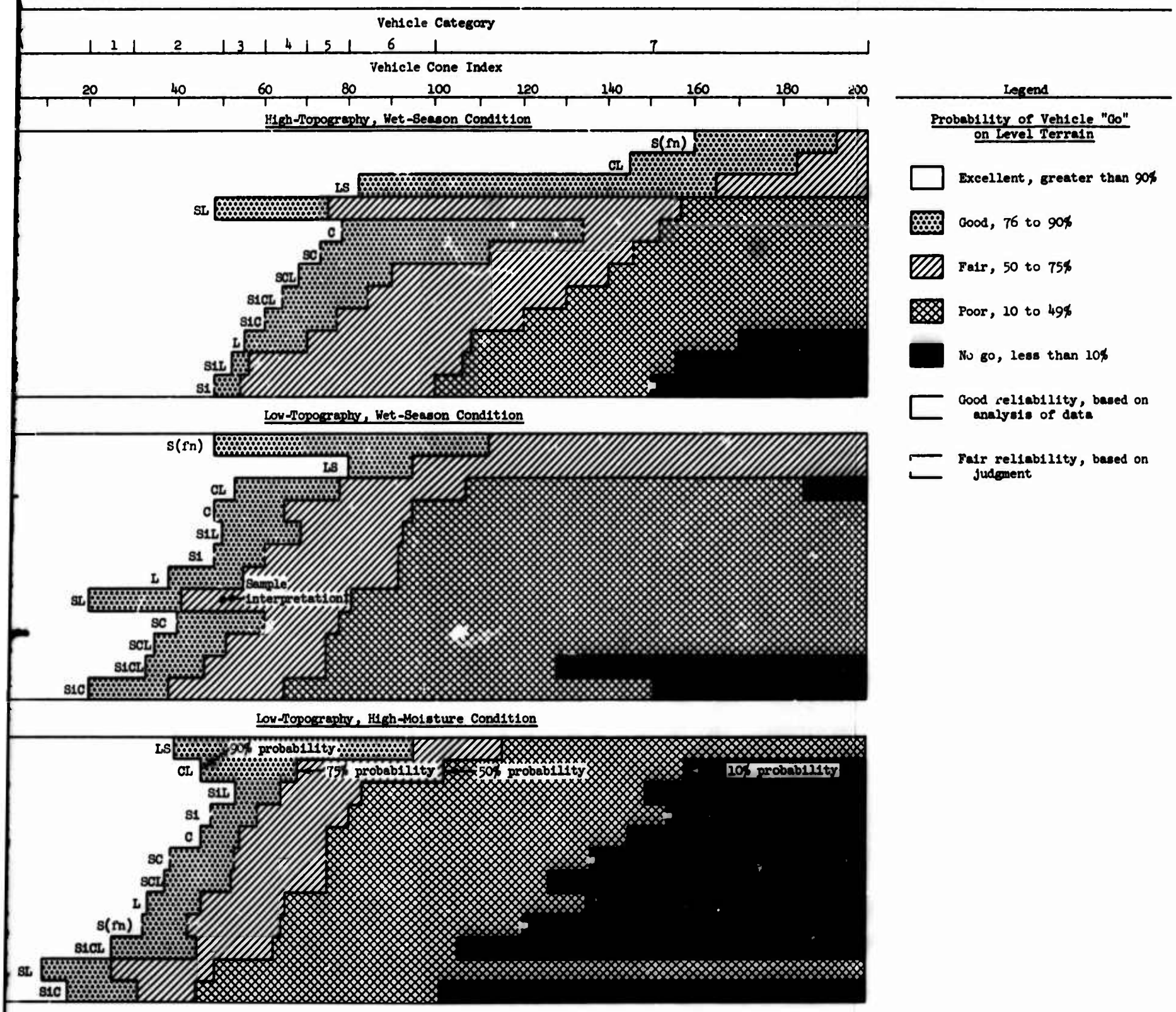
Soil Type Symbol	Strength Measurements: Mean CI	Mean RI	Surface Shear Strength* S/R	Surface Shear Strength* S/S	RCI	Range RCI**
High-Topography, Wet-Season Condition						
S(fn)	153	1.03†	--	--	145†	160-300+††
CL	278	1.19	6.56	8.98†	245	145-300+
LS	301	1.62	4.88	7.18	325	82-300+
SL	264	1.04	5.91	7.80	171	48-290
C	171	0.90†	5.00†	6.20†	145†	78-290††
SC	511†	--	--	--	--	73-205††
SCL	199	0.95	5.10†	6.50†	221	68-300+
SiCL	188†	0.89†	3.60†	8.20†	136†	64-205††
SiC	252†	1.16†	5.70†	8.60†	274†	60-210††
L	218	0.83	6.49	8.94	124	55-170
SiL	210	0.92	7.10†	9.00†	99	52-156
Si	--	--	--	--	--	48-150††
Low-Topography, Wet-Season Condition						
S(fn)	240	1.34	7.50†	7.10†	301	48-300+
LS	250	1.07	4.98	6.33	230	80-300+
CL	229	0.75	6.43	8.36	117	53-185
C	184	0.87	5.83†	6.98	141	48-300+
SiL	210	0.83	5.87	7.75	111	50-209
Si	141†	0.86†	--	--	118†	48-204††
L	221	0.69	5.51	7.15	119	38-221
SL	252	0.65	5.37	7.59	121	20-293
SC	--	--	--	--	--	40-205††
SCL	195	0.64	6.90†	10.00†	91	35-201
SiCL	154	0.77	6.25	7.04	84	33-128
SiC	97	0.76	3.30†	3.65†	78	20-151
Low-Topography, High-Moisture Condition						
LS	208	0.86	4.73†	5.93†	134	39-300+
CL	158	0.73	5.17†	6.48	102	45-158
SiL	190	0.78	6.02	7.53	94	53-149
Si	--	--	--	--	--	47-154††
C	122	0.75	6.40†	6.33†	87	45-145
SC	--	--	--	--	--	38-136††
SCL	123	0.60	--	--	79	37-126
L	167	0.59	4.68	5.93	85	33-135
S	207	1.32	--	--	315	32-120††
SiCL	105	0.71	6.70†	5.23†	66	25-105
SL	178	0.47	4.62	6.86	75	9-221
SiC	76	0.68	--	2.00†	53	15-101



Note: Vehicle category and cone index range are given in paragraph 52.
* Shearograph soil-to-rubber (S/R) and soil-to-soil (S/S) strength in psi for a normal load of 10 psi.
** Excluding lowest 10% and highest 10% of all RCI values.
† Based on analysis of less than five samples.
†† Estimated from textural, plasticity, and organic properties of soil under given moisture condition.
‡ A vehicle with a vehicle cone index of 50 would have a 50-75% chance of "go" on an SL soil of low-topography, wet-season condition.

Table 9

Soil Trafficability Classification in USDA Terms



in paragraph 52.
l (S/S) strength in psi for a normal load of 10 psi.
values.

c properties of soil under given moisture condition.
have a 50-75% chance of "go" on an SL soil of low-topography, wet-season condition.

Table 10

Percent Probability of "Go" for Tracked and Wheeled Vehicles on Level and Slo

Soil Type Symbol	No. of Samples	Vehicle Category 1* VCI Range 20-29								Vehicle Category 2 VCI Range 30-49								Vehicle Category 3 VCI Range 50-59								Vehicle Category 4* VCI Range 60-69						
		Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope		
		0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	3
High-Topography, Wet-Season Condition																																
GW, GP SW, SP	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10
SP-SM†	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10
GM†	1	100	100	100	99	100	100	100	95	100	100	98	94	100	100	96	90	98	96	93	90	98	95	92	86	95	93	90	86	95	92	8
SM	32	97	96	95	93	97	96	94	88	95	94	92	86	95	94	90††	78	92	89	84	78	92	88	81	73	88	83	78	74	88	82	7
SM-SC†	4	100	100	100	100	100	100	100	100	100	100	100	98	100	100	100	95	100	99	97	94	100	99	96	91	99	97	95	92	99	96	9
GC†	1	100	100	100	99	100	100	100	96	100	100	99	96	100	100	97	93	99	97	95	92	99	96	94	89	96	94	93	90	96	94	9
SC	10	100	100	100	97	100	100	100	90	100	100	94	90	100	100	90	90	94	90	90	90	94	90	90	90	90	90	90	90	90	90	9
CH	11	100	100	100	98	100	100	100	91	100	100	95	91	100	100	91	82	95	91	91	82	95	91	86	82	91	89	82	82	91	87	8
MH	9	100	100	100	95	100	100	100	78	100	100	88	78	100	100	78	78	88	78	78	75	88	78	78	66	78	78	78	66	78	78	6
CL-ML	7	100	100	100	96	100	100	100	86	100	100	92	86	100	100	86	71	92	86	86	71	92	86	78	71	86	82	71	71	86	79	7
CL	16	100	100	100	92	100	100	97	82	100	95	91	80	100	94	88	63	91	86	76	61	91	83	69	50	82	74	63	54	82	71	6
ML†	7	100	100	100	87	100	100	99	68	100	95	83	65	100	92	75	50	83	72	61	48	83	69	55	40	68	59	50	42	68	56	4
Low-Topography, Wet-Season Condition																																
GW, GP SW, SP	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1
SP-SM	6	100	100	100	100	100	100	100	91	100	100	100	88	100	100	100	83	100	98	83	83	100	93	83	83	91	83	83	83	91	83	
GM†	0	100	99	94	86	100	98	91	78	94	90	85	77	94	88	82	72	85	80	75	72	85	79	74	69	78	75	72	69	78	74	
SM	55	91	87	80	76	91	85	78	72	80	77	75	71	80	76	74	71	75	73	71	70	75	73	71	66	72	71	71	68	72	71	
GC†	0	100	98	91	82	100	96	88	74	91	86	80	73	91	85	76	69	80	75	72	69	80	74	71	65	74	72	69	66	74	71	
SC	23	100	97	87	78	100	94	83	72	87	82	77	71	87	80	74	69	77	73	69	68	77	72	69	61	72	69	69	61	72	69	
CL-ML	24	96	91	87	76	96	90	82	73	87	79	74	73	87	77	73	69	74	73	73	66	74	73	71	48	73	72	69	51	73	71	
CL	187	98	96	92	80	98	95	87	70	92	85	77	69	92	83	73	57	77	72	67	55	77	71	62	45	70	65	57	48	70	63	
CH	100	95	93	89	78	95	92	84	65	89	81	76	62	87	80	74	52	76	69	59	50	76	65	55	44	65	58	52	46	65	56	
MH	33	95	92	88	73	95	91	83	57	88	81	68	56	88	79	60	45	68	59	54	44	68	58	50	34	57	52	45	37	57	51	
SM-SC	13	92	91	85	74	92	89	81	54	85	79	65	54	85	78	54	46	65	54	54	45	65	54	50	38	54	52	46	38	54	51	
ML	36	84	79	69	65	84	77	68	57	69	68	62	56	69	67	58	47	62	58	55	46	62	57	50	43	57	53	47	44	57	51	
OL†	0	45	34	23	6	45	32	12	0	23	14	2	0	23	11	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	
OH	5	31	20	20	0	31	20	12	0	20	8	0	0	20	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Low-Topography, High-Moisture Conditio																																
GW, GP SW, SP	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1
SP-SM†	2	100	100	97	84	100	100	91	74	97	90	81	73	97	87	75	69	81	75	72	68	81	74	71	64	74	72	69	65	74	71	
GC†	0	100	98	90	78	100	96	85	72	90	83	75	71	90	81	73	67	75	73	70	67	75	72	69	63	72	70	67	63	72	69	
SC	11	95	88	82	60	95	87	73	45	82	69	55	45	82	66	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	
GM†	0	92	85	78	72	92	83	74	67	78	74	71	66	78	73	69	61	71	68	65	60	71	67	63	56	67	64	61	57	67	64	
SM	23	88	84	74	68	88	82	71	65	74	70	67	65	74	70	65	65	67	65	65	64	67	65	65	57	65	65	65	59	65	65	
SM-SC†	3	96	89	80	69	96	87	75	59	80	74	67	57	80	72	63	47	67	61	54	46	67	59	50	39	59	53	47	40	59	51	
CL	91	96	93	89	73	96	92	81	60	89	79	70	58	89	76	65	42	70	63	55	40	70	61	49	25	60	53	42	28	60	50	
ML	17	80	74	65	63	80	71	65	55	65	65	61	54	65	65	58	41	61	57	53	40	61	56	47	32	55	51	41	34	55	48	
CL-ML	12	87	75	75	63	87	75	71	42	75	69	59	38	75	68	50	33	59	46	33	32	59	43	33	17	42	33	33	22	42	33	
MH	16	97	92	82	64	97	89	75	35	82	73	55	33	82	71	40	19	55	36	31	19	55	35	25	19	35	29	19	19	35	26	
CH	50	91	87	78	54	91	85	68	45	78	64	52	43	78	60	48	30	52	47	40	29	52	15	35	24	45	38	30	25	45	37	
OL†	0	43	32	20	0	43	29	11	0	20	8	0	0	20	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
OH†	4	35	23	11	0	35	21	2	0	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* Probability of "go" based on median vehicle cone index within vehicle categories 1-6 and minimum vehicle cone index for category 7.
** Probability of "go" for vehicles in category 7 equal to or less than given value.
† Soils with estimated probabilities.
†† Sample interpretation: A wheeled vehicle with a vehicle cone index in the range 30-49 has an 90% probability of "go" on an SM soil at 30% slope under high-topogr

Table 10

eled Vehicles on Level and Sloping Terrain Classified in USCS Terms

Vehicle Category 4* VCI Range 60-69								Vehicle Category 5 VCI Range 70-79								Vehicle Category 6 VCI Range 80-99								Vehicle Category 7** VCI Range 100 or Greater							
Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope			
0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45
pography, Wet-Season Condition																															
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
95	93	90	86	95	92	89	83	92	90	87	83	92	89	86	80	87	85	83	79	87	84	81	75	84	82	80	76	84	81	78	70
88	83	78	74	88	82	77	72	81	78	75	72	82	77	73	68	75	73	72	68	75	72	72	65	72	72	68	65	72	72	65	62
99	97	95	92	99	96	94	89	96	94	92	89	96	94	91	86	92	91	89	86	92	90	88	82	90	88	86	83	90	87	85	80
96	94	93	90	96	94	91	86	94	92	90	87	94	92	89	84	90	88	86	83	90	88	85	80	88	86	84	81	88	85	83	78
90	90	90	90	90	90	90	85	90	90	90	88	90	90	90	80	90	90	85	80	90	90	80	80	90	83	80	80	90	81	80	80
91	89	82	82	91	87	82	77	86	82	82	79	86	82	82	72	82	82	77	72	82	82	72	64	82	75	72	66	82	73	72	54
78	78	78	66	78	78	72	66	78	75	66	66	78	73	66	66	66	66	66	66	66	66	66	55	66	66	66	58	66	66	66	56
86	82	71	71	86	79	71	55	78	71	71	64	78	71	71	27	71	71	55	22	71	71	40	14	71	50	27	14	71	44	14	14
82	74	63	54	82	71	60	44	69	61	56	44	69	60	50	41	56	48	44	39	56	46	44	38	44	44	41	38	44	44	38	31
68	59	50	42	68	56	46	36	55	48	43	37	55	47	40	33	43	39	36	32	43	38	34	29	38	35	33	30	38	35	32	27
graphy, Wet-Season Condition																															
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
91	83	83	83	91	83	83	83	83	83	83	83	83	83	83	73	83	83	83	69	83	83	83	66	83	83	73	66	83	83	66	66
78	75	72	69	78	74	71	66	74	72	70	66	74	71	69	63	70	68	66	62	70	67	65	59	67	65	63	60	67	65	62	56
72	71	71	68	72	71	70	62	71	70	69	63	71	70	66	59	69	65	62	58	69	64	62	56	64	62	59	56	64	62	56	56
74	72	69	66	74	71	68	61	71	69	66	62	71	68	65	58	66	64	61	58	66	63	60	53	63	61	58	54	63	60	57	50
72	69	69	61	72	69	66	61	69	68	61	61	69	66	61	58	61	61	61	57	61	61	61	52	61	61	58	51	61	61	56	48
73	72	69	51	73	71	61	42	71	66	54	42	71	62	48	40	54	46	42	39	54	43	42	38	42	42	40	38	42	42	38	38
70	65	57	48	70	63	53	37	62	55	50	39	62	54	45	31	50	43	37	30	50	42	34	24	41	36	37	25	41	35	29	18
65	58	52	46	65	56	49	38	55	50	48	39	55	50	44	34	48	42	38	33	48	41	36	21	40	37	34	24	40	36	32	21
57	52	45	37	57	51	42	29	50	44	39	29	50	43	34	27	39	32	29	27	39	30	27	21	30	28	27	23	30	27	27	15
54	52	46	38	54	51	43	38	50	45	38	38	50	44	38	34	38	38	38	33	38	38	38	15	38	38	34	20	38	38	31	15
57	53	47	44	57	51	46	40	50	46	44	41	50	46	43	37	44	42	40	37	44	42	39	33	42	39	37	34	42	39	36	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ography, High-Moisture Condition																															
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
74	72	69	65	74	71	68	61	71	69	66	62	71	68	64	58	66	64	61	58	66	63	60	54	63	61	58	55	63	60	57	51
72	70	67	63	72	69	66	60	69	67	64	60	69	66	63	57	64	62	60	56	64	62	58	52	61	59	57	53	61	58	55	49
45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	37	45	45	45	39	45	45	45	37
67	64	61	57	67	64	60	52	63	60	58	53	63	60	56	48	58	55	52	48	58	54	50	43	54	51	48	44	54	50	46	39
65	65	65	59	65	65	63	50	65	64	61	51	64	65	57	41	61	55	50	38	61	53	48	35	52	49	41	35	52	48	35	35
59	53	47	40	59	51	44	33	50	46	41	35	50	45	39	27	41	38	33	26	41	37	30	19	36	32	27	20	36	31	24	13
60	53	42	28	60	50	36	18	49	40	30	19	49	37	25	14	30	23	18	14	30	21	16	9	20	17	14	8	20	16	13	6
55	51	41	34	55	48	38	30	47	40	35	30	47	39	32	30	35	31	30	30	35	30	30	23	30	30	30	25	30	30	30	23
42	33	33	22	42	33	29	8	33	32	25	8	33	30	17	8	25	14	8	8	25	10	8	8	8	8	8	8	8	8	8	8
35	29	19	19	35	26	19	19	25	19	19	19	25	19	19	19	19	19	19	19	19	19	19	12	19	19	19	14	19	19	19	6
45	38	30	25	45	37	28	17	35	29	26	20	35	29	24	11	26	23	17	11	26	23	12	10	22	15	11	10	22	13	10	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

at 30% slope under high-topography, wet-season condition.

2

Table 11

Percent Probability of "Go" for Tracked and Wheeled Vehicles on L

Soil Type Symbol	No. of Samples	Vehicle Category 1* VCI Range 20-29								Vehicle Category 2 VCI Range 30-49								Vehicle Category 3 VCI Range 50-59								Vehicle VCI Ran			
		Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope			
		0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45
High-Topography, Wet-Seaso																													
S(f_n)†	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
LS	12	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	92	83	92	92	92	83
SL	29	97	96	93	89	97	95	91	83	93	90	88	81	93	90	86	72	88	85	79	72	88	83	76	72	83	78	72	72
CL	5	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
C†	3	100	100	100	97	100	100	99	93	100	98	96	93	100	98	95	90	96	94	92	89	96	94	91	86	93	92	90	87
SC†	0	100	100	100	98	100	100	100	93	100	100	97	92	100	99	95	87	97	94	91	86	97	93	89	81	93	90	87	82
SCL	8	100	100	100	100	100	100	100	93	100	100	100	91	100	100	100	75	100	97	88	75	100	95	82	75	93	85	75	7
SiC†	2	100	100	100	97	100	100	100	85	100	100	94	84	100	100	90	73	94	88	81	72	94	86	76	64	85	79	73	66
SiCL†	3	100	100	100	100	100	100	100	90	100	100	97	88	100	100	93	78	97	92	86	77	97	90	82	70	90	84	78	71
L	23	100	100	100	93	100	100	98	79	100	97	90	77	100	96	83	70	90	82	75	69	90	80	72	61	79	74	70	65
SiL	5	100	100	100	91	100	100	100	60	100	100	79	60	100	100	60	60	79	60	60	60	79	60	60	60	60	60	60	60
Si†	0	100	100	100	80	100	100	95	69	100	91	75	68	100	87	72	61	75	70	66	60	75	69	64	52	69	65	61	54
Low-Topography, Wet-Season																													
S(f_n)	9	100	100	100	89	100	100	94	83	100	91	89	81	100	89	89	78	89	86	78	78	89	84	78	78	83	78	78	73
LS	22	100	98	91	91	100	96	91	91	91	91	91	91	91	91	91	91	91	91	91	89	91	91	91	75	91	91	91	79
CL	38	100	99	97	90	100	99	94	83	97	93	89	81	97	92	86	74	89	85	79	73	89	83	76	63	83	78	74	6
C	32	100	99	97	87	100	98	94	75	97	91	86	70	97	90	84	60	86	81	66	59	86	77	63	50	75	65	60	5
SiL	71	96	95	93	89	96	95	91	78	93	91	87	76	93	90	82	62	87	80††	74	60	87	79	68	49	78	72	62	5
L	98	98	94	88	77	98	93	84	67	88	82	74	66	88	80	70	58	74	69	63	57	74	68	60	48	67	62	58	5
SL	97	87	83	76	65	87	82	72	56	76	70	62	55	76	68	58	50	62	57	53	49	62	56	52	43	56	53	50	4
SiCL	46	94	90	87	66	94	89	78	57	87	75	64	56	87	71	61	41	64	59	54	40	64	58	48	35	57	51	41	3
SC†	0	100	95	90	81	100	94	86	70	90	85	79	67	90	83	75	50	79	74	62	49	79	71	56	45	70	60	50	4
SCL	26	100	96	84	73	100	93	80	61	84	78	70	59	84	77	65	39	70	64	58	38	70	63	47	29	61	54	39	3
SiC	39	87	82	74	59	87	80	67	50	74	65	57	49	74	63	51	36	57	51	49	35	57	50	41	30	50	45	36	3
Si†	1	100	100	100	85	100	100	94	71	100	91	81	70	100	88	75	59	81	74	67	58	81	72	63	49	71	65	59	5
Low-Topography, High-Moist																													
LS	9	100	97	89	89	100	95	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	79	89	89	89	8
CL	21	100	99	95	86	100	98	90	78	95	89	86	76	95	87	86	62	86	84	72	62	86	80	67	57	78	70	62	6
SiL	21	97	95	95	92	97	95	95	73	95	95	89	70	95	95	80	57	89	78	66	52	89	75	62	30	73	64	57	3
Si†	0	100	100	100	82	100	100	91	67	100	90	79	65	100	86	72	50	79	70	61	49	79	68	56	42	67	59	50	4
C	15	100	100	100	77	100	100	89	60	100	85	73	58	100	82	67	46	73	64	53	45	73	62	50	37	60	52	46	3
SC†	0	100	97	88	76	100	95	84	61	88	82	73	59	88	80	67	47	73	65	56	45	73	63	50	37	61	53	47	3
SCL	15	100	97	87	76	100	95	83	60	87	82	68	60	87	81	60	33	68	60	60	32	68	60	46	21	60	56	33	2
L	50	95	91	84	65	95	89	77	51	84	72	61	49	84	70	55	40	61	53	46	36	61	51	43	23	51	44	40	2
S†	5	100	100	100	80	100	100	90	68	100	86	80	64	100	83	80	60	80	74	60	60	80	71	60	60	63	60	60	6
SiCL	29	90	86	83	60	90	85	72	47	83	68	57	45	83	64	52	28	57	50	42	25	57	48	35	14	47	39	28	1
SL	38	77	67	60	44	77	65	54	30	60	51	40	30	60	49	32	26	40	31	29	26	40	30	28	24	30	28	26	2
SiC	27	81	74	50	35	81	70	48	30	59	43	33	30	59	39	30	15	33	30	30	15	33	30	22	13	30	27	15	1

* Probability of "go" based on median vehicle cone index within vehicle categories 1-6 and minimum vehicle cone index for category 7.
** Probability of "go" for vehicles in category 7 equal to or less than given value.
† Soils with estimated probabilities.
†† Sample interpretation: A tracked vehicle with a vehicle cone index in the range 50-59 has an 80% probability of "go" on an SiL soil at 15% slope und

e 11

es on Level and Sloping Terrain Classified in USDA Terms

ehicle Category 4 VCI Range 60-69						Vehicle Category 5 VCI Range 70-79								Vehicle Category 6 VCI Range 80-99								Vehicle Category 7** VCI Range 100 or Greater							
d		Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope			
e																													
30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45
t-Season Condition																													
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99
92	83	92	92	88	83	92	91	83	83	92	88	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
72	72	83	77	72	72	76	72	72	72	76	72	72	69	72	72	72	68	72	72	72	66	72	72	69	66	72	72	66	62
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
90	87	93	91	88	83	91	89	87	84	91	88	86	80	87	85	83	80	87	84	82	76	84	82	80	77	84	82	79	67
87	82	93	89	85	78	89	86	83	79	89	85	81	73	83	81	78	71	83	80	76	62	80	77	73	64	80	76	69	54
75	75	93	83	75	64	82	75	75	70	82	75	75	50	75	75	64	50	75	75	50	50	75	59	50	50	75	54	50	50
73	66	85	77	70	59	76	72	67	60	76	71	64	53	67	63	59	52	67	62	56	46	61	57	53	47	61	56	50	41
78	71	90	83	75	64	82	77	72	65	82	75	69	58	72	68	64	57	72	67	61	50	67	63	58	52	67	62	56	45
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61	54	69	64	58	46	64	60	55	48	64	59	52	38	55	51	46	36	55	50	42	26	50	44	38	28	50	42	34	18
-Season Condition																													
78	78	83	78	78	78	78	78	78	78	78	78	78	72	78	78	78	70	78	78	78	67	78	78	72	67	78	79	67	67
91	79	91	91	86	73	91	89	82	73	91	88	75	70	82	73	73	69	82	73	73	68	73	73	70	68	73	73	68	68
74	66	83	77	71	53	76	73	68	55	76	72	63	43	68	60	53	41	68	59	48	34	58	50	43	36	58	48	39	24
[illegible]	53	75	64	58	42	63	59	56	43	63	58	50	40	56	47	42	40	56	45	40	31	44	41	40	34	44	40	40	28
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41	36	57	50	39	29	48	40	37	31	48	39	35	23	37	34	29	21	37	33	26	9	32	28	23	11	32	26	19	9
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59	50	71	64	55	45	63	58	51	46	63	56	49	42	51	48	45	41	51	48	44	37	47	45	42	38	47	44	40	33
h-Moisture Condition																													
89	84	89	89	89	60	89	89	89	63	89	89	79	50	89	72	60	47	89	69	55	44	67	58	50	44	67	56	44	44
62	60	78	68	62	43	67	62	62	49	67	62	57	31	62	55	43	30	62	54	33	19	52	39	31	22	52	35	28	14
57	34	73	62	46	24	62	52	37	24	62	49	30	24	37	28	24	24	37	25	24	19	24	24	24	20	24	24	24	14
50	44	67	57	47	37	56	49	45	38	56	48	42	31	45	41	37	30	45	40	34	23	39	35	31	25	39	34	29	18
46	39	60	51	44	27	50	45	40	30	50	44	37	20	40	35	27	20	40	34	20	20	33	24	20	20	33	22	20	13
47	39	61	51	44	30	50	45	40	32	50	44	37	24	40	36	30	23	40	34	27	14	34	29	24	16	34	28	21	8
33	26	60	51	30	13	46	32	27	13	46	31	21	13	27	18	13	13	27	16	13	7	13	13	13	9	13	13	13	7
40	25	51	43	32	19	43	36	26	19	43	34	23	17	26	22	19	16	26	21	18	12	20	18	17	13	20	18	16	8
60	60	68	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
28	16	47	36	23	10	35	25	17	10	35	24	14	8	17	13	10	8	17	11	10	3	10	10	8	5	10	10	7	3
26	24	30	28	25	24	28	26	24	24	28	25	24	21	24	24	24	20	24	24	24	18	24	24	21	18	24	24	18	10
15	14	30	24	15	7	22	15	15	9	22	15	13	4	15	12	7	4	15	11	4	4	11	6	4	4	11	4	4	4

ope under low-topography, wet-season condition.

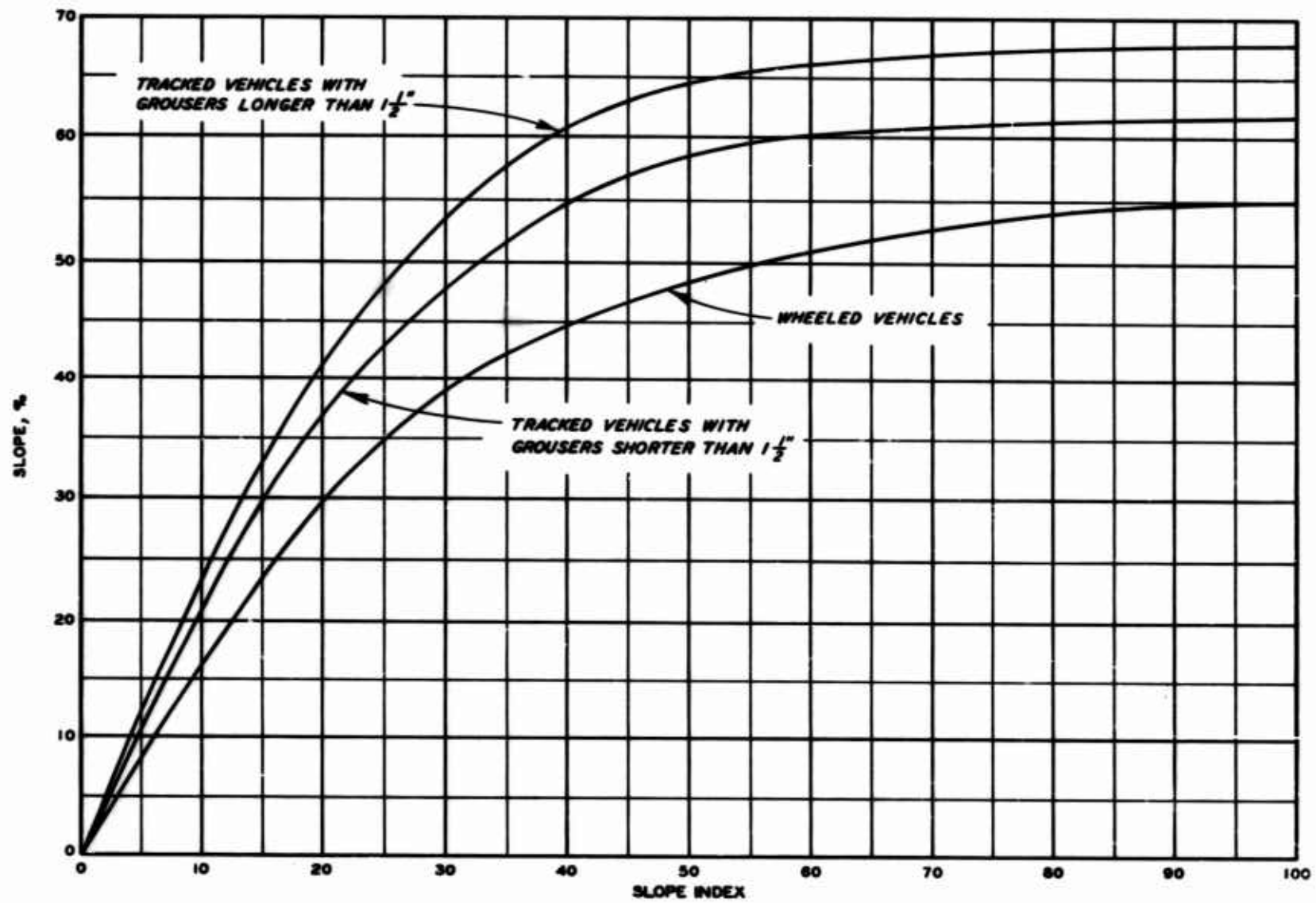
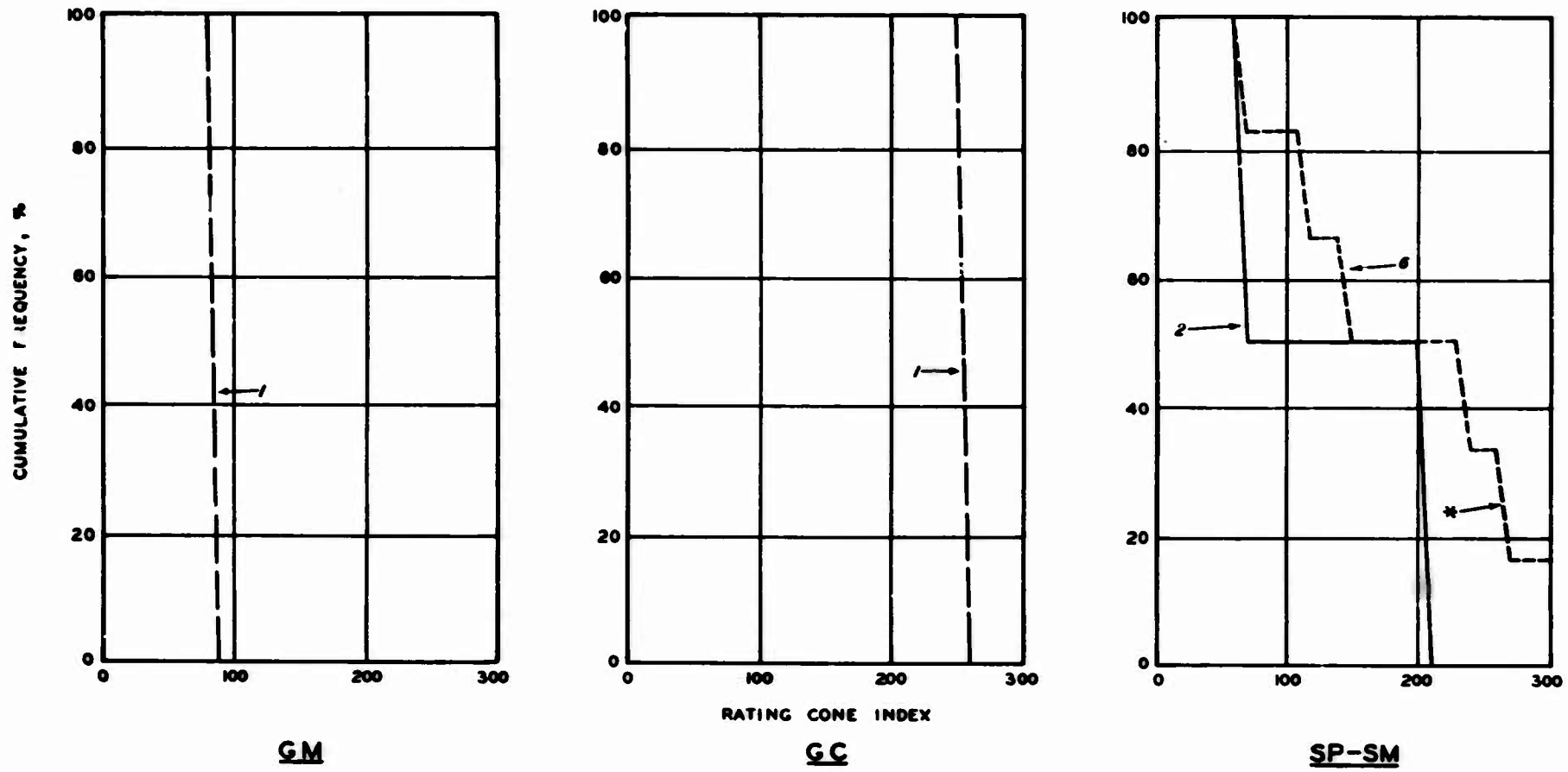


CHART FOR DETERMINING SLOPE INDEX

PLATE I

PLATE 2



LEGEND

- LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY, WET-SEASON CONDITION
- HIGH-TOPOGRAPHY, WET-SEASON CONDITION

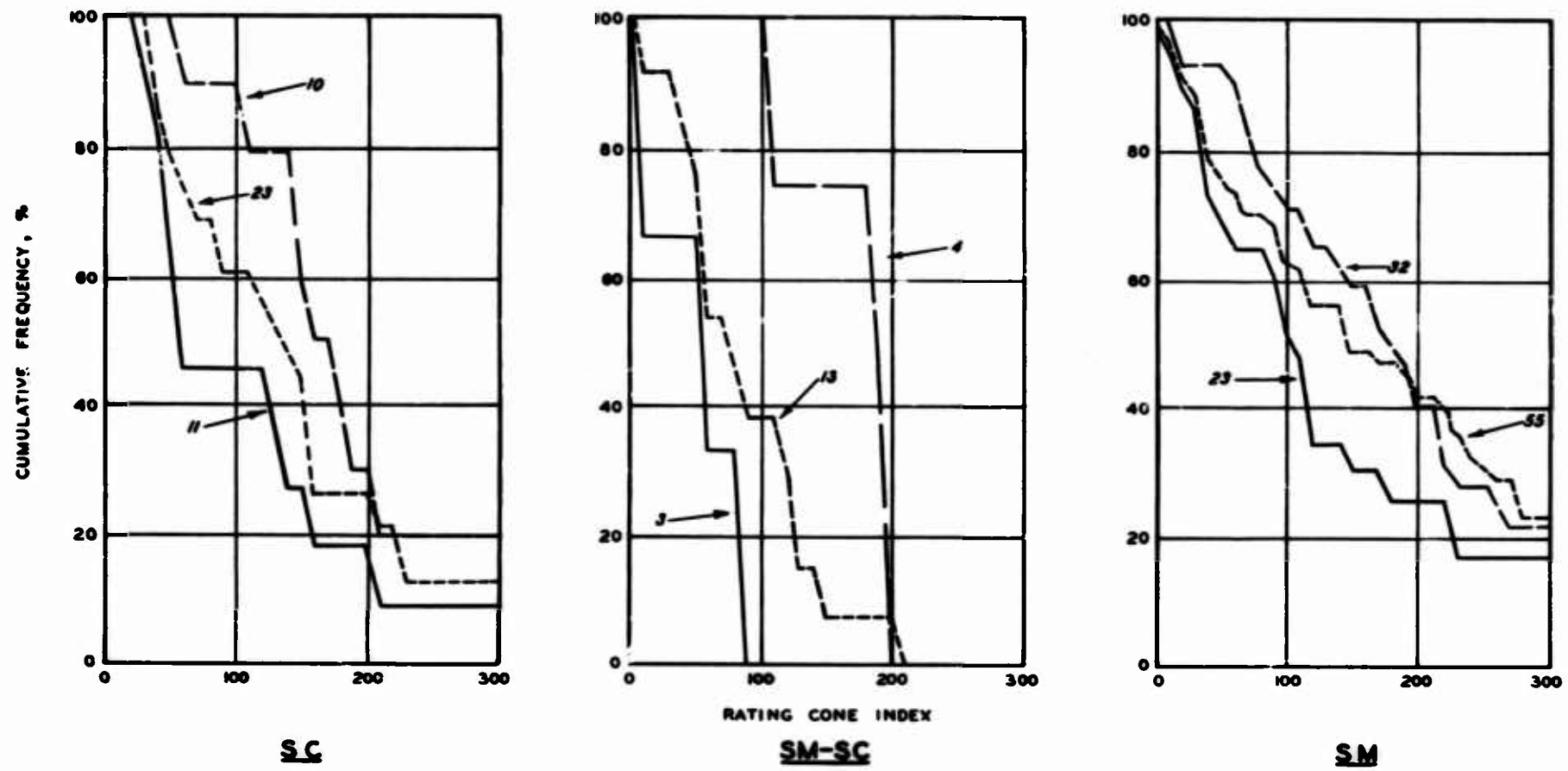
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

* SAMPLE INTERPRETATION: 25% OF SAMPLES OCCURRED AT RATING CONE INDEX OF 265 OR HIGHER.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USCS SOILS

GM, GC, AND SP-SM



LEGEND

LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION

LOW-TOPOGRAPHY, WET-SEASON CONDITION

HIGH-TOPOGRAPHY, WET-SEASON CONDITION

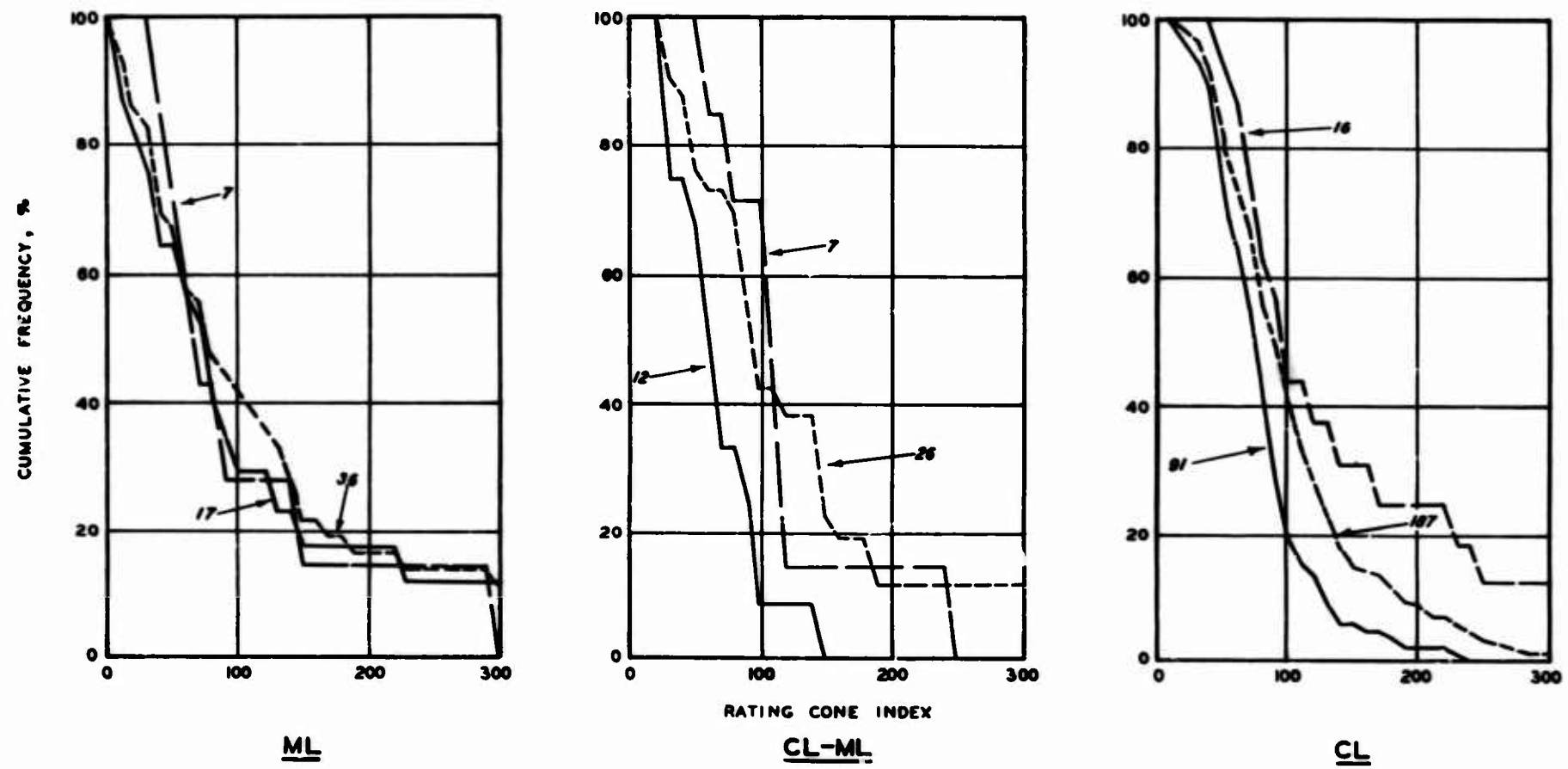
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USCS SOILS

SC, SM-SC, AND SM

PLATE 4



LEGEND

LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION

LOW-TOPOGRAPHY, WET-SEASON CONDITION

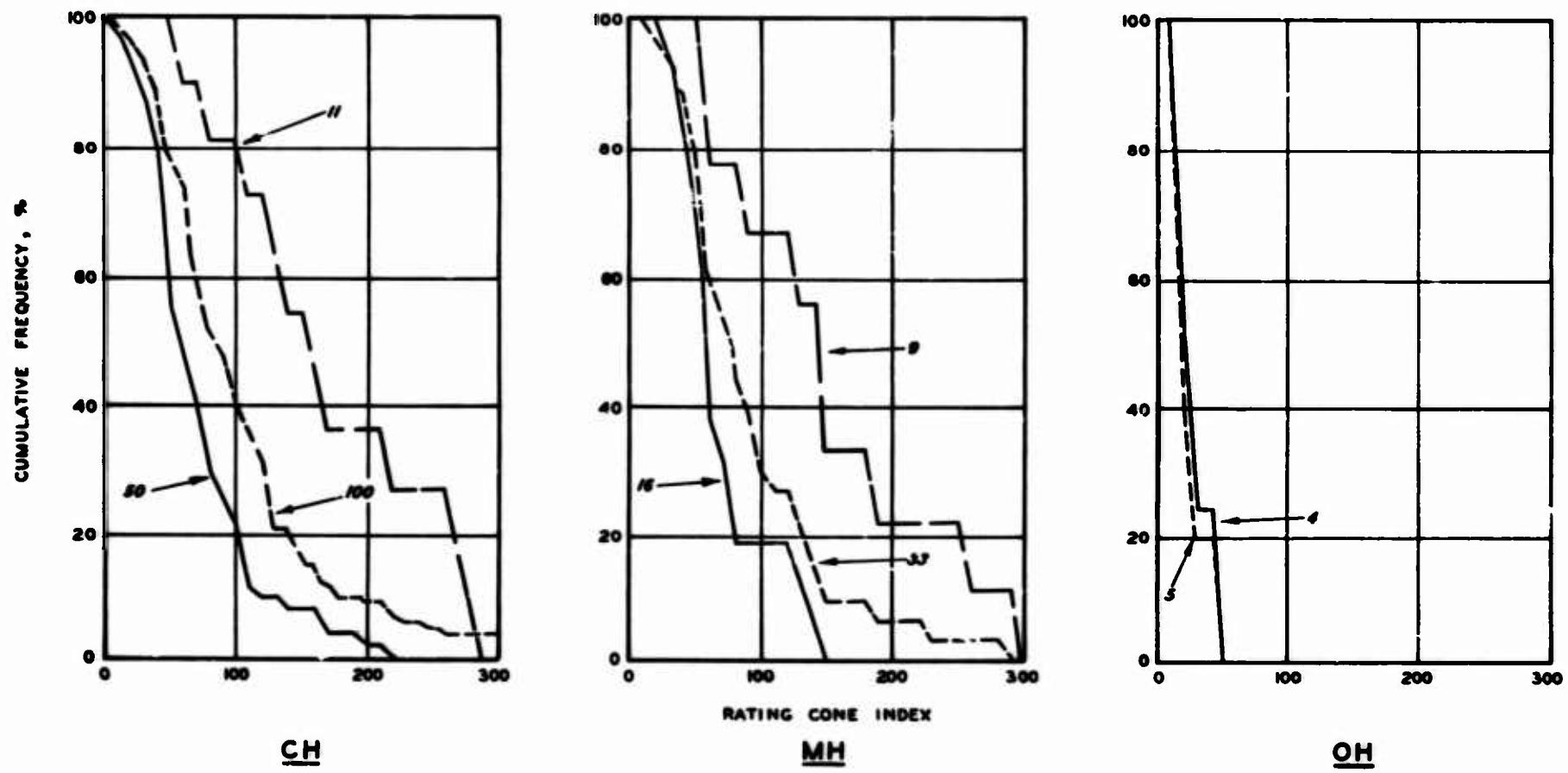
HIGH-TOPOGRAPHY, WET-SEASON CONDITION

NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USCS SOILS

ML, CL-ML, AND CL



LEGEND

LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION

LOW-TOPOGRAPHY, WET-SEASON CONDITION

HIGH-TOPOGRAPHY, WET-SEASON CONDITION

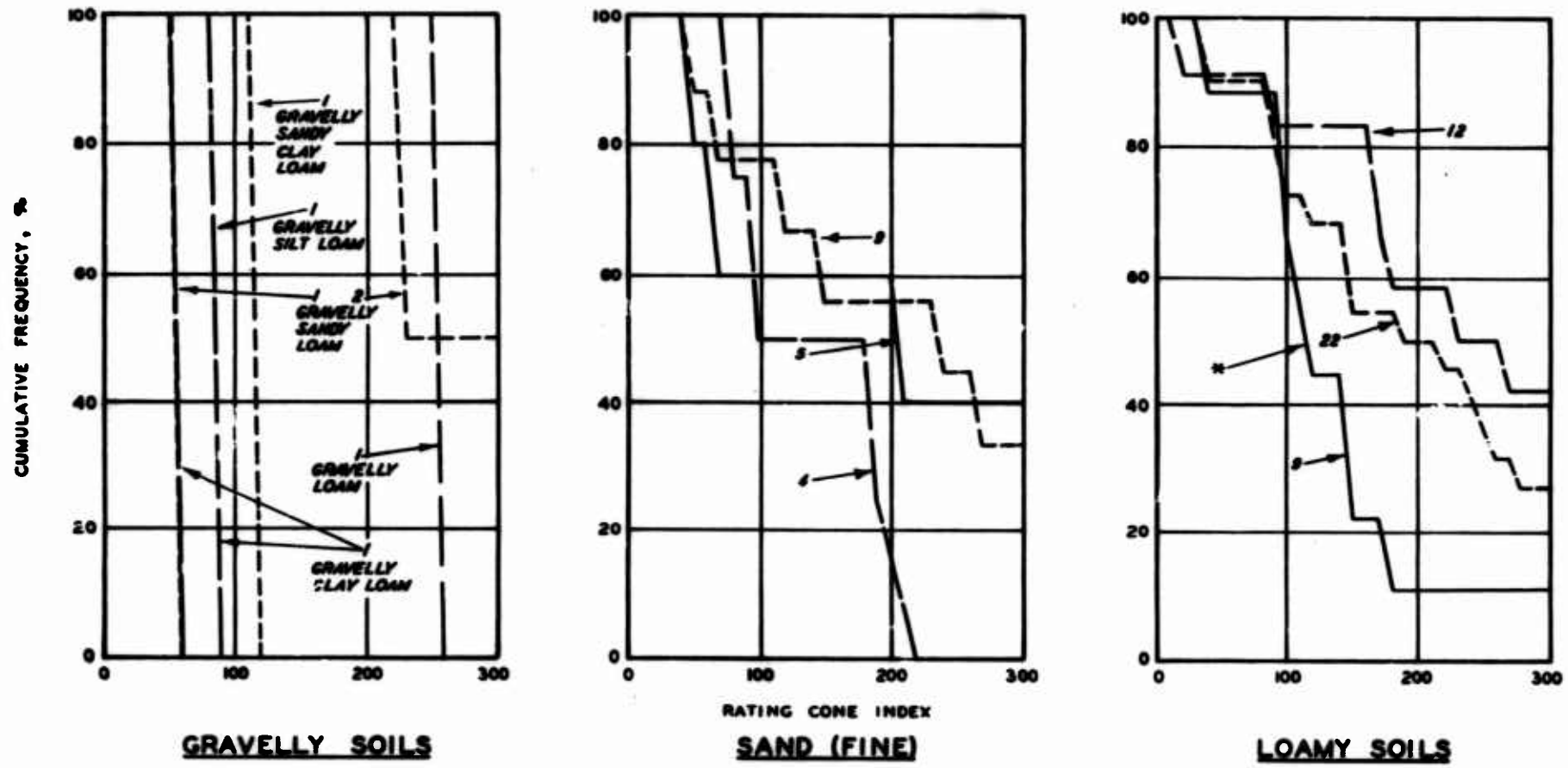
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USCS SOILS

CH, MH, AND OH

PLATE 6



LEGEND

LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION

LOW-TOPOGRAPHY, WET-SEASON CONDITION

HIGH-TOPOGRAPHY, WET-SEASON CONDITION

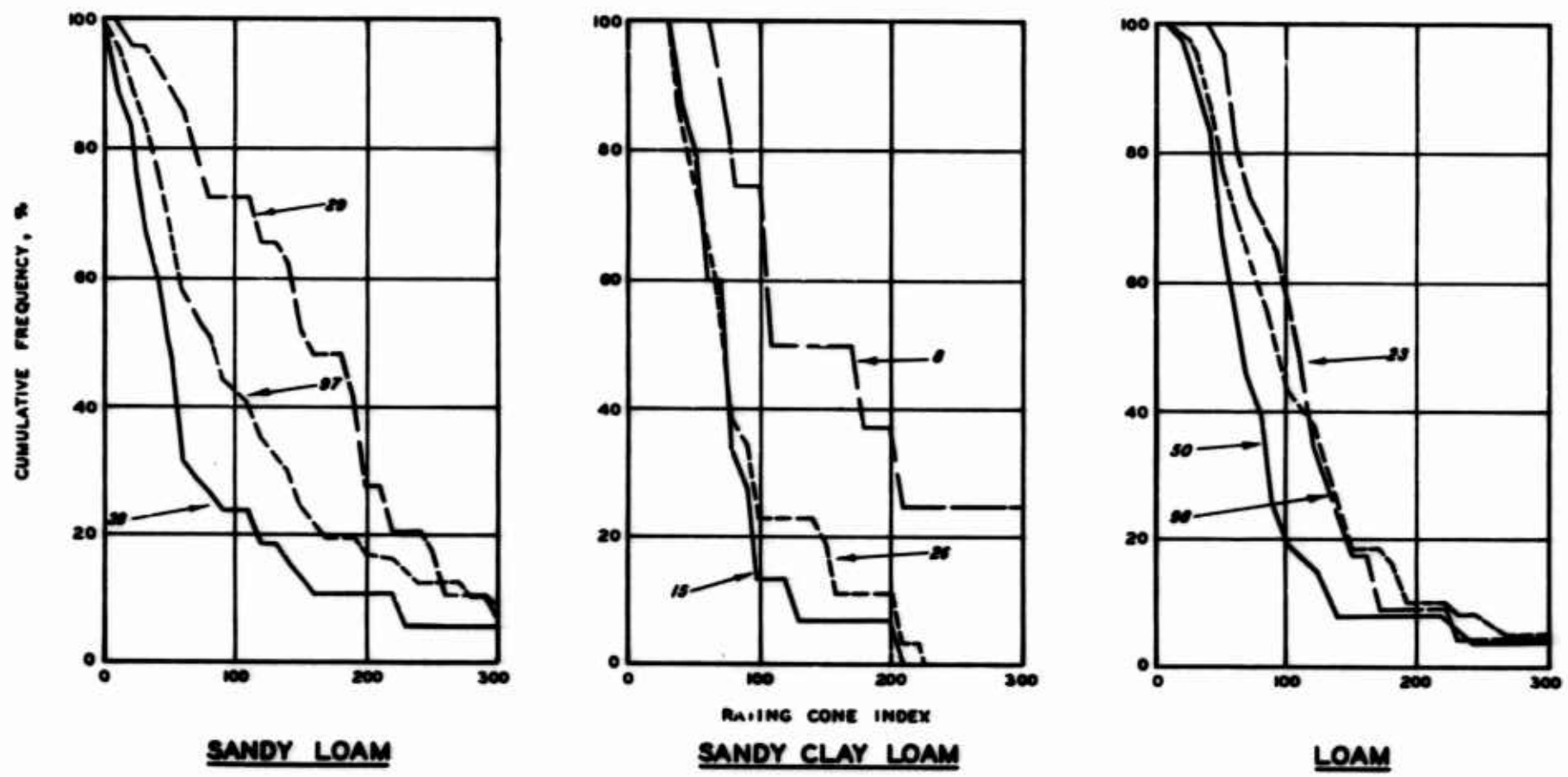
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

* SAMPLE INTERPRETATION: 50% OF SAMPLES OCCURRED AT RATING CONE INDEX OF 115 OR HIGHER.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USDA SOILS

GRAVELLY SOILS, SAND (FINE), AND LOAMY SAND



LEGEND

- LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY, WET-SEASON CONDITION
- HIGH-TOPOGRAPHY, WET-SEASON CONDITION

NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

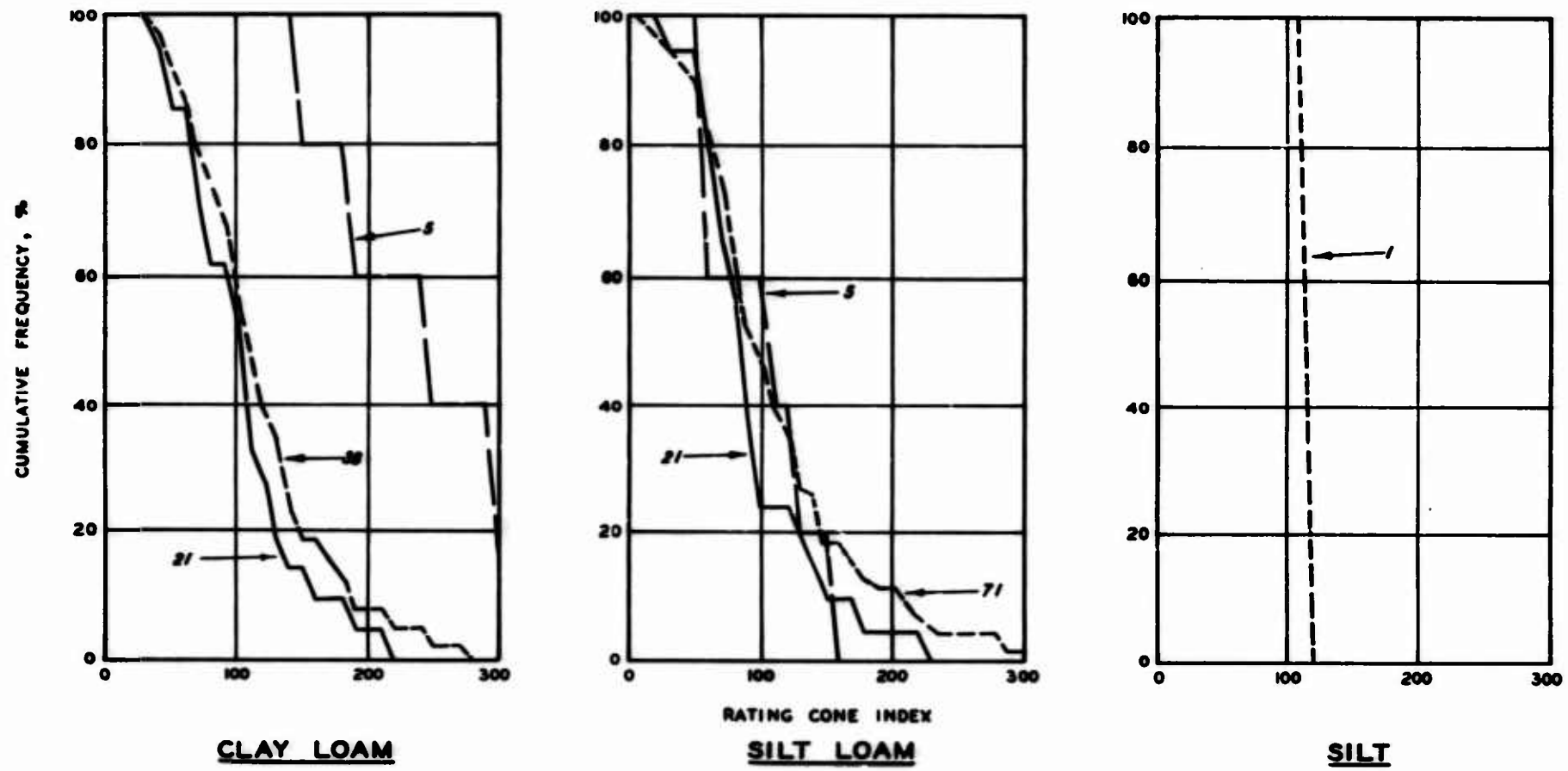
CUMULATIVE FREQUENCY OF RATING CONE INDEX

USDA SOILS

SANDY LOAM, SANDY CLAY LOAM, AND LOAM

PLATE 7

PLATE 8



LEGEND

LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION

LOW-TOPOGRAPHY, WET-SEASON CONDITION

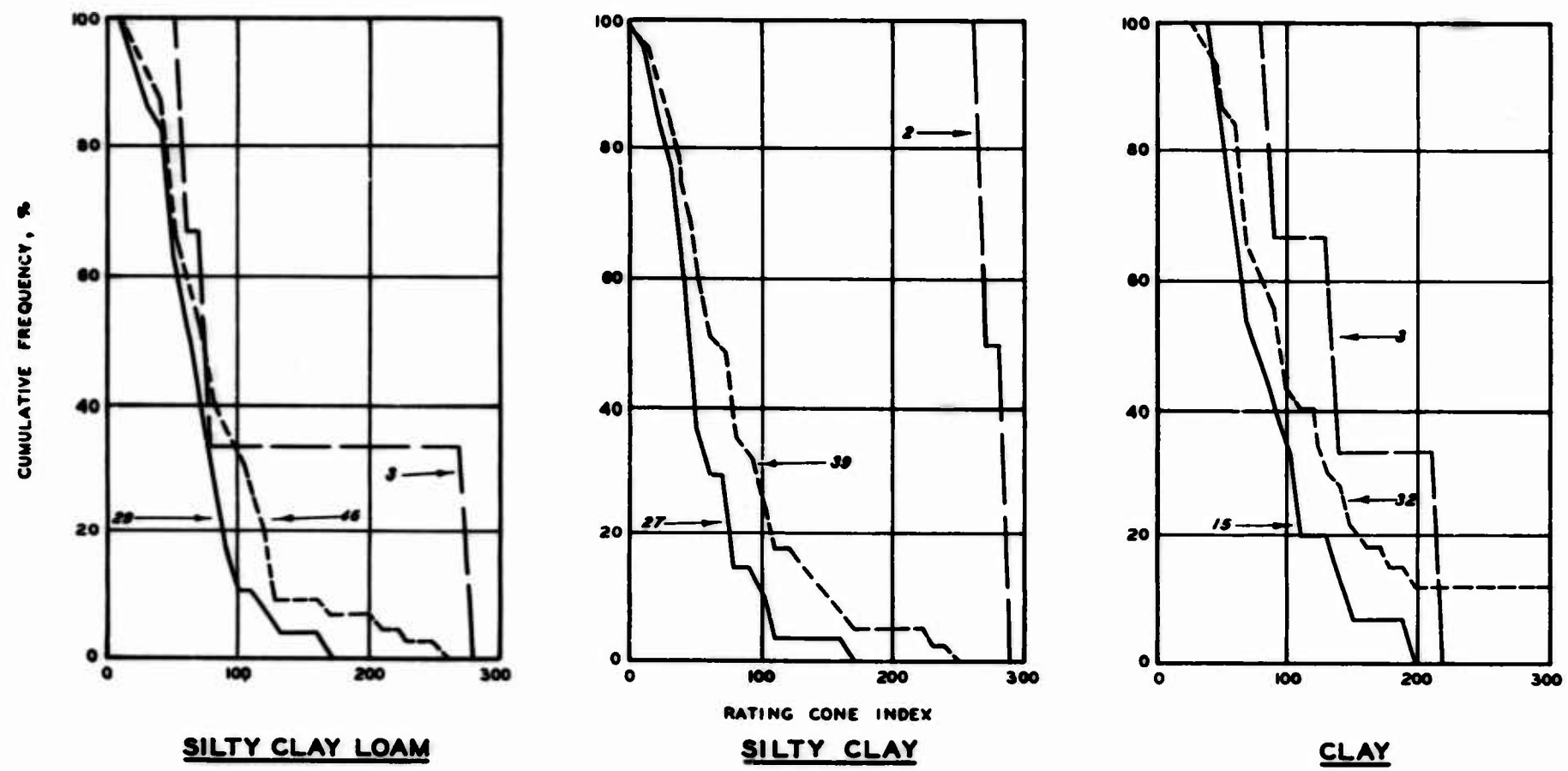
HIGH-TOPOGRAPHY, WET-SEASON CONDITION

NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USDA SOILS

CLAY LOAM, SILT LOAM, AND SILT



LEGEND

- LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY, WET-SEASON CONDITION
- HIGH-TOPOGRAPHY, WET-SEASON CONDITION

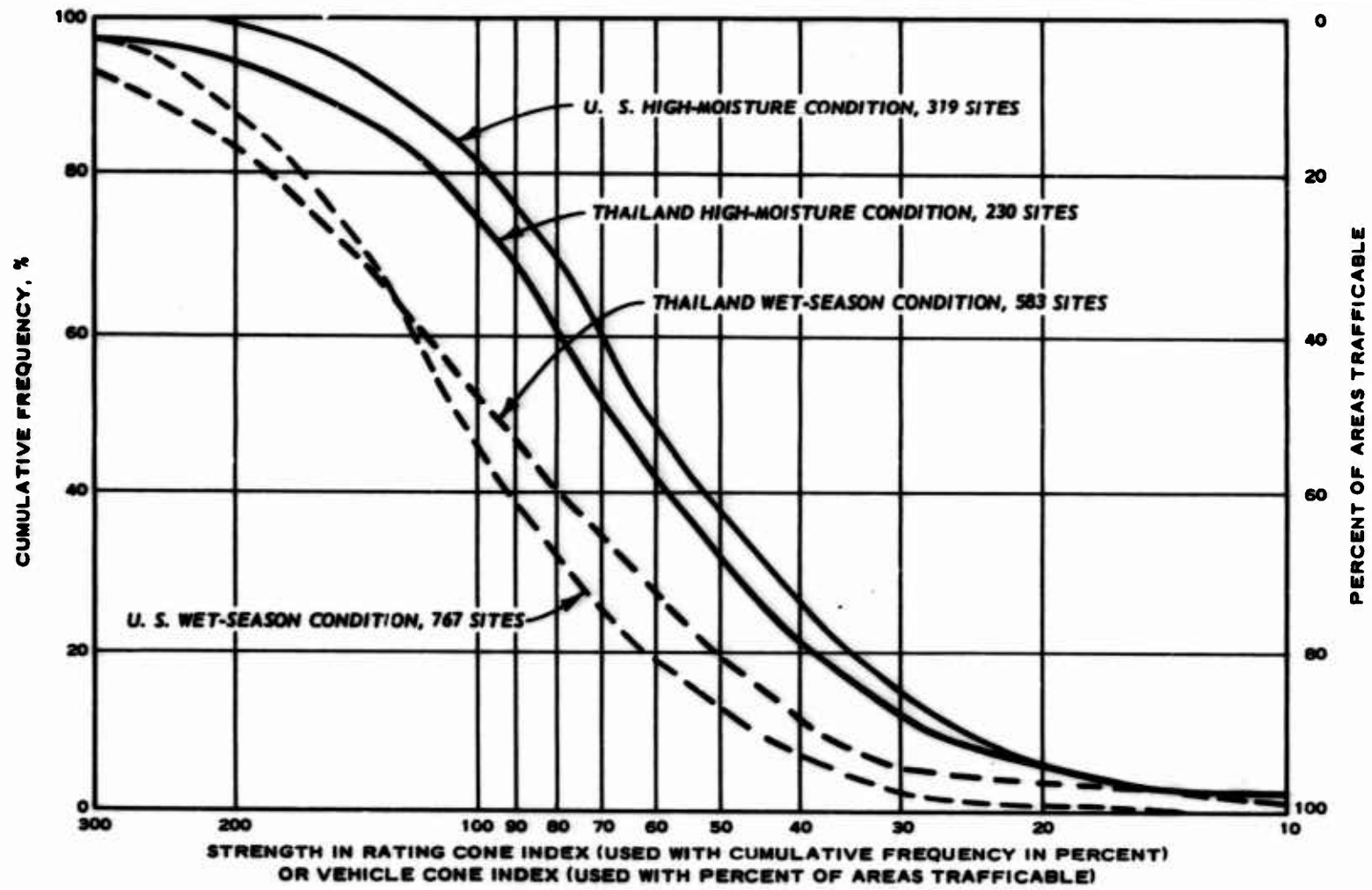
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

CUMULATIVE FREQUENCY OF RATING CONE INDEX

USDA SOILS

SILTY CLAY LOAM, SILTY CLAY, AND CLAY

PLATE 10



NOTE: WET-SEASON CONDITION IS FOR HIGH- AND LOW-TOPOGRAPHY AREAS; HIGH-MOISTURE CONDITION IS FOR LOW-TOPOGRAPHY AREAS ONLY.

CUMULATIVE FREQUENCY OF RATING CONE INDEXES IN UNITED STATES AND THAILAND

FINE-GRAINED SOILS, 6-TO 12-IN. LAYER

APPENDIX A: SOURCES OF DATA AND DETAILED PROCEDURES USED TO OBTAIN DATA

1. The soil and site data pertinent to the soil trafficability classification analyses are presented in tables A1-A6. These data were obtained in six different programs conducted during the period June 1962 through November 1965 in Thailand. Soil data included are texture, Atterberg limits, USCS and USDA soil type, organic content, and specific gravity. Trafficability data included are moisture content, density, depth to water table, and strength, i.e. cone index (CI), remolding index (RI), rating cone index (RCI), and sheargraph cohesion, adhesion and tan ϕ values, for wet-season and high-moisture conditions. Site data included are geographic locations furnished on Army Map Service map sheets and military grid coordinates, topographic class, topographic position, slope, vegetation, and land use. The general locations of the sites are shown on a map of Thailand in fig. 4 of the main text.

2. In tables A1-A6, the trafficability data for the wet-season condition are the data obtained during one visit to a site or an average of data for two or more visits during the wet season, as noted in the tables. At some sites the RI and, consequently, the RCI could not be determined on some visits because of the firmness of the soil. In determining an average RCI for a site which was visited two or more times, the CI data used were those for which RI measurements were available. Data for high-moisture conditions (water table 18 in. or less from the surface) for all trafficability parameters except sheargraph are usually for one visit. If this condition occurred on more than one visit, the data presented in the tables and used in the analyses were for the day of lowest RCI. Sheargraph data are listed under the high-moisture condition only when the water table was at the surface or free water was above the surface.

3. The following paragraphs are grouped according to the six sources of data and contain a detailed discussion of sampling techniques, number of visits to a site and number of measurements taken during each visit, number and geographical locations of the sites, and other important features of the test programs relevant to the data for each of the sources.

Preliminary Survey Study

4. A preliminary study[2] was made in Thailand to provide guidance for a planned, long-range research program to develop new methods and apply existing methods for measuring and predicting in quantitative and semiquantitative terms the effects of environmental factors on ground vehicles operating in Southeast Asia. Data were obtained from 202 sites visited during the period June-October 1962 by a team of specialist engineers, physical scientists, and technicians. The test sites were concentrated primarily in four geographic areas: the lower Chao Phraya Delta, the Bangkok Plain, the Khorat Plateau in south-central and eastern Thailand, and the Chiang Mai Basin in northwest Thailand. Also, some of the sites visited were located in the southeastern coastal plain. One visit was made to each site. The data collected for the preliminary survey study from 165 sites that are pertinent to this trafficability classification study are presented in table A1.

Soil and trafficability data

5. At each test site, 10 CI penetrations were made in an area approximately 10 by 20 ft. For each penetration, CI was measured at the surface and at 3-in. vertical increments to a depth of 18 in., and then at 6-in. vertical increments to a depth of 30 in., when possible. When soil conditions permitted testing, RI was measured at each site for the 0- to 6- and 6- to 12-in. layers. In some instances remolding index was measured for the 12- to 18-in. layer. Soil samples were taken for moisture content-density determinations for the same soil layers mentioned above. Representative bulk samples were taken from the 0- to 6- and 6- to 12-in. layers and occasionally from the 12- to 18-in. layer for laboratory tests. Samples were taken in an area approximately 1 ft square.

Site data

6. The site data obtained included geographic location of the test site, topographic position, slope, land use, vegetation, depth of soil, surface-water depth, and depth to water table. An attempt was made to sample a wide range of conditions and soil types with emphasis on testing the lowest and wettest areas on the assumption that the test results would

give some insight into the maximum moisture contents and minimum strengths that various soil types would exhibit during the peak of the wet season.

Trafficability Classification Study

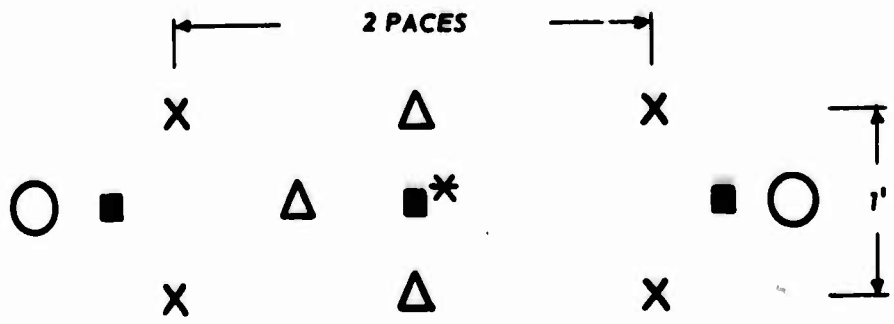
7. Data collected for the trafficability classification study were obtained from 246 sites visited during the period August-October 1964 by a WES soil-trafficability team whose objective was to provide data specifically for the study reported herein. The sites were located within six MERS study areas: Nakhon Sawan, Lop Buri, Chiang Mai, Khon Kaen, Pran Buri, and Chanthaburi. In general, the rainy season extends from May to September in the northern area, from May to October in the central area, and from May to November in the south-central area of Thailand; hence, the period of testing coincided with the expected period of high soil-moisture content during the wettest monsoon season. One visit was made to each site. The data from 238 sites are presented in table A2.

Soil and trafficability data

8. The strength data at each site were obtained as follows. Four sets of CI profiles were taken with measurements taken at the surface and at 3-in. vertical increments to a depth of 18 in.; RI tests were run on two or occasionally three samples from the 6- to 12-in. layer, and surface sheargraph measurements were made at three different locations on the site. Soil samples were taken from the 0- to 6- and 6- to 12-in. layers with the trafficability sampler for determination of moisture content, density, grain-size distribution, Atterberg limits, organic content, and specific gravity. When the soil was too firm for sampling with the trafficability sampler, samples were secured with an Oakfield punch or with a shovel. The locations of test or sampling points for each site are shown in fig. A1.

Site data

9. In each area sites were selected to include a range of different soil types, topographic positions, land uses, and vegetation types with emphasis on the collection of data for soil type-topographic positions for which little or no data had previously been collected, e.g. moderately and highly organic soils on all topographic positions, all soils on upland



X CONE INDEX

■ REMOLDING INDEX

■* REMOLDING INDEX (OPTIONAL)

○ MOISTURE-DENSITY AND BULK SAMPLES

△ SHEARGRAPH

Fig. A1. Site layout

depressions and ridges, and clayey sands, silts, and clays on upland flats. A special effort was made to include an equal number of sites in each combination of soil type and topographic position.

10. Land use at each site was described in one or more of the following terms:

a. Undisturbed; not obviously used by man or domestic animals.

b. Disturbed; obviously used by man or domestic animals.

(1) Cropland currently in use (excluding hayfields, orchards, vineyards, tree plantations). Type _____.

(2) Cropland currently lying fallow (excluding hayfields, orchards, vineyards, tree plantations). Type _____.

(3) Pasture grazed by domestic animals.

(4) Hayfields (not currently being grazed).

(5) Orchards, vineyards, tree plantations. Type _____.

(6) Lawns, recreation areas.

(7) Logged, cut for fuel, newly cleared for slash-and-burn agriculture.

11. Since the essence of this program lay in securing a wide range of soil types and topographic position data during the high-moisture period of the wettest monsoon season, no attempt was made to collect detailed vegetation data; instead, the vegetation was described in general but consistent terms that could be readily identified even by relatively untrained observers. These terms are:

a. Forest. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering more than 90% of the area. Only the trees are significant; smaller plants are ignored.

b. Woodland. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering between 40 and 90% of the area.

c. Savanna. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering from 5 to 40% of the area. The "ground cover" may be wild grass, rice, maize, or any mostly herbaceous plants.

d. Tall scrub forest. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with the crowns covering more than 90% of the area.

e. Tall scrub woodland. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with the crowns covering 40 to 90% of the area.

f. Tall scrub savanna. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with crowns covering from 5 to 40% of the area.

g. Low scrub. Shrubs from 0.7 (approximately 2.3 ft) to 1.8 m (approximately 6 ft) tall with the crowns covering more than 40% of the area.

h. Low scrub savanna. Shrubs from 0.7 (approximately 2.3 ft) to 1.8 m (approximately 6 ft) tall with the crowns covering from 5 to 40% of the area.

i. Tall-grass prairie. Herbaceous plants, usually of mostly grasses or grasslike plants, more than 0.7 m (approximately 2.3 ft) high with the plants covering more than 50% of the ground surface.

j. Short-grass prairie. Herbaceous plants, usually of mostly grasses or grasslike plants, less than 0.7 m (approximately 2.3 ft) high with the plants covering more than 50% of the ground surface.

k. Barren. More than 50% of the ground surface is bare, i.e. not covered by plants.

In the definitions listed above no distinction is made between cultivated

and noncultivated plants. Thus, a coconut plantation, a rubber grove, or an orchard is usually a "forest" or a "woodland" and a field of mature rice is a "tall-grass prairie."

12. Topographic slope was measured with an Abney hand level at each site on the contiguous area over which no change in true slope occurred. Topographic position was identified as one of the following:

a. Upland flat (UF)
b. Upland depression (UD)
c. Upland ridge (UR)
d. Upper slope (US)
e. Lower slope (LS)
f. Terrace flat (T)
g. Terrace slope (TS)
h. Bottomland flat (BF)
i. Bottomland depression (BD)
j. Natural levee (NL)
k. Stream bottom (SB)
l. Tidal flat (TF)
m. Drainage ditch (DD)
n. Beach (B)

Other data collected included depth of water over soil surface, depth to ground water, and depth to bedrock if within several feet of the surface.

Surface Composition Study

13. The objective of the surface composition study[3] was to secure data for establishing the range in variation of areal and seasonal soil strength in Thailand and for mapping soils exhibiting similar trafficability characteristics in selected study areas in Thailand. These data were obtained during the period April 1964 through June 1965 by a soil trafficability team. The study areas and the number of visits to sites in each area are shown in the following tabulation.

Area	No. of Visits to Site
Nakhon Sawan	2
Lop Buri	3
Chiang Mai	2
Pran Buri	1
Khon Kaen	2
Chanthaburi	1

The data collected for the surface composition study from 224 sites that are pertinent to the trafficability classification study are presented in table A3.

Soil and trafficability data

14. At each site, soil-strength data were collected for CI, RI, and sheargraph tests. Four or more CI profiles were obtained. Measurements for each profile were made at 1-in. vertical increments to a depth of 18 in. RI tests were conducted on samples from the 0- to 6- and 6- to 12-in. layers. If the results of the tests on two samples from each layer were not in close agreement, a third RI test was made. Sheargraph tests were performed on the soil surface at only one point on the site. Soil samples were taken with the trafficability sampler in 3-in. increments to a depth of 12 in. for the determination of moisture content and density. Bulk samples were taken for laboratory determination of grain-size distribution, Atterberg limits, organic content, and specific gravity. At each site a pit was dug and the soil profile was described to a depth of 18 in. Data also were obtained on the color, pH, and reaction to HCl of soil horizons. From these data the soil series were identified.

Site data

15. The classification of site data for this study was the same as that used in the trafficability classification study (see paragraphs 10-12 of this appendix).

Soil Moisture-Strength Study

16. The objective of the soil moisture-strength study[4] was to develop means for quantitatively predicting soil-moisture contents and

strength of the soil for use in predicting trafficability of the critical soil layer. Data for this study were obtained from 75 sites during the period May 1964-November 1965 by teams of Thai engineers and technicians. Data were collected during two wet seasons and one dry season. Sites were selected to provide a range in climate, topography, soil type, and land use. The sites were located in seven MERS study areas and in the vicinity of Bangkok, Thailand.

17. Two types of sites, prediction-development (PD) and survey (TS), were established. Data from PD sites were used to develop rainfall-soil moisture-strength relations, and data from the TS sites will be used to check the accuracy of soil moisture-strength predictions that were based on the relations developed from PD site data. Twenty PD and 55 TS sites were established. The PD sites were visited daily to collect unit electrical resistivity data for use in measurement of soil-moisture content, and these sites and the TS sites also were visited one or more times each month to collect trafficability data. The data from this study that are pertinent to the soil trafficability classification study are presented in table A4.

Soil and trafficability data

18. Data from the PD and TS sites were collected in a 21- by 36-ft sampling area divided into 3-ft-square plots. Samples and direct measurements of the soil were taken in three randomly selected plots during each sampling visit to the site.

19. Six CI penetrations, two in each of three randomly selected plots, were made on each visit, and measurements of CI were averaged for the 0- to 6- and 6- to 12-in. layers. RI tests were performed on samples of the 6- to 12-in. layer from each of the three plots. Data from the tests were averaged for each visit. The RCI for a specific visit was then tabulated in the usual manner. An attempt was made to obtain strength measurements concurrently with moisture measurements. CI and especially RI data could not be obtained as frequently as moisture data and at some sites could not be obtained at all during the dry season due to firmness of the soil. At some sites flooding prevented data collection for long periods during the wet season.

20. For each visit sheargraph measurements on the soil surface were made at two spots on each of the three selected plots and averaged. For most sites these data were obtained on four visits during the period of testing.

21. Soil samples of the 3-in. soil layers from the surface to a depth of 18 in. were taken with the trafficability sampler for determination of moisture content. Samples were obtained from two spots in each of three plots. The moisture content data were averaged for each 3-in. layer and for the 0- to 6- and 6- to 12-in. layers.

22. When a thin-walled piston type soil sampler could be used to obtain a relatively undisturbed sample of proper length, that sample was saved for moisture content and density determinations. Also, when the soil was moist, two 2-in. cores were taken with the San Dimas or drive-type sampler for determination of density. The density listed in the summary table for each site is the average of density values determined from tests on piston-type soil samples, or where no such samples were obtained, it is the average of the two density values determined from tests on San Dimas soil samples.

23. The USDA and USCS soil types for each site were determined from mechanical analysis and Atterberg limits of bulk samples taken from the 0- to 6- and 6- to 12-in. layers. The sample tested in the laboratory for each layer was a composite of three samples taken at each end and along a point on one side of the site. The bulk soil samples were also tested to determine the organic content and specific gravity of the soil layer.

Site data

24. Measurements of rainfall, depth to ground water, and ambient temperature were made daily at each of the PD sites.

25. Data describing the topographic position, slope, land use, and vegetation at a site were collected from observations in the field during the period of study. The systems for classifying topographic position, land use, and slope are the same as those used in the trafficability classification study (see paragraphs 10-12 of this appendix).

U. S. Army Cold Regions Research and Engineering Laboratory (CRREL) Airphoto Pattern Study

26. The purpose of the CRREL airphoto pattern study[5] was to develop a method for interpreting, classifying, and mapping terrain features of Thailand from airphotos in terms of their effect on ground mobility. Data were obtained from 191 sites during the period 4 September-18 October 1964 by a team of specialist engineers and physical scientists.

27. The sites were located in two MERS study areas selected for detailed study--Lop Buri and Chanthaburi. The sites were selected primarily on the ability of the analyst to recognize tone and texture on aerial photographs. One visit was made to each site. The data from 121 sites pertinent to the trafficability classification study reported herein are presented in table A5.

Soil and trafficability data

28. Three or more CI penetrations were made at each site. For each penetration, CI generally was measured at 1-in. increments from the surface to a depth of 18 in. RI tests were made on samples from the 6- to 12-in. layer. Samples for determination of moisture content and density were taken with the trafficability sampler in 3-in. vertical increments from the surface to a depth of 12 in. The data were averaged for the 0- to 6- and 6- to 12-in. layers. (The density values are questionable and are not listed in the table.) When the soil was too firm to be sampled with the trafficability sampler, samples for moisture only were taken with the Oakfield punch. Bulk samples for determination of grain size, Atterberg limits, organic content, and specific gravity were taken from the 0- to 6- and 6- to 12-in. layers. The soil profile was described briefly in pedological terms.

Site data

29. The topography class, topographic position, and land use identification for each site were based on a general description or were interpreted from aerial or ground photographs of the site.

Terrain-Vehicle Tests

30. The terrain-vehicle test program[6] was conducted to verify a mathematical model of cross-country vehicle performance previously developed in the United States, by applying it to tropical terrains and modifying it as required. Data for the program were collected in traffic test courses during the period September through October 1965 by a team of engineers, physical scientists, and technicians. The test courses ranged from 10 to 20 ft (hydrologic geometry, designated HG, test courses), to several hundred feet (surface geometry, designated SG, and multiple, designated M, test courses), to several thousand feet (cross-country, designated CC, test courses) in length. For purposes of this study, each of the HG, SG, and M test courses was designated as a site. Each of the CC test courses was subdivided into two or more short stretches, based on changes in soil type, topography, and land use. These stretches were also designated as sites; e.g, test course CC2 was subdivided into sites CC2-A, -B, and -C. The data used in this report are from 23 sites located in the MERS study area of Khon Kaen. Data from the vehicle test program pertinent to the trafficability classification study are presented in table A6.

Soil and trafficability data

31. The data in the table for each site are average values for the total number of visits. On each visit 10 or more CI penetrations were made. For each penetration, CI was measured at the surface, at depths of 1 in. and 3 in., and then at 3-in. vertical increments to 24 or 30 in. Several RI tests were made on samples from the 0- to 6- and 6- to 12-in. layers. Sheargraph measurements of the soil surface were taken in one small area. One set of samples per visit was obtained from the 0- to 1/4- and 0- to 1-in. soil layers for determination of moisture content, and another set of samples was obtained from the 0- to 6- and 6- to 12-in. layers for determination of moisture content and density. Bulk samples for determination of grain size, Atterberg limits, and specific gravity were obtained from the 0- to 6- and 6- to 12-in. layers.

Site data

32. Geographic location, topography class, topographic position, slope, land use, and vegetation data were obtained from general terrain information secured in the field. Again, these data, as tabulated, represent average conditions of the test area.

Tables A1-A6

Table A1

Preliminary Survey Study

Summary of Site, Soil, and Trafficability Data

Section A. Site Data									Section B. Soil Data											
	Location									USDA Texture by Wt, %					USCS Atterberg Limits					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
1	5153III	873521	Low	Bottomland flat	0	Bare	Cultivated	0-6	--	--	--	--	--	63	27	36	CH	--	2.58
								6-12	12	54	34	SiCL	92	65	27	38	CH	--	2.64
3	5153IV	811787	Low	Drainage ditch	0	Short grass	Grazed	0-6	4	28	68	C	96	63	32	31	MH	--	2.59
								6-12	7	30	63	C	93	64	36	28	MH	--	2.57
4	5153IV	811787	Low	Bottomland flat	0	Grass (6 in. high)	Cultivated (idle)	0-6	4	28	68	C	97	66	34	32	MH	--	2.48
								6-12	12	18	70	C	98	65	32	33	CH	--	2.61
5	5153IV	811787	Low	Bottomland depression	0	Grass (8 in. high)	Cultivated (idle)	0-6	15	14	71	C	100	72	38	34	MH	--	2.52
								6-12	1	14	85	C	100	73	34	39	CH	--	2.55
8	5253IV	170848	Low	Lower slope	1	Short grass	Cultivated (idle)	0-6	56	19	25	SCL	63	20	--	NP	ML	--	2.56
								6-12	54	22	24	SCL	63	25	18	7	CL-ML	--	2.61
9	5153I	105821	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	3	72	25	SiL	100	81	65	16	OH	--	2.34
								6-12	10	30	60	C	94	77	39	38	MH	--	2.56
12	5254I	426187	High	Terrace flat	0	Melons	Cultivated	0-6	11	45	44	SiC	92	57	36	21	MH	--	2.60
								6-12	7	22	71	C	94	54	37	17	MH	--	2.61
13	5255II	670353	High	Terrace flat	1-2	Brush and trees	Undisturbed	0-6	28	27	45	C	78	40	29	11	ML	--	2.64
								6-12	33	22	45	C	73	44	29	15	ML	--	2.65
14	5355I	049455	Low	Bottomland flat	1	Short grass	Cultivated (idle)	0-6	11	21	68	C	92	62	34	28	MH	--	2.70
								6-12	15	32	53	C	92	59	26	33	CH	--	2.69
15	5456III	925612	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	10	40	50	SiC	93	59	30	29	CH	2.09	2.63
								6-12	6	28	66	C	95	62	28	34	CH	0.95	2.69
16	5457II	269981	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	66	24	10	SL	49	22	--	NP	SM	1.05	2.61
								6-12	62	23	15	SL	49	22	15	7	SM-SC	--	2.69
17	5457II	269989	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	55	27	18	SL	57	38	15	23	CL	--	2.58
								6-12	55	28	17	SL	55	29	13	16	CL	--	2.69
18	5457II	268989	Low	Bottomland depression	0	Short grass	Cultivated (idle)	0-6	57	27	16	SL	62	25	15	10	CL	--	2.61
								6-12	53	26	21	GSCL	47	26	21	5	SM-SC	--	2.73
19	5558II	623412	Low	Bottomland flat	0	Rice	Cultivated	0-6	47	33	20	L	65	36	19	17	CL	0.78	2.71
								6-12	42	31	27	L	70	36	18	18	CL	--	2.71
20	5558IV	499639	High	Upper slope	1	Trees and brush	Undisturbed	0-6	85	12	3	LS	24	--	--	NP	SM	--	2.61
								6-12	86	12	2	LS	23	17	16	1	SM	--	2.65
21	5559II	771755	Low	Stream bottom	0	Short grass	Grazed	0-6	92	6	2	S	17	--	--	NP	SM	--	2.63
								6-12	93	5	2	S	13	20	--	NP	SM	--	2.66
22	5757IV	551305	High	Upland flat	2	Brush and trees	Undisturbed	0-6	81	17	2	LS	35	--	--	NP	SM	--	2.57
								6-12	83	15	2	LS	34	17	--	NP	SM	--	2.64
23	5757IV	590290	Low	Bottomland flat	0	Marsh grass	Grazed	0-6	73	22	5	SL	46	--	--	NP	SM	--	2.62
								6-12	80	17	3	LS	42	18	--	NP	SM	--	2.65
24	5754IV	387080	High	Terrace flat	1	Tall trees and bamboo grass	Undisturbed	0-6	51	34	15	L	73	24	--	NP	ML	--	2.59
								6-12	25	51	24	SiL	92	27	19	8	CL	--	2.62
25	5754III	610967	High	Upland flat	1	Trees	Undisturbed	0-6	72	7	21	SCL	36	18	--	NP	SM	0.46	2.61
								6-12	72	6	22	SCL	37	20	15	5	SM-SC	--	2.60
26	5754III	550980	Low	Bottomland flat	0	Tall trees	Undisturbed	0-6	87	13	0	S	19	--	--	NP	SM	--	2.55
								6-12	82	15	3	LS	21	16	16	0	SM	--	2.65
28	5754IV	400140	Low	Bottomland flat	0	Open trees with some grass	Cultivated (idle)	0-6	67	19	14	SL	37	--	--	NP	SM	0.42	2.60
								6-12	71	22	7	SL	38	18	--	NP	SM	0.32	2.61
29	5754IV	329150	Low	Bottomland flat	0	Scattered trees	Cultivated	0-6	71	21	8	SL	50	14	--	NP	SM	0.46	2.63
								6-12	52	33	15	L	53	14	--	NP	ML	0.42	2.62
30	5956II	920655	Low	Bottomland depression	0	Rice	Cultivated	0-6	51	29	20	L	68	18	--	NP	ML	1.55	2.62
								6-12	71	13	16	SL	55	19	--	NP	ML	1.24	2.65
31	5956II	923659	Low	Natural levee	0	Heavy brush with some trees	Undisturbed	0-6	73	6	21	SCL	40	--	--	NP	SM	1.08	2.56
								6-12	62	16	22	SCL	62	--	--	NP	ML	0.42	2.62
32	5956II	915672	Low	Upper slope	1	Sparse grass with some trees	Cultivated (idle)	0-6	82	11	7	LS	30	--	--	NP	SM	0.38	2.63
								6-12	91	8	1	S	25	--	--	NP	SM	0.36	2.58
34	5956I	858858	Low	Bottomland depression	1	Short grass	Grazed	0-6	71	23	6	SL	38	--	--	NP	SM	0.62	2.63
								6-12	67	24	9	SL	41	--	--	NP	SM	0.58	2.59
37	5958IV	603647	High	Upper slope	1	Open forest/brush and short grass	Undisturbed	0-6	62	26	12	SL	55	--	--	NP	ML	0.70	2.62
								6-12	78	15	7	LS	27	--	--	NP	SM	0.50	2.62
38	5960IV	703285	High	Upper slope	3	Short grass	Grazed	0-6	89	6	5	S	18	--	--	NP	SM	1.29	2.61
								6-12	89	5	6	S	18	--	--	NP	SM	0.58	2.64

(Continued)

* G = gravelly, VG = very gravelly.

Table A1 (Continued)

Section C. Trafficability Data																							
Wet-Season Condition												High-Moisture Condition											
								Shearegraph**									Shearegraph**				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
1	1	0-6	68.0	52.2	21	1.00	21					68.0	52.2	21	1.00	21					+2
		6-12	84.2	35.4	93	0.78	73					84.2	35.4	93	0.78	73					
3	1	0-6	69.0	51.8	52	0.72	37					69.0	51.8	52	0.72	37					6
		6-12	70.6	47.8	73	0.72	53					70.6	47.8	73	0.72	53					
4	1	0-6	72.0	38.0	85	1.27	108					72.0	38.0	85	1.27	108					18
		6-12	75.2	36.6	100	0.91	91					75.2	36.6	100	0.91	91					
5	1	0-6	65.8	54.5	44	0.91	40					65.8	54.5	44	0.91	40					+3
		6-12	80.5	37.0	75	0.65	49					80.5	37.0	75	0.65	49					
8	1	0-6	92.4	19.5	136	0.63	86														
		6-12	98.9	19.8	162	0.88	143														
9	1	0-6	58.4	51.8	152	--	--														
		6-12	78.3	34.9	193	--	--														
12	1	0-6	70.5	35.0	68	0.90	61														
		6-12	--	24.8	222+	--	--														
13	1	0-6	--	16.0	233+	--	--														
		6-12	--	14.2	--	--	--														
14	1	0-6	89.6	29.9	55	0.90	50					89.6	29.9	55	0.90	50					18
		6-12	--	27.4	88	0.76	67					--	27.4	88	0.76	67					
15	1	0-6	--	22.2	285	--	--														
		6-12	--	--	220	--	--														
16	1	0-6	--	15.9	144	0.83	120														
		6-12	108.6	13.4	187	0.66	123														
17	1	0-6	97.6	20.6	47	0.63	30														
		6-12	108.9	18.8	106	0.85	90														
18	1	0-6	106.1	18.4	89	0.60	53														
		6-12	107.9	18.2	150	0.77	116														
19	1	0-6	96.4	19.8	24	0.52	12					96.4	19.8	24	0.52	12					+2
		6-12	110.2	17.9	78	0.74	58					110.2	17.9	78	0.74	58					
20	1	0-6	93.2	5.0	231	--	--														
		6-12	--	--	305	--	--														
21	1	0-6	--	--	104	--	--					--	--	104	--	--					10
		6-12	93.6	13.8	258	--	--					93.6	13.8	258	--	--					
22	1	0-6	100.4	9.6	490	--	--														
		6-12	--	--	727	--	--														
23	1	0-6	103.3	15.4	277	--	--														
		6-12	98.0	16.4	475	--	--														
24	1	0-6	89.8	23.8	136	0.37	50														
		6-12	91.8	24.2	98	0.52	51														
25	1	0-6	93.9	18.4	127	0.80	102														
		6-12	105.2	17.0	145	0.70	102														
26	1	0-6	89.2	9.2	108	--	--														
		6-12	--	--	250	--	--														
28	1	0-6	103.2	14.2	108	0.65	70					103.2	14.2	108	0.65	70					11
		6-12	99.5	17.5	100	0.26	26					99.5	17.5	100	0.26	26					
29	1	0-6	111.0	14.8	61	0.86	52					111.0	14.8	61	0.86	52					[illegible]
		6-12	99.2	19.5	110	0.36	40					99.2	19.5	110	0.36	40					
30	1	0-6	93.9	21.5	44	0.21	9					93.9	21.5	44	0.21	9					+1
		6-12	88.0	20.5	78	0.33	26					88.0	20.5	78	0.33	26					
31	1	0-6	81.1	12.6	124	--	--														
		6-12	91.7	13.8	170	--	--														
32	1	0-6	94.2	19.9	316	--	--														
		6-12	94.0	19.4	582	--	--														
34	1	0-6	103.0	19.9	215	--	--														
		6-12	104.8	13.2	162	0.62	100														
37	1	0-6	102.0	11.3	243	--	--														
		6-12	96.1	17.2	198	0.82	162														
38	1	0-6	108.0	9.2	194	--	--														
		6-12	111.4	7.4	132	--	--														

(Continued)

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

Table A1 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
39	5960IV	700348	Low	Terrace flat	0	Bare	Cultivated	0-6	51	36	13	L	65	--	--	NP	ML	0.74	2.63
								6-12	59	30	11	SL	56	--	--	NP	ML	0.44	2.62
40	5960IV	660420	High	Upland flat	0.5	Tall weeds with scattered trees	Cultivated (idle)	0-6	68	11	21	SCL	45	--	--	NP	SM	1.46	2.61
								6-12	70	19	11	SL	42	--	--	NP	SM	0.95	2.65
41	5960IV	655415	High	Lower slope	1	Trees	Undisturbed	0-6	82	18	0	VGLS	13	--	--	NP	SM	1.15	2.76
								6-12	--	--	--	--	--	--	--	--	--	--	--
42	5962III	698832	High	Upper slope	2	Scattered trees	Undisturbed	0-6	72	12	16	SL	31	--	--	NP	SM	0.90	2.64
								6-12	73	14	13	GLS	29	--	--	NP	SM	1.00	2.60
43	5963III	614180	High	Upland flat	0	Heavy tree growth	Undisturbed	0-6	50	29	21	GL	37	39	27	12	SM	2.20	3.14
								6-12	51	18	31	VGSCL	23	52	32	20	SM	1.05	3.17
44	5963III	590171	Low	Bottomland flat	0	Low brush and scattered trees	Cultivated (idle)	0-6	35	46	19	L	81	38	26	12	ML	2.87	2.64
								6-12	20	47	33	SiCL	85	48	24	24	CL	0.96	2.69
45	5862I	391151	High	Upland flat	0.5	Short grass and scattered trees	Cultivated (idle)	0-6	45	38	17	L	91	16	--	NP	ML	2.01	2.58
								6-12	39	28	33	VGCL	13	17	--	NP	GM	1.29	2.91
47	5763III	640201	High	Upland flat	0	Trees	Undisturbed	0-6	69	24	7	SL	47	--	--	NP	SM	0.38	2.53
								6-12	60	31	9	SL	47	--	--	NP	SM	0.25	2.53
49	5763III	640220	Low	Terrace flat	0	Rice	Cultivated	0-6	54	37	9	SL	60	--	--	NP	ML	0.50	2.61
								6-12	56	41	3	SL	70	17	17	0	ML	0.44	2.63
50	5763III	505279	Low	Terrace flat	0	Bare	Cultivated	0-6	46	32	22	L	85	17	--	NP	ML	0.58	2.55
								6-12	25	24	51	C	90	35	21	14	CL	0.62	2.55
51	5563II	683239	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	72	20	8	SL	53	--	--	NP	ML	0.46	2.58
								6-12	43	28	29	CL	62	17	--	NP	ML	0.39	2.58
52	5462I	312063	High	Lower slope	15	Scattered trees and tall grass	Undisturbed	0-6	82	8	10	LS	50	--	--	NP	SM	0.86	2.53
								6-12	60	26	14	SL	50	22	17	5	SM-SC	0.55	2.68
53	5462I	326070	High	Lower slope	7	Bamboo with scattered trees	Undisturbed	0-6	45	19	36	CL	55	22	--	NP	ML	1.55	--
								6-12	46	16	38	SC	55	23	--	NP	ML	1.15	--
54	5563II	683239	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	72	20	8	SL	53	--	--	NP	ML	0.46	--
								6-12	44	28	30	CL	62	17	--	NP	ML	0.39	--
55	5561II	661493	High	Upland flat	1	Trees and brush	Undisturbed	0-6	94	6	0	S	28	--	--	NP	SM	0.32	2.62
								6-12	82	14	4	LS	30	20	19	1	SM	0.25	2.62
56	5560II	696228	High	Upper slope	1	Brush and trees	Undisturbed	0-6	87	13	0	S	35	--	--	NP	SM	0.74	2.59
								6-12	71	22	7	SL	38	13	13	0	SM	0.62	2.66
57	5458II	142367	High	Upper slope	3	Short grass	Cultivated (idle)	0-6	82	14	4	LS	28	20	--	NP	SM	0.70	2.64
								6-12	80	17	3	LS	28	20	18	2	SM	0.42	2.62
58	5358II	204351	Low	Bottomland flat	0	Bare	Cultivated	0-6	100	0	0	S	32	--	--	NP	SM	1.77	2.61
								6-12	74	9	17	SL	42	22	--	NP	SM	0.70	2.64
59	5357II	033062	High	Upper slope	1	Short grass	Lawn	0-6	100	0	0	S	34	--	--	NP	SM	0.88	2.62
								6-12	71	17	12	SL	38	18	--	NP	SM	0.70	2.62
60	5156II	001670	Low	Bottomland flat	0	Rice	Cultivated	0-6	40	30	30	C	66	50	19	31	CH	0.88	2.57
								6-12	32	45	23	C	70	68	26	42	CH	0.46	2.56
62	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	9	37	54	C	92	--	--	--	--	0.38	--
								6-12	7	36	57	C	95	68	28	40	CL	0.32	2.72
63	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	6	36	58	C	96	--	--	--	--	0.32	--
								6-12	8	34	58	C	93	72	30	42	CH	0.84	2.74
66	5154II	061031	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	39	49	12	L	67	--	--	--	--	0.58	--
								6-12	42	45	13	L	64	18	14	4	CL-ML	0.38	2.65
67	5151IV	795940	Low	Bottomland flat	0	Brush	Grazed	0-6	9	39	52	C	97	--	--	--	--	1.82	--
								6-12	6	47	47	SiC	97	79	25	54	CH	1.72	2.75
68	5151IV	795940	Low	Bottomland flat	0	Brush and short grass	Grazed	0-6	12	43	45	SiC	91	70	32	38	CH	2.22	--
								6-12	5	48	47	SiC	97	69	30	39	CH	2.20	2.72
69	5151IV	795940	Low	Bottomland flat	0	Brush and short grass	Grazed	0-6	5	56	39	SiCL	97	86	34	52	CH	3.87	--
								6-12	4	46	50	SiC	97	97	36	61	CH	3.58	2.73
70	5150II	087445	High	Terrace flat	0	Recently cleared of trees	Fruit plantation	0-6	76	18	6	SL	28	--	--	--	--	--	--
								6-12	75	17	8	SL	29	11	--	NP	SM	--	--
71	5248I	530000	Low	Bottomland flat	0	Rice	Cultivated	0-6	73	9	18	SL	32	--	--	--	--	1.35	--
								6-12	75	5	20	SL	27	23	15	8	SC	1.20	2.64
73	5248I	635955	Low	Beach	0.5	Bare	Undisturbed	0-6	96	2	2	S	20	--	--	--	--	0.22	--
								6-12	94	3	3	S	20	27	--	NP	SM	0.25	2.68
74	5449III	973040	Low	Terrace flat	0	Short grass	Grazed	0-6	45	52	3	SiL	70	17	17	0	ML	2.91	--
								6-12	52	37	11	SL	58	14	14	0	ML	0.84	2.64
75	5449III	945008	High	Upper slope	6	Rubber plantation	Cultivated	0-6	64	19	17	SL	40	34	24	10	SM	3.94	--
								6-12	62	12	26	SCL	43	42	20	22	SC	2.49	2.64

(Continued)

Table A1 (Continued)

Section C. Trafficability Data																						
			Wet-Season Condition									High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
39	1	0-6	98.9	19.4	108	--	--					98.9	19.4	108	--	--					18
		6-12	101.0	16.0	114	0.48	55					101.0	16.0	114	0.48	55					
40	1	0-6	96.1	11.1	198	--	--														
		6-12	97.4	11.6	187	--	--														
41	1	0-6	--	--	442+	--	--														
		6-12	--	--	750+	--	--														
42	1	0-6	102.3	10.2	224	--	--														
		6-12	118.2	10.4	266	--	--														
43	1	0-[illegible]	104.5	18.6	191	--	--														
		6-12	--	--	297+	--	--														
44	1	0-6	88.0	26.6	106	0.60	64														
		6-12	91.4	27.9	130	0.87	113														
45	1	0-6	--	--	104	0.28	29					--	--	104	0.28	29					15
		6-12	94.6	22.4	175	0.51	89					94.6	22.4	175	0.51	89					
47	1	0-6	96.1	14.1	400	--	--														
		6-12	108.6	9.2	489	--	--														
49	1	0-6	101.0	21.8	94	0.93	87														
		6-12	102.0	29.3	360	--	--														
50	1	0-6	99.6	24.6	119	0.24	29					99.6	24.6	119	0.24	29					1
		6-12	99.6	19.4	172	--	--					99.6	19.4	172	--	--					
51	1	0-6	106.1	17.5	209+	1.12	234+														
		6-12	111.7	14.6	335+	0.48	161+														
52	1	0-6	102.4	7.6	486+	--	--														
		6-12	117.0	12.0	273+	--	--														
53	1	0-6	--	8.8	184	--	--														
		6-12	--	8.1	272	--	--														
54	1	0-6	104.2	20.6	242	0.78	189					104.2	20.6	242	0.78	189					+2
		6-12	110.2	17.3	293	0.33	97					110.2	17.3	293	0.33	97					
55	1	0-6	94.2	9.4	216	--	--														
		6-12	97.0	7.6	255	--	--														
56	1	0-6	103.6	7.2	336	--	--														
		6-12	98.7	3.0	574	--	--														
57	1	0-6	94.6	9.6	113	--	--														
		6-12	93.9	12.8	179	--	--														
58	1	0-6	--	3.7	750+	--	--					--	3.7	750+	--	--					+3
		6-12	--	6.8	--	--	--					--	6.8	--	--	--					
59	1	0-6	103.6	7.6	184	--	--														
		6-12	105.5	5.2	330+	--	--														
60	1	0-6	77.4	39.8	40	1.16	46														
		6-12	73.0	44.9	77	--	--														
62	1	0-6	77.7	37.5	31	0.79	24														
		6-12	76.2	38.1	61	0.82	50														
63	1	0-6	79.2	31.0	39	0.97	38														
		6-12	79.0	31.3	67	0.96	64														
66	1	0-6	100.4	19.4	115	0.47	54														
		6-12	98.0	19.4	167	0.27	45														
67	1	0-6	85.2	27.2	34	0.87	30					85.2	27.2	34	0.87	30					18
		6-12	78.0	30.5	37	0.33	12					78.0	30.5	37	0.33	12					
68	1	0-6	76.1	39.4	51	0.71	36					76.1	39.4	51	0.71	36					18
		6-12	75.5	42.8	58	0.68	39					75.5	42.8	58	0.68	39					
69	1	0-6	56.5	67.0	8	0.49	4					56.5	67.0	8	0.49	4					+1
		6-12	49.6	82.0	8	0.54	4					49.6	82.0	8	0.54	4					
70	1	0-6	--	--	210+	--	--														
		6-12	--	--	--	--	--														
71	1	0-6	88.9	25.4	61	0.42	26														
		6-12	99.6	17.8	230+	0.40	92+														
73	1	0-6	91.1	30.6	104	1.20	125					91.1	30.6	104	1.20	125					1
		6-12	84.2	30.8	225	1.88	423					84.2	30.8	225	1.88	423					
74	1	0-6	116.7	23.4	128	1.30	166					116.7	23.4	128	1.30	166					5
		6-12	97.0	22.8	133	0.11	15					97.0	22.8	133	0.11	15					
75	1	0-6	83.6	30.7	78	0.42	33														
		6-12	84.6	25.9	157	1.11	174														

(Continued)

Table A1 (Continued)

Section A. Site Data								Section B. Soil Data											
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
76	5547IV	310535	Low	Bottomland flat	0	Short grass	Grazed	0-6	37	51	12	SiL	88	41	31	10	ML	4.82	--
								6-12	40	48	12	L	87	30	22	8	CL	4.80	2.58
77	5448IV	832932	Low	Bottomland flat	0	Marsh grass	Undisturbed	0-6	53	31	16	SL	74	49	34	15	ML	4.44	--
								6-12	33	42	25	L	72	37	23	14	CL	2.42	--
78	5150I	085730	Low	Bottomland flat	0	Mangrove	Undisturbed	0-6	65	26	9	SL	52	--	--	--	--	2.22	--
								6-12	67	25	8	SL	54	48	40	8	ML	2.94	2.60
80	4867III	202814	High	Terrace flat	2	Grass, brush, and small trees	Undisturbed	0-6	53	30	17	SL	57	--	--	--	--	2.12	--
								6-12	48	30	22	L	62	24	16	8	CL	1.76	2.66
81	4867IV	190832	High	Upland flat	1	Small trees, brush, and grass	Undisturbed	0-6	74	20	6	SL	35	--	--	--	SM	3.00	--
								6-12	73	20	7	SL	37	16	--	NP	SM	0.94	2.63
82	4867IV	169837	High	Upper slope	35	Scattered trees and brush	Undisturbed	0-6	62	23	15	GL	34	21	17	4	SM-SC	3.44	--
								6-12	58	25	17	GSL	42	22	14	8	SC	1.60	2.66
83	4867IV	149863	High	Upper slope	6	Scattered small trees and brush	Undisturbed	0-6	78	7	15	VGSL	12	--	--	--	SP-SM	0.88	--
								6-12	69	21	10	VGSL	14	21	15	6	SM-SC	1.89	3.31
84	4867IV	129859	Low	Natural levee	0	Garden	Cultivated	0-6	18	54	28	SiCL	83	--	--	--	--	2.67	--
								6-12	17	50	33	SiCL	88	40	24	16	CL	3.11	2.65
85	4867IV	129859	Low	Bottomland depression	0	Bare	Cultivated	0-6	18	47	35	SiCL	85	42	26	16	ML	3.00	--
								6-12	26	39	35	CL	77	41	24	17	CL	1.14	2.70
86	4767I	958948	Low	Bottomland depression	0	Bare	Cultivated	0-6	25	48	27	CL	82	40	24	16	CL	1.66	--
								6-12	17	43	40	SiCL	88	46	24	22	CL	2.00	2.69
87	4767I	947947	Low	Upper slope	2	Bare	Cultivated	0-6	17	41	42	SiC	88	--	--	--	--	3.04	--
								6-12	19	41	40	SiCL	86	51	22	29	CH	1.60	2.66
88	4870IV	213999	Low	Lower slope	0.5	Rice	Cultivated	0-6	11	53	36	SiCL	94	--	--	--	--	6.21	--
								6-12	7	51	42	SiC	96	49	26	23	CL	3.30	2.69
89	4870IV	213001	Low	Natural levee	0	Short, heavy grass	Lawn	0-6	38	45	17	L	68	--	--	--	--	4.80	--
								6-12	44	38	18	L	64	30	21	9	CL	2.36	2.66
90	4870III	173905	High	Terrace flat	3	Short grass and scattered trees	Grazed	0-6	36	44	20	L	72	--	--	--	--	3.27	--
								6-12	39	43	18	L	67	23	13	10	CL	1.60	2.65
91	4869IV	105650	High	Terrace flat	7	Tall grass	Grazed	0-6	26	42	32	CL	83	63	40	23	MH	6.45	--
								6-12	25	37	38	CL	93	63	34	29	MH	3.14	2.81
92	4869III	007530	High	Upper slope	12	Scattered trees and grass	Undisturbed	0-6	62	25	13	SL	47	--	--	--	SM-SC	2.41	--
								6-12	62	25	13	SL	47	19	15	4	SM-SC	1.26	2.66
93	4766IV	650465	Low	Bottomland depression	7	Tall grass	Grazed	0-6	20	48	32	SiCL	87	--	--	--	--	3.55	--
								6-12	36	37	27	L	75	34	17	17	CL	1.56	2.66
94	4766IV	650465	High	Upper slope	28	Small trees	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	66	26	8	VGSL	15	--	--	NP	SM	1.33	2.69
95	4766III	657445	High	Upper slope	2	Small trees and brush	Undisturbed	0-6	56	20	24	SCL	55	--	--	--	--	0.70	--
								6-12	52	20	28	SCL	57	30	15	15	CL	0.46	2.67
96	4766I	893574	Low	Bottomland flat	0	Bare	Cultivated	0-6	28	37	35	CL	77	33	19	14	CL	1.16	--
								6-12	53	29	18	SL	55	26	15	11	CL	0.78	2.63
97	4767II	920680	Low	Terrace flat	1	Short grass	Cultivated (idle)	0-6	32	43	25	L	75	33	20	13	CL	1.52	--
								6-12	53	28	19	SL	53	23	16	7	CL-ML	0.44	2.67
98	4767II	970780	High	Terrace flat	1	Short grass	Grazed	0-6	60	29	11	SL	47	18	16	2	SM	0.98	--
								6-12	53	29	18	SL	53	19	12	7	CL-ML	0.54	2.62
99	4767I	970831	High	Upper slope	35	Tall trees and brush	Undisturbed	0-6	45	23	32	SCL	58	60	34	26	MH	5.46	--
								6-12	35	19	46	C	68	57	30	27	MH	1.76	2.61
100	5455IV	909551	High	Lower slope	1	Bamboo grass	Undisturbed	0-6	64	24	12	SL	44	--	--	--	--	--	--
								6-12	60	23	17	SL	47	20	13	[illegible]	SM-SC	--	2.63
101	5455IV	919537	High	Upper slope	1	Short trees and brush	Undisturbed	0-6	64	28	8	SL	49	14	14	0	SM	--	--
								6-12	65	31	4	SL	53	17	14	3	ML	--	2.64
102	5455III	943369	High	Lower slope	1-2	Tall trees and bamboo grass	Undisturbed	0-6	74	20	6	SL	43	--	--	--	--	--	--
								6-12	70	24	6	SL	47	16	--	NP	SM	--	--
103	5455IV	942468	High	Upper slope	2.5	Tall trees and brush	Undisturbed	0-6	78	15	7	LS	30	--	--	--	--	--	--
								6-12	75	18	7	SL	32	13	--	NP	SM	--	2.64
104	5455IV	929416	Low	Bottomland flat	0	Bamboo and short grass	Undisturbed	0-6	52	30	18	L	57	--	--	--	--	0.95	--
								6-12	48	29	23	L	58	26	15	10	CL	0.46	2.64
105	5455III	947340	High	Lower slope	1-2	Tall trees (thick)	Undisturbed	0-6	72	20	8	SL	40	13	--	NP	SM	--	--
								6-12	69	22	9	SL	40	11	--	NP	SM	--	--
106	5456II	045705	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	47	30	23	L	61	31	13	18	CL	0.54	--
								6-12	48	30	22	L	60	25	11	14	CL	0.38	2.66
107	5456II	045705	Low	Bottomland flat	0	Bare	Cultivated	0-6	45	33	22	L	64	21	13	8	CL	1.98	--
								6-12	49	33	18	L	58	27	11	16	CL	0.78	2.66

(Continued)

Table A1 (Continued)

Section C. Trafficability Data																					
			Wet-Season Condition									High-Moisture Condition									
								Sheargraph									Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
76	1	0-6	73.8	44.0	30	0.49	15					73.8	44.0	30	0.49	15					+6
		6-12	73.4	42.4	61	0.76	46					73.4	42.4	61	0.76	46					
77	1	0-6	--	--	167	--	--					--	--	167	--	--					+2
		6-12	--	--	233	--	--					--	--	233	--	--					
78	1	0-6	87.0	32.0	34	0.50	17					87.0	32.0	34	0.50	17					
		6-12	72.7	45.5	35	0.25	9					72.7	45.5	35	0.25	9					
80	1	0-6	87.6	20.2	66	0.38	25														
		6-12	96.4	20.1	89	0.53	47														
81	1	0-6	89.2	17.2	107	--	--														
		6-12	94.8	14.0	146	--	--														
82	1	0-6	107.4	18.0	83	0.91	76														
		6-12	108.6	15.9	103	0.51	53														
83	1	0-6	121.7	11.0	273	--	--														
		6-12	123.2	10.3	301	--	--														
84	1	0-6	94.2	23.4	63	0.40	25														
		6-12	98.2	23.8	132	0.78	103														
85	1	0-6	88.6	33.3	8	0.52	4					88.6	33.3	8	0.52	4					+5
		6-12	100.8	23.8	80	0.60	48					100.8	23.8	80	0.60	48					
86	1	0-6	79.6	40.5	24	0.82	20					79.6	40.5	24	0.82	20					+6
		6-12	101.4	23.0	117	0.66	77					101.4	23.0	117	0.66	77					
87	1	0-6	61.8	55.0	9	0.78	7					61.8	55.0	9	0.78	7					+6
		6-12	98.2	24.1	67	0.75	50					98.2	24.1	67	0.75	50					
88	1	0-6	100.2	33.4	35	0.56	20					100.2	33.4	35	0.56	20					+6
		6-12	98.9	25.2	134	0.59	79					98.9	25.2	134	0.59	79					
89	1	0-6	81.1	35.3	90	0.71	64														
		6-12	86.4	31.4	94	0.48	45														
90	1	0-6	100.8	18.6	177	0.50	89														
		6-12	106.1	16.6	139	0.57	79														
91	1	0-6	80.8	42.2	147	--	--														
		6-12	84.2	36.0	184	--	--														
92	1	0-6	92.7	13.5	190	--	--														
		6-12	103.6	15.4	213	0.92	196														
93	1	0-6	90.2	20.4	133	0.76	101														
		6-12	101.4	18.8	175	--	--														
94	1	0-6	--	--	300+	--	--														
		6-12	--	--	--	--	--														
95	1	0-6	--	--	132	--	--														
		6-12	--	--	116	--	--														
96	1	0-6	89.8	28.6	15	--	--					89.8	28.6	15	--	--					+4
		6-12	101.4	23.6	95	0.58	55					101.4	23.6	95	0.58	55					
97	1	0-6	99.8	18.7	127	--	--														
		6-12	101.7	11.0	140	--	--														
98	1	0-6	102.4	13.7	172	--	--														
		6-12	107.4	11.8	171	--	--														
99	1	0-6	68.4	35.6	55	0.60	33														
		6-12	87.0	30.6	118	0.71	84														
100	1	0-6	93.6	12.1	219	1.52	333														
		6-12	--	--	565+	--	--														
101	1	0-6	105.2	2.6	230	1.44	331														
		6-12	--	--	571+	--	--														
102	1	0-6	98.9	17.4	243+	--	--														
		6-12	--	--	663+	--	--														
103	1	0-6	--	--	450+	--	--														
		6-12	--	--	750+	--	--														
104	1	0-6	96.4	9.9	224	--	--														
		6-12	93.0	4.6	425	--	--														
105	1	0-6	--	--	588+	--	--														
		6-12	--	--	800+	--	--														
106	1	0-6	104.2	21.9	64	0.68	44					104.2	21.9	64	0.68	44					+5
		6-12	116.7	16.4	135	0.70	95					116.7	16.4	135	0.70	95					
107	1	0-6	105.8	24.2	125	0.31	39					105.8	24.2	125	0.31	39					+1
		6-12	--	20.8	191	0.62	119					--	20.8	191	0.62	119					

(Continued)

Table A1 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
108	5456II	045705	Low	Bottomland flat	0	Short grass	Grazed	0-6	62	30	8	SL	47	13	--	NP	SM	0.95	--
								6-12	68	15	17	SL	37	24	--	NP	SM	0.38	2.67
111	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	9	39	52	C	92	64	29	35	CH	1.52	--
								6-12	6	34	60	C	98	65	29	36	CH	0.96	2.75
112	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	11	36	53	C	92	62	29	33	CH	4.87	2.77
								6-12	8	42	50	SiC	94	63	31	32	CH	2.10	2.77
113	5151IV	795940	Low	Tidal flat	0	Short weeds	Undisturbed	0-6	16	41	43	SiC	86	86	42	44	OH	7.91	2.72
								6-12	16	42	42	SiC	95	82	38	44	OH	9.01	2.69
114	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	5	45	50	SiC	97	71	31	40	CH	4.70	2.73
								6-12	7	40	53	SiC	97	71	34	37	MH	4.34	2.75
118	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	14	43	43	SiC	92	91	36	55	OH	8.86	2.69
								6-12	10	43	47	SiC	95	102	35	67	OH	8.39	2.71
119	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	14	43	43	SiC	92	91	36	55	CH	--	2.69
								6-12	10	43	47	SiC	95	102	35	67	CH	--	2.71
120	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	9	47	44	SiC	96	64	30	34	CH	4.05	2.75
								6-12	6	47	47	SiC	96	78	32	46	CH	4.15	2.75
121	5151IV	795940	Low	Tidal flat	0	Mangrove	Undisturbed	0-6	6	46	48	SiC	96	88	35	53	OH	10.48	2.71
								6-12	9	54	37	SiCL	96	99	34	65	OH	8.32	2.75
122	5151IV	795940	Low	Tidal flat	0	Short weeds	Undisturbed	0-6	10	43	47	SiC	95	82	35	47	OH	8.01	2.76
								6-12	6	41	53	SiC	95	82	33	49	OH	--	2.75
123	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	7	46	47	SiC	96	68	30	38	CH	2.40	2.76
								6-12	7	45	48	SiC	94	77	32	45	CH	4.60	2.75
124	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	7	46	47	SiC	96	68	30	38	CH	--	2.76
								6-12	7	45	48	SiC	94	77	32	45	CH	--	2.75
125	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6	9	39	52	C	98	76	34	42	CH	2.48	2.74
								6-12	11	43	46	SiC	93	79	33	46	CH	2.20	2.73
126A	5556III	328777	High	Upland flat	3.5	Open forest and grass	Undisturbed	0-6	82	13	5	LS	28	--	--	--	--	0.95	--
								6-12	81	13	6	LS	28	13	13	0	SM	--	2.63
126B	5556III	331779	High	Lower slope	2	Heavy brush	Undisturbed	0-6	94	4	2	S	13	--	--	--	--	0.46	2.64
								6-12	90	7	3	S	24	17	15	2	SM	--	--
127	5456I	253863	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	50	32	18	L	59	27	13	14	CL	1.45	--
								6-12	48	27	25	SCL	63	30	12	18	CL	0.86	2.65
128	5456I	231898	Low	Bottomland flat	0	Rice	Cultivated	0-6	10	30	60	C	98	--	--	--	--	2.35	--
								6-12	7	33	60	C	97	82	29	53	CH	1.65	2.67
131	5456I	252950	Low	Lower slope	0	Short grass	Cultivated (idle)	0-6	81	13	6	GLS	37	18	18	0	SM	0.78	--
								6-12	68	14	18	GSL	38	37	11	26	SC	0.78	2.91
132	5456I	221881	Low	Lower slope	0	Short grass	Cultivated (idle)	0-6	15	38	47	C	92	50	23	27	CH	1.98	--
								6-12	18	30	52	C	87	63	23	40	CH	1.33	2.66
133	5456I	244940	Low	Bottomland flat	0	Rice	Cultivated	0-6	54	30	16	SL	58	24	15	9	CL	1.65	--
								6-12	42	30	28	CL	65	43	13	30	CL	1.15	2.68
135	5457II	258981	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	55	28	17	SL	58	--	--	--	--	0.95	--
								6-12	52	29	19	L	62	26	13	13	CL	0.62	2.65
136	5457II	289989	High	Lower slope	1	Brush and grass	Undisturbed	0-6	80	13	7	LS	33	16	--	NP	SM	0.38	--
								6-12	65	18	17	SL	43	25	13	12	SC	0.55	2.72
137	5457II	299993	Low	Bottomland flat	0	Rice	Cultivated	0-6	71	15	14	GSL	40	22	16	6	SM-SC	0.70	--
								6-12	57	18	25	GSCL	53	39	15	24	CL	0.55	3.00
138	5557III	319001	Low	Lower slope	1	Short grass	Cultivated (idle)	0-6	73	20	7	SL	40	--	--	--	--	0.70	--
								6-12	76	17	7	LS	38	15	15	0	SM	0.55	2.65
142	5557III	346034	Low	Bottomland flat	0	Trees	Undisturbed	0-6	82	15	3	LS	32	--	--	--	--	1.55	--
								6-12	83	15	2	LS	28	16	14	2	SM	0.46	2.63
145	5155IV	741409	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	20	38	42	C	85	--	--	--	--	--	--
								6-12	21	40	39	CL	83	60	22	38	CH	--	2.71
146	5557III	400065	High	Lower slope	1	Grass and brush	Undisturbed	0-6	18	29	53	C	88	62	25	37	CH	--	--
								6-12	15	27	58	C	92	68	25	43	CH	--	2.64
147	5558II	680349	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	85	13	2	LS	30	--	--	--	--	0.32	--
								6-12	78	15	7	LS	33	16	14	2	SM	0.32	2.66
148	5557I	680287	Low	Lower slope	1	Grass and weeds	Grazed	0-6	65	27	8	SL	53	19	18	1	ML	1.33	--
								6-12	65	28	7	SL	53	21	17	4	CL-ML	--	2.66
151	5557I	676296	Low	Bottomland flat	0	Rice	Cultivated	0-6	82	15	3	LS	32	18	17	1	SM	0.32	--
								6-12	83	15	2	LS	32	18	15	3	SM	0.32	2.64
154	5557I	679299	Low	Bottomland flat	0	Rice	Cultivated	0-6	79	18	3	LS	40	--	--	--	--	0.25	--
								6-12	76	20	4	LS	43	16	16	0	SM	0.38	2.68

(Continued)

Table A1 (Continued)

Section C. Trafficability Data																						
			Wet-Season Condition									High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
108	1	0-6	108.6	13.4	151	0.42	63					108.6	13.4	151	0.42	63					+1
		6-12	117.6	14.0	193	0.62	120					117.6	14.0	193	0.62	120					
111	1	0-6	88.6	37.7	53	0.80	42														
		6-12	75.5	41.7	78	0.89	69														
112	1	0-6	78.0	39.2	48	0.87	42														
		6-12	69.6	42.0	71	0.83	59														
113	1	0-6	65.8	57.2	53	0.81	43					65.8	57.2	53	0.81	43					5
		6-12	42.4	109.8	54	0.81	44					42.4	109.8	54	0.81	44					
114	1	0-6	76.4	42.2	50	0.68	34					76.4	42.2	50	0.68	34					5
		6-12	72.7	47.2	60	0.70	42					72.7	47.2	60	0.70	42					
118	1	0-6	52.1	75.6	21	0.62	13					52.1	75.6	21	0.62	13					5
		6-12	50.2	85.7	25	0.56	14					50.2	85.7	25	0.56	14					
119	1	0-6	--	--	26	0.62	16					--	--	26	0.62	16					5
		6-12	--	--	28	0.56	16					--	--	28	0.56	16					
120	1	0-6	79.2	40.3	61	0.86	52					79.2	40.3	61	0.86	52					5
		6-12	74.0	46.2	54	0.82	44					74.0	46.2	54	0.82	44					
121	1	0-6	49.9	84.4	15	0.64	10					49.9	84.4	15	0.64	10					1
		6-12	45.2	98.2	23	0.60	14					45.2	98.2	23	0.60	14					
122	1	0-6	63.0	60.6	31	0.70	22					63.0	60.6	31	0.70	22					3
		6-12	52.8	75.6	36	0.64	23					52.8	75.6	36	0.64	23					
123	1	0-6	75.8	42.9	52	0.75	39					75.8	42.9	52	0.75	39					1
		6-12	68.0	52.6	56	0.71	40					68.0	52.6	56	0.71	40					
124	1	0-6	--	--	48	0.75	36					--	--	48	0.75	36					1
		6-12	--	--	57	0.71	40					--	--	57	0.71	40					
125	1	0-6	69.9	47.8	38	0.57	22					69.9	47.8	38	0.57	22					1
		6-12	64.9	57.0	43	0.78	34					64.9	57.0	43	0.78	34					
126A	1	0-6	100.8	9.1	109	--	--														
		6-12	--	--	123	--	--														
126B	1	0-6	95.2	9.1	146	--	--														
		6-12	--	--	225	--	--														
127	1	0-6	109.2	15.8	147	0.81	119														
		6-12	103.6	16.4	185	--	--														
128	1	0-6	85.2	33.4	81	1.11	90														
		6-12	77.7	39.5	101	--	--														
131	1	0-6	116.4	17.2	184	1.52	280					116.4	17.2	184	1.52	280					+3
		6-12	112.9	20.4	311	--	--					112.9	20.4	311	--	--					
132	1	0-6	81.4	29.6	74	--	--					81.4	29.6	74	--	--					+1
		6-12	--	32.0	115	--	--					--	32.0	115	--	--					
133	1	0-6	94.2	27.9	104	0.60	62														
		6-12	99.8	22.8	263	--	--														
135	1	0-6	105.2	19.2	56	0.69	39														
		6-12	105.4	19.4	133	0.83	110														
136	1	0-6	105.8	12.2	241	--	--														
		6-12	103.6	11.8	349	--	--														
137	1	0-6	103.6	15.4	240	--	--														
		6-12	117.3	15.7	371	--	--														
138	1	0-6	100.8	17.7	206	1.58	325														
		6-12	105.2	13.3	337	1.13	381														
142	1	0-6	88.6	6.8	146	--	--														
		6-12	89.2	5.4	114	--	--														
145	1	0-6	--	48.0	42	0.75	32														
		6-12	--	46.5	79	0.78	62														
146	1	0-6	--	--	96	--	--														
		6-12	--	--	119	--	--														
147	1	0-6	--	16.9	135	1.16	157														
		6-12	--	14.3	226	--	--														
148	1	0-6	103.6	22.5	130	0.60	78					103.6	22.5	130	0.60	78					+3
		6-12	--	--	275+	0.54	149+					--	--	275+	0.54	149+					
151	1	0-6	103.0	18.6	65	1.04	68					103.0	18.6	65	1.04	68					1
		6-12	104.6	17.4	145	0.98	142					104.6	17.4	145	0.98	142					
154	1	0-6	95.2	13.0	59	--	--					95.2	13.0	[illegible]	--	--					+18
		6-12	97.6	16.0	130	--	--					97.6	16.0	130	--	--					

(Continued)

Table A1 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
155	5557IV	542170	Low	Bottomland flat	0	Rice	Cultivated	0-6	75	21	4	SL	38	15	—	NP	SM	—	—
								6-12	75	19	6	LS	38	16	—	NP	SM	—	—
156	5457III	452119	Low	Bottomland flat	0	Rice	Cultivated	0-6	76	21	3	LS	42	17	—	NP	SM	0.32	—
								6-12	70	17	13	SL	46	20	17	3	SM	0.55	2.65
157	5457III	456119	Low	Lower slope	1	Scattered trees; logged	Cultivated (idle)	0-6	66	30	4	SL	55	16	—	NP	ML	0.38	—
								6-12	47	32	21	L	65	31	15	16	CL	0.62	2.66
158	5457I	238262	High	Upland flat	0	Jute	Cultivated	0-6	80	16	4	LS	33	17	—	NP	SM	0.55	—
								6-12	80	17	3	LS	35	18	—	NP	SM	0.38	2.64
161	5457I	321201	Low	Bottomland flat	0	Rice	Cultivated	0-6	35	43	22	L	87	29	19	10	CL	—	—
								6-12	43	34	23	L	72	31	14	17	CL	—	2.67
162	5457I	321201	High	Upland flat	0	Short grass	Cultivated (idle)	0-6	63	27	10	SL	77	21	18	3	ML	1.05	—
								6-12	67	23	10	SL	47	21	19	2	SM	5.32	2.65
163	5557IV	358201	High	Upland flat	0	Jute	Cultivated	0-6	72	21	7	SL	47	20	—	NP	SM	1.05	—
								6-12	72	22	6	SL	45	19	—	NP	SM	—	2.62
164	5557IV	357201	Low	Bottomland depression	0	Grass	Undisturbed	0-6	23	54	23	SiL	87	27	19	8	CL	0.78	—
								6-12	30	51	19	SiL	84	26	17	9	CL	1.45	2.63
165	5557IV	405198	Low	Bottomland flat	0	Rice	Cultivated	0-6	43	42	15	L	70	23	14	9	CL	0.70	—
								6-12	32	38	30	CL	77	31	14	17	CL	1.77	2.67
166	5557IV	386197	Low	Bottomland flat	0	Grass and brush	Grazed	0-6	55	31	14	GSL	53	20	16	4	CL-ML	1.05	—
								6-12	41	29	30	GCL	62	48	18	30	CL	0.62	2.82
167	5557IV	390197	Low	Lower slope	1	Rice	Cultivated	0-6	35	46	19	L	75	26	15	11	CL	0.78	—
								6-12	36	42	22	L	74	30	15	15	CL	—	2.70
168	5557IV	492201	Low	Bottomland flat	0	Rice	Cultivated	0-6	59	33	8	SL	57	16	—	NP	ML	0.62	—
								6-12	52	30	18	L	60	24	12	12	CL	0.38	2.68
170	5154II	143987	High	Lower slope	15	Tall grass	Cultivated (idle)	0-6	70	20	10	SL	34	29	17	12	SC	2.21	—
								6-12	65	22	13	GSL	28	25	17	8	SC	1.82	2.65
171	5154II	141980	High	Lower slope	52	Grass and brush	Undisturbed	0-6	50	36	14	L	56	27	19	8	CL	3.72	—
								6-12	56	31	13	SL	52	17	16	1	ML	2.48	2.67
172	5154II	120991	Low	Bottomland depression	0	Corn	Cultivated	0-6	58	29	13	SL	46	—	—	—	—	2.94	—
								6-12	63	26	11	SL	43	26	21	5	SM-SC	2.42	2.67
173	5154II	112002	Low	Bottomland flat	0	Tall trees and bamboo	Undisturbed	0-6	62	30	8	SL	47	—	—	—	—	2.32	—
								6-12	60	31	9	SL	47	16	14	2	SM	1.33	2.60
174	5154II	099991	Low	Upper slope	2	Grass and brush	Grazed	0-6	—	—	—	—	—	28	25	3	ML	3.28	—
								6-12	56	33	11	SL	52	17	17	0	ML	1.65	2.61
175	5154II	076015	Low	Bottomland flat	0	Rice	Cultivated	0-6	55	37	8	SL	52	14	13	1	ML	1.82	—
								6-12	43	44	13	L	63	18	14	4	CL-ML	1.45	2.61
176	5154II	070021	Low	Terrace flat	0	Scattered trees	Cultivated (idle)	0-6	28	61	11	SiL	78	—	—	—	—	3.50	—
								6-12	28	57	15	SiL	77	18	16	2	ML	2.42	2.61
177	5253II	457666	Low	Terrace flat	0	Rice	Cultivated	0-6	32	46	22	L	80	—	—	—	—	3.14	—
								6-12	30	45	25	L	82	44	22	22	CL	2.87	2.67
178	5253IV	421691	Low	Terrace flat	0	Rice	Cultivated	0-6	7	50	43	SiC	96	48	33	15	ML	4.92	—
								6-12	6	36	58	C	96	62	29	33	CH	5.18	2.63
179	5253IV	164843	Low	Bottomland flat	0	Rice	Cultivated	0-6	23	60	17	SiL	82	—	—	—	—	3.91	—
								6-12	18	59	23	SiL	86	30	19	11	CL	3.91	2.64
180	5154III	733862	Low	Bottomland flat	0	Rice	Cultivated	0-6	8	53	39	SiCL	96	—	—	—	—	4.34	—
								6-12	5	52	43	SiC	98	61	21	40	CH	3.96	2.71
181	5254IV	168089	Low	Bottomland flat	0	Rice	Cultivated	0-6	21	65	14	SiL	80	28	24	4	ML	1.98	—
								6-12	22	57	21	SiL	82	28	20	8	CL	1.65	2.60
182	5254IV	167100	Low	Bottomland flat	0	Rice	Cultivated	0-6	22	42	36	CL	82	—	—	—	—	0.78	—
								6-12	35	29	36	CL	82	70	21	49	CH	0.55	2.69
184	5254IV	160124	Low	Bottomland flat	0	Rice	Cultivated	0-6	13	54	33	SiCL	92	—	—	—	—	3.86	—
								6-12	11	55	34	SiCL	93	47	22	25	CL	1.33	2.65
186	5155III	650380	Low	Bottomland flat	0	Rice	Cultivated	0-6	13	49	38	SiCL	95	—	—	—	—	3.27	2.69
								6-12	18	43	39	SiCL	93	46	22	24	CL	—	—
187	5155III	655380	Low	Bottomland depression	0	Tall trees	Undisturbed	0-6	5	38	57	C	97	—	—	—	—	2.75	—
								6-12	4	38	58	C	97	59	27	32	CH	—	2.71
189	5155III	804351	Low	Bottomland flat	0	Grass	Village	0-6	38	45	17	SiCL	60	49	25	24	CL	4.20	—
								6-12	27	46	27	L	76	48	25	23	CL	—	2.64
190	5155III	799358	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	10	37	53	C	92	70	30	40	CH	3.00	2.70
								6-12	—	—	—	—	—	—	—	—	—	—	—
192	5155II	950398	High	Terrace flat	0	Corn	Cultivated	0-6	25	48	27	L	80	—	—	—	—	3.86	—
								6-12	22	45	33	CL	83	44	22	22	CL	—	—

(Continued)

Table A1 (Continued)

Section C. Trafficability Data																						
Wet-Season Condition												High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
155	1	0-6	--	--	44	--	--					--	--	44	--	--					+2
		6-12	--	--	211+	--	--					--	--	211+	--	--					
156	1	0-6	105.2	17.6	153	1.24	190					105.2	17.6	153	1.24	190					+3
		6-12	103.9	18.2	198	1.14	226					103.9	18.2	198	1.14	226					
157	1	0-6	104.5	17.4	93	--	--					104.5	17.4	93	--	--					+3
		6-12	100.8	19.6	173	--	--					100.8	19.6	173	--	--					
158	1	0-6	95.2	9.8	318	--	--														
		6-12	92.0	10.2	270	--	--														
161	1	0-6	--	--	89	--	--														
		6-12	--	--	197	--	--														
162	1	0-6	108.6	15.6	64	0.48	31														
		6-12	107.6	18.8	56	0.22	12														
163	1	0-6	90.2	17.0	127	--	--														
		6-12	--	--	142	--	--														
164	1	0-6	91.8	23.4	122	0.34	41					91.8	23.4	122	0.34	41					+2
		6-12	95.8	22.9	138	0.20	28					95.8	22.9	138	0.20	28					
165	1	0-6	99.2	22.1	55	0.81	45														
		6-12	102.0	20.8	117	0.78	91														
166	1	0-6	106.1	18.4	99	0.26	26														
		6-12	110.4	20.2	103	0.51	53														
167	1	0-6	103.0	21.3	63	0.36	23					103.0	21.3	63	0.36	23					+6
		6-12	99.6	23.0	111	0.72	80					99.6	23.0	111	0.72	80					
168	1	0-6	107.0	18.4	140	0.90	126					107.0	18.4	140	0.90	126					+12
		6-12	113.9	16.0	204	0.64	131					113.9	16.0	204	0.64	131					
170	1	0-6	85.5	21.9	43	0.38	16														
		6-12	96.8	18.4	67	--	--														
171	1	0-6	91.4	24.9	57	0.64	36														
		6-12	98.9	19.8	118	0.33	39														
172	1	0-6	91.1	26.4	60	0.34	20					91.1	26.4	60	0.34	20					+3
		6-12	96.7	23.8	68	0.12	8					96.7	23.8	68	0.12	8					
173	1	0-6	94.6	23.7	49	0.28	14					94.6	23.7	49	0.28	14					6
		6-12	94.6	22.9	51	0.28	14					94.6	22.9	51	0.28	14					
174	1	0-6	89.0	24.6	95	0.36	34					89.0	24.6	95	0.36	34					12
		6-12	92.6	22.8	60	0.16	10					92.6	22.8	60	0.16	10					
175	1	0-6	100.8	20.0	65	0.82	53					100.8	20.0	65	0.82	53					+7
		6-12	100.2	20.4	106	0.22	23					100.2	20.4	106	0.22	23					
176	1	0-6	90.5	25.8	127+	0.59	75+					90.5	25.8	127+	0.59	75+					+10
		6-12	100.8	20.8	300+	--	--					100.8	20.8	300+	--	--					
177	1	0-6	97.0	24.3	128	0.63	81					97.0	24.3	128	0.63	81					+3
		6-12	94.8	27.6	270	0.47	127					94.8	27.6	270	0.47	127					
178	1	0-6	77.4	40.5	36	0.44	16					77.4	40.5	36	0.44	16					+6
		6-12	83.6	37.2	124	0.84	104					83.6	37.2	124	0.84	104					
179	1	0-6	100.4	22.0	91	0.20	18					100.4	22.0	91	0.20	18					+6
		6-12	--	27.6	129	0.55	71					--	27.6	129	0.55	71					
180	1	0-6	83.3	33.4	99	0.76	75					83.3	33.4	99	0.76	75					+2
		6-12	85.2	32.0	127	0.84	107					85.2	32.0	127	0.84	107					
181	1	0-6	88.2	30.6	104	0.37	38					88.2	30.6	104	0.37	38					+12
		6-12	96.4	25.0	193	0.42	81					96.4	25.0	193	0.42	81					
182	1	0-6	--	26.8	143	0.66	94					--	26.8	143	0.66	94					+1
		6-12	--	22.0	295	--	--					--	22.0	295	--	--					
184	1	0-6	--	39.1	63	1.24	78					--	39.1	63	1.24	78					+6
		6-12	--	25.6	103	0.94	97					--	25.6	103	0.94	97					
186	1	0-6	88.3	29.3	173	--	--														
		6-12	--	--	430	--	--														
187	1	0-6	--	33.8	58	0.90	52					--	33.8	58	0.90	52					+1
		6-12	--	--	117	--	--					--	--	117	--	--					
189	1	0-6	--	29.4	109	0.72	78														
		6-12	--	--	155	--	--														
190	1	0-6	--	--	42	0.98	41					--	--	42	0.98	41					+4
		6-12	--	--	65	1.00	65					--	--	65	1.00	65					
192	1	0-6	--	--	100	--	--														
		6-12	--	--	196	--	--														

(Continued)

Table A1 (Continued)

Section A. Site Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
													By Wt %	Atterberg Limits				Organic Content	Specific Gravity
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	%	
193	5155II	951381	High	Terrace flat	0	Corn	Cultivated	0-6	34	38	28	CL	70	--	--	--	--	1.15	--
								6-12	36	37	27	L	68	31	17	14	CL	--	2.65
195	5155III	865317	Low	Bottomland flat	0	Rice	Cultivated	0-6	13	29	58	C	92	--	--	--	--	4.05	--
								6-12	13	20	67	C	93	89	43	46	MH	1.77	2.71
196	5155II	911230	Low	Bottomland flat	0	Short grass	Grazed	0-6	13	41	46	SiC	93	116	44	72	CH	--	2.69
								6-12	--	--	--	--	--	--	--	--	--	--	--
198	5154IV	874146	Low	Bottomland flat	0	Trees	Undisturbed	0-6	5	45	50	SiC	97	--	--	--	--	1.65	--
								6-12	7	36	57	C	97	76	25	51	CH	1.45	2.72
201	5154I	030191	Low	Bottomland flat	0	Rice	Cultivated	0-6	38	39	23	L	68	--	--	--	--	2.75	--
								6-12	43	33	24	L	63	34	17	17	CL	1.05	2.72
202	[illegible]5II	994242	Low	Bottomland flat	0	Tapioca	Cultivated	0-6	28	45	27	CL	78	34	20	14	CL	2.87	--
								6-12	22	42	36	L	83	37	18	19	CL	1.65	2.70
206	5154I	130102	Low	Bottomland flat	0	Rice	Cultivated	0-6	12	40	48	SiC	88	--	--	--	--	--	--
								6-12	9	38	53	C	92	61	22	39	CH	--	2.75
208	5757III	590000	Low	Bottomland flat	0	Rice	Cultivated	0-6	53	39	8	SL	57	15	14	1	ML	1.65	--
								6-12	40	28	32	CL	67	38	15	23	CL	1.33	2.66
210	5557I	739230	Low	Bottomland flat	0	Rice	Cultivated	0-6	73	25	2	LS	43	--	--	--	--	0.62	--
								6-12	75	22	3	LS	43	14	--	NP	SM	0.46	2.63
211	5657IVI	012111	Low	Bottomland flat	<1	Rice	Cultivated	0-6	50	42	8	L	69	21	19	2	ML	1.88	--
								6-12	42	38	20	L	70	27	15	12	CL	2.08	2.64

(Continued)

Table A1 (Concluded)

Section C. Trafficability Data																						
			Wet-Season Condition									High-Moisture Condition										
								Shear graph									Shear graph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
193	1	0-6	101.1	21.6	113	1.00	113														
		6-12	--	--	205	--	--														
195	1	0-6	--	58.2	51	1.04	53					--	58.2	51	1.04	53					+6
		6-12	--	--	77	0.84	65					--	--	77	0.84	65					
196	1	0-6	--	--	55	--	--					--	--	55	--	--					+2
		6-12	--	--	67	--	--					--	--	67	--	--					
198	1	0-6	74.2	45.6	27	0.62	17														
		6-12	83.6	37.5	59	0.68	40														
201	1	0-6	--	35.2	48	--	--					--	35.2	48	--	--					+2
		6-12	--	23.4	101	--	--					--	23.4	101	--	--					
202	1	0-6	94.6	24.7	60	0.66	40														
		6-12	101.4	22.6	97	0.68	66														
206	1	0-6	91.8	30.7	52	0.80	42														
		6-12	--	--	88	0.84	74														
208	1	0-6	99.5	19.8	147	0.36	53					99.5	19.8	147	0.36	53					+6
		6-12	100.2	20.5	165	0.58	96					100.2	20.5	165	0.58	96					
210	1	0-6	101.4	17.8	184	--	--														
		6-12	100.5	17.8	475	--	--														
211	1	0-6	--	22.3	78	0.80	62					--	22.3	78	0.80	62					9
		6-12	--	25.9	105	0.82	86					--	25.9	105	0.82	86					

Table A2

Trafficability Classification Study

Summary of Site, Soil, and Trafficability Data

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	Atterberg Limits LL	PL	PI	Type	Organic Content %	Specific Gravity
							Nakhon Sawan Area												
1A	5958I	955583	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	16	34	SCL	52	27	13	14	CL	0.62	--
1B	5958I	957584	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	23	34	CL	61	33	14	19	CL	0.70	--
1C	5958I	950589	Low	Upland depression	0	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	27	21	SCL	58	24	12	12	CL	1.10	--
1D	5958I	950589	Low	Upland flat	0	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	27	39	34	CL	83	33	16	17	CL	1.40	2.72
2A	5958I	975562	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	49	18	33	SCL	53	36	18	18	CL	0.70	2.72
2B	5958I	978563	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	48	30	22	L	63	21	12	9	CL	0.76	--
2C	5958I	982568	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	40	37	23	L	67	25	15	10	CL	1.56	--
2D	5958I	984570	Low	Terrace flat	0	Tall scrub savanna	Cultivated (corn, rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	16	49	35	SiCL	90	29	17	12	CL	1.90	--
2E	5958I	994588	Low	Terrace flat	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	78	16	6	LS	27	--	--	NP	SM	0.31	2.62
3A	4958II	987476	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	64	22	14	SL	49	19	14	5	SM-SC	0.86	2.60
3B	4958II	993480	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	39	18	L	68	24	14	10	CL	0.78	--
4A	5058III	115373	Low	Natural levee	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	38	34	28	CL	70	34	20	14	CL	0.86	--
4B	5058III	115373	Low	Stream bottom	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	50	31	SiCL	88	34	20	14	CL	1.72	--
4C	5058III	115374	Low	Natural levee	11	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	51	35	14	L	65	21	16	5	CL-ML	1.24	2.60
4D	5058III	101395	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	67	23	10	SL	42	12	10	2	SM	0.76	2.61
4E	5058III	110392	Low	Terrace flat	0	Tall scrub savanna	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	70	22	8	SL	41	15	14	1	SM	1.24	2.61
5A	5057IV	213215	Low	Lower slope	1	Tall scrub savanna	Cultivated (corn)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	31	39	30	CL	75	42	24	18	CL	2.90	--
5B	5057IV	215214	Low	Lower slope	1	Short-grass prairie	Cultivated (corn)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	41	33	26	L	69	31	17	14	CL	2.75	--
5C	5057IV	224212	High	Upper slope	13	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	41	16	L	60	27	25	2	ML	1.05	--
5D	5057IV	227211	High	Upland flat	0	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	38	37	CL	82	43	24	19	CL	2.35	2.74
5E	5057IV	233209	Low	Upland depression	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	32	31	CL	68	41	16	25	CL	1.40	--
6A	5058III	207343	Low	Natural levee	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	34	44	22	L	85	30	20	10	CL	1.40	--
6B	5058III	207342	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	31	34	35	GCL	52	36	17	19	CL	1.05	2.73
6C	5058III	207341	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	21	37	42	C	80	55	21	34	CH	0.76	--
6D	5058III	207341	High	Terrace flat	0	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	18	42	40	SiCL	81	56	20	36	CH	0.46	--
6E	5058III	207341	High	Lower slope	1	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	30	56	C	86	70	27	43	CH	1.40	2.74
7A	5057IV	226322	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	16	51	33	SiCL	90	49	21	28	CL	2.10	--
7B	5057IV	227322	Low	Terrace slope	4	Tall scrub savanna	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	31	32	GCL	51	35	18	17	CL	1.15	2.74
7C	5057IV	227322	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	33	34	33	CL	73	60	28	32	CH	1.10	--

(Continued)

* G = gravelly; VG = very gravelly.

Table A2 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Shearograph** c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Shearograph** c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
			Section C. Trafficability Data																		
			Wet-Season Condition									High-Moisture Condition									
Nakhon Sawan Area																					
1A	1	0-6	113.2	16.6	60	—	—	3.6	0.30	1.4	0.70	113.2	16.6	60	—	—	—	—	—	—	5.0
		6-12	107.2	18.9	83	0.40	33					107.2	18.9	83	0.40	33					
1B	1	0-6	109.5	16.1	163	—	—	5.0	0.75	0.8	0.62										
		6-12	102.8	20.8	132	1.00	132														
1C	1	0-6	95.0	23.6	38	—	—	5.5	0.75	0.8	0.60	95.0	23.6	38	—	—	5.5	0.75	0.8	0.60	+0.5
		6-12	97.0	24.0	58	0.58	34					97.0	24.0	58	0.58	34					
1D	1	0-6	96.6	23.1	208	—	—	0.7	1.19	2.1	0.51										
		6-12	89.5	26.3	133	0.63	84														
2A	1	0-6	—	14.3	214	—	—	1.7	0.53	0.2	0.47										
		6-12	—	25.2	305	0.67	204														
2B	1	0-6	108.4	12.6	163	—	—	2.0	0.78	1.9	0.53										
		6-12	108.5	18.7	140	0.58	81														
2C	1	0-6	86.6	19.2	179	—	—	2.0	0.78	0.0	0.55										
		6-12	94.4	15.7	253	0.70	177														
2D	1	0-6	91.1	21.4	181	—	—	5.8	0.78	1.0	0.58										
		6-12	97.7	25.2	172	0.46	79														
2E	1	0-6	101.1	12.4	66	—	—	2.0	0.51	0.2	0.40										
		6-12	105.1	12.1	57	0.56	32														
3A	1	0-6	105.4	13.1	334	—	—	3.0	0.53	0.0	0.60										
		6-12	98.0	10.1	382	0.32	122														
3B	1	0-6	105.1	17.0	112	—	—	5.1	0.51	0.7	1.00										
		6-12	105.6	21.8	107	0.54	58														
4A	1	0-6	97.2	20.2	246	—	—	0.2	0.58	0.8	0.58										
		6-12	88.4	20.8	238	0.58	138														
4B	1	0-6	90.6	27.4	125	—	—	3.4	0.36	1.6	0.22	90.6	27.4	125	—	—	—	—	—	—	12.0
		6-12	95.9	23.9	135	0.41	55					95.9	23.9	135	0.41	55					
4C	1	0-6	—	15.8	540+	—	—	0.0	0.84	0.6	0.23										
		6-12	94.2	14.2	607+	1.86	1129+														
4D	1	0-6	109.2	13.8	121	—	—	0.0	0.47	0.0	0.36										
		6-12	113.8	13.3	87	0.22	19														
4E	1	0-6	107.7	13.4	146	—	—	0.0	0.67	0.2	0.40										
		6-12	94.4	12.0	151	2.05	310														
5A	1	0-6	—	22.8	157	—	—	0.8	0.65	0.0	0.51										
		6-12	—	23.7	255	—	—														
5B	1	0-6	96.3	15.9	191	—	—	0.0	0.45	0.2	0.58										
		6-12	—	20.1	211	1.23	260														
5C	1	0-6	—	12.3	750+	—	—	—	—	—	—										
		6-12	—	15.8	750+	—	—														
5D	1	0-6	—	12.6	705+	—	—	0.0	0.73	0.0	0.47										
		6-12	—	14.1	750+	—	—														
5E	1	0-6	82.3	41.1	61	—	—	0.2	0.09	0.7	0.23										
		6-12	93.4	26.4	129	0.70	90														
6A	1	0-6	90.9	14.3	211	—	—	0.1	0.53	0.0	0.60										
		6-12	91.0	28.4	277	0.62	173														
6B	1	0-6	—	26.0	269+	—	—	0.5	0.40	0.2	0.51										
		6-12	—	23.5	693+	—	—														
6C	1	0-6	82.7	40.2	62	—	—	1.0	0.49	0.4	0.27										
		6-12	89.4	30.4	80	0.81	65														
6D	1	0-6	90.5	22.0	144	—	—	0.0	0.58	0.0	0.49										
		6-12	88.1	32.6	93	0.81	75														
6E	1	0-6	—	25.2	154	—	—	0.0	0.53	0.0	0.34										
		6-12	—	35.1	139	0.94	131														
7A	1	0-6	90.2	32.5	92	—	—	2.0	0.30	0.1	0.12	90.2	32.5	92	—	—	2.0	0.30	0.1	0.12	+1.0
		6-12	88.1	36.5	96	0.72	69					88.1	36.5	96	0.72	69					
7B	1	0-6	—	19.3	320	—	—	0.8	0.51	0.2	0.27										
		6-12	—	22.8	543+	—	—														
7C	1	0-6	—	23.9	319	—	—	2.8	0.49	0.7	0.34										
		6-12	—	26.6	321	—	—														

(Continued)

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	By Wt % Fines	Atterberg Limits LL	PL	PI	Type	Organic Content %	Specific Gravity
7D	5057IV	244318	High	Terrace flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	38	19	L	52	39	23	16	CL	2.60	--
7E	5057IV	244318	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	42	38	20	L	58	28	12	16	CL	0.64	--
7F	5057IV	243318	Low	Bottomland depression	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	31	50	19	SiL	66	28	12	16	CL	0.92	--
8A	5057IV	206259	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	44	32	24	L	66	30	16	14	CL	2.30	--
8B	5057IV	206259	Low	Terrace slope	1	Low scrub savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	27	40	33	CL	82	63	23	40	CH	3.10	--
8C	5057IV	223266	High	Upper slope	5	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	29	16	SL	48	25	18	7	SM-SC	3.10	2.72
8D	5057IV	217268	High	Drainage ditch	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	20	67	13	SiL	95	35	28	7	ML	2.75	--
8E	5057IV	207264	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	51	30	19	L	57	31	17	14	CL	4.75	--
9A	5057IV	209322	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	42	35	23	L	59	43	19	24	CL	3.50	--
9B	5057IV	214187	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	48	27	25	VGSCL	23	26	13	13	GC	0.76	--
9C	5057IV	214187	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	63	24	13	SL	41	18	12	6	SM-SC	0.64	--
							Los Buri Area												
10A	5153IV	854741	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	5	43	52	SiC	98	69	26	43	CH	1.60	2.72
10B	5153IV	859734	Low	Terrace flat	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	15	40	45	SiC	89	55	27	28	CH	1.10	--
10C	5153IV	713745	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	12	45	43	SiC	98	55	24	31	CH	0.92	--
10D	5153IV	713744	Low	Terrace slope	3	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	9	45	46	SiC	98	56	23	33	CH	1.60	--
10E	5153IV	712744	Low	Terrace flat	0	Short-grass prairie	Lawn	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	15	43	42	SiC	89	44	20	24	CL	1.10	--
11A	5154III	721871	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	9	41	50	SiC	98	70	29	41	CH	1.40	2.69
11B	5154III	717872	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	12	53	35	SiCL	98	48	20	28	CL	1.10	--
11C	5154III	717872	Low	Natural levee	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	18	51	31	SiCL	99	42	19	23	CL	2.10	--
11D	5153IV	774824	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	8	39	53	C	98	70	26	44	CH	1.72	--
11E	5153IV	705724	Low	Natural levee	0	Woodland	Apple orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	5	40	55	SiC	99	67	22	45	CH	1.24	--
12A	5154II	939923	Low	Terrace flat	0	Tall scrub savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	38	43	C	83	54	22	32	CH	2.30	2.66
12B	5154II	939923	Low	Terrace flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	36	50	C	91	65	23	42	CH	3.50	--
12C	5154II	027877	Low	Terrace flat	0	Woodland	Apple orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	16	62	22	SiL	94	39	24	15	CL	3.50	--
12D	5154II	025877	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	12	46	42	SiC	94	46	22	24	CL	2.30	--
12E	5154II	015866	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	10	33	57	C	97	88	26	62	CH	1.10	--
13A	5155III	873316	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	9	45	46	SiC	93	80	30	50	CH	2.30	2.67
13B	5155III	873317	Low	Terrace slope	5	Tall-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	9	65	26	SiL	94	60	23	37	CH	2.75	--
13C	5155III	873317	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	22	55	23	SiL	71	57	27	30	CH	3.10	--
13D	5155III	841331	Low	Terrace flat	0	Woodland	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	63	18	SiL	70	35	22	13	CL	2.30	--

(Continued)

Table A2 (Continued)

Section C. Trafficability Data																						
	Wet-Season Condition											High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
7D	1	0-6	--	12.6	548+	--	--	0.8	0.27	1.4	0.20										
		6-12	--	10.5	713+	--	--														
7E	1	0-6	108.8	16.3	54	--	--	0.4	0.16	0.3	0.09										
		6-12	103.6	16.5	79	0.48	38														
7F	1	0-6	104.0	19.8	152	--	--	2.2	0.23	1.0	0.22										
		6-12	110.3	17.9	271	0.48	130														
8A	1	0-6	74.3	37.6	92	--	--	0.0	0.30	0.0	0.25										
		6-12	100.2	17.9	142	1.00	142														
8B	1	0-6	--	21.0	356	--	--	0.8	0.23	1.0	0.16										
		6-12	--	22.3	382	--	--														
8C	1	0-6	--	7.9	613+	--	--	0.0	0.28	1.0	0.22										
		6-12	--	8.7	750+	--	--														
8D	1	0-6	--	7.8	608+	--	--	1.9	0.47	0.7	0.27										
		6-12	--	8.4	741+	--	--														
8E	1	0-6	107.1	17.0	85	--	--	2.0	0.18	3.4	0.12										
		6-12	83.6	32.6	127	0.74	94														
9A	1	0-6	87.4	27.9	145	--	--	0.0	0.27	0.0	0.09										
		6-12	86.6	34.5	168	0.66	111														
9B	1	0-6	--	29.5	70	--	--	0.0	0.16	0.0	0.20										
		6-12	--	12.6	430+	--	--														
9C	1	0-6	--	6.2	575+	--	--	0.0	0.40	0.0	0.25										
		6-12	--	6.8	750+	--	--														
										Lop Buri Area											
10A	1	0-6	89.1	27.5	158	--	--	1.5	0.34	0.4	0.23										
		6-12	88.9	28.1	178	0.92	164														
10B	1	0-6	74.3	36.9	131	--	--	0.0	0.32	1.0	0.16										
		6-12	76.6	38.8	92	0.73	67														
10C	1	0-6	79.9	39.4	63	--	--	1.0	0.09	0.0	0.07	79.9	39.4	63	--	--	1.0	0.09	0.0	0.07	+1.0
		6-12	92.2	29.6	89	0.64	57					92.2	29.6	89	0.64	57					
10D	1	0-6	89.2	23.1	110	--	--	1.6	0.27	2.2	0.07										
		6-12	93.0	25.3	132	0.71	94														
10E	1	0-6	84.2	23.7	108	--	--	2.0	0.23	1.5	0.25										
		6-12	94.3	25.1	105	0.74	78														
11A	1	0-6	84.3	27.6	88	--	--	1.9	0.12	1.0	0.05										
		6-12	87.4	34.6	114	0.92	105														
11B	1	0-6	--	27.5	145	--	--	1.7	0.20	1.7	0.11										
		6-12	--	23.6	154	--	--														
11C	1	0-6	--	15.1	406	--	--	2.0	0.22	1.0	0.18										
		6-12	--	13.6	714+	--	--														
11D	1	0-6	77.8	38.3	54	--	--	0.0	0.18	1.0	0.09	77.8	38.3	54	--	--	0.0	0.18	1.0	0.09	+1.0
		6-12	83.5	35.0	104	0.81	84					83.5	35.0	104	0.81	84					
11E	1	0-6	88.3	27.8	125	--	--	2.6	0.12	0.5	0.18										
		6-12	89.4	30.4	124	0.72	89														
12A	1	0-6	86.0	31.9	105	--	--	0.9	0.28	0.7	0.11	86.0	31.9	105	--	--	--	--	--	--	12.0
		6-12	--	33.6	113	0.66	74					--	33.6	113	0.66	74					
12B	1	0-6	83.2	34.8	118	--	--	1.0	0.28	1.0	0.25										
		6-12	--	28.8	204	--	--														
12C	1	0-6	--	17.5	417	--	--	0.0	0.28	0.0	0.30										
		6-12	--	14.6	610+	--	--														
12D	1	0-6	92.3	24.6	134	--	--	1.2	0.32	0.2	0.22										
		6-12	81.7	38.4	65	0.82	53														
12E	1	0-6	86.8	31.0	131	--	--	1.9	0.40	1.9	0.18										
		6-12	--	35.7	137	0.91	125														
13A	1	0-6	65.3	55.2	48	--	--	0.9	0.18	0.0	0.16	65.3	55.2	48	--	--	0.9	0.18	0.0	0.16	+1.0
		6-12	70.4	44.5	83	0.94	78					70.4	44.5	83	0.94	78					
13B	1	0-6	84.4	33.9	47	--	--	1.0	0.12	0.2	0.14	84.4	33.9	47	--	--	--	--	--	--	12.0
		6-12	78.0	41.5	76	0.83	63					78.0	41.5	76	0.83	63					
13C	1	0-6	--	32.6	79	--	--	1.2	0.18	0.8	0.22										
		6-12	--	29.6	150	--	--														
13D	1	0-6	94.4	22.6	150	--	--	1.3	0.20	0.3	0.14										
		6-12	91.5	21.7	154	0.61	94														

(Continued)

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
13E	5155III	841331	Low	Terrace slope	5	Woodland	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	58	23	SiL	79	41	22	19	CL	1.72	--
14A	5155II	984265	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	41	45	SiC	93	67	26	41	CH	1.90	2.70
14B	5155II	984265	Low	Terrace slope	2	Tall-grass prairie	Cultivated (peanut)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	43	43	SiC	91	65	26	39	CH	2.30	--
14C	5155II	983266	Low	Terrace slope	2	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	43	43	SiC	92	63	23	40	CH	1.40	--
14D	5155II	957276	Low	Terrace flat	0	Barren	Cultivated (peanut)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	36	50	C	90	56	24	32	CH	1.65	2.73
14E	5155II	958275	Low	Terrace flat	0	Barren	Cultivated (peanut)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	23	39	38	CL	84	49	20	29	CL	1.15	--
15A	5154I	041174	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	41	16	L	65	29	13	16	CL	0.64	2.71
15B	5154I	041173	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	21	60	19	SiL	85	27	17	10	CL	0.92	--
15C	5154I	041172	Low	Terrace flat	0	Tall-grass prairie	Lawn	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	36	40	24	L	69	37	15	22	CL	1.10	--
15D	5154I	908104	Low	Natural levee	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	10	45	45	SiC	95	55	20	35	CH	1.10	--
15E	5154I	950126	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	13	42	45	SiC	95	48	22	26	CL	1.24	--
16A	5154I	122126	Low	Natural levee	3	Savanna	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	35	15	L	71	28	22	6	CL-ML	0.78	2.66
16B	5154I	123125	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	28	15	SL	60	27	23	4	ML	1.10	--
16C	5154I	102074	Low	Natural levee	0	Tall scrub woodland	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	56	25	SiL	89	37	22	15	CL	1.72	--
16D	5154I	103076	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	7	35	58	C	98	62	22	40	CH	1.40	--
16E	5154I	104077	Low	Lower slope	3	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	23	45	32	CL	86	38	21	17	CL	1.56	--
17A	5154II	038929	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	42	21	L	77	31	19	12	CL	1.24	--
17B	5154II	037931	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	39	47	C	89	67	23	44	CH	1.56	2.73
17C	5154II	037932	Low	Lower slope	1	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	17	40	43	SiC	92	59	21	38	CH	1.24	--
17D	5154II	059995	Low	Bottomland flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	27	52	21	SiL	81	26	18	8	CL	1.40	2.73
17E	5154II	060999	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	17	74	9	SiL	92	--	--	NP	ML	1.24	--
17F	5154II	060999	Low	Terrace slope	1	Barren	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	17	78	5	SiL	90	--	--	NP	ML	0.92	--
18A	5154II	102988	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	44	45	11	L	63	17	16	1	ML	1.24	2.58
18B	5154II	101989	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	39	49	12	L	72	17	16	1	ML	1.10	--
18C	5154II	101991	Low	Terrace flat	0	Tall-grass prairie	Lawn	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	54	36	10	SL	54	--	--	NP	ML	1.10	--
18D	5154II	081012	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	38	10	L	57	--	--	NP	ML	1.40	--
Chiang Mai Area																			
19A	4867IV	166867	Low	Bottomland depression	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	80	16	4	LS	29	--	--	NP	SM	0.58	--
19B	4867IV	165867	Low	Terrace flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	79	16	5	LS	32	--	--	NP	SM	1.04	2.63
19C	4867IV	162866	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	69	13	18	SL	37	24	13	11	SC	0.39	--
19D	4867IV	161866	Low	Drainage ditch	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	16	29	SCL	57	35	18	17	CL	0.55	--

(Continued)

Table A2 (Continued)

Section C. Trafficability Data																						
Wet-Season Condition												High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
13E	1	0-6	91.5	25.7	112	—	—	1.5	0.32	1.7	0.14										
		6-12	93.8	22.9	112	0.71	80														
14A	1	0-6	81.4	36.3	30	—	—	0.4	0.22	1.2	0.09	81.4	36.3	30	—	—	0.4	0.22	1.2	0.09	+3.0
		6-12	84.6	34.6	100	0.92	92					84.6	34.6	100	0.92	92					
14B	1	0-6	83.9	32.4	58	—	—	1.2	0.22	1.6	0.14										
		6-12	85.6	30.4	133	1.16	154														
14C	1	0-6	86.8	30.5	67	—	—	2.0	0.25	1.0	0.16										
		6-12	—	29.4	151	0.82	124														
14D	1	0-6	79.1	29.0	126	—	—	0.6	0.32	1.7	0.30										
		6-12	81.0	30.5	195	0.82	160														
14E	1	0-6	88.6	25.9	97	—	—	0.4	0.45	0.0	0.28										
		6-12	91.0	23.9	190	0.76	144														
15A	1	0-6	106.8	19.0	76	—	—	0.5	0.23	0.8	0.09	106.8	19.0	76	—	—	0.5	0.23	0.8	0.09	+1.0
		6-12	103.2	20.4	115	0.51	59					103.2	20.4	115	0.51	59					
15B	1	0-6	98.9	19.5	97	—	—	0.7	0.27	0.1	0.27										
		6-12	97.0	23.1	147	0.55	81														
15C	1	0-6	93.9	31.8	125	—	—	1.6	0.28	0.4	0.30										
		6-12	106.3	19.5	143	0.88	126														
15D	1	0-6	92.7	26.6	100	—	—	1.0	0.23	0.4	0.20										
		6-12	90.6	25.2	149	0.95	142														
15E	1	0-6	89.7	29.4	90	—	—	1.8	0.23	0.0	0.32										
		6-12	92.5	26.5	147	0.93	137														
16A	1	0-6	88.7	21.5	240	—	—	1.0	0.40	0.0	0.32										
		6-12	89.4	14.0	390	0.95	370														
16B	1	0-6	93.5	19.9	237	—	—	0.0	0.49	0.0	0.30										
		6-12	92.3	15.9	356	1.07	381														
16C	1	0-6	82.8	30.3	65	—	—	1.3	0.32	0.0	0.36										
		6-12	90.5	27.0	70	0.61	43														
16D	1	0-6	88.0	28.8	55	—	—	0.0	0.18	0.0	0.12	88.0	28.8	55	—	—	0.0	0.18	0.0	0.12	+3.0
		6-12	87.6	31.5	95	0.49	46					87.6	31.5	95	0.49	46					
16E	1	0-6	94.5	21.9	244	—	—	0.1	0.51	0.0	0.22										
		6-12	91.6	25.2	201	0.68	137														
17A	1	0-6	99.4	21.3	105	—	—	0.7	0.30	0.0	0.11	99.4	21.3	105	—	—	—	—	—	—	7.0
		6-12	94.4	25.5	116	0.56	65					94.4	25.5	116	0.56	65					
17B	1	0-6	94.8	22.9	192	—	—	1.9	0.36	2.4	0.09										
		6-12	90.0	28.0	198	0.65	129														
17C	1	0-6	97.3	23.6	83	—	—	0.5	0.18	1.1	0.18	97.3	23.6	83	—	—	0.5	0.18	1.1	0.18	+1.0
		6-12	94.3	28.5	106	0.39	41					94.3	28.5	106	0.39	41					
17D	1	0-6	79.9	30.7	178	—	—	0.7	0.45	0.0	0.27										
		6-12	96.0	18.6	165	0.24	40														
17E	1	0-6	—	14.8	647	—	—	0.0	0.36	0.0	0.28										
		6-12	—	13.3	750+	—	—														
17F	1	0-6	—	43.3	437+	—	—	0.0	0.47	1.8	0.32	—	43.3	437+	—	—	0.0	0.47	1.8	0.32	+3.0
		6-12	—	21.0	750+	—	—					—	21.0	750+	—	—					
18A	1	0-6	97.5	19.6	221	—	—	2.0	0.22	0.0	0.25	97.5	19.6	221	—	—	—	—	—	—	9.0
		6-12	92.8	25.5	205	0.15	31					92.8	25.5	205	0.15	31					
18B	1	0-6	98.6	19.3	221	—	—	0.0	0.32	0.0	0.32										
		6-12	97.9	16.3	379	0.48	182														
18C	1	0-6	93.7	15.9	423	—	—	0.0	0.42	0.8	0.25										
		6-12	92.8	15.9	433	1.66	719														
18D	1	0-6	97.6	20.0	261	—	—	0.0	0.27	0.0	0.20	97.6	20.0	261	—	—	0.0	0.27	0.0	0.20	+0.5
		6-12	102.6	18.9	687+	0.46	316+					102.6	18.9	687+	0.46	316+					
Chiang Mai Area																						
19A	1	0-6	99.4	16.5	96	—	—	0.0	0.27	0.7	0.14	99.4	16.5	96	—	—	0.0	0.27	0.7	0.14	0.0
		6-12	102.1	16.1	175	0.53	93					102.1	16.1	175	0.53	93					
19B	1	0-6	92.5	18.7	155	—	—	0.5	0.30	0.9	0.34										
		6-12	94.8	19.5	174	0.52	90														
19C	1	0-6	86.2	46.0	128	—	—	—	—	—	—	86.2	46.0	128	—	—	—	—	—	—	+12.0
		6-12	100.0	22.3	112	0.28	31					100.0	22.3	112	0.28	31					
19D	1	0-6	104.9	21.4	76	—	—	1.6	0.42	0.0	0.23	104.9	21.4	76	—	—	1.6	0.42	0.0	0.23	+6.0
		6-12	103.1	22.9	156	0.59	92					103.1	22.9	156	0.59	92					

(Continued)

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data											
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	By Wt % Fines	USCS Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
19E	4867IV	161862	High	Lower slope	3	Low scrub	Orange orchard	0-6	--	--	--	--	--	--	--	--	--	--	---
								6-12	75	21	4	LS	33	--	--	NP	SM	0.78	2.64
19F	4867IV	160862	High	Upper slope	2	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	69	24	7	SL	42	--	--	NP	SM	0.95	--
20A	4866IV	135458	Low	Stream bottom	0	Savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	83	10	7	GSL	13	--	--	NP	SM	2.10	--
20B	4866IV	135458	Low	Bottomland flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	27	13	SL	47	23	18	5	SM-SC	2.50	--
20C	4866IV	134458	High	Terrace flat	0	Tall-grass prairie	Cultivated (peanuts)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	33	44	23	L	81	34	21	13	CL	2.66	--
20D	4866IV	131458	High	Upper slope	7	Tall-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	28	15	SL	52	16	14	2	ML	1.72	--
20E	4866IV	133458	High	Upper flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	48	31	21	L	63	22	13	9	CL	1.40	2.65
20F	4866IV	133458	High	Lower slope	18	Short-grass prairie	Cultivated (pepper)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	27	16	SL	49	25	17	8	SC	2.66	--
21A	4867III	028793	Low	Natural levee	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	66	21	13	SL	46	20	17	3	SM	1.56	--
21B	4867III	029794	Low	Terrace flat	0	Tall scrub savanna	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	27	18	SL	54	30	18	12	CL	1.40	--
21C	4867III	029794	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	56	26	18	SL	57	28	18	10	CL	0.70	2.68
21D	4867III	030794	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	58	24	18	SL	57	28	18	10	CL	0.95	--
21E	4867III	031795	Low	Bottomland flat	0	Tall-grass prairie	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	66	20	14	SL	46	24	17	7	SM-SC	0.78	--
21F	4867III	031795	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	86	9	5	LS	20	--	--	NP	SM	2.30	--
22A	4866IV	014533	Low	Natural levee	4	Tall scrub savanna	Banana Orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	40	31	29	CL	76	31	17	14	CL	1.40	2.68
22B	4866IV	015533	Low	Bottomland depression	0	Tall scrub woodland	Banana Orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	15	46	39	SICL	88	47	23	24	CL	2.30	--
22C	4866IV	015533	Low	Terrace slope	5	Tall scrub woodland	Apple Orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	30	40	30	CL	78	40	21	19	CL	1.90	--
22D	4866IV	026531	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	13	53	34	SICL	94	33	20	13	CL	1.05	2.66
22E	4866IV	027530	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	12	63	25	SIL	91	34	22	12	CL	1.25	--
23A	4866IV	097456	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	34	30	36	CL	66	54	26	28	CH	2.47	2.80
23B	4866IV	097456	High	Lower slope	9	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	24	26	50	C	68	78	35	43	CH	2.75	--
23C	4866IV	096457	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	23	28	49	GC	63	72	35	37	MH	1.55	--
23D	4866IV	053510	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	44	31	CL	75	32	19	13	CL	0.95	--
23E	4866IV	054509	Low	Terrace slope	1	Low scrub	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	63	28	9	SL	48	--	--	NP	SM	0.86	2.67
23F	4866IV	055509	Low	Terrace slope	1	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	32	11	SL	54	--	--	NP	ML	0.95	--
23G	4866IV	058507	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	61	31	8	SL	51	--	--	NP	ML	0.78	--
24A	4766I	854484	Low	Bottomland flat	0	Low scrub savanna	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	11	55	34	SICL	94	42	24	18	CL	2.30	--
24B	4766I	855484	ow	Terrace slope	2	Low scrub	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	29	46	25	L	79	27	18	9	CL	1.10	--
24C	4766I	855484	Low	Terrace flat	0	Low scrub	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	33	40	27	L	75	33	19	14	CL	1.90	2.64
24D	4766I	854483	Low	Natural levee	0	Woodland	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	66	26	8	SL	48	--	--	NP	SM	1.77	--
25A	4766I	892573	Low	Bottomland flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	45	39	16	L	68	33	22	11	CL	4.30	--

(Continued)

Table A2 (Continued)

Section C. Trafficability Data																							
			Wet-Season Condition										High-Moisture Condition										
								Sheargraph										Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
19E	1	0-6	94.9	11.7	117	—	—	0.0	0.32	0.3	0.27										
		6-12	101.3	15.1	197	0.86	169														
19F	1	0-6	88.2	15.2	110	—	—	1.5	0.34	1.4	0.32										
		6-12	97.6	13.3	116	0.98	114														
20A	1	0-6	89.0	23.3	52	—	—	1.0	0.14	0.8	0.20	89.0	23.3	52	—	—	—	—	—	—	2.0
		6-12	—	19.9	118	—	—					—	19.9	118	—	—					
20B	1	0-6	85.7	22.8	118	—	—	0.9	0.38	0.1	0.51										
		6-12	94.4	14.6	199	1.01	201														
20C	1	0-6	90.0	24.4	100	—	—	1.6	0.36	0.4	0.30										
		6-12	93.8	23.9	115	0.56	64														
20D	1	0-6	92.4	26.8	116	—	—	0.4	0.30	0.7	0.23										
		6-12	104.0	17.6	156	0.32	50														
20E	1	0-6	95.7	17.0	116	—	—	0.3	0.42	0.0	0.36										
		6-12	105.1	16.6	153	0.60	92														
20F	1	0-6	94.0	15.6	207	—	—	1.0	0.38	0.0	0.18										
		6-12	99.8	16.3	212	0.67	146														
21A	1	0-6	92.7	22.6	93	—	—	0.8	0.32	1.2	0.32										
		6-12	100.9	20.1	119	0.54	64														
21B	1	0-6	90.1	30.4	54	—	—	0.9	0.09	0.5	0.05	90.1	30.4	54	—	—	0.9	0.09	0.5	0.05	+5.0
		6-12	94.6	27.4	90	0.53	48					94.6	27.4	90	0.53	48					
21C	1	0-6	102.6	16.6	81	—	—	1.0	0.18	0.1	0.18	102.6	16.6	81	—	—	1.0	0.18	0.1	0.18	+0.5
		6-12	101.3	21.5	117	0.35	41					101.3	21.5	117	0.35	41					
21D	1	0-6	88.0	33.1	92	—	—	1.5	0.16	0.6	0.14	88.0	33.1	92	—	—	1.5	0.16	0.6	0.14	+2.0
		6-12	96.3	25.6	123	0.37	46					96.3	25.6	123	0.37	46					
21E	1	0-6	91.9	28.0	59	—	—	1.5	0.34	0.3	0.30	91.9	28.0	59	—	—	1.5	0.34	0.3	0.30	0.0
		6-12	100.6	21.9	142	0.36	51					100.6	21.9	142	0.36	51					
21F	1	0-6	98.4	20.0	159	—	—	—	—	—	—	98.4	20.0	159	—	—	—	—	—	—	+6.0
		6-12	98.7	18.8	308	0.24	91					98.7	18.8	308	0.24	91					
22A	1	0-6	91.2	25.9	56	—	—	1.5	0.28	0.5	0.14										
		6-12	97.7	22.8	111	0.53	59														
22B	1	0-6	76.9	39.4	18	—	—	1.0	0.18	0.4	0.18	76.9	39.4	18	—	—	1.0	0.18	0.4	0.18	+6.0
		6-12	87.5	33.4	48	0.54	26					87.5	33.4	48	0.54	26					
22C	1	0-6	87.1	26.2	57	—	—	1.7	0.38	0.7	0.20										
		6-12	98.5	21.5	84	0.73	61														
22D	1	0-6	95.2	24.7	181	—	—	0.8	0.14	1.0	0.09	95.2	24.7	181	—	—	0.8	0.14	1.0	0.09	+2.0
		6-12	97.4	24.3	226	0.29	66					97.4	24.3	226	0.29	66					
22E	1	0-6	92.8	26.5	214	—	—	0.7	0.30	0.2	0.03										
		6-12	94.2	24.3	313	0.25	78														
23A	1	0-6	81.8	37.3	101	—	—	0.8	0.53	0.5	0.18	81.8	37.3	101	—	—	0.8	0.53	0.5	0.18	0.0
		6-12	87.5	33.2	157	0.43	68					87.5	33.2	157	0.43	68					
23B	1	0-6	—	34.3	137	—	—	0.7	0.42	1.2	0.09										
		6-12	—	37.4	220	—	—														
23C	1	0-6	—	34.9	150	—	—	1.8	0.27	1.2	0.03										
		6-12	—	31.7	219	—	—														
23D	1	0-6	—	22.9	421+	—	—	0.3	0.45	0.0	0.18										
		6-12	—	28.6	672+	—	—														
23E	1	0-6	96.4	21.6	236	—	—	0.5	0.32	0.5	0.25										
		6-12	105.2	14.8	182	0.18	33														
23F	1	0-6	98.3	15.1	95	—	—	0.0	0.40	0.2	0.30										
		6-12	98.5	21.5	108	0.18	19														
23G	1	0-6	104.3	15.4	82	—	—	0.7	0.34	0.4	0.23	104.3	15.4	82	—	—	0.7	0.34	0.4	0.23	+4.0
		6-12	110.0	12.4	295	0.25	74					110.0	12.4	295	0.25	74					
24A	1	0-6	86.4	28.4	97	—	—	1.8	0.16	0.8	0.14	86.4	28.4	97	—	—	—	—	—	—	4.0
		6-12	88.5	28.7	168	0.54	91					88.5	28.7	168	0.54	91					
24B	1	0-6	89.8	23.6	290+	—	—	2.0	0.16	0.0	0.18										
		6-12	—	15.0	750+	—	—														
24C	1	0-6	85.6	31.1	87	—	—	2.1	0.22	0.1	0.25										
		6-12	95.0	22.6	130	0.69	90														
24D	1	0-6	83.9	15.6	93	—	—	0.5	0.32	0.2	0.28										
		6-12	84.4	20.2	252+	1.60	403+														
25A	1	0-6	77.6	29.0	71	—	—	1.3	0.45	0.0	0.30										
		6-12	79.6	14.7	150	0.93	140														

(Continued)

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data										
Location									USDA				USCS					
									Texture by Wt, %				By Wt %	Atterberg Limits				
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
25B	4866I	891572	Low	Terrace slope	2	Tall scrub savanna	Apple orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	45	33	22	L	66	26	16	10	CL	0.86	2.66
25C	4866I	889571	High	Terrace flat	0	Savanna	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	75	18	7	SL	32	--	--	NP	SM	0.86	--
26A	4767I	948978	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	17	28	SCL	51	25	12	13	CL	1.05	--
26B	4767I	948978	Low	Terrace flat	0	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	38	19	L	62	28	18	10	CL	3.96	--
26C	4767I	947978	High	Lower slope	9	Tall-grass prairie	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	76	16	8	SL	28	--	--	NP	SM	1.10	2.64
26D	4767I	947978	High	Upper slope	9	Tall scrub savanna	Cultivated (peanuts)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	77	19	4	LS	28	--	--	NP	SM	0.62	--
26E	4767I	947978	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	74	15	11	SL	31	--	--	NP	SM	0.55	--
27A	4767II	962791	Low	Terrace flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	58	25	17	SL	47	19	13	6	SM-SC	0.78	--
27B	4767II	961792	Low	Lower slope	1	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	28	17	SL	52	22	14	8	CL	0.78	2.62
27C	4767II	959793	Low	Lower slope	1	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	63	25	12	SL	42	17	14	3	SM	1.40	--
27D	4767II	959794	Low	Natural levee	0	Savanna	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	24	19	SL	49	22	15	7	SM-SC	1.40	--
Chanthaburi Area																			
28A	5448IV	889951	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	22	26	SCL	54	32	14	18	CL	1.72	2.66
28B	5448IV	889952	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	53	24	23	SCL	52	24	15	9	CL	0.78	--
28C	5448IV	889952	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	53	26	21	SCL	51	25	16	9	CL	1.05	--
28D	5448IV	889953	Low	Terrace flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	51	24	25	SCL	58	28	17	11	CL	1.88	2.66
29A	5448IV	840933	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	43	20	L	67	44	24	20	CL	5.74	2.66
29B	5448IV	838932	Low	Bottomland fbbt	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	34	45	21	L	78	88	33	55	CH	15.00	2.46
29C	5448IV	841934	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	27	46	27	L	78	34	17	17	CL	2.90	--
30A	5448IV	759003	Low	Natural levee	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	54	19	27	SCL	58	28	16	12	CL	3.10	2.62
30B	5448IV	759004	Low	Terrace slope	2	Tall scrub woodland	Cultivated (pepper)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	62	17	21	SCL	48	23	15	8	SC	1.72	--
30C	5448IV	758005	Low	Terrace slope	2	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	68	12	20	SL	41	17	12	5	SM-SC	1.40	2.64
30D	5448IV	758006	Low	Terrace flat	0	Woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	62	16	22	SCL	51	23	14	9	CL	1.72	--
31A	5349II	213078	Low	Natural levee	5	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	41	37	22	L	76	41	25	16	CL	1.40	2.66
31B	5349II	213078	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	11	57	32	SiCL	93	65	33	32	MH	2.30	--
31C	5349II	212078	Low	Bottomland depression	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	17	53	30	SiCL	94	55	28	27	CH	1.90	--
32A	5349II	141101	Low	Terrace flat	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	68	24	8	SL	49	--	--	NP	SM	0.86	--
32B	5349II	141101	Low	Lower slope	8	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	67	22	11	SL	49	12	--	NP	SM	0.86	2.64
32C	5349II	141102	Low	Upper slope	10	Low scrub savanna	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	47	35	18	L	61	27	16	11	CL	0.86	2.65
32D	5349II	141102	Low	Upper slope	11	Low scrub savanna	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	26	22	SCL	61	24	14	10	CL	0.86	2.68
33A	5448IV	759001	Low	Bottomland depression	0	Woodland	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	12	57	31	SiCL	92	53	33	20	MH	2.50	2.64

(Continued)

Table A2 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Wet-Season Condition: Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph: c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	High-Moisture Condition: Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph: c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
			Section C. Trafficability Data																		
25B	1	0-6	99.0	20.4	85	--	--	0.8	0.30	1.1	0.22										
		6-12	106.5	17.2	136	0.67	91														
25C	1	0-6	99.6	12.9	81	--	--	1.3	0.32	0.0	0.42										
		6-12	104.0	11.7	93	0.81	75														
26A	1	0-6	--	24.7	127	--	--	--	--	--	--	--	24.7	127	--	--	--	--	--	--	+15.0
		6-12	--	15.2	195	0.40	78					--	15.2	195	0.40	78					
26B	1	0-6	87.3	27.9	69	--	--	1.0	0.49	0.0	0.45	87.3	27.9	69	--	--	--	--	--	--	11.0
		6-12	86.7	30.4	58	0.32	19					86.7	30.4	58	0.32	19					
26C	1	0-6	94.9	11.6	86	--	--	0.0	0.55	0.0	0.32										
		6-12	100.1	10.7	111	1.93	214														
26D	1	0-6	97.9	10.0	97	--	--	0.0	0.40	0.6	0.34										
		6-12	--	10.8	158	3.69	583														
26E	1	0-6	101.0	12.5	204	--	--	0.9	0.38	0.6	0.22										
		6-12	112.0	11.8	239	--	--														
27A	1	0-6	89.9	28.2	148	--	--	1.3	0.38	0.7	0.22										
		6-12	107.2	16.3	173	0.32	55														
27B	1	0-6	99.4	18.9	249	--	--	1.2	0.30	0.3	0.30										
		6-12	110.7	12.6	356	0.65	231														
27C	1	0-6	94.6	23.9	381	--	--	1.0	0.42	0.3	0.23										
		6-12	104.2	15.3	420	0.35	147														
27D	1	0-6	98.7	18.5	93	--	--	0.3	0.32	0.0	0.28										
		6-12	102.9	17.5	115	0.47	54														
												Chanthaburi Area									
28A	1	0-6	77.4	44.7	81	--	--	1.6	0.27	0.5	0.23	77.4	44.7	81	--	--	1.6	0.27	0.5	0.23	+1.0
		6-12	108.1	18.7	153	0.54	83					108.1	18.7	153	0.54	83					
28B	1	0-6	102.6	18.0	122	--	--	1.0	0.42	0.0	0.23	102.6	18.0	122	--	--	1.0	0.42	0.0	0.23	0.0
		6-12	108.4	17.2	112	0.68	76					108.4	17.2	112	0.68						
28C	1	0-6	92.1	25.9	139	--	--	0.4	0.40	0.2	0.23	92.1	25.9	139	--	--	--	--	--	--	4.0
		6-12	103.7	19.6	147	0.50	74					103.7	19.6	147	0.50	74					
28D	1	0-6	99.1	22.4	156	--	--	1.8	0.27	0.2	0.25	99.1	22.4	156	--	--	--	--	--	--	6.0
		6-12	103.6	18.8	145	0.54	78					103.6	18.8	145	0.54	78					
29A	1	0-6	83.5	29.5	85	--	--	0.6	0.14	0.0	0.12	83.5	29.5	85	--	--	0.6	0.14	0.0	0.12	+2.0
		6-12	79.0	37.6	93	0.38	35					79.0	37.6	93	0.38	35					
29B	1	0-6	59.6	57.7	40	--	--	--	--	--	--	59.6	57.7	40	--	--	--	--	--	--	+9.0
		6-12	49.3	97.5	47	0.51	24					49.3	97.5	47	0.51	24					
29C	1	0-6	101.1	18.6	82	--	--	0.4	0.36	0.6	0.16	101.1	18.6	82	--	--	0.4	0.36	0.6	0.16	+2.0
		6-12	84.1	31.5	88	0.48	42					84.1	31.5	88	0.48	42					
30A	1	0-6	89.2	22.1	67	--	--	0.3	0.25	0.2	0.18										
		6-12	94.5	21.5	103	0.49	50														
30B	1	0-6	93.8	18.4	48	--	--	1.1	0.32	0.2	0.18										
		6-12	87.4	20.5	50	0.63	32														
30C	1	0-6	95.8	21.7	99	--	--	0.0	0.34	0.0	0.27										
		6-12	98.2	16.7	91	0.46	42														
30D	1	0-6	91.0	23.6	100	--	--	0.0	0.36	0.2	0.23										
		6-12	90.9	19.1	99	0.54	53														
31A	1	0-6	77.5	38.7	54	--	--	1.0	0.20	0.2	0.28										
		6-12	82.3	32.3	69	0.52	36														
31B	1	0-6	61.2	62.1	35	--	--	0.9	0.22	1.1	0.11										
		6-12	75.1	41.3	63	0.69	43														
31C	1	0-6	62.4	58.6	26	--	--	--	--	--	--	62.4	58.6	26	--	--	--	--	--	--	+5.0
		6-12	80.7	38.3	49	0.61	30					80.7	38.3	49	0.61	30					
32A	1	0-6	80.8	37.3	58	--	--	0.0	0.55	0.0	0.38	80.8	37.3	58	--	--	0.0	0.55	0.0	0.38	0.0
		6-12	95.7	22.3	109	0.07	8					95.7	22.3	109	0.07	8					
32B	1	0-6	88.7	19.4	77	--	--	0.0	0.53	0.0	0.32										
		6-12	101.8	16.6	115	0.36	41														
32C	1	0-6	91.5	24.9	50	--	--	0.0	0.40	0.9	0.22										
		6-12	100.9	18.9	96	0.51	49														
32D	1	0-6	92.8	24.3	76	--	--	0.5	0.32	0.8	0.25										
		6-12	104.8	17.5	124	0.52	64														
33A	1	0-6	67.8	50.5	119	--	--	0.9	0.45	0.0	0.30	67.8	50.5	119	--	--	0.9	0.45	0.0	0.30	+6.0
		6-12	75.3	42.5	199	0.29	58					75.3	42.5	199	0.29	58					

(Continued)

Table A2 (Continued)

Section A. Site Data									Section B. Soil Data											
	Location									USDA Texture by Wt, %				USCS						
														By Wt %	Atterberg Limits				Or-	Spe-
Site No.	Map Sheet	Grid Coor-di-nates	Topog-raphy Class	Topo-graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	ganic Con-tent %	cific Grav-ity
33B	5448IV	761000	High	Terrace slope	3	Tall scrub savanna	Cultivated (pepper)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	17	44	39	SiCL	87	56	43	13	MH	2.10	—
33C	5448IV	762999	High	Terrace flat	0	Forest	Apple orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	19	46	37	SiCL	86	55	43	12	MH	2.30	2.85
34A	5349III	951136	Low	Natural levee	0	Tall scrub savanna	Banana orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	25	48	27	L	88	40	25	15	CL	2.30	2.64
34B	5349III	951137	Low	Terrace slope	1	Short-grass prairie	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	46	23	31	SCL	60	28	16	12	CL	1.56	—
34C	5349III	950138	Low	Terrace slope	4	Short-grass prairie	Lawn	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	34	20	46	GC	42	48	24	24	SC	1.77	—
34D	5349III	950139	Low	Terrace slope	3	Short-grass prairie	Lawn	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	34	19	47	GC	42	36	19	17	SC	1.45	2.80
34E	5349III	949139	High	Lower slope	5	Tall-grass prairie	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	45	32	23	L	58	36	22	14	CL	1.88	2.72
35A	5349III	743027	Low	Bottomland flat	0	Tall scrub savanna	Fruit orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	46	38	16	L	70	22	15	7	CL-ML	2.75	2.64
35B	5349III	743028	Low	Terrace slope	4	Tall scrub savanna	Fruit orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	49	27	24	SCL	67	26	13	13	CL	1.10	—
35C	5349III	743028	Low	Terrace flat	0	Tall scrub savanna	Fruit orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	65	28	7	SL	52	12	12	0	ML	0.92	2.63
35D	5349III	742028	Low	Lower slope	5	Tall scrub savanna	Fruit orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	64	27	9	SL	45	14	—	NP	SM	1.40	—
35E	5349III	742029	High	Upper slope	10	Tall scrub savanna	Fruit orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	53	25	22	SCL	66	26	16	10	CL	1.40	—
36A	5248I	578980	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	72	9	19	SL	33	34	16	18	SC	1.77	2.59
36B	5248I	578979	Low	Terrace slope	2	Low scrub savanna	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	92	5	3	S	13	11	—	NP	SM	1.89	—
36C	5248I	577979	Low	Terrace flat	0	Low scrub savanna	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	96	2	2	S	9	—	—	NP	SP-SM	1.04	—
36D	5248I	576979	Low	Lower slope	2	Short-grass prairie	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	97	1	2	S	6	—	—	NP	SP-SM	0.63	—
36E	5248I	575979	Low	Upland flat	0	Woodland	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	93	5	2	S	8	—	—	NP	SP-SM	0.89	—
37A	5149II	059082	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	48	26	26	SCL	60	30	12	18	CL	0.70	2.66
37B	5149II	059082	Low	Terrace slope	3	Tall scrub savanna	Coconut orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	42	32	26	L	63	36	13	23	CL	1.33	—
37C	5149II	059081	Low	Terrace flat	0	Tall scrub woodland	Coconut orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	58	23	19	SL	46	20	12	8	SC	0.70	—
37D	5149II	058080	Low	Terrace flat	0	Tall-grass prairie	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	34	41	25	L	71	29	14	15	CL	2.10	—
							Pran Buri Area												
38A	4947I	943509	Low	Stream bottom	0	Tall-grass prairie	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	23	51	26	SiL	88	33	17	16	CL	2.10	2.66
38B	4947I	943508	Low	Terrace slope	3	Tall scrub savanna	Coconut orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	48	35	17	L	67	23	14	9	CL	1.56	—
38C	4947I	943508	Low	Terrace slope	3	Woodland	Coconut orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	42	37	21	L	71	20	14	6	CL-ML	1.40	—
38D	4947I	943507	Low	Terrace flat	0	Woodland	Coconut orchard	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	47	36	17	L	70	20	14	6	CL-ML	1.40	—
39A	4947I	937585	Low	Terrace flat	0	Tall scrub woodland	Cultivated (rice)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	57	31	12	SL	58	21	19	2	ML	0.95	2.58
39B	4947I	937585	Low	Lower slope	6	Tall-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	59	27	14	SL	58	20	18	2	ML	0.62	2.58
39C	4947I	936586	High	Lower slope	6	Barren	Cultivated (corn)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	47	27	26	SCL	68	27	15	12	CL	0.95	—
39D	4947I	936586	High	Upper slope	10	Tall scrub woodland	Cultivated (corn)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	51	32	17	L	67	20	17	3	ML	1.10	—
40A	4948II	046693	Low	Natural levee	1	Tall-grass prairie	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	67	24	9	SL	39	21	18	3	SM	3.90	2.64

(Continued)

Table A2 (Continued)

Section C. Trafficability Data																						
	Wet-Season Condition											High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
33B	1	0-6	69.8	41.2	264	—	—	0.0	0.67	0.0	0.34										
		6-12	70.0	41.7	326	—	—														
33C	1	0-6	57.0	53.4	88	—	—	0.5	0.47	0.0	0.36										
		6-12	69.6	43.3	79	0.68	54														
34A	1	0-6	79.3	38.8	125	—	—	1.2	0.18	0.7	0.07										
		6-12	86.5	30.3	114	0.54	62														
34B	1	0-6	96.6	21.0	112	—	—	1.9	0.23	0.2	0.27										
		6-12	98.7	19.9	112	0.59	66														
34C	1	0-6	90.7	23.0	151	—	—	0.6	0.30	0.8	0.25										
		6-12	103.0	17.7	186	0.83	154														
34D	1	0-6	90.7	24.3	361	—	—	3.3	0.40	0.7	0.34										
		6-12	98.7	18.8	583+	0.55	321+														
34E	1	0-6	96.1	26.9	425+	—	—	0.2	0.47	0.0	0.30										
		6-12	94.9	21.4	686+	—	—														
35A	1	0-6	92.6	23.9	71	—	—	0.3	0.43	0.5	0.36										
		6-12	97.2	20.9	81	0.34	28														
35B	1	0-6	100.5	17.6	91	—	—	0.0	0.58	0.0	0.30										
		6-12	104.7	17.7	105	0.73	77														
35C	1	0-6	90.8	17.4	86	—	—	0.6	0.42	0.2	0.36										
		6-12	92.4	16.7	119	0.48	57														
35D	1	0-6	87.7	16.1	88	—	—	0.4	0.40	0.3	0.27										
		6-12	89.4	16.0	114	1.28	146														
35E	1	0-6	92.4	19.8	62	—	—	1.6	0.40	1.0	0.36										
		6-12	100.0	18.6	115	0.60	69														
36A	1	0-6	60.3	56.6	90	—	—	0.4	0.20	0.0	0.23	60.3	56.6	90	—	—	0.4	0.20	0.0	0.23	+4.0
		6-12	93.0	25.3	119	0.47	56					93.0	25.3	119	0.47	56					
36B	1	0-6	88.2	21.3	101	—	—	1.0	0.30	0.3	0.25	88.2	21.3	101	—	—	1.0	0.30	0.3	0.25	0.0
		6-12	85.1	25.5	117	0.38	44					85.1	25.5	117	0.38	44					
36C	1	0-6	78.5	31.0	91	—	—	0.8	0.38	0.9	0.27										
		6-12	96.1	20.7	149	0.77	115														
36D	1	0-6	84.5	8.1	96	—	—	0.0	0.36	0.0	0.27										
		6-12	90.0	7.0	208	1.13	235														
36E	1	0-6	85.5	13.3	107	—	—	1.0	0.28	0.0	0.27										
		6-12	88.7	9.0	171	0.87	149														
37A	1	0-6	101.0	20.3	45	—	—	1.0	0.11	1.0	0.27	101.0	20.3	45	—	—	1.0	0.11	1.0	0.27	0.0
		6-12	106.7	18.2	96	0.57	55					106.7	18.2	96	0.57	55					
37B	1	0-6	105.7	16.5	63	—	—	0.7	0.23	0.3	0.23	105.7	16.5	63	—	—	—	—	—	—	5.5
		6-12	109.6	17.3	128	0.38	49					109.6	17.3	128	0.38	49					
37C	1	0-6	103.2	18.1	31	—	—	1.2	0.18	0.4	0.27	103.2	18.1	31	—	—	1.2	0.18	0.4	0.27	0.0
		6-12	106.9	16.8	68	0.61	41					106.9	16.8	68	0.61	41					
37D	1	0-6	88.1	30.1	50	—	—	0.0	0.27	0.0	0.27	88.1	30.1	50	—	—	0.0	0.27	0.0	0.27	0.0
		6-12	93.1	25.0	81	0.42	34					93.1	25.0	81	0.42	34					
From Burt Area																					
38A	1	0-6	85.0	23.6	178	—	—	1.5	0.65	0.8	0.30										
		6-12	94.5	18.5	172	0.67	115														
38B	1	0-6	93.9	15.0	68	—	—	0.4	0.42	0.0	0.40										
		6-12	100.1	14.4	95	0.76	72														
38C	1	0-6	94.7	14.1	66	—	—	0.5	0.32	0.9	0.30										
		6-12	103.8	14.1	118	0.74	87														
38D	1	0-6	96.4	17.3	32	—	—	0.3	0.32	0.3	0.28										
		6-12	102.5	16.9	73	0.45	33														
39A	1	0-6	82.4	22.7	34	—	—	0.5	0.30	0.2	0.32										
		6-12	92.2	20.2	49	0.23	11														
39B	1	0-6	92.5	15.6	92	—	—	0.0	0.34	0.0	0.36										
		6-12	100.8	16.2	106	0.37	39														
39C	1	0-6	95.2	16.3	60	—	—	0.3	0.42	0.0	0.42										
		6-12	104.3	15.1	85	0.83	71														
39D	1	0-6	97.4	15.6	40	—	—	0.3	0.51	0.0	0.40										
		6-12	103.1	13.3	79	0.81	64														
40A	1	0-6	87.9	23.5	115	—	—	0.0	0.53	0.2	0.30										
		6-12	93.0	17.4	143	—	—														

(Continued)

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
													By Wt %	Atterberg Limits				Organic Content %	Specific Gravity
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type		
40B	4948II	046693	Low	Natural levee	1	Tall-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	63	23	SiL	94	35	23	12	CL	2.66	--
40C	4948II	046692	Low	Terrace flat	0	Tall scrub savanna	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	18	56	26	SiL	87	31	18	13	CL	1.56	--
40D	4948II	045691	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	17	50	33	SiCL	92	36	23	13	CL	3.10	--
41A	4948I	049853	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	46	27	27	SCL	61	34	14	20	CL	0.70	--
41B	4948I	050850	Low	Terrace slope	1	Tall-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	47	25	28	SCL	57	26	12	14	CL	0.86	2.66
41C	4948I	052847	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	36	39	CL	78	40	16	24	CL	0.70	--
41D	4948I	053844	Low	Terrace slope	1	Barren	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	46	28	26	L	59	26	12	14	CL	0.76	2.64
42A	4949II	038059	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	71	20	9	SL	29	--	--	NP	SM	0.28	2.63
42B	4949II	038062	Low	Terrace flat	0	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	63	21	16	SL	44	23	15	8	SC	0.23	2.64
42C	4949II	039066	Low	Terrace flat	0	Barren	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	72	16	12	SL	31	15	13	2	SM	0.38	2.64
42D	4949II	040069	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	48	38	14	L	58	17	11	6	CL-ML	0.76	2.64
43A	4949II	036010	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	67	22	11	SL	41	12	12	NP	SM	0.32	--
43B	4949II	036013	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	68	24	8	SL	40	12	12	NP	SM	0.76	--
43C	4949II	036017	Low	Terrace flat	0	Tall-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	30	18	L	53	17	10	7	CL-ML	0.62	--
43D	4949II	037030	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	49	33	18	L	59	17	12	5	CL-ML	0.46	--
44A	4949II	045156	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	34	32	34	CL	70	40	15	25	CL	1.40	--
44B	4949II	043156	Low	Terrace slope	1	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	26	57	17	SiL	83	22	16	6	CL-ML	1.10	--
44C	4949II	041156	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	44	31	CL	80	32	13	19	CL	0.92	--
44D	4949II	040155	Low	Terrace slope	1	Tall scrub savanna	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	45	18	L	71	23	14	9	CL	1.24	--
44E	4949II	039155	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	28	17	SL	54	20	14	6	CL-ML	0.62	--
44F	4949II	037155	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	34	16	L	63	22	13	9	CL	0.64	--
47A	4949II	063146	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	18	38	44	C	85	50	22	28	CH	2.30	--
47B	4949II	063148	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	21	36	43	C	83	48	22	26	CL	2.50	--
48C	4948I	040961	Low	Terrace slope	3	Short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	90	6	4	S	12	--	--	NP	SP-SM	0.46	--
48D	4948I	038961	Low	Terrace slope	1	Barren	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	72	16	12	SL	14	14	14	NP	SM	0.95	--
Khon Kaen Area																			
49A	5460I	200433	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	64	20	16	SL	48	24	16	8	SC	0.64	2.67
49B	5460I	202432	High	Lower slope	3	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	18	25	SCL	46	34	17	17	SC	1.10	--
49C	5460I	203431	High	Upper slope	2	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	70	21	9	SL	45	16	15	1	SM	0.46	--
49D	5460I	204429	High	Upland flat	0	Tall scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	78	19	3	LS	35	--	--	NP	SM	0.64	2.64
50A	5460I	235363	Low	Drainage ditch	0	Savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	95	4	1	S	5	--	--	NP	SP-SM	0.28	--

(Continued)

Table A2 (Continued)

Section C. Trafficability Data																							
	Wet-Season Condition											High-Moisture Condition											
								Sheargraph									Sheargraph						
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
40B	1	0-6	83.0	27.0	122	—	—	0.4	0.34	0.6	0.32										
		6-12	83.2	23.6	155	0.67	104														
40C	1	0-6	84.9	22.0	155	—	—	0.3	0.42	0.3	0.47										
		6-12	87.6	16.5	345	—	—														
40D	1	0-6	77.1	37.4	61	—	—	0.5	0.40	0.2	0.30										
		6-12	90.1	28.0	91	0.48	44														
41A	1	0-6	95.7	20.3	126	—	—	0.8	0.58	0.0	0.49										
		6-12	—	18.3	199	—	—														
41B	1	0-6	100.2	16.8	166	—	—	0.6	0.65	0.0	0.49										
		6-12	86.8	16.0	264	—	—														
41C	1	0-6	98.3	21.8	108	—	—	1.8	0.22	0.7	0.27	98.3	21.8	108	—	—	—	—	—	—	9.0
		6-12	99.2	21.0	185	0.58	107					99.2	21.0	185	0.58	107					
41D	1	0-6	—	13.0	277	—	—	0.0	0.36	0.9	0.27										
		6-12	—	15.9	293	—	—														
42A	1	0-6	—	11.5	218	—	—	0.5	0.27	0.4	0.18	—	11.5	218	—	—	0.5	0.27	0.4	0.18	+3.0
		6-12	—	8.5	518+	—	—					—	8.5	518+	—	—					
42B	1	0-6	—	6.4	212	—	—	0.3	0.32	0.8	0.18										
		6-12	—	6.6	482+	—	—														
42C	1	0-6	—	7.9	467+	—	—	0.0	0.51	0.0	0.32										
		6-12	—	9.0	668+	—	—														
42D	1	0-6	—	16.3	228+	—	—	0.3	0.28	0.2	0.16	—	16.3	228+	—	—	0.3	0.28	0.2	0.16	+5.0
		6-12	—	12.7	567+	—	—					—	12.7	567+	—	—					
43A	1	0-6	—	13.4	166	—	—	0.5	0.34	0.2	0.28										
		6-12	—	9.0	472+	—	—														
43B	1	0-6	—	6.7	193	—	—	0.0	0.49	0.7	0.36										
		6-12	—	7.2	224	—	—														
43C	1	0-6	104.7	14.7	113	—	—	0.4	0.30	0.6	0.23	104.7	14.7	113	—	—	—	—	—	—	9.0
		6-12	108.8	15.0	112	0.45	50					108.8	15.0	112	0.45	50					
43D	1	0-6	—	28.1	351+	—	—	0.0	0.36	0.0	0.32	—	28.1	351+	—	—	0.0	0.36	0.0	0.32	+3.0
		6-12	—	13.3	713+	—	—					—	13.3	713+	—	—					
44A	1	0-6	98.9	22.4	93	—	—	—	—	—	—	98.9	22.4	93	—	—	—	—	—	—	+9.0
		6-12	100.7	22.2	159	0.84	134					100.7	22.2	159	0.84	134					
44B	1	0-6	97.9	18.8	111	—	—	0.0	0.23	0.0	0.20	97.9	18.8	111	—	—	0.0	0.23	0.0	0.20	+1.0
		6-12	99.0	18.3	244	0.41	98					99.0	18.3	244	0.41	98					
44C	1	0-6	97.6	15.0	197	—	—	0.3	0.47	0.0	0.38										
		6-12	—	17.5	348	0.53	184														
44D	1	0-6	—	12.4	205	—	—	1.4	0.38	0.3	0.38										
		6-12	—	15.4	269	—	—														
44E	1	0-6	97.6	12.1	231	—	—	0.7	0.40	0.2	0.36										
		6-12	101.5	11.7	236	0.67	158														
44F	1	0-6	97.3	25.2	127	—	—	—	—	—	—	97.3	25.2	127	—	—	—	—	—	—	+5.0
		6-12	105.5	18.8	143	0.47	67					105.5	18.8	143	0.47	67					
47A	1	0-6	79.6	19.8	243	—	—	0.0	0.53	0.5	0.36										
		6-12	—	19.1	336	1.03	346														
47E	1	0-6	—	19.1	313	—	—	—	—	—	—										
		6-12	—	22.5	310	—	—														
48C	1	0-6	98.0	3.3	387	—	—	0.6	0.32	1.7	0.23										
		6-12	97.3	4.6	431	—	—														
48D	1	0-6	94.6	6.4	403	—	—	0.5	0.34	0.0	0.36										
		6-12	90.6	6.8	548+	—	—														
Khon Kaen Area																					
49A	1	0-6	104.2	15.2	76	—	—	0.0	0.42	0.0	0.30	104.2	15.2	76	—	—	—	—	—	—	3.0
		6-12	94.2	22.8	81	0.51	41					94.2	22.8	81	0.51	41					
49B	1	0-6	100.6	19.7	99	—	—	1.3	0.38	0.0	0.40										
		6-12	96.2	23.2	142	0.75	107														
49C	1	0-6	98.1	16.2	133	—	—	0.0	0.45	0.2	0.32										
		6-12	99.6	19.1	117	0.48	56														
49D	1	0-6	98.7	17.0	88	—	—	0.2	0.47	0.4	0.32										
		6-12	95.1	19.8	89	0.22	20														
50A	1	0-6	99.9	22.3	26	—	—	0.8	0.20	0.5	0.12	99.9	22.3	26	—	—	0.8	0.20	0.5	0.12	0.0
		6-12	96.8	23.0	75	0.82	62					96.8	23.0	75	0.82	62					

(Continued)

Table A2 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
50B	5460I	235362	High	Lower slope	3	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	87	12	1	S	33	—	—	NP	SM	0.31	—
50C	5460I	236361	High	Upper slope	2	Savanna	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	85	13	2	LS	25	—	—	NP	SM	0.43	—
50D	5460I	237358	High	Upland flat	0	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	87	11	2	S	26	—	—	NP	SM	0.23	—
51A	5560I	673366	Low	Terrace flat	0	Tall-grass prairie	Cultivated (rice)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	69	18	13	SL	43	18	16	2	SM	0.28	2.67
51B	5560I	674365	High	Lower slope	4	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	86	13	1	S	28	—	—	NP	SM	0.46	—
51C	5560I	675363	High	Upper slope	3	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	82	17	1	LS	36	—	—	NP	SM	0.46	—
51D	5560I	676361	High	Upland flat	0	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	86	13	1	S	27	—	—	NP	SM	0.78	—
52A	5560I	687288	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	34	45	21	L	80	29	17	12	CL	0.62	2.68
52B	5560I	688285	Low	Terrace slope	2	Short-grass prairie	Cultivated (grazed)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	34	42	24	L	79	32	16	16	CL	0.76	—
52C	5560I	689281	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	44	40	16	L	71	24	18	6	CL-ML	0.50	—
52D	5560I	689279	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	58	34	8	SL	56	16	—	NP	ML	0.64	2.65
53A	5560III	425232	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	65	16	19	SL	52	34	17	17	CL	1.10	—
53B	5560III	427231	High	Lower slope	4	Woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	79	18	3	LS	37	—	—	NP	SM	0.62	2.64
53C	5560III	428231	High	Upper slope	4	Short-grass prairie	Logged	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	77	16	7	SL	35	—	—	NP	SM	0.78	—
53D	5560III	429231	High	Upper ridge	0	Savanna	Logged	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	84	14	2	LS	28	—	—	NP	SM	0.38	—
53E	5560III	429230	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	84	12	4	LS	32	—	—	NP	SM	0.62	—
54A	5560III	534198	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	38	29	33	CL	72	37	16	21	CL	0.55	—
54B	5560III	530198	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	54	24	22	SCL	57	32	14	18	CL	0.55	—
54C	5560III	529197	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	70	21	9	SL	46	16	15	1	SM	0.46	—
54D	5560III	527196	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	84	12	4	LS	33	—	—	NP	SM	0.38	—
55A	5560III	903187	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	85	11	4	LS	30	—	—	NP	SM	0.55	2.64
55B	5560III	903188	Low	Terrace slope	3	Woodland	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	77	15	8	SL	38	—	—	NP	SM	1.10	—
55C	5560III	903188	Low	Terrace slope	2	Woodland	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	83	12	5	LS	31	—	—	NP	SM	0.62	—
55D	5560III	904189	Low	Terrace slope	2	Tall-grass prairie	Grazed	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	80	14	6	LS	37	—	—	NP	SM	1.24	—
56A	5560II	749173	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	41	35	24	L	68	32	17	15	CL	0.92	—
56B	5560II	748173	Low	Terrace flat	0	Short-grass prairie	Lawn	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	41	35	24	L	74	32	17	15	CL	0.78	—
56C	5560II	748172	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	44	33	23	L	66	29	18	11	CL	1.24	—
56D	5560II	747172	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6	—	—	—	—	—	—	—	—	—	—	—
								6-12	52	27	21	SCL	64	27	17	10	CL	1.24	—

(Continued)

Table A2 (Concluded)

Section C. Trafficability Data																						
			Wet-Season Condition									High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
50B	1	0-6	92.8	20.7	139	—	—	0.0	0.36	0.3	0.34										
		6-12	92.8	19.9	157	0.62	97														
50C	1	0-6	96.5	17.5	129	—	—	0.8	0.42	0.5	0.42										
		6-12	92.3	19.9	139	0.58	81														
50D	1	0-6	94.2	18.5	140	—	—	0.5	0.34	0.2	0.34										
		6-12	95.0	19.0	122	0.63	77														
51A	1	0-6	102.6	20.3	58	—	—	0.3	0.34	0.7	0.30	102.6	20.3	58	—	—	—	—	—	—	1.0
		6-12	104.2	18.4	84	0.39	33					104.2	18.4	84	0.39	33					
51B	1	0-6	95.9	15.4	117	—	—	0.0	0.40	0.0	0.38										
		6-12	91.2	8.0	140	1.57	220														
51C	1	0-6	97.2	14.8	133	—	—	0.0	0.42	0.4	0.32										
		6-12	94.2	10.9	153	1.13	173														
51D	1	0-6	92.3	14.2	101	—	—	0.0	0.38	0.0	0.36										
		6-12	89.9	6.6	143	1.31	187														
52A	1	0-6	103.3	20.4	46	—	—	1.0	0.16	0.2	0.18	103.3	20.4	46	—	—	1.0	0.16	0.2	0.18	+0.5
		6-12	93.8	25.5	64	0.67	43					93.8	25.5	64	0.67	43					
52B	1	0-6	102.0	20.0	105	—	—	0.0	0.36	0.6	0.27	102.0	20.0	105	—	—	—	—	—	—	3.0
		6-12	93.4	25.3	79	0.68	54					93.4	25.3	79	0.68	54					
52C	1	0-6	99.3	22.6	85	—	—	0.6	0.22	0.4	0.30	99.3	22.6	85	—	—	0.6	0.22	0.4	0.30	+1.0
		6-12	94.9	27.3	113	0.72	81					94.9	27.3	113	0.72	81					
52D	1	0-6	93.9	18.8	63	—	—	0.0	0.47	0.2	0.36										
		6-12	98.0	17.4	92	0.51	47														
53A	1	0-6	94.7	22.9	158	—	—	0.6	0.38	0.2	0.30										
		6-12	96.7	23.1	114	0.82	93														
53B	1	0-6	98.5	11.1	184	—	—	0.4	0.45	0.2	0.28										
		6-12	97.3	12.0	250	1.62	405														
53C	1	0-6	92.8	11.3	119	—	—	0.1	0.40	0.0	0.36										
		6-12	99.0	10.8	174	1.23	214														
53D	1	0-6	91.1	12.3	84	—	—	0.6	0.32	0.7	0.32										
		6-12	89.6	9.1	111	2.02	224														
53E	1	0-6	91.1	7.6	98	—	—	0.2	0.45	0.0	0.40										
		6-12	90.0	8.7	128	2.05	262														
54A	1	0-6	97.4	26.9	94	—	—	0.8	0.23	0.0	0.34	97.4	26.9	94	—	—	—	—	—	—	2.0
		6-12	97.9	25.8	134	0.93	125					97.9	25.8	134	0.93	125					
54B	1	0-6	107.2	18.9	46	—	—	—	—	—	—	102.7	18.9	46	—	—	—	—	—	—	+2.0
		6-12	104.6	21.0	63	0.73	46					104.6	21.0	63	0.73	46					
54C	1	0-6	105.8	16.1	128	—	—	0.0	0.40	0.3	0.36	105.8	16.1	128	—	—	—	—	—	—	1.5
		6-12	105.8	13.7	120	0.31	37					105.8	13.7	120	0.31	37					
54D	1	0-6	97.4	19.2	115	—	—	0.7	0.47	0.3	0.38	97.4	19.2	115	—	—	—	—	—	—	6.0
		6-12	98.3	16.4	143	1.03	147					98.3	16.4	143	1.03	147					
55A	1	0-6	90.3	26.8	153	—	—	—	—	—	—	90.3	26.8	153	—	—	—	—	—	—	+1.0
		6-12	98.9	16.2	206	0.56	115					98.9	16.2	206	0.56	115					
55B	1	0-6	104.5	13.7	143	—	—	0.9	0.47	0.2	0.36										
		6-12	102.5	15.1	133	0.42	56														
55C	1	0-6	99.7	10.8	117	—	—	0.0	0.42	0.0	0.36										
		6-12	99.2	12.1	162	—	—														
55D	1	0-6	94.7	7.4	130	—	—	0.3	0.40	0.0	0.34										
		6-12	97.3	10.4	170	1.99	338														
56A	1	0-6	93.3	23.5	106	—	—	1.2	0.27	0.4	0.12	93.3	23.5	106	—	—	1.2	0.27	0.4	0.12	0.0
		6-12	95.5	24.1	141	0.76	107					95.5	24.1	141	0.76	107					
56B	1	0-6	103.2	19.1	132	—	—	1.0	0.27	0.0	0.18	103.2	19.1	132	—	—	1.0	0.27	0.0	0.18	0.0
		6-12	95.2	25.3	105	0.54	57					95.2	25.3	105	0.54	57					
56C	1	0-6	96.3	21.1	86	—	—	0.6	0.30	0.4	0.20	96.3	21.1	86	—	—	0.6	0.30	0.4	0.20	+1.0
		6-12	91.7	26.1	103	0.45	46					91.7	26.1	103	0.45	46					
56D	1	0-6	97.2	20.8	58	—	—	1.1	0.16	0.0	0.27	97.2	20.8	58	—	—	1.1	0.16	0.0	0.27	0.0
		6-12	90.9	26.2	103	0.54	56					90.9	26.2	103	0.54	56					

Table A3

Surface Composition Study

Summary of Site, Soil, and Trafficability Data

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
														Atterberg Limits					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
								Nakhon Sawan Area											
1T-1	5057IV	313312	Low	Bottomland flat	0	Tall scrub woodland	Undisturbed	0-6	45	34	21	L	62	32	18	14	CL	--	--
								6-12	45	34	21	L	62	32	18	14	CL	--	--
1T-2	5058III	115380	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	72	21	7	SL	34	14	14	0	SM	--	--
								6-12	72	21	7	SL	34	14	14	0	SM	--	--
1T-3	4958I	935603	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6	43	40	17	L	65	30	17	13	CL	--	--
								6-12	43	40	17	L	65	30	17	13	CL	--	--
1T-4	4958I	830660	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	74	14	12	SL	31	--	--	NP	SM	--	--
								6-12	59	19	22	SCL	45	18	10	8	SC	--	--
1T-5	5058III	190350	Low	Bottomland depression	0	Tall scrub woodland	Undisturbed	0-6	6	34	60	C	98	60	30	30	CH	--	--
								6-12	3	29	68	C	99	63	30	33	CH	--	--
1T-6	5058III	145345	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	31	37	32	GCL	60	35	20	15	CL	--	--
								6-12	26	44	30	CL	74	37	23	14	CL	--	--
1T-7	5058III	155355	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6	77	11	12	SL	25	--	--	NP	SM	--	--
								6-12	66	16	18	SL	38	21	14	7	SM-SC	--	--
1T-8	5088III	160345	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6	49	34	17	L	61	28	21	7	CL-ML	--	--
								6-12	45	36	19	L	66	29	20	9	CL	--	--
1T-9	4958I	908652	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6	26	48	26	CL	82	36	19	17	CL	0.58	--
								6-12	22	41	37	CL	84	50	21	29	CH	0.55	--
1T-10	4958I	849672	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6	29	51	20	SiL	82	28	20	8	CL	3.06	--
								6-12	28	50	22	SiL	81	25	17	8	CL	2.24	--
1T-11	5057IV	210320	Low	Bottomland flat	3	Short-grass prairie	Grazed	0-6	59	33	8	SL	45	18	14	4	SM	0.59	--
								6-12	49	34	17	L	52	25	15	10	CL	0.90	--
1T-12	5077IV	210260	Low	Bottomland flat	2	Tall scrub savanna	Cultivated (idle)	0-6	25	34	41	C	81	71	23	48	CH	2.81	--
								6-12	24	36	40	CL	82	70	23	47	CH	2.24	--
1T-13	5051IV	230140	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	39	53	8	SiL	80	--	--	--	--	1.90	--
								6-12	36	54	10	SiL	79	23	19	4	CL-ML	1.49	--
1T-15	5057IV	200140	Low	Natural levee	0	Woodland	Cultivated	0-6	39	42	19	L	76	36	26	10	ML	5.36	--
								6-12	39	42	19	L	76	36	26	10	ML	5.36	--
1T-16	5057IV	200163	Low	Bottomland depression	2	Short-grass prairie	Cultivated (idle)	0-6	76	10	14	SL	26	--	--	NP	SM	0.50	--
								6-12	55	17	28	SCL	49	42	18	24	SC	0.96	--
1T-17	5057IV	210190	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	37	36	27	L	70	29	16	13	CL	1.79	--
								6-12	37	36	27	L	70	29	16	13	CL	1.79	--
1T-18	4958II	835425	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	80	14	6	LS	32	16	14	2	SM	0.43	--
								6-12	59	29	12	SL	51	17	13	4	CL-ML	0.45	--
1T-19	4958II	863437	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (rice)	0-6	49	38	13	L	65	26	19	7	CL-ML	1.24	--
								6-12	49	38	13	L	66	25	17	8	CL	0.85	--
1T-21	5057IV	261201	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	67	23	10	SL	44	--	--	--	--	0.93	--
								6-12	60	27	13	SL	46	21	12	9	SC	0.45	--
1T-22	5057IV	294178	Low	Bottomland flat	0	Low scrub savanna	Logged	0-6	57	29	14	SL	44	20	15	5	SM-SC	0.77	--
								6-12	57	29	14	SL	44	20	15	5	SM-SC	0.77	--
1T-23	5057I	576207	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	69	19	12	SL	39	20	10	10	SC	1.14	--
								6-12	63	19	18	SL	45	23	12	11	SC	0.59	--
1T-24	5057I	570220	Low	Bottomland flat	3	Tall scrub savanna	Undisturbed	0-6	83	11	6	LS	19	--	--	--	--	0.55	--
								6-12	78	10	12	SL	22	11	12	0	SM	0.38	--
1T-25	5057I	528246	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	45	42	13	L	60	--	--	--	--	1.25	--
								6-12	46	40	14	L	54	25	14	11	CL	0.72	--
1T-26	5057I	510250	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6	50	28	22	L	47	--	--	--	--	0.87	--
								6-12	50	29	21	L	46	37	14	23	SC	0.70	--
1T-27	5057I	450235	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	20	42	38	SiCL	87	--	--	--	--	0.23	--
								6-12	19	36	45	C	88	82	25	57	CH	0.70	--
1T-28	5057I	350290	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	58	21	21	SCL	49	--	--	--	--	0.61	--
								6-12	57	20	23	SCL	51	34	16	18	CL	0.49	--
18GT-20	4958I	909526	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	48	38	14	L	63	--	--	--	--	0.59	--
								6-12	30	32	38	CL	78	39	18	21	CL	0.55	--
18GT-23	4958II	900426	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	51	31	18	L	58	--	--	--	--	1.56	--
								6-12	53	31	16	SL	58	22	15	7	CL-ML	0.83	--
18GT-27	4958II	997446	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	74	19	7	SL	36	--	--	--	--	0.67	--
								6-12	56	17	27	SCL	52	28	13	15	CL	0.74	--

(Continued)

* G = gravelly; VG = very gravelly.

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	WL, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	WL, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
			Section C. Trafficability Data																		
			Wet-Season Condition									High-Moisture Condition									
								Shearograph**									Shearograph**				
								Hobbs Sewer Area													
1T-1	2	0-6	—	6.6	404	—	—	0.5	0.[illegible]9	0.3	0.53										
		6-12	—	7.3	504	—	—														
1T-2	2	0-6	—	15.9	158	—	—	0.6	0.46	1.2	0.40	—	15.9	98	—	—	1.0	0.67	0.0	0.45	+3
		6-12	—	14.8	270+	—	—					—	14.8	239+	—	—					
1T-3	2	0-6	—	10.1	257	—	—	0.0	0.81	1.0	0.54										
		6-12	—	14.0	414	—	—														
1T-4	2	0-6	—	14.3	178	—	—	0.9	0.78	0.3	0.49	—	14.3	121	—	—	0.9	0.78	0.0	0.51	+6
		6-12	—	17.4	266	0.97	202						17.4	208	0.97	202					
1T-5	2	0-6	—	35.9	78	0.91	55	2.6	0.60	0.9	0.41	—	35.9	60	0.91	55	1.2	0.84	0.9	0.55	+5
		6-12	—	24.4	208	0.69	192					—	24.4	278	0.69	192					
1T-6	2	0-6	—	17.4	98	0.45	46	2.4	0.70	0.4	0.62	—	17.4	103	0.45	46	0.9	0.73	0.9	0.65	+4
		6-12	—	13.0	344+	—	—														
1T-7	2	0-6	—	16.3	354	—	—	2.8	0.54	0.7	0.49										
		6-12	—	12.6	470	—	—														
1T-8	2	0-6	—	22.9	191	—	—	2.6	0.48	0.4	0.50										
		6-12	—	9.7	398+	—	—														
1T-9	2	0-6	—	22.0	90	0.38	37	4.3	0.42	0.3	0.75	—	22.0	98	0.38	37	4.3	0.42	0.3	0.75	+4
		6-12	—	14.8	206	0.88	211					—	14.8	240	0.88	211					
1T-10	2	0-6	—	19.7	94	0.58	71	2.1	0.40	1.2	0.28	—	19.7	122	0.58	71	2.0	0.18	1.2	0.14	+3
		6-12	—	18.5	122	1.12	171					—	18.5	153	1.12	171					
1T-11	2	0-6	—	10.1	362+	—	—	1.6	0.76	0.2	0.53										
		6-12	—	7.9	6[illegible]4+	—	—														
1T-12	2	0-6	—	18.8	150	—	—	2.8	0.64	1.1	0.58										
		6-12	—	14.1	305	—	—														
1T-13	2	0-6	—	19.9	142	—	—	0.7	0.50	0.8	0.35	—	—	111	—	—	1.2	0.34	0.9	0.36	+3
		6-12	—	17.8	276	—	—					—	—	186	—	—					
1T-15	2	0-6	—	10.1	458	—	—	1.0	0.72	0.1	0.60										
		6-12	—	8.2	586	—	—														
1T-16	2	0-6	—	25.0	294	—	—	2.0	0.37	0.9	0.44										
		6-12	—	24.3	420	—	—														
1T-17	2	0-6	—	32.7	214	0.52	39	1.7	0.74	0.6	0.52	—	32.7	75	0.52	39	1.4	0.75	0.4	0.47	+4
		6-12	—	28.2	420	0.71	227					—	28.2	320	0.71	227					
1T-18	2	0-6	—	7.1	388	—	—	1.8	0.52	0.8	0.45	—	—	227	—	—	1.6	0.34	1.0	0.32	+4
		6-12	—	10.0	590+	—	—					—	—	458	—	—					
1T-19	1	0-6	—	—	119	—	—	3.2	0.14	1.0	0.42										
		6-12	—	—	170	—	—														
1T-21	2	0-6	—	33.8	67	1.14	73	2.4	0.44	0.8	0.46	—	33.8	64	1.14	73	2.4	0.28	1.4	0.22	+3
		6-12	—	28.4	130	0.83	131					—	28.4	158	0.83	131					
1T-22	2	0-6	—	11.6	250	—	—	2.4	0.58	1.4	0.50										
		6-12	—	10.1	299+	—	—														
1T-23	2	0-6	—	4.9	412+	—	—	1.6	0.50	1.0	0.50										
		6-12	—	6.7	424+	—	—														
1T-24	2	0-6	—	2.8	444+	—	—	1.6	0.35	0.6	0.47										
		6-12	—	3.0	480+	—	—														
1T-25	2	0-6	—	25.7	58	1.49	54	3.0	0.60	1.0	0.45	—	25.7	36	1.49	54	1.9	0.49	1.9	0.23	+3
		6-12	—	20.6	127	1.06	125					—	20.6	118	1.06	125					
1T-26	2	0-6	—	16.6	122	1.40	294	2.6	0.29	2.0	0.25	—	16.6	210	1.40	294	2.2	0.55	2.0	0.36	+4
		6-12	—	18.8	217	1.17	378					—	18.8	323	1.17	378					
1T-27	2	0-6	—	18.2	113	1.32	142	1.8	0.66	0.4	0.46										
		6-12	—	24.4	177	1.19	171														
1T-28	2	0-6	—	43.6	52	0.90	27	2.4	0.76	1.7	0.52										
		6-12	—	27.8	156	0.73	98														
18GT-20	2	0-6	—	9.0	288	—	—	2.4	0.66	0.5	0.66										
		6-12	—	9.7	473	—	—														
18GT-23	2	0-6	—	5.3	434+	—	—	2.0	0.42	0.1	0.46	—	—	118	—	—	2.4	0.38	0.2	0.47	+3
		6-12	—	5.4	464+	—	—					—	—	178	—	—					
18GT-27	2	0-6	—	5.5	248	—	—	1.6	0.44	0.2	0.47										
		6-12	—	8.2	428+	—	—														

(Continued)

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	USCS: By Wt % Fines	Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
18GT-30	5057IV	233146	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	58	36	6	SL	49	--	--	--	--	0.45	--
								6-12	40	46	14	L	67	16	12	4	CL-ML	0.28	--
							Lee Burr Area												
2T-1	5153IV	825794	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	6	62	32	SiCL	96	61	23	38	CH	--	2.65
								6-12	6	62	32	SiCL	96	61	23	38	CH	--	2.65
2T-2	5153IV	715743	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	14	59	27	SiCL	90	57	29	28	CH	--	2.52
								6-12	14	59	27	SiCL	90	57	29	28	CH	--	2.52
2T-3	5153IV	750830	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	5	65	30	SiCL	97	64	30	34	CH	--	2.50
								6-12	5	65	30	SiCL	97	64	30	34	CH	--	2.50
2T-4	5153IV	786804	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	15	50	35	SiCL	89	62	27	35	CH	--	2.69
								6-12	18	48	34	SiCL	86	60	26	34	CH	--	2.76
2T-5	5154I	085175	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	24	69	7	SiL	83	31	18	13	CL	--	2.64
								6-12	24	69	7	SiL	83	31	18	13	CL	--	2.64
2T-6	5154I	100135	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	26	62	12	SiL	78	58	23	35	CH	--	2.75
								6-12	25	60	15	SiL	74	62	23	39	CH	--	2.74
2T-7	5154I	080117	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	24	66	10	SiL	83	40	18	22	CL	--	2.69
								6-12	24	66	10	SiL	83	40	18	22	CL	--	2.69
2T-8	5154I	142114	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	7	65	28	SiCL	96	57	29	28	CH	--	2.69
								6-12	8	53	39	SiCL	94	61	29	32	CH	--	2.71
2T-9	5154I	040210	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	25	65	10	SiL	82	36	21	15	CL	--	2.68
								6-12	25	65	10	SiL	82	36	21	15	CL	--	2.68
2T-10	5154I	070080	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	40	55	5	SiL	56	17	15	2	ML	--	2.75
								6-12	40	55	5	SiL	56	17	15	2	ML	--	2.75
2T-11	5154II	080990	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	55	39	6	SL	53	--	--	--	ML	--	2.63
								6-12	59	35	6	SL	49	--	--	--	SM	--	2.60
2T-12	5154II	000000	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	35	54	11	SiL	73	25	19	6	CL-ML	--	2.64
								6-12	35	54	11	SiL	73	25	19	6	CL-ML	--	2.64
2T-13	5154II	970933	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	21	48	31	CL	84	42	26	16	CL	--	2.63
								6-12	21	46	33	CL	83	43	25	18	CL	--	2.63
2T-14	5154II	000930	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	20	61	19	SiL	85	28	19	9	CL	--	2.64
								6-12	15	4	31	SiCL	89	41	23	18	CL	--	2.68
2T-15	5154II	020875	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	6	60	34	SiCL	96	46	26	20	CL	--	2.68
								6-12	12	58	30	SiCL	92	45	25	20	CL	--	2.73
2T-16	5154II	050860	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	8	67	25	SiL	94	53	25	28	CH	--	2.65
								6-12	8	67	25	SiL	94	53	25	28	CH	--	2.65
2T-17	5154III	850985	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	12	69	19	SiL	96	45	22	23	CL	--	2.67
								6-12	12	69	19	SiL	96	45	22	23	CL	--	2.67
2T-18	5154III	211945	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	7	69	24	SiL	96	49	25	24	CL	--	2.68
								6-12	7	69	24	SiL	96	49	25	24	CL	--	2.68
2T-19	5154III	793905	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	16	64	20	SiL	89	44	20	24	CL	--	2.67
								6-12	16	64	20	SiL	89	44	20	24	CL	--	2.67
2T-20	5154IV	970130	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	13	65	22	SiL	93	62	25	37	CH	--	2.59
								6-12	13	65	22	SiL	93	62	25	37	CH	--	2.59
2T-21	5155II	913260	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	39	51	10	SiL	70	59	32	27	MH	--	2.63
								6-12	39	51	10	SiL	70	59	32	27	MH	--	2.63
2T-22	5155II	935370	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	34	59	7	SiL	74	29	18	11	CL	--	2.63
								6-12	34	59	7	SiL	74	29	18	11	CL	--	2.63
2T-23	5155II	010240	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6	46	42	12	L	54	28	18	10	CL	--	2.67
								6-12	33	49	18	L	73	37	18	19	CL	--	2.65
2T-24	5155III	680400	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	10	54	36	SiCL	93	92	29	63	CH	--	2.56
								6-12	10	54	36	SiCL	93	92	29	63	CH	--	2.56
2T-25	5155III	680380	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	9	66	25	SiCL	95	47	26	21	CL	--	2.65
								6-12	9	66	25	SiCL	95	47	26	21	CL	--	2.65
2T-26	5155III	820290	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	22	59	19	SiL	87	86	42	44	MH	--	2.58
								6-12	22	59	19	SiL	87	86	42	44	MH	--	2.58
2T-27	5155IV	780470	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	25	64	11	SiL	82	51	20	31	CH	--	2.61
								6-12	25	64	11	SiL	82	51	20	31	CH	--	2.61
2T-28	5155IV	803437	Low	Bottomland flat	5	Tall-grass prairie	Undisturbed	0-6	36	56	8	SiL	70	50	24	26	CH	--	2.60
								6-12	36	56	8	SiL	70	50	24	26	CH	--	2.60
2T-29	5155IV	780420	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	26	65	9	SiL	80	36	17	19	CL	--	2.57
								6-12	26	65	9	SiL	80	36	17	19	CL	--	2.57

(Continued)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	c_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	c_{ur} psi	Tan α_{ur}	Depth to Water Table in.
			Section C. Trafficability Data																		
			Wet-Season Condition					Shearograph				High-Moisture Condition					Shearograph				
18GT-30	2	0-6	--	19.2	238	--	--	1.6	0.58	0.6	0.56	--	--	190	--	--	1.0	0.55	1.0	0.45	+4
		6-12	--	33.5	58+A	--	--					--	--	530	--	--					
												Lee Burl Area									
2T-1	3	0-6	--	33.6	69	1.15	82	1.6	0.68	2.3	0.36										
		6-12	--	32.4	117	1.10	125														
2T-2	3	0-6	--	28.3	100	0.88	98	1.4	0.68	1.7	0.49										
		6-12	--	28.4	123	0.86	120														
2T-3	3	0-6	--	35.2	87	1.04	67	1.2	0.49	1.9	0.81										
		6-12	--	30.8	116	1.06	113														
2T-4	3	0-6	--	31.8	124	1.19	112	1.0	0.70	1.4	0.35										
		6-12	--	31.5	120	1.02	122														
2T-5	3	0-6	--	23.0	167+	1.36	46	0.6	0.78	0.8	0.51	--	23.0	34	1.36	46	0.6	0.78	0.8	0.51	+2
		6-12	--	18.3	192+	1.06	90					--	18.3	85	1.06	90					
2T-6	3	0-6	--	35.2	57	1.20	40	0.5	0.84	1.6	0.42	--	37.7	25	1.54	39	--	--	--	--	
		6-12	--	29.6	98	0.90	65					--	29.9	67	0.90	60					
2T-7	3	0-6	--	29.6	120	0.94	142	0.0	1.00	0.4	0.65	--	35.0	30	0.73	22	0.0	1.00	0.8	0.55	+4
		6-12	--	24.2	202	0.98	238					--	27.8	105	0.90	95					
2T-8	2	0-6	--	--	74	2.95	295	1.7	0.75	1.0	0.36	--	--	100	2.95	295	1.7	0.75	0.6	0.58	+3
		6-12	--	--	125	1.04	161					--	--	155	1.04	161					
2T-9	2	0-6	--	24.7	102	1.14	114	0.8	0.75	1.5	0.32										
		6-12	--	32.1	170	1.51	282														
2T-10	2	0-6	--	23.5	100	0.46	71	1.1	0.73	0.8	0.55	--	23.5	155	0.46	71	1.1	0.73	0.8	0.55	+3
		6-12	--	21.7	150	0.71	121					--	21.7	171	0.71	121					
2T-11	2	0-6	--	24.0	282	--	--	1.0	0.31	0.9	0.55	--	--	167	--	--	1.0	0.81	0.9	0.55	+6
		6-12	--	19.8	402+	--	--					--	--	300+	--	--					
2T-12	2	0-6	--	24.1	168	0.93	105	0.3	1.08	1.2	0.66	--	24.1	113	0.93	105	0.3	1.08	1.2	0.73	+7
		6-12	--	24.4	238+	--	--					--	24.4	175	--	--					
2T-13	2	0-6	--	31.2	166	1.90	228	1.1	0.84	0.8	0.67										
		6-12	--	31.7	238	--	--														
2T-14	2	0-6	--	29.8	143	--	--	0.6	0.84	0.8	0.57	--	29.8	112	--	--	0.6	0.84	0.5	0.67	+8
		6-12	--	27.6	282+	--	--					--	27.6	265	--	--					
2T-15	2	0-6	--	33.0	64	1.24	51	1.0	0.73	1.0	0.49	--	33.0	41	1.24	51	1.0	0.73	0.8	0.62	+6
		6-12	--	29.6	160	1.07	124					--	29.6	116	1.07	124					
2T-16	3	0-6	--	[illegible]	83	0.72	62	0.7	0.70	1.2	0.43	--	45.6	49	0.70	34	0.7	0.70	0.8	0.58	+9
		6-12	--	[illegible]	137	0.82	122					--	51.2	117	0.71	83					
2T-17	2	0-6	--	[illegible]	106	1.17	81	1.6	0.62	0.9	0.53										
		6-12	--	[illegible]	134	1.19	219														
2T-18	2	0-6	--	39.6	55	0.84	34	1.9	0.58	1.8	0.34										
		6-12	--	48.7	98	0.97	60														
2T-19	2	0-6	--	26.4	140	0.90	148	0.6	0.93	0.7	0.75										
		6-12	--	26.0	156	0.87	144														
2T-20	3	0-6	--	37.6	61	1.26	71	1.7	0.60	1.4	0.44										
		6-12	--	31.4	107	0.98	86														
2T-21	2	0-6	--	30.1	207	1.60	184	1.9	0.50	1.3	0.36										
		6-12	--	30.5	269	1.33	283														
2T-22	2	0-6	--	--	256	--	--	0.9	0.84	0.4	0.56										
		6-12	--	--	434	--	--														
2T-23	3	0-6	--	29.2	109	0.80	80	1.2	0.70	0.7	0.48	--	27.6	85	0.77	65	1.2	0.70	1.0	0.49	
		6-12	--	27.0	186	1.04	222					--	27.7	104	0.85	88					
2T-24	2	0-6	--	31.0	54	0.81	53	2.0	0.55	1.3	0.42										
		6-12	--	47.0	79	0.72	73														
2T-25	3	0-6	--	28.6	352+	0.68	26	2.0	0.42	1.0	0.72										
		6-12	--	[illegible]	320+	0.59	36														
2T-26	3	0-6	--	[illegible]	81	1.14	84	1.2	0.57	1.5	0.36										
		6-12	--	[illegible]	106	0.94	106														
2T-27	2	0-6	--	[illegible]	88	0.69	52	1.1	0.67	0.2	0.51										
		6-12	--	[illegible]	160	1.16	218														
2T-28	2	0-6	--	[illegible]	264+	--	--	1.1	0.73	1.7	0.40										
		6-12	--	21.0	322+	--	--														
2T-29	3	0-6	--	19.4	127	0.93	42	0.8	0.73	0.7	0.52										
		6-12	--	21.3	174	0.78	111														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
													By Wt %	Atterberg Limits				Organic Content	Specific Gravity
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	%	
2T-30	5155IV	740480	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6	63	37	0	SL	46	28	15	13	SC	--	2.90
								6-12	--	--	--	--	--	--	--	--	--	--	--
2T-31	5155IV	740515	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6	40	50	10	SiL	67	29	15	14	CL	--	2.65
								6-12	40	50	10	SiL	67	29	15	14	CL	--	2.65
2T-32	5155IV	720550	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6	11	58	31	SiCL	93	64	26	38	CH	--	2.56
								6-12	11	57	32	SiCL	92	61	31	30	CH	--	2.57
2T-33	5155IV	830510	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	75	16	9	SL	35	--	--	NP	SM	0.32	--
2T-34	5155IV	800570	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	30	15	SL	54	17	12	5	CL-ML	0.32	--
2T-35	5155III	788372	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	72	18	10	SL	38	--	--	NP	SM	0.38	--
2T-36	5154III	734860	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	11	72	17	SiL	94	37	21	16	CL	--	2.63
								6-12	11	72	17	SiL	94	37	21	16	CL	--	2.65
							Chiang Mai Area												
3T-1	4767I	968842	Low	Bottomland flat	2	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	73	20	7	SL	36	--	--	NP	SM	0.47	--
3T-2	4767I	950891	Low	Natural levee	3	Woodland	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	38	25	L	79	39	21	18	CL	1.05	--
3T-3	4767I	942909	Low	Bottomland flat	1	Tall scrub savanna	Banana orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	13	27	SCL	49	24	13	11	SC	0.74	--
3T-6	4867III	220700	Low	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	65	22	13	SL	43	--	--	NP	SM	0.67	--
3T-7	4867III	173702	Low	Natural levee	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	40	36	24	L	71	38	27	11	ML	1.77	--
3T-8	4767I	941909	Low	Bottomland flat	1	Tall scrub savanna	Cultivated (orchard)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	69	13	18	SL	39	24	18	6	SM-SC	0.83	--
3T-9	4767I	946963	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	36	14	L	58	31	19	12	CL	2.29	--
3T-10	4767I	965922	Low	Natural levee	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	28	55	17	SiL	85	43	31	12	ML	2.03	--
3T-11	4867IV	049832	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	76	15	9	SL	58	34	25	9	ML	0.62	--
3T-12	4867IV	027882	Low	Bottomland flat	2	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	76	20	4	LS	38	--	--	NP	SM	0.46	--
3T-13	4867IV	145864	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	51	23	26	SCL	53	35	18	17	CL	0.74	--
3T-14	4967III	036800	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	28	15	SL	52	35	22	13	CL	1.55	--
3T-16	4767II	956723	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	37	42	21	L	75	19	15	4	CL-ML	0.66	--
3T-17	4767II	958718	Low	Bottomland flat	2	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	35	13	L	57	15	13	2	ML	0.42	--
3T-18	4766I	879568	Low	Bottomland depression	4	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	76	18	6	LS	37	--	--	NP	SM	0.51	--
3T-19	4766III	685392	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	46	34	20	L	59	32	16	16	CL	0.74	--
3T-20	4766III	670326	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	81	12	7	LS	24	--	--	NP	SM	0.51	--
3T-21	4766III	673283	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	62	20	18	SL	44	19	12	7	SM-SC	0.70	--
3T-22	4867III	060732	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	67	15	18	SL	38	23	17	6	SM-SC	0.62	--
3T-23	4867III	063707	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	22	52	26	SiL	84	40	23	17	CL	1.65	--
3T-24	4867III	025674	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	44	31	CL	78	32	17	15	CL	0.74	--
3T-25	4866IV	022536	Low	Bottomland flat	1	Savanna	Grased	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	40	36	24	L	72	28	17	11	CL	0.74	--
3T-26	4866IV	057527	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	58	33	9	SL	58	16	15	1	ML	0.63	--

(Continued)

Table A3 (Continued)

Section C. Trafficability Data

Site No.	No. of Visits	Depth of Layer in.	Wet-Season Condition: Dry Density lb/cu ft	MC, %	CI	RI	RCI	Shearograph c_u psi	Shearograph Tan ϕ_u	Shearograph c_{ur} psi	Shearograph Tan ϕ_{ur}	High-Moisture Condition: Dry Density lb/cu ft	MC, %	CI	RI	RCI	Shearograph c_u psi	Shearograph Tan ϕ_u	Shearograph c_{ur} psi	Shearograph Tan ϕ_{ur}	Depth to Water Table in.
2T-30	2	0-6	--	12.7	475+	--	--	1.4	0.65	1.0	0.40										
		6-12	--	14.7	544+	--	--														
2T-31	2	0-6	--	21.8	109	1.31	114	1.7	0.67	0.6	0.56										
		6-12	--	18.8	153	1.17	190														
2T-32	3	0-6	--	35.6	66	0.86	66	1.3	0.67	0.4	0.46										
		6-12	--	36.4	99	1.00	104														
2T-33	2	0-6	--	25.7	426	--	--	0.9	0.81	0.8	0.55										
		6-12	--	21.6	668	--	--														
2T-34	2	0-6	--	21.0	181	--	--	0.2	0.84	0.8	0.53										
		6-12	--	20.8	245	--	--														
2T-35	2	0-6	--	18.7	560	--	--	1.3	0.55	0.6	0.35										
		6-12	--	--	574+	--	--														
2T-36	2	0-6	--	30.8	158	1.16	87	1.0	0.73	1.8	0.28										
		6-12	--	28.0	146	1.21	167														
Chiang Mai Area																					
3T-1	2	0-6	--	12.0	323+	0.20	31	2.5	0.49	1.6	0.54										
		6-12	--	13.5	380+	0.48	63														
3T-2	2	0-6	--	15.8	222	0.40	41	3.0	0.56	1.4	0.51										
		6-12	--	18.2	377+	0.66	75														
3T-3	2	0-6	--	11.1	150	0.31	33	2.7	0.54	2.0	0.48										
		6-12	--	13.3	154	0.51	36														
3T-6	2	0-6	--	10.3	306+	0.44	13	3.6	0.52	1.7	0.50	--	--	29	0.44	13	5.0	0.30	2.1	0.47	+4
		6-12	--	14.6	394+	--	--					--	--	39	--	--					
3T-7	2	0-6	--	14.3	199	--	--	3.0	0.54	3.0	0.40	--	--	41	--	--	3.7	0.42	2.4	0.27	+5
		6-12	--	14.3	152	--	--					--	--	43	--	--					
3T-8	2	0-6	--	13.6	173	--	--	2.8	0.60	0.9	0.60										
		6-12	--	14.0	176	--	--														
3T-9	2	0-6	--	15.1	326+	0.35	45	4.4	0.56	1.7	0.45	--	--	129	0.35	45	4.7	0.42	1.4	0.20	+4
		6-12	--	10.8	464+	0.38	67					--	--	178	0.38	67					
3T-10	2	0-6	--	24.9	224	0.50	39	5.0	0.36	2.0	0.42										
		6-12	--	24.0	230	0.62	60														
3T-11	2	0-6	--	19.1	244	0.64	96	3.6	0.54	1.5	0.56										
		6-12	--	12.2	366	--	--														
3T-12	2	0-6	--	21.7	172	0.83	164	3.6	0.40	1.6	0.42										
		6-12	--	12.2	262	--	--														
3T-13	2	0-6	--	18.9	236	0.63	37	3.0	0.62	1.6	0.42										
		6-12	--	13.5	424+	0.92	153														
3T-14	2	0-6	--	23.1	130	0.59	30	4.6	0.40	2.4	0.32										
		6-12	--	15.3	188	0.34	33														
3T-16	2	0-6	--	12.3	384+	0.47	104	5.0	0.52	3.1	0.46										
		6-12	--	11.4	566+	0.46	182														
3T-17	2	0-6	--	7.1	365+	0.24	19	4.3	0.52	1.6	0.60										
		6-12	--	8.0	379+	0.31	64														
3T-18	2	0-6	85.9	31.9	186	1.79	474	3.3	0.49	1.4	0.40	85.9	31.9	106	--	--	--	--	--	--	12
		6-12	95.8	26.5	269	1.20	516					95.8	26.5	108	--	--					
3T-19	2	0-6	91.3	28.9	131	0.92	120	2.2	0.35	2.7	0.38										
		6-12	92.9	29.0	150	0.88	127														
3T-20	2	0-6	--	3.5	392+	0.46	99	2.2	0.70	1.4	0.40										
		6-12	--	4.2	512+	0.53	146														
3T-21	2	0-6	101.7	22.7	104	0.46	48	5.0	0.30	2.2	0.29										
		6-12	106.4	19.8	130	0.61	80														
3T-22	2	0-6	92.4	29.2	67	--	--	2.5	0.46	2.0	0.46										
		6-12	104.9	20.4	142	--	--														
3T-23	2	0-6	83.8	36.3	113	0.74	86	4.6	0.62	1.3	0.44	83.8	36.3	58	0.69	40	5.6	0.51	2.0	0.47	0
		6-12	87.7	33.4	182	0.88	161					87.7	33.4	112	0.88	99					
3T-24	2	0-6	90.3	32.0	66	0.32	40	4.6	0.47	2.0	0.42										
		6-12	97.6	22.6	134	0.91	120														
3T-25	2	0-6	--	11.4	434+	0.78	92	3.6	0.50	2.4	0.48										
		6-12	--	11.8	462+	0.80	139														
3T-26	2	0-6	--	4.2	442+	0.19	25	2.5	0.49	1.5	0.40										
		6-12	--	5.8	451+	0.23	35														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data											
	Location								USDA Texture by Wt, %				USCS						
													By Wt %	Atterberg Limits				Organic	Specific
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Content %	Gravity
3T-27	4866IV	129456	Low	Bottomland flat	2	Low scrub	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	33	44	23	L	76	31	20	11	CL	1.49	--
3T-28	4766I	973496	Low	Bottomland flat	3	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	25	48	27	L	92	36	21	15	CL	1.20	--
3T-29	4766I	966472	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	24	16	SL	52	23	16	7	CL-ML	0.55	--
3T-30	4766I	935475	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	24	54	22	SiL	85	38	25	13	ML	2.23	--
3T-31	4766I	959576	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	24	16	SL	48	23	17	6	SM-SC	1.00	--
3T-32	4766I	993544	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	23	41	36	CL	84	37	25	12	ML	1.35	--
From Burl Area																			
4T-2	4947I	994501	Low	Bottomland flat	0	Tall-grass prairie	Grazed	0-6	17	39	44	C	98	91	36	55	CH	4.34	--
								6-12	--	--	--	--	--	--	--	--	--	--	--
4T-4	4947I	977463	Low	Bottomland flat	0	Tall-grass prairie	Grazed	0-6	13	62	25	SiL	93	39	23	36	CH	1.45	--
								6-12	16	59	25	SiL	93	46	18	28	CL	0.62	--
4T-5	4947I	982446	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	10	56	34	SiCL	96	57	20	37	CH	1.98	--
4T-6	4947I	973451	Low	Bottomland flat	0	Tall-grass prairie	Grazed	0-6	20	45	35	SiCL	99	50	17	33	CH	1.15	--
								6-12	20	45	35	SiCL	99	50	17	33	CH	1.15	--
4T-7	4947II	970446	Low	Bottomland flat	0	Tall-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	9	49	42	SiC	97	64	25	39	CH	3.54	--
4T-10	4947II	984425	Low	Bottomland flat	0	Tall-grass prairie	Grazed	0-6	7	51	42	SiC	95	76	28	48	CH	0.55	--
								6-12	7	51	42	SiC	95	76	28	48	CH	0.55	--
4T-11	4947I	012526	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	17	32	51	C	93	70	36	34	MH	5.24	--
								6-12	32	35	33	CL	74	60	24	36	CH	3.41	--
4T-12	4947I	018543	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	30	27	43	C	79	70	32	38	CH	5.24	--
								6-12	41	31	28	CL	64	47	19	28	CL	3.13	--
4T-20	4948II	901741	Low	Bottomland flat	0	Short-grass prairie	Cultivated (sugar cane)	0-6	8	69	23	SiL	99	34	21	13	CL	1.33	--
								6-12	--	--	--	--	--	--	--	--	--	--	--
4T-21	4948II	904778	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6	60	26	14	SL	48	15	14	1	SM	0.78	--
								6-12	56	25	19	SL	52	17	12	5	CL-ML	0.70	--
4T-22	4948II	898791	Low	Bottomland flat	0	Tall scrub forest	Undisturbed	0-6	24	56	20	SiL	83	34	23	11	CL	3.13	--
								6-12	--	--	--	--	--	--	--	--	--	--	--
4T-23	4948II	879752	Low	Bottomland flat	0	Forest	Undisturbed	0-6	58	29	13	SL	55	14	14	0	ML	0.70	--
								6-12	--	--	--	--	--	--	--	--	--	--	--
4T-24	4948II	862776	Low	Bottomland flat	0	Forest	Undisturbed	0-6	58	29	13	SL	50	22	18	4	SM	2.75	--
								6-12	60	27	13	SL	48	17	14	3	SM	1.33	--
4T-25	4948II	837739	Low	Natural levee	0	Forest	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	35	41	24	L	77	24	16	8	CL	0.95	--
4T-26	4948II	845743	Low	Bottomland flat	0	Forest	Undisturbed	0-6	48	31	21	L	60	26	14	12	CL	1.15	--
								6-12	44	25	31	CCL	40	30	14	16	SC	0.86	--
4T-27	4947I	056578	Low	Bottomland depression	0	Barren	Undisturbed	0-6	69	16	15	SL	38	17	14	3	SM	0.46	--
								6-12	39	20	41	C	66	45	15	30	CL	0.55	--
4T-28	4947I	054562	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	27	50	23	SiL	87	37	20	17	CL	3.62	--
								6-12	17	51	32	SiCL	93	37	20	17	CL	1.98	--
4T-29	4947I	986530	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	11	66	23	SiL	99	34	22	12	CL	1.33	--
								6-12	24	52	24	SiL	86	26	16	10	CL	1.45	--
4T-31	4948II	929750	Low	Bottomland flat	0	Tall scrub forest	Undisturbed	0-6	63	24	13	SL	50	16	13	3	SM	0.95	--
								6-12	57	17	26	SCL	50	22	10	12	SC	0.70	--
4T-32	4948II	918744	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	20	52	28	SiCL	88	31	14	17	CL	1.25	--
								6-12	21	43	36	CL	87	35	13	22	CL	0.55	--
4T-33	4948II	908723	Low	Bottomland flat	0	Short-grass prairie	Cultivated (sugar cane)	0-6	22	53	25	SiL	87	30	18	12	CL	1.15	--
								6-12	20	55	25	SiL	91	32	19	13	CL	1.15	--
From Kaap Area																			
5T-1	5560II	733172	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	30	58	12	SiL	81	28	17	11	CL	0.78	2.67
								6-12	34	56	10	SiL	77	28	17	11	CL	0.55	2.69
5T-2	5560II	766184	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	16	60	24	SiL	88	68	40	28	MH	1.15	2.70
								6-12	14	52	34	SiCL	91	79	46	33	MH	1.05	2.78

(Continued)

Table A3 (Continued)

Section C. Trafficability Data																					
			Wet-Season Condition									High-Moisture Condition									
								Sheargraph									Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
3T-27	2	0-6	--	14.2	113	0.60	101	2.4	0.46	1.0	0.62										
		6-12	--	14.2	223	0.69	126														
3T-28	2	0-6	--	12.8	430+	0.97	107	3.4	0.31	1.8	0.32										
		6-12	--	11.1	454+	0.79	124														
3T-29	2	0-6	--	9.0	432+	0.45	52	0.8	0.66	1.5	0.48										
		6-12	--	13.2	470+	0.63	120														
3T-30	2	0-6	--	7.4	414+	0.64	51	1.4	0.75	0.8	0.65										
		6-12	--	8.2	455+	0.66	106														
3T-31	2	0-6	--	15.3	324	0.73	89	1.9	0.60	0.6	0.70										
		6-12	--	17.9	294	0.53	83														
3T-32	2	0-6	86.7	32.4	36	0.70	26	2.2	0.46	3.2	0.36										
		6-12	89.9	25.2	138	0.52	78														
Pran Buri Area																					
4T-2	1	0-6	--	--	15	0.77	12					--	--	15	0.77	12					5
		6-12	--	--	27	0.66	18					--	--	27	0.66	18					
4T-4	1	0-6	--	--	53	0.74	39					--	--	53	0.74	39					+2
		6-12	--	--	74	0.83	61					--	--	74	0.83	61					
4T-5	1	0-6	--	51.0	34	0.76	26					--	51.0	34	0.76	26					13
		6-12	--	43.2	53	0.82	43					--	43.2	53	0.82	43					
4T-6	1	0-6	--	46.7	24	1.12	27					--	46.7	24	1.12	27					15
		6-12	--	38.6	58	0.80	46					--	38.6	58	0.80	46					
4T-7	1	0-6	--	96.0	14	0.87	12					--	96.0	14	0.87	12					13
		6-12	--	58.6	45	0.52	23					--	58.6	45	0.52	23					
4T-10	1	0-6	--	--	16	0.47	8					--	--	16	0.47	8					5
		6-12	--	--	54	0.81	44					--	--	54	0.81	44					
4T-11	1	0-6	--	--	57	1.41	80														
		6-12	--	--	77	0.77	59														
4T-12	1	0-6	--	79.9	37	0.74	27					--	79.9	37	0.74	27					+1
		6-12	--	49.6	48	0.92	44					--	49.6	48	0.92	44					
4T-20	1	0-6	--	8.2	377	--	--	2.5	0.18	0.0	0.47										
		6-12	--	9.4	670+	--	--														
4T-21	1	0-6	--	2.8	393	--	--	0.0	0.70	1.8	0.27										
		6-12	--	4.5	560	--	--														
4T-22	1	0-6	--	6.1	750+	--	--	0.0	0.62	0.0	0.42										
		6-12	--	5.7	750+	--	--														
4T-23	1	0-6	--	3.7	750+	--	--	0.4	0.40	0.0	0.58										
		6-12	--	3.6	750+	--	--														
4T-24	1	0-6	--	4.4	600+	--	--	0.0	0.73	0.0	0.60										
		6-12	--	3.6	750+	--	--														
4T-25	1	0-6	--	4.4	750+	--	--	1.5	0.45	2.5	0.47										
		6-12	--	5.9	750+	--	--														
4T-26	1	0-6	--	6.8	750+	--	--	0.0	0.73	0.0	0.73										
		6-12	--	5.6	750+	--	--														
4T-27	1	0-6	--	4.2	750+	--	--	0.5	0.97	0.0	0.81										
		6-12	--	12.8	750+	--	--														
4T-28	1	0-6	--	12.2	750+	--	--	0.0	1.11	0.0	0.42										
		6-12	--	15.0	750+	--	--														
4T-29	1	0-6	--	29.5	62	0.67	42					--	29.5	62	0.67	42					+4
		6-12	--	28.7	113	0.69	78					--	28.7	113	0.69	78					
4T-31	1	0-6	--	1.3	750+	--	--	1.5	0.84	1.7	0.34										
		6-12	--	5.4	750+	--	--														
4T-32	1	0-6	--	6.5	750+	--	--	0.0	0.97	0.0	0.75										
		6-12	--	12.6	750+	--	--														
4T-33	1	0-6	--	6.0	151	--	--	0.0	0.58	0.0	0.84										
		6-12	--	10.8	328	--	--														
Khon Kaen Area																					
5T-1	2	0-6	95.1	19.7	142	0.67	102	3.0	0.54	0.4	0.58	--	21.8	91	0.55	50					18
		6-12	100.2	20.8	198	0.80	172					--	23.6	104	0.66	69					
5T-2	2	0-6	--	27.0	252	1.37	292	1.0	0.57	1.0	0.32										
		6-12	--	28.6	418	1.19	224														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data										
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	Dry Wt % Fines	USCS Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
5T-3	5560II	805180	Low	Bottomland flat	0	Barren	Cultivated (rice)	0-6	10	60	30	SiCL	94	60	29	31	CH	1.05	2.71
								6-12	9	70	24	SiCL	98	49	26	23	CL	0.88	2.77
5T-4	5560II	806220	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	84	11	5	LS	22	--	--	NP	SM	0.55	2.65
								6-12	77	17	6	LS	30	--	--	NP	SM	0.25	2.65
5T-5	5560II	810245	Low	Bottomland flat	0	Short-grass prairie	Cultivated (jute)	0-6	69	25	6	SL	37	--	--	NP	SM	0.95	2.63
								6-12	65	31	4	SL	42	--	--	NP	SM	0.38	2.65
5T-6	5560I	827257	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	76	22	2	LS	30	--	--	NP	SM	1.98	2.63
								6-12	83	17	0	LS	23	--	--	NP	SM	0.32	2.63
5T-7	5560I	850277	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	72	27	1	LS	35	17	13	4	SM-SC	0.70	2.64
								6-12	67	31	2	GSL	30	26	13	13	SC	0.55	2.77
5T-8	5560II	735148	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	31	60	9	SiL	77	22	--	--	ML	0.62	2.61
								6-12	27	60	13	SiL	81	25	18	7	CL-ML	0.46	2.71
5T-9	5660III	907186	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	77	20	3	LS	33	--	--	NP	SM	0.78	2.65
								6-12	75	21	4	LS	35	--	--	NP	SM	0.25	2.66
5T-10	5660III	933176	High	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6	82	16	2	LS	27	--	--	NP	SM	0.70	2.65
								6-12	79	18	3	LS	31	--	--	NP	SM	0.38	2.67
5T-11	5560II	718218	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	63	30	7	SL	46	--	--	NP	SM	0.55	2.67
								6-12	68	27	5	SL	39	--	--	NP	SM	0.25	2.69
5T-12	5560II	730246	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	40	54	6	SiL	69	28	18	10	CL	1.05	2.60
								6-12	39	53	8	SiL	70	33	22	11	CL	0.38	2.60
5T-13	5560II	610155	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	44	46	10	L	65	35	22	13	CL	0.78	2.71
								6-12	40	46	14	L	67	38	21	17	CL	0.95	2.76
5T-14	5560II	660152	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	48	42	10	L	63	24	--	--	ML	0.62	2.62
								6-12	42	46	12	L	68	31	17	14	CL	0.46	2.64
5T-15	5461II	160453	Low	Upland depression	0	Short-grass prairie	Cultivated (rice)	0-6	72	24	4	SL	39	--	--	NP	SM	0.62	2.65
								6-12	76	24	0	LS	33	--	--	NP	SM	0.38	2.64
5T-16	5461II	125460	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6	59	46	5	SL	54	--	--	NP	ML	0.32	2.62
								6-12	54	39	7	SL	58	--	--	NP	ML	0.46	2.65
5T-17	5560II	665092	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	74	19	7	SL	33	--	--	NP	SM	0.38	2.64
								6-12	67	23	10	SL	41	25	17	8	SC	0.38	2.65
5T-18	5560II	667244	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	76	21	3	LS	40	--	--	NP	SM	1.25	2.65
								6-12	72	24	4	SL	46	--	--	NP	SM	0.55	2.67
5T-19	5460I	237277	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	9	61	30	SiCL	94	72	36	36	MH	0.70	2.68
								6-12	10	65	25	SiL	93	73	28	45	CH	0.46	2.78
5T-20	5460I	236287	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	59	37	4	SL	48	22	18	4	SM-SC	0.70	2.67
								6-12	59	34	7	SL	48	30	14	16	SC	0.55	2.69
5T-21	5460I	234344	High	Upland depression	0	Short-grass prairie	Logged	0-6	73	23	4	SL	38	--	--	NP	SM	0.86	2.68
								6-12	65	28	7	SL	44	24	18	6	SM-SC	0.46	2.63
5T-22	5460I	283324	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	41	52	7	SiL	69	23	--	NP	ML	0.95	2.61
								6-12	44	47	9	L	65	29	14	15	CL	0.78	2.60
5T-23	5460I	163395	High	Upland flat	0	Woodland	Logged	0-6	82	15	3	LS	26	--	--	NP	SM	0.62	2.61
								6-12	82	16	2	LS	26	--	--	NP	SM	0.25	2.63
5T-24	5460I	143363	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	62	34	4	SL	49	--	--	NP	SM	0.62	2.59
								6-12	74	26	0	LS	34	--	--	NP	SM	0.38	2.64
5T-25	5460II	188253	Low	Bottomland flat	0	Barren	Cultivated (rice)	0-6	30	59	11	SiL	81	50	20	30	CL	0.86	2.67
								6-12	24	65	11	SiL	87	41	29	12	ML	0.70	2.66
5T-26	5460II	293240	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6	65	34	1	SL	47	--	--	NP	SM	0.32	2.62
								6-12	59	40	1	SL	52	20	16	4	CL-ML	0.32	2.66
5T-27	5461III	990485	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6	51	43	6	SL	58	22	--	NP	ML	0.55	2.72
								6-12	63	33	4	SL	48	19	--	NP	SM	0.38	2.72
5T-28	5460II	266190	Low	Bottomland depression	0	Low scrub	Cultivated (rice)	0-6	52	42	6	SL	60	24	17	7	CL-ML	0.38	2.65
								6-12	45	47	8	L	67	26	15	11	CL	0.32	2.65
5T-29	5560III	455215	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	67	30	3	SL	48	--	--	NP	SM	0.38	2.67
								6-12	57	39	4	SL	60	--	--	NP	ML	0.18	2.67
5T-30	5560III	375225	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	54	44	2	SL	60	--	--	NP	ML	0.70	2.64
								6-12	54	41	5	SL	58	18	--	NP	ML	0.38	2.65
5T-31	5560III	377173	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	20	67	13	SiL	89	22	19	3	ML	0.55	2.64
								6-12	14	62	24	SiL	91	27	18	9	CL	0.38	2.64
5T-32	5560III	504145	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	72	25	3	SL	37	--	--	NP	SM	0.70	2.63
								6-12	74	21	5	SL	38	--	--	NP	SM	0.38	2.66
5T-33	5560III	563137	High	Upland flat	0	Low scrub	Cultivated (jute)	0-6	77	19	4	LS	32	--	--	NP	SM	0.55	2.65
								6-12	79	18	3	LS	30	--	--	NP	SM	0.38	2.61

(Continued)

Table A3 (Continued)

Section C. Trafficability Data																									
			Wet-Season Condition									High-Moisture Condition													
								Sheargraph											Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	c_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	c_{ur} psi	Tan α_{ur}	Depth to Water Table in.
5T-3	2	0-6	84.5	27.8	138	1.03	137	2.4	0.44	2.0	0.22										
		6-12	86.0	29.5	235	1.10	258														
5T-4	2	0-6	--	10.0	309+	0.97	139	2.2	0.41	0.8	0.42										
		6-12	--	8.6	518+	0.88	251														
5T-5	2	0-6	114.2	10.6	338+	--	--	2.8	0.24	1.0	0.30										
		6-12	115.4	10.8	338+	0.62	233														
5T-6	2	0-6	91.4	16.6	223	--	--	1.2	0.58	0.1	0.44										
		6-12	104.0	11.4	384	--	--														
5T-7	2	0-6	103.8	15.3	122	--	--	1.7	0.44	0.5	0.47										
		6-12	93.8	11.2	187	--	--														
5T-8	2	0-6	87.4	15.3	376+	0.40	58	0.7	0.62	0.2	0.52										
		6-12	77.5	15.2	429+	0.75	81														
5T-9	2	0-6	--	11.7	434+	--	--	0.2	0.72	0.2	0.50										
		6-12	--	10.4	550+	1.50	660														
5T-10	2	0-6	90.2	5.3	196	2.48	460	1.0	0.58	1.2	0.37										
		6-12	93.7	4.4	220	1.94	347														
5T-11	2	0-6	--	12.1	302+	0.32	55	3.0	0.44	1.7	0.46										
		6-12	--	16.2	442+	--	--														
5T-12	2	0-6	--	15.0	336+	0.97	201	3.6	0.36	1.0	0.24										
		6-12	--	15.2	460+	0.64	106														
5T-13	2	0-6	93.5	26.7	86	1.58	152	1.8	0.56	1.4	0.34	--	28.2	67	1.06	71	--	--	--	--	19
		6-12	90.4	28.0	256	1.22	314					--	31.6	198	1.20	238					
5T-14	2	0-6	--	14.6	385+	0.78	126	0.8	0.63	0.7	0.46										
		6-12	--	15.4	456+	0.88	142														
5T-15	2	0-6	96.5	13.0	197	1.24	246	2.3	0.42	0.1	0.51										
		6-12	96.3	11.4	250	1.69	485														
5T-16	2	0-6	97.0	18.6	207	0.58	85	3.3	0.50	1.8	0.37										
		6-12	107.2	17.0	247	0.82	142														
5T-17	2	0-6	99.8	17.8	168	0.49	53	0.8	0.60	0.4	0.44										
		6-12	101.5	18.0	159	0.74	117														
5T-18	2	0-6	--	11.6	381+	0.76	271	0.4	0.56	0.6	0.41	--	6.3	357	0.76	271	0.7	0.60	1.0	0.40	0
		6-12	--	17.0	556+	0.62	225					--	12.6	363	0.62	225					
5T-19	2	0-6	93.0	34.6	93	0.61	60	3.8	0.41	1.9	0.32										
		6-12	95.0	33.0	160	1.08	146														
5T-20	2	0-6	--	15.0	415+	0.52	42	3.7	0.53	2.2	0.32										
		6-12	--	17.6	428+	1.42	152														
5T-21	2	0-6	--	10.2	374+	1.32	259	4.4	0.42	1.0	0.47										
		6-12	--	10.4	461+	1.12	193														
5T-22	2	0-6	96.5	16.3	220	1.03	242	1.2	0.82	1.2	0.57										
		6-12	98.4	19.5	180	0.82	148														
5T-23	2	0-6	93.1	9.2	328	1.37	446	2.9	0.52	2.0	0.31										
		6-12	95.4	8.8	416	2.36	1020														
5T-24	2	0-6	--	18.2	265	0.40	53	3.0	0.66	0.8	0.49										
		6-12	--	15.8	453+	1.22	231														
5T-25	2	0-6	--	29.0	254	0.84	48	1.5	0.57	1.4	0.42										
		6-12	--	27.2	218	0.81	40														
5T-26	2	0-6	--	12.4	284+	0.68	84	1.8	0.68	1.0	0.29										
		6-12	--	13.4	452+	0.55	84														
5T-27	2	0-6	--	13.0	432+	0.79	100	3.0	0.60	0.6	0.63										
		6-12	--	12.1	462+	0.94	165														
5T-28	2	0-6	107.5	19.0	168	0.96	180	2.0	0.56	0.6	0.48	--	24.1	52	0.79	40	--	--	--	--	19
		6-12	105.5	20.6	174	1.36	270					--	26.3	100	0.94	94					
5T-29	2	0-6	97.7	14.7	248	1.24	344	0.4	0.79	0.6	0.48										
		6-12	96.0	13.8	224	1.24	300														
5T-30	2	0-6	--	11.8	286+	0.86	252	2.6	0.59	1.0	0.35										
		6-12	--	14.6	472+	0.71	137														
5T-31	2	0-6	96.8	15.9	138	1.19	206	1.5	0.54	0.5	0.50										
		6-12	100.5	17.9	237	1.22	333														
5T-32	2	0-6	--	12.6	374+	0.93	132	1.5	0.62	0.2	0.39										
		6-12	--	10.6	495+	1.14	274														
5T-33	2	0-6	--	3.9	540+	--	--	0.2	0.62	0.2	0.39										
		6-12	--	3.4	750+	--	--														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data										
	Location								USDA Texture by Wt, %				USCS					
													By Wt %	Atterberg Limits				
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
5T-34	5560III	515237	Low	Bottomland slope	0	Barren	Cultivated (rice)	0-6	56	41	3	SL	52	--	--	NP	ML	0.32	2.60
								6-12	50	44	6	SL	52	31	13	6	CL-ML	0.32	2.63
5T-35	5560III	560207	High	Upland flat	0	Short-grass prairie	Cultivated (jute)	0-6	76	21	3	LS	33	--	--	NP	SM	1.05	2.62
								6-12	75	22	3	LS	34	--	--	NP	SM	0.86	2.65
5T-40	5560II	797160	Low	Bottomland flat	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	4.70	--
								6-12	7	28	65	C	96	86	30	56	CH	2.87	--
5T-41	5560II	792158	Low	Bottomland depression	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	3.96	--
								6-12	5	35	60	C	97	80	28	52	CH	1.98	--
5T-42	5560II	794157	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	2.23	--
								6-12	6	23	71	C	97	100	31	69	CH	1.98	--
5T-43	5560II	794153	Low	Bottomland flat	0	Low scrub	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	5.74	--
								6-12	6	28	66	C	98	79	27	52	CH	3.96	--
5T-44	5560II	794153	Low	Bottomland depression	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	5.50	--
								6-12	7	29	64	C	97	93	38	55	CH	2.75	--
5T-45	5560II	794153	Low	Bottomland depression	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	7.24	--
								6-12	5	27	68	C	99	93	35	58	CH	3.41	--
5T-46	5560II	727240	Low	Bottomland flat	0	Short grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	1.25	--
								6-12	58	26	16	SL	53	21	12	9	CL	0.70	--
5T-47	5560II	727237	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	1.45	--
								6-12	33	38	29	CL	76	32	13	19	CL	0.95	--
5T-48	5560II	727240	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	0.78	--
								6-12	35	41	24	L	76	29	13	16	CL	0.70	--
5T-49	5560II	732237	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	1.25	--
								6-12	35	27	38	CL	74	40	14	26	CL	0.86	--
5T-50	5560II	760201	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	1.15	--
								6-12	27	53	20	SiL	89	28	18	10	CL	0.78	--
Chanthaburi Area																			
6T-1	5349III	486103	Low	Bottomland flat	0	Woodland	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	30	18	GL	29	48	30	18	SM	--	3.14
6T-2	5349II	120070	High	Terrace slope	2	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	52	30	18	VGL	23	43	21	22	SC	--	3.19
6T-3	5448IV	849000	High	Upper flat	2	Short-grass prairie	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	33	48	19	L	75	31	19	12	CL	0.78	2.69
6T-4	5349II	120093	Low	Bottomland depression	0	Tall-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	16	54	30	SiCL	87	30	18	12	CL	0.70	2.61
6T-5	5349II	133032	High	Terrace slope	2	Tall scrub woodland	Logged	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	64	33	3	SL	49	--	--	NP	SM	0.46	2.64
6T-6	5449IV	969083	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	58	26	16	SL	45	25	15	10	SC	0.55	2.65
6T-7	5349II	073103	Low	Bottomland depression	0	Short-grass prairie	Grased	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	10	64	26	SiL	88	30	20	10	CL	0.62	2.66
6T-8	5448IV	862788	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	69	21	10	SL	40	28	--	NP	SM	0.38	2.68
6T-9	5349II	207077	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	6	52	42	SiC	95	47	30	17	ML	1.05	2.71
6T-10	5448IV	883910	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	84	8	8	LS	18	21	14	7	SM-SC	--	2.65
6T-11	5348I	145970	Low	Bottomland flat	0	Woodland	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	80	14	6	LS	26	--	--	NP	SM	0.70	2.65
6T-12	5448IV	915836	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	86	8	6	LS	17	17	--	NP	SM	--	2.62
6T-13	5448IV	873881	Low	Bottomland flat	0	Savanna	Cultivated (sugar cane)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	79	17	4	LS	27	--	--	NP	SM	--	2.67
6T-14	5448III	893811	Low	Bottomland flat	0	Low scrub	Nipa palm orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	52	34	SiCL	91	77	33	44	CH	4.15	2.60
6T-15	5448III	889791	Low	Bottomland flat	0	Savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	18	44	38	SiCL	85	60	36	24	MH	5.02	2.61
6T-16	5448IV	846936	Low	Bottomland flat	0	Savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	13	55	32	SiCL	93	32	21	11	CL	1.65	2.67
6T-17	5348I	225970	Low	Bottomland flat	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	19	58	23	SiL	88	37	20	17	CL	2.47	2.61

(Continued)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Sheargraph Tan ϕ_u	Sheargraph a_{ur} psi	Sheargraph Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Sheargraph Tan ϕ_u	Sheargraph a_{ur} psi	Sheargraph Tan α_{ur}	Depth to Water Table in.
			Section C. Trafficability Data																		
			Wet-Season Condition									High-Moisture Condition									
5T-34	2	0-6	--	11.6	310	0.62	87	2.2	0.59	1.2	0.40										
		6-12	--	13.0	454+	--	--														
5T-35	2	0-6	--	3.1	604+	--	--	1.6	0.58	0.3	0.40										
		6-12	--	7.0	750+	--	--														
5T-40	2	0-6	72.8	19.8	329	1.67	449	0.6	0.91	0.0	0.61										
		6-12	72.8	22.3	492+	1.08	420														
5T-41	2	0-6	--	21.8	268	--	--	0.6	1.04	0.7	0.51										
		6-12	--	25.3	521+	--	--														
5T-42	2	0-6	68.5	62.0	106	1.78	175	0.8	0.72	0.0	0.48										
		6-12	74.9	42.2	173	1.45	149														
5T-43	2	0-6	62.8	56.4	158	0.80	23	1.4	0.69	1.0	0.34										
		6-12	80.2	40.4	242	0.90	93														
5T-44	2	0-6	59.9	30.9	260	2.80	672	0.6	0.85	0.0	0.56										
		6-12	64.4	31.2	392+	1.24	487														
5T-45	1	0-6	65.2	29.6	269	1.25	336	0.9	0.87	0.2	0.60										
		6-12	70.5	35.0	365	1.59	580														
5T-46	2	0-6	--	11.4	366	1.05	359	0.9	0.86	0.6	0.49										
		6-12	--	11.4	488+	--	--														
5T-47	2	0-6	--	14.8	344+	--	--	1.2	0.70	0.1	0.58										
		6-12	--	14.0	488+	--	--														
5T-48	2	0-6	--	9.8	616+	--	--	1.3	0.76	0.7	0.64										
		6-12	--	14.3	750+	--	--														
5T-49	2	0-6	--	11.0	588+	--	--	2.2	0.69	0.8	0.60										
		6-12	--	12.5	750+	--	--														
5T-50	2	0-6	--	11.4	547+	--	--	1.4	0.97	0.4	0.52										
		6-12	--	12.3	750+	--	--														
									Chanthaburi Area												
6T-1	1	0-6	--	--	205	--	--	2.3	0.73	1.6	0.47										
		6-12	--	--	525+	--	--														
6T-2	1	0-6	--	--	241	--	--	0.0	0.93	0.6	0.53										
		6-12	--	--	351+	--	--														
6T-3	1	0-6	--	23.0	70	0.44	31	--	--	--	--										
		6-12	--	22.0	103	1.10	113														
6T-4	1	0-6	--	22.2	54	0.25	13	0.8	0.67	1.4	0.27	--	22.2	54	0.25	13	--	--	--	--	6
		6-12	--	21.5	76	0.53	41					--	21.5	76	0.53	41					
6T-5	1	0-6	--	17.4	212	0.64	136	1.0	0.49	0.6	0.47										
		6-12	--	14.5	269	0.55	148														
6T-6	1	0-6	--	28.5	140	0.80	112	--	--	--	--	--	28.5	140	0.80	112	--	--	--	--	+1
		6-12	--	16.2	192	0.80	155					--	16.2	192	0.80	155					
6T-7	1	0-6	--	23.1	111	0.62	69	2.1	0.70	0.0	0.53										
		6-12	--	28.6	109	0.67	73														
6T-8	1	0-6	--	21.3	117	1.26	147	0.8	0.47	0.7	0.42	--	21.3	117	1.26	147	--	--	--	--	12
		6-12	--	24.4	307	1.16	357					--	24.4	307	1.16	357					
6T-9	1	0-6	--	--	40	0.55	22	2.6	0.42	0.4	0.45	--	--	40	0.55	22	2.6	0.42	0.4	0.45	0
		6-12	--	--	128	0.60	77					--	--	128	0.60	77					
6T-10	1	0-6	--	20.5	240	--	--	--	--	--	--	--	20.5	240	--	--	--	--	--	--	+3
		6-12	--	12.6	633+	--	--					--	12.6	633+	--						
6T-11	1	0-6	--	14.2	159	--	--	1.4	0.60	0.4	0.34										
		6-12	--	13.6	168	--	--														
6T-12	1	0-6	--	12.3	65	2.25	145	1.2	0.45	0.0	0.47										
		6-12	--	12.1	105	2.02	212														
6T-13	1	0-6	--	19.2	80	--	--	1.0	0.45	0.0	0.55										
		6-12	--	15.5	215	--	--														
6T-14	1	0-6	--	70.9	14	1.58	22	--	--	--	--	--	70.9	14	1.58	22	--	--	--	--	3
		6-12	--	77.4	30	1.44	43					--	77.4	30	1.44	43					
6T-15	1	0-6	--	45.6	29	0.78	23	--	--	--	--	--	45.6	29	0.78	23	--	--	--	--	+4
		6-12	--	48.1	55	0.77	42					--	48.1	55	0.77	42					
6T-16	1	0-6	--	24.1	49	0.93	45	--	--	--	--	--	24.1	49	0.93	45	--	--	--	--	+12
		6-12	--	40.7	33	0.48	16					--	40.7	33	0.48	16					
6T-17	1	0-6	--	16.0	127	0.85	108	1.8	0.58	1.3	0.36										
		6-12	--	24.1	124	0.82	102														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
													By Wt %	Atterberg Limits					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
6T-18	5448IV	800847	Low	Bottomland flat	0	Barren	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	56	31	13	SL	53	43	24	19	CL	2.87	2.65
6T-19	5348I	210950	Low	Tidal flat	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	40	53	7	SiL	73	71	49	22	MH	--	2.64
6T-20	5348I	171936	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	24	26	SCL	56	27	15	12	CL	0.86	2.63
6T-21	5348I	277879	Low	Beach	1	Woodland	Coconut orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	99	1	0	S	6	--	--	NP	SP-SM	--	2.72
6T-22	5448III	901826	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	30	47	23	L	74	39	18	21	CL	--	2.62
6T-23	5448III	820809	Low	Bottomland flat	0	Savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	21	45	34	CL	84	75	38	37	MH	4.05	2.65
6T-24	5348I	195976	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	45	27	28	CL	60	34	19	15	CL	0.78	2.66
6T-25	5448IV	810923	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	15	52	33	SiCL	90	50	26	24	CH	0.70	2.66
6T-26	5448IV	976006	High	Upper slope	4	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	76	15	9	GSL	15	27	19	8	SC	--	2.77
6T-27	5349II	220081	Low	Bottomland flat	0	Short-grass prairie	Orange orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	65	22	13	SL	40	22	14	8	SC	0.62	2.63
6T-28	5448IV	896980	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	14	59	27	SiL	90	49	34	15	ML	1.33	2.61
6T-29	5448IV	940017	Low	Bottomland flat	0	Low scrub; short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	34	34	32	CL	71	58	32	26	MH	0.78	2.67
6T-30	5449III	978060	Low	Bottomland flat	0	Low scrub; short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	22	40	38	CL	75	53	33	20	MH	0.78	2.70
6T-31	5449III	993072	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	29	14	SL	52	27	15	12	CL	0.38	2.61
6T-32	5449III	924035	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	22	47	31	CL	83	54	34	20	MH	1.33	2.65
6T-33	5449III	932074	Low	Bottomland depression	0	Woodland	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	30	20	L	55	32	20	12	CL	0.86	2.62
6T-34	5348I	217015	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	15	56	29	SiCL	89	55	36	19	MH	2.35	2.63
6T-35	5448IV	775959	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	59	29	12	SL	48	58	45	13	SM	2.87	2.81
6T-36	5349II	103019	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	87	11	2	S	22	--	--	NP	SM	0.38	2.63
6T-37	5449III	784024	Low	Terrace flat	0	Low scrub	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	65	20	15	GSL	32	39	23	16	SC	--	2.61
6T-38	5448IV	825014	Low	Upland flat	0	Short-grass prairie	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	59	21	20	SL	40	42	26	16	SM	1.65	2.58
6T-39	5448IV	914864	Low	Terrace flat	0	Savanna	Durian orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	43	36	21	L	60	54	34	20	MH	1.55	2.62
6T-40	5449III	821079	High	Upland flat	0	Low scrub	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	59	28	13	SL	50	41	29	12	SM	1.55	2.65
6T-41	5449III	806024	High	Upland flat	0	Savanna	Orange orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	22	18	SL	44	38	19	19	SC	0.70	2.62
6T-42	5448III	009814	Low	Terrace flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	63	24	13	SL	36	45	30	15	SM	1.33	2.61
6T-43	5448III	960793	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	77	14	9	SL	26	--	--	NP	SM	1.45	2.60
6T-44	5449III	890050	High	Upland flat	0	Tall scrub woodland	Logged	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	45	37	18	L	61	44	31	13	ML	1.65	2.60
6T-45	5448IV	804004	High	Upper slope	15	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	59	17	24	GSCL	28	53	29	24	SM	--	2.64
6T-46	5448IV	774983	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	49	37	14	L	61	59	43	16	MH	1.98	2.73
6T-47	5448IV	790947	Low	Bottomland flat	0	Short-grass prairie	Durian orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	56	36	8	SL	55	57	45	12	MH	2.08	2.65
6T-48	5448IV	846985	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	31	55	14	SiL	78	39	26	13	ML	1.88	2.65

(Continued)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Sheargraph Tan ϕ_u	Sheargraph a_{ur} psi	Sheargraph Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Sheargraph Tan ϕ_u	Sheargraph a_{ur} psi	Sheargraph Tan α_{ur}	Depth to Water Table in.
			Section C. Trafficability Data																		
			Wet-Season Condition									High-Moisture Condition									
6T-18	1	0-6	--	45.5	13	0.97	13	--	--	--	--	--	45.5	13	0.97	13	--	--	--	--	6
		6-12	--	54.6	22	0.98	21					--	54.6	22	0.98	21					
6T-19	1	0-6	--	--	36	0.69	25	--	--	--	--	--	--	36	0.69	25	--	--	--	--	3
		6-12	--	--	54	0.97	52					--	--	54	0.97	52					
6T-20	1	0-6	--	18.9	187	0.65	122	1.0	0.62	0.2	0.36	--	18.9	187	0.65	122	--	--	--	--	12
		6-12	--	20.6	131	0.70	92					--	20.6	131	0.70	92					
6T-21	1	0-6	--	23.0	132	--	--	--	--	--	--										
		6-12	--	21.6	212	--	--														
6T-22	1	0-6	--	18.3	55	0.80	44	--	--	--	--	--	18.3	55	0.80	44	--	--	--	--	+3
		6-12	--	33.3	87	0.58	50					--	33.3	87	0.58	50					
6T-23	1	0-6	--	59.0	30	0.85	25	--	--	--	--	--	59.0	30	0.85	25	--	--	--	--	+13
		6-12	--	75.3	46	0.81	37					--	75.3	46	0.81	37					
6T-24	1	0-6	--	31.6	94	0.65	61	2.0	0.36	1.3	0.34	--	31.6	94	0.65	61	--	--	--	--	6
		6-12	--	23.7	130	0.80	104					--	23.7	130	0.80	104					
6T-25	1	0-6	--	30.5	78	1.29	101	--	--	--	--	--	30.5	78	1.29	101	--	--	--	--	+7
		6-12	--	30.8	128	0.59	75					--	30.8	128	0.59	75					
6T-26	1	0-6	--	15.2	205	--	--	1.0	0.58	0.8	0.42										
		6-12	--	12.3	633+	--	--														
6T-27	1	0-6	--	14.3	154	1.29	199	1.2	0.62	0.9	0.51										
		6-12	--	14.0	192	0.78	150														
6T-28	1	0-6	--	39.2	144	0.77	111	0.8	0.60	1.1	0.51	--	39.2	144	0.77	111	--	--	--	--	12
		6-12	--	37.7	281	0.52	146					--	37.7	281	0.52	146					
6T-29	1	0-6	--	21.9	135	0.64	86	--	--	--	--	--	21.9	135	0.64	86	--	--	--	--	+3
		6-12	--	33.4	183	0.43	79					--	33.4	183	0.43	79					
6T-30	1	0-6	--	33.3	102	0.66	67	--	--	--	--	--	33.3	102	0.66	67	--	--	--	--	+5
		6-12	--	30.2	172	0.73	125					--	30.2	172	0.73	125					
6T-31	1	0-6	--	17.5	155	--	--	--	--	--	--	--	17.5	155	--	--	--	--	--	--	+11
		6-12	--	15.2	185	--	-					--	15.2	185	--	--					
6T-32	1	0-6	--	36.7	87	0.60	52	--	--	--	--										
		6-12	--	30.6	132	0.70	92														
6T-33	1	0-6	--	24.7	112	0.82	92	2.8	0.60	1.9	0.45										
		6-12	--	21.5	127	0.71	90														
6T-34	1	0-6	--	34.7	132	0.60	79	2.4	0.49	1.2	0.47										
		6-12	--	45.5	90	0.40	36														
6T-35	1	0-6	--	48.2	41	0.33	13	1.2	0.73	1.7	0.42										
		6-12	--	44.8	60	0.49	29														
6T-36	1	0-6	--	20.2	252	1.70	428	--	--	--	--	--	20.2	252	1.70	428	--	--	--	--	9
		6-12	--	19.4	442	1.91	844					--	19.4	442	1.91	844					
6T-37	1	0-6	--	13.1	225	1.10	248	2.2	0.51	0.5	0.49										
		6-12	--	14.1	325	1.15	359														
6T-38	1	0-6	--	17.5	99	1.25	124	1.7	0.40	0.5	0.51										
		6-12	--	20.7	237	1.45	344														
6T-39	1	0-6	--	30.0	175	0.77	135	0.5	0.49	0.3	0.45										
		6-12	--	29.0	187	0.97	182														
6T-40	1	0-6	--	29.3	109	0.37	40	2.2	0.62	1.2	0.58										
		6-12	--	28.6	146	0.48	70														
6T-41	1	0-6	--	17.2	107	1.35	144	2.0	0.60	1.0	0.55										
		6-12	--	16.9	180	0.83	149														
6T-42	1	0-6	--	23.3	170	--	--	0.8	0.42	0.2	0.36										
		6-12	--	22.4	267	--	--														
6T-43	1	0-6	--	11.0	175	--	--	0.5	0.51	0.2	0.55										
		6-12	--	11.1	212	--	--														
6T-44	1	0-6	--	30.0	144	0.72	104	2.0	0.42	1.0	0.49										
		6-12	--	32.6	128	0.66	84														
6T-45	1	0-6	--	--	458	--	--	1.0	0.40	1.0	0.36										
		6-12	--	--	750+	--	--														
6T-46	1	0-6	--	40.9	53	1.53	81	1.2	0.55	1.5	0.49										
		6-12	--	40.0	78	1.66	130														
6T-47	1	0-6	--	47.3	69	0.38	26	0.6	0.60	0.8	0.58										
		6-12	--	46.5	70	0.89	62														
6T-48	1	0-6	--	--	94	--	--	1.4	0.45	0.0	0.36										
		6-12	--	--	107	--	--														

(Continued)

Table A3 (Continued)

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
													By Wt %	Atterberg Limits				
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
6T-49	5448IV	995964	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	36	7	7	LS	16	18	--	NP	SM	1.05	2.63
6T-50	5448IV	820970	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	21	19	SL	44	38	24	14	SC	0.95	2.61
6T-51	5448IV	877880	Low	Lower slope	25	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	79	16	5	GLS	14	15	--	NP	SM	--	2.57
6T-52	5349II	145098	Low	Terrace flat	0	Short-grass prairie	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	57	29	14	SL	53	25	20	5	CL-ML	1.55	2.61
6T-53	5448IV	933858	Low	Upland flat	0	Low scrub	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	62	19	19	SL	39	46	30	16	SM	1.65	2.59
6T-54	5448IV	790954	High	Upper slope	22	Tall scrub savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	49	40	11	VGL	26	56	37	19	CH	--	3.30
6T-55	5348I	130952	High	Terrace slope	6	Low scrub; short-grass prairie	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	50	34	16	GL	41	29	22	7	SM-SC	--	2.78
6T-56	5448III	820834	Low	Bottomland flat	0	Savanna	Logged	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	39	6	SL	54	76	44	32	MH	--	2.65
6T-57	5448III	817816	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	94	4	2	S	9	--	--	NP	SP-SM	2.47	2.63
6T-58	5349II	150065	Low	Bottomland flat	0	Tall scrub woodland	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	55	28	17	SL	51	22	15	7	CL-ML	0.95	2.63
6T-59	5349II	159089	Low	Bottomland flat	0	Low scrub; short-grass prairie	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	20	38	42	C	83	52	27	25	CH	0.95	2.62
6T-60	5349II	187064	High	Upland flat	0	Tall scrub forest	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	51	35	14	L	59	18	--	NP	ML	0.55	2.64
6T-61	5348I	152984	High	Upland flat	0	Low scrub	Undisturbed	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	60	28	12	GSL	29	24	16	8	SC	0.95	2.99
6T-62	5448IV	767963	Low	Bottomland depression	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	--	--	--
								6-12	70	21	9	GSL	19	36	24	12	SC	--	2.85

(Continued)

Table A3 (Concluded)

Section C. Trafficability Data																						
Wet-Season Condition												High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
6T-49	1	0-6	--	15.4	65	1.89	122	0.7	0.42	0.1	0.38	--	15.4	65	1.89	122	--	--	--	--	12
		6-12	--	13.1	125	2.45	305					--	13.1	125	2.45	305					
6T-50	1	0-6	--	19.6	88	1.02	90	0.7	0.51	0.7	0.47										
		6-12	--	20.3	117	1.07	125														
6T-51	1	0-6	--	5.4	750+	--	--	0.0	0.78	1.2	0.30										
		6-12	--	7.4	750+	--	--														
6T-52	1	0-6	--	16.6	595	--	--	0.3	0.70	0.6	0.45										
		6-12	--	18.2	400	--	--														
6T-53	1	0-6	--	18.3	160	1.35	215	0.9	0.38	0.0	0.38										
		6-12	--	17.2	232	1.21	280														
6T-54	1	0-6	--	--	644+	--	--	1.0	0.62	0.8	0.47										
		6-12	--	--	750+	--	--														
6T-55	1	0-6	--	--	612+	--	--	1.0	0.73	0.0	0.34										
		6-12	--	--	750+	--	--														
6T-56	1	0-6	--	114.7	15	0.71	11	--	--	--	--	--	114.7	15	0.71	11	--	--	--	--	1
		6-12	--	115.2	30	0.97	21					--	115.2	30	0.97	21					
6T-57	1	0-6	--	16.5	162	1.86	302	0.8	0.40	0.0	0.84										
		6-12	--	21.0	240	2.41	577														
6T-58	1	0-6	--	17.9	132	0.49	65	1.1	0.65	1.2	0.49										
		6-12	--	17.7	105	0.95	96														
6T-59	1	0-6	--	26.5	104	0.52	54	0.0	0.65	0.5	0.55										
		6-12	--	28.5	194	0.47	91														
6T-60	1	0-6	--	18.2	112	0.30	34	1.0	0.67	1.2	0.49										
		6-12	--	17.7	110	0.52	57														
6T-61	1	0-6	--	--	428+	--	--	1.8	0.58	0.8	0.36										
		6-12	--	--	750+	--	--														
6T-62	1	0-6	--	--	390	--	--	1.4	0.55	1.0	0.47										
		6-12	--	--	718+	--	--														

Table A4

Soil Moisture-Strength Study

Summary of Site, Soil, and Trafficability Data

Section A. Site Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	Atterberg Limits LL	PL	PI	Type	Organic Content %	Specific Gravity
							Chiang Mai Area												
PD241	4867IV	017901	Low	Bottomland flat	0	Short-grass prairie	Lawn	0-6	35	49	16	L	77	26	19	7	CL-ML	2.87	--
								6-12	31	49	20	L	75	25	18	7	CL-ML	0.95	2.67
PD242	4867IV	020902	High	Terrace flat	4	Low scrub savanna	Undisturbed	0-6	73	20	7	SL	44	16	16	0	SM	0.78	--
								6-12	69	24	7	SL	--	14	14	0	SM	0.55	--
PD243	4767I	997917	Low	Bottomland flat	1	Short-grass prairie	Lawn	0-6	39	45	16	L	72	24	16	8	CL	1.55	--
								6-12	42	45	13	L	69	18	13	5	CL-ML	0.62	--
TS1	4867III	013761	High	Natural levee	0	Short-grass prairie	Lawn	0-6	39	42	19	L	77	34	24	10	ML	2.75	--
								6-12	38	44	18	L	81	30	20	10	CL	2.08	--
TS2	4867III	017765	High	Natural levee	1	Short-grass prairie	Lawn	0-6	22	50	28	CL	86	49	29	20	ML	3.13	--
								6-12	20	50	30	CL	86	43	25	18	CL	2.23	2.69
TS3	4767II	917791	High	Upper slope	20	Forest	Undisturbed	0-6	39	33	28	CL	73	65	45	20	MH	5.74	2.59
								6-12	37	27	36	CL	70	56	33	23	MH	3.27	2.59
TS4	4766I	896587	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	46	32	22	L	61	35	18	17	CL	2.08	2.63
								6-12	26	40	34	CL	79	38	20	18	CL	1.65	2.63
TS5	4766III	664413	Low	Terrace flat	5	Short-grass prairie	Undisturbed	0-6	67	22	11	SL	41	17	17	0	SM	0.95	--
								6-12	54	27	19	SL	56	22	16	6	CL-ML	0.87	--
TS6	4766III	654433	Low	Terrace flat	2	Short-grass prairie	Cultivated	0-6	31	47	22	L	72	42	21	21	CL	1.45	--
								6-12	32	50	18	L	79	30	17	13	CL	0.86	--
TS7	4766III	657445	Low	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6	85	9	6	LS	21	--	--	NP	SM	0.46	--
								6-12	86	9	5	LS	17	--	--	NP	SM	0.32	--
TS19B	4867IV	165867	Low	Terrace flat	0	Woodland	Undisturbed	0-6	71	22	7	SL	43	--	--	NP	SM	0.70	--
								6-12	79	16	5	LS	32	--	--	NP	SM	1.04	2.63
TS19C	4867IV	162866	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	71	21	8	SL	36	--	--	NP	SM	0.86	--
								6-12	69	13	18	SL	37	24	13	11	SC	0.39	--
TS19E	4867IV	161862	High	Lower slope	3	Low scrub	Cultivated	0-6	77	20	3	LS	32	--	--	NP	SM	0.46	--
								6-12	75	21	4	LS	33	--	--	NP	SM	0.78	2.64
							Khon Kaen Area												
PD246	5560II	667076	High	Terrace flat	1	Short-grass prairie	Cultivated	0-6	78	15	7	LS	33	16	16	0	SM	0.95	--
								6-12	77	15	8	SL	37	14	14	0	SM	0.62	--
PD247	5560II	666077	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6	70	19	11	SL	43	17	17	0	SM	1.05	2.61
								6-12	62	26	12	SL	48	14	14	0	SM	0.95	2.61
PD248	5560II	662083	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	76	17	7	SL	38	16	16	0	SM	0.78	--
								6-12	75	17	8	SL	39	14	14	0	SM	0.46	--
PD249	5560II	657085	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6	61	27	12	SL	57	20	18	2	ML	0.78	2.62
								6-12	61	23	16	SL	57	18	17	1	ML	0.46	2.64
TS9	5560II	689234	Low	Upland flat	1	Tall-grass prairie	Cultivated	0-6	75	20	5	LS	32	--	--	NP	SM	0.86	--
								6-12	81	14	5	LS	31	--	--	NP	SM	0.62	--
TS10	5560II	688230	High	Upper slope	3	Low scrub savanna	Cultivated	0-6	68	24	8	SL	43	17	15	2	SM	0.78	--
								6-12	74	18	8	SL	39	--	--	NP	SM	0.62	2.63
TS11	5560II	658190	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6	82	13	5	LS	33	--	--	NP	SM	0.46	--
								6-12	77	20	3	LS	40	13	13	0	SM	0.46	2.64
TS12	5560II	657099	High	Natural levee	1	Short-grass prairie	Grazed	0-6	48	41	11	L	71	27	22	5	ML	0.86	--
								6-12	41	42	17	L	76	26	20	6	CL-ML	0.78	--
TS13	5560II	658089	High	Natural levee	1	Short-grass prairie	Grazed	0-6	43	44	13	L	80	30	23	7	ML	1.65	--
								6-12	43	43	14	L	80	25	19	6	CL-ML	0.78	--
TS14	5560II	659085	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6	26	46	28	CL	84	37	19	18	CL	1.45	--
								6-12	13	51	36	SiCL	93	41	18	23	CL	1.05	--
TS56A	5560II	749173	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	43	34	23	L	67	26	14	12	CL	0.70	--
								6-12	41	35	24	L	68	32	17	15	CL	0.92	--
TS56B	5560II	748173	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	47	32	21	L	66	26	15	11	CL	0.62	--
								6-12	41	35	24	L	74	32	17	15	CL	0.78	--
TS56D	5560II	747172	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	--	0.86	--
								6-12	44	33	23	L	66	29	18	11	CL	1.24	--
							Nakhon Sawan Area												
PD251	5058III	215324	High	Terrace flat	1	Short-grass prairie	Lawn	0-6	25	44	31	CL	80	47	21	26	CL	2.87	--
								6-12	25	40	35	CL	81	48	23	25	CL	2.23	2.69
TS15	4958II	026467	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	20	48	32	SiCL	86	32	19	13	CL	1.45	--
								6-12	11	41	48	SiC	92	45	22	23	CL	0.78	2.66

(Continued)

* G = gravelly; VG = very gravelly.

Table A4 (Continued)

Section C. Trafficability Data																						
	Wet-Season Condition											High-Moisture Condition										
								Sheargraph**									Sheargraph**					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
Chiang Mai Area																						
PD241	19	0-6	94.8	25.9	100+	--	--	--	--	--	--	--	28.2	35	--	--					1
		6-12	97.6	20.5	212+	0.68	150+					--	19.4	96	0.29	28					
PD242	18	0-6	93.4	12.8	156	--	--	3.2	0.58	0.7	0.43										
		6-12	97.8	11.7	177	2.60	472														
PD243	18	0-6	97.9	20.4	192+	--	--	3.8	0.58	0.9	0.70	98.7	19.2	90	--	--					23
		6-12	109.8	15.0	348+	0.58	184+					113.8	15.3	121	0.44	53					
TS1	14	0-6	86.2	19.4	497+	--	--	--	--	--	--										
		6-12	89.3	15.6	661+	1.01	491+														
TS2	16	0-6	79.5	28.8	191	--	--	3.1	0.68	0.2	0.63										
		6-12	84.9	26.2	265+	1.02	247														
TS3	10	0-6	67.8	42.3	60	--	--	2.6	0.68	0.7	0.70										
		6-12	63.5	33.7	106	1.26	141														
TS4	14	0-6	89.8	29.0	68	--	--	3.3	0.19	1.6	0.19	--	29.6	51	--	--					0
		6-12	98.0	25.2	126	0.86	109					--	25.1	102	0.69	70					
TS5	15	0-6	91.1	11.8	297+	--	--	1.5	0.78	1.2	0.75										
		6-12	89.3	11.5	369+	1.64	421+														
TS6	19	0-6	91.7	28.9	78	--	--	--	--	--	--	--	34.5	60	--	--					0
		6-12	104.6	21.2	137+	0.78	103+					--	23.6	129	0.35	45					
TS7	8	0-6	88.3	28.6	173	--	--	--	--	--	--	--	29.3	136	--	--					0
		6-12	86.6	28.8	279	0.99	276					--	29.9	224	0.77	172					
TS19B	8	0-6	93.2	17.2	263	--	--	--	--	--	--										
		6-12	95.4	14.3	297	--	--														
TS19C	9	0-6	96.0	21.9	170	--	--	--	--	--	--	--	21.6	169	--	--					1
		6-12	101.6	17.5	167	0.37	62					--	20.1	147	0.17	25					
TS19E	9	0-6	90.2	11.2	142	--	--	--	--	--	--										
		6-12	94.0	10.2	239	2.14	474														
Khon Kaen Area																						
PD246	7	0-6	96.4	12.1	181+	--	--	0.6	0.76	0.3	0.60										
		6-12	100.1	11.7	230+	2.15	442+														
PD247	6	0-6	101.1	17.3	151	--	--	--	--	--	--	--	16.2	92	--	--					1
		6-12	105.2	16.5	200+	0.55	117+					--	17.1	153+	0.35	54+					
PD248	7	0-6	99.7	18.9	184+	--	--	0.8	0.68	0.8	0.47	--	19.1	188+	--	--					0
		6-12	104.6	15.6	344+	0.86	332+					--	15.1	406+	0.29	118+					
PD249	7	0-6	95.8	17.5	211+	--	--	0.6	0.84	0.9	0.32	--	18.8	185	--	--					18
		6-12	97.4	15.1	504+	1.09	547+					--	16.6	388+	0.80	310+					
TS9	6	0-6	97.5	12.4	87	--	--	0.8	0.58	0.4	0.60										
		6-12	99.1	12.2	160+	1.59	242+														
TS10	4	0-6	89.5	13.9	95	--	--	1.1	0.54	0.6	0.47										
		6-12	93.2	13.4	101	1.87	193														
TS11	4	0-6	102.6	16.2	180	--	--	0.7	0.49	0.6	0.47	--	17.0	187	--	--	0.7	0.49	0.6	0.47	4
		6-12	103.5	16.1	240	0.78	190					--	16.8	246	0.42	103					
TS12	6	0-6	96.8	19.3	182	--	--	2.2	0.44	0.2	0.50										
		6-12	97.2	20.4	178	0.62	102														
TS13	7	0-6	91.1	19.5	191+	--	--	2.2	0.64	0.5	0.54										
		6-12	92.4	20.1	157	0.69	115														
TS14	6	0-6	92.8	22.3	215+	--	--	0.0	1.15	0.0	0.58	--	27.2	68	--	--	0.0	1.15	0.0	0.58	3
		6-12	91.0	26.2	206+	0.98	209+					--	28.1	115	0.76	87					
TS56A	4	0-6	91.9	19.7	118	--	--	--	--	--	--	95.4	19.7	94	--	--					6
		6-12	95.4	20.0	214+	0.90	197+					97.6	20.4	172	0.78	134					
TS56B	3	0-6	98.0	21.3	86	--	--	--	--	--	--	--	21.6	82	--	--					0
		6-12	99.3	21.9	117	0.78	91					--	22.0	101	0.76	77					
TS56D	3	0-6	99.5	17.4	131	--	--	--	--	--	--	98.2	17.3	142	--	--					20
		6-12	93.0	21.1	123	0.74	91					92.3	20.7	116	0.73	85					
Nakhon Sawan Area																						
PD251	8	0-6	81.2	21.8	232+	--	--	2.2	0.52	3.0	0.55										
		6-12	89.3	21.7	362+	1.12	366+														
TS15	9	0-6	74.9	26.2	112+	--	--	3.7	0.43	1.5	0.65	--	25.9	66	--	--					0
		6-12	83.0	25.2	229+	1.09	246+					--	25.4	122	0.88	107					

(Continued)

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

Table A4 (Continued)

Section A. Site Data									Section B. Soil Data											
Site No.	Location: Map Sheet	Location: Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %: Sand	Silt	Clay	Type	By Wt % Fines	USCS Atterberg Limits: LL	PL	PI	Type	Organic Content %	Specific Gravity
TS16	5058III	171364	Low	Bottomland depression	1	Low scrub savanna	Cultivated	0-6	10	34	56	C	96	64	32	32	MH	2.35	--
								6-12	5	33	62	C	98	81	35	46	CH	1.88	2.70
TS17	5057IV	206249	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6	44	34	22	L	67	40	20	20	CL	2.87	2.67
								6-12	41	33	26	L	68	43	24	19	CL	2.35	--
TS18	5057IV	207239	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	62	29	9	SL	54	20	16	4	CL-ML	0.95	--
								6-12	59	27	14	SL	53	19	14	5	CL-ML	0.62	--
TS19	5057III	252102	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	59	28	13	SL	47	19	11	8	SC	0.95	--
								6-12	49	33	18	L	57	24	12	12	CL	0.70	2.64
TS20	5057III	327103	High	Terrace flat	3	Short-grass prairie	Cultivated (idle)	0-6	17	43	40	SiC	86	67	31	36	CH	3.54	--
								6-12	16	41	43	SiC	89	68	29	39	CH	2.75	2.69
							Lop Buri Area												
PD252	5155II	937287	Low	Bottomland flat	0	Low scrub savanna	Cultivated	0-6	12	50	38	SiCL	95	78	45	33	MH	3.27	--
								6-12	11	47	42	SiC	93	88	53	35	CH	3.00	2.69
PD253	5155II	943282	High	Terrace flat	1	Short-grass prairie	Lawn	0-6	12	49	39	SiCL	93	69	30	39	CH	3.27	--
								6-12	10	46	44	SiC	96	72	33	39	CH	2.75	2.66
PD254	5155II	951285	High	Lower slope	6	Low scrub savanna	Cultivated	0-6	12	39	49	C	88	53	30	23	MH	2.87	--
								6-12	14	51	35	SiCL	93	63	31	32	CH	2.08	2.69
PD255	5254IV	213155	Low	Bottomland flat	1	Short-grass prairie	Grazed	0-6	28	47	25	L	83	36	18	18	CL	1.65	--
								6-12	30	46	24	L	84	36	24	12	CL	1.77	2.63
PD256	5254IV	220162	Low	Terrace flat	1	Short-grass prairie	Grazed	0-6	28	38	34	CL	83	58	25	33	CH	2.23	--
								6-12	27	37	36	CL	84	62	26	36	CH	1.77	2.71
TS21	5155IV	771468	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	30	36	34	CL	78	53	18	35	CH	1.25	--
								6-12	30	33	37	CL	79	55	18	37	CH	1.05	2.70
TS22	5155IV	794479	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	36	33	31	CL	74	49	20	29	CL	1.05	--
								6-12	34	34	32	CL	78	47	17	30	CL	1.05	--
TS23	5155IV	808487	Low	Bottomland flat	1	Low scrub savanna	Cultivated (idle)	0-6	31	41	28	CL	79	42	19	23	CL	1.55	--
								6-12	27	39	34	CL	83	51	18	33	CH	1.15	2.68
TS24	5155IV	834489	Low	Lower slope	3	Savanna	Undisturbed	0-6	43	32	25	L	70	37	21	16	CL	2.60	--
								6-12	41	28	31	CL	70	41	23	18	CL	1.65	2.82
TS25	5154I	071039	Low	Terrace flat	0	Short-grass prairie	Cultivated	0-6	9	84	7	Si	96	17	17	0	ML	0.85	--
								6-12	12	78	10	SiL	94	16	16	0	ML	0.62	2.60
TS25A	5154II	084012	Low	Terrace flat	0	Savanna	Cultivated (idle)	0-6	30	58	12	SiL	78	27	22	5	ML	1.05	--
								6-12	29	51	20	SiL	80	21	19	2	ML	0.62	--
TS25B	5154II	084013	Low	Terrace flat	0	Tall scrub savanna	Grazed	0-6	42	42	16	L	66	29	22	7	ML	1.05	--
								6-12	43	41	16	L	44	23	17	6	SM-SC	0.62	--
TS26	5153I	912764	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	16	49	35	SiCL	80	75	38	37	MH	3.20	--
								6-12	13	49	38	SiCL	97	74	31	43	CH	2.08	--
							Bangkok Area												
PD244	5152III	740113	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6	6	41	53	SiC	99	72	27	45	CH	1.98	--
								6-12	6	37	57	C	99	67	23	44	CH	1.55	2.68
PD245	5152IV	711319	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6	11	41	48	SiC	98	67	29	38	CH	3.00	2.68
								6-12	11	41	48	SiC	98	66	27	39	CH	1.65	--
TS8	5052II	592229	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	13	43	44	SiC	94	65	29	36	CH	2.08	--
								6-12	12	41	47	SiC	94	66	29	37	CH	1.45	2.71
							Pran Buri Area												
PD257	4948I	040904	High	Terrace flat	1	Short-grass prairie	Lawn	0-6	72	23	5	SL	37	--	--	NP	SM	0.70	--
								6-12	75	19	6	SL	33	--	--	NP	SM	0.55	--
TS29	4948II	062776	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	68	21	11	SL	45	18	13	5	SM-SC	0.78	2.63
								6-12	54	17	29	SCL	49	28	11	17	SC	0.55	--
TS30	4948II	053772	High	Terrace slope	3	Tall scrub savanna	Cultivated	0-6	64	24	12	SL	51	18	15	3	ML	1.05	--
								6-12	62	24	12	SL	48	17	13	4	SM-SC	0.62	2.67
TS31	4948II	951732	High	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6	44	45	11	L	70	21	15	6	CL-ML	1.33	--
								6-12	38	44	18	L	73	20	13	7	CL-ML	0.78	--
TS32	4948II	944730	High	Terrace flat	1	Tall-grass prairie	Undisturbed	0-6	48	40	12	L	64	18	14	4	CL-ML	0.95	--
								6-12	43	43	14	L	66	17	12	5	CL-ML	0.78	--
TS33	4948II	925730	High	Terrace flat	0	Low scrub	Undisturbed	0-6	27	55	18	SiL	85	28	19	9	CL	1.65	--
								6-12	30	46	24	L	86	23	16	7	CL-ML	0.95	--
TS34	4948II	967679	High	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6	39	43	18	L	76	26	15	9	CL	1.65	--
								6-12	34	39	27	L	80	27	14	13	CL	1.15	2.65

(Continued)

Table A4 (Continued)

Section C. Trafficability Data																						
Wet-Season Condition												High-Moisture Condition										
								Sheargraph									Sheargraph					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
TS16	6	0-6	84.7	32.8	89	--	--	0.7	0.70	1.3	0.43	--	37.5	52	--	--					22
		6-12	82.1	37.4	121	1.15	126					--	37.3	96	1.05	101					
TS17	8	0-6	94.9	21.3	144+	--	--	3.5	0.45	1.3	0.51										
		6-12	97.5	22.0	226+	1.10	242+														
TS18	8	0-6	91.1	13.5	453+	--	--	2.2	0.43	1.4	0.40	--	16.0	378+	--	--					0
		6-12	86.2	7.2	746+	--	--					--	7.1	722+	--	--					
TS19	4	0-6	112.1	14.0	108	--	--	3.0	0.43	2.0	0.45	--	15.0	62	--	--					0
		6-12	109.9	18.1	125	0.63	79					--	19.2	105	0.53	56					
TS20	8	0-6	76.8	28.6	186+	--	--	3.7	0.49	1.9	0.38										
		6-12	74.3	28.7	271+	1.20	285+														
Lop Buri Area																					
PD252	13	0-6	63.1	38.6	125	--	--	2.7	0.28	0.9	0.65	--	39.0	117	--	--					48
		6-12	66.8	38.2	203	1.12	228					--	41.9	154	1.06	163					
PD253	13	0-6	72.1	35.4	126	--	--	5.4	0.28	0.6	0.30										
		6-12	76.7	33.5	233+	1.12	263+														
PD254	13	0-6	77.0	30.6	97	--	--	3.0	0.32	1.6	0.34										
		6-12	88.6	31.5	252+	1.18	279+														
PD255	14	0-6	87.5	26.5	100	--	--	3.8	0.97	0.8	0.70	--	29.1	70	--	--					3
		6-12	95.1	24.0	124	0.94	117					--	27.2	88	0.92	81					
PD256	14	0-6	87.7	28.1	136	--	--	2.6	0.84	0.9	0.68	--	30.5	96	--	--					24
		6-12	90.8	26.3	168	1.07	180					--	27.3	108	1.01	109					
TS21	9	0-6	95.0	25.1	100	--	--	2.6	0.58	0.6	0.50	--	27.9	55	--	--					29
		6-12	97.1	24.2	106	1.08	115					--	26.6	61	1.22	74					
TS22	7	0-6	95.0	27.0	66	--	--	4.3	0.47	2.1	0.45	--	28.4	65	--	--					20
		6-12	94.9	25.0	121+	0.92	108+					--	25.8	91	0.68	62					
TS23	10	0-6	90.8	28.8	74	--	--	3.1	0.32	0.7	0.48	--	38.5	51	--	--	1.8	0.02	0.1	0.18	9
		6-12	90.9	25.3	225+	1.07	245+					--	25.4	187+	0.59	110+					
TS24	9	0-6	87.7	26.0	146+	--	--	1.8	0.54	1.0	0.49	--	26.6	111	--	--	0.7	0.36	1.3	0.40	0
		6-12	85.9	26.0	236+	1.16	278+					--	27.6	159	0.99	157					
TS25	10	0-6	82.4	16.3	622+	--	--	--	--	--	--	--	17.7	614+	--	--					0
		6-12	104.3	12.2	750+	--	--					--	13.0	750+	--	--					
TS25A	5	0-6	91.8	24.6	288+	--	--	--	--	--	--										
		6-12	98.0	20.5	395+	0.37	137+														
TS25B	5	0-6	98.6	22.5	223	--	--	--	--	--	--	--	23.5	119	--	--					0
		6-12	96.5	21.5	265+	0.54	141+					--	21.7	152	0.54	82					
TS26	11	0-6	64.1	51.8	121	--	--	--	--	--	--	--	58.4	116	--	--					2
		6-12	78.7	39.7	147	0.84	125					--	44.8	139	0.50	70					
Bangkok Area																					
PD244	15	0-6	76.0	39.5	47	--	--	--	--	--	--	--	41.7	32	--	--					0
		6-12	86.4	35.0	72	0.97	70					--	37.4	57	0.80	46					
PD245	12	0-6	78.8	34.8	103	--	--	--	--	--	--	--	38.2	55	--	--					0
		6-12	82.6	34.2	114	0.99	105					--	35.1	61	0.75	46					
TS8	17	0-6	74.6	44.3	63	--	--	3.5	0.18	1.4	0.19	--	52.2	47	--	--					0
		6-12	72.7	49.1	64	0.93	59					--	56.8	55	0.64	35					
Pran Buri Area																					
PD257	3	0-6	104.0	12.9	203+	--	--	2.5	0.54	0.0	0.63										
		6-12	101.4	10.1	248+	1.57	257														
TS29	11	0-6	109.5	14.6	308	--	--	2.8	0.45	0.1	0.40	113.8	16.6	249	--	--					0
		6-12	112.7	16.5	263	0.86	227					113.6	16.8	174	0.74	129					
TS30	4	0-6	101.0	15.4	72	--	--	--	--	--	--										
		6-12	112.0	13.6	144+	1.18	188+														
TS31	5	0-6	95.6	17.2	77	--	--	3.0	0.73	0.7	0.56										
		6-12	99.0	16.8	70+	0.72	55+														
TS32	6	0-6	97.4	15.2	81	--	--	3.2	0.44	1.8	0.60										
		6-12	101.2	13.2	90+	0.92	110+														
TS33	5	0-6	94.7	20.8	132	--	--	4.4	0.46	1.7	0.54										
		6-12	103.8	16.9	148+	0.76	117+														
TS34	4	0-6	95.5	18.8	41	--	--	2.4	0.63	1.4	0.63										
		6-12	97.8	17.7	66	1.18	95														

(Continued)

Table A4 (Continued)

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
													By Wt %	Atterberg Limits				
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
							Chanthaburi Area												
PD258	5448IV	857957	High	Upper slope	2	Short-grass prairie	Cultivated (idle)	0-6	25	36	39	CL	82	50	29	21	MH	3.27	--
								6-12	23	36	41	C	83	50	28	22	CH	1.98	2.67
PD259	5448IV	805932	High	Upper slope	2	Short-grass prairie	Cultivated	0-6	28	47	25	L	90	53	40	13	MH	3.00	2.88
								6-12	24	47	29	CL	90	56	42	14	MH	2.75	2.88
TS35	5149II	059028	High	Terrace flat	0	Forest	Cultivated	0-6	51	40	9	L	48	16	14	2	SM	0.70	--
								6-12	61	25	14	SL	51	15	11	4	CL-ML	0.55	--
TS36	5149II	060009	High	Terrace slope	4	Tall scrub woodland	Cultivated	0-6	47	35	18	L	63	25	15	10	CL	1.55	--
								6-12	41	37	22	L	67	27	16	11	CL	0.78	2.69
TS37	5249III	319085	High	Lower slope	2	Short-grass prairie	Lawn	0-6	63	11	26	SCL	41	25	13	12	SC	1.45	--
								6-12	61	9	30	SCL	44	28	14	14	SC	1.33	2.61
TS38	5249III	385046	Low	Bottomland flat	2	Short-grass prairie	Cultivated (grazed)	0-6	16	43	41	SiC	93	107	75	32	MH	2.60	2.29
								6-12	19	46	35	SiCL	89	96	68	28	MH	12.35	2.40
TS39	5249II	484093	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6	76	20	4	LS	35	--	--	NP	SM	0.86	--
								6-12	68	19	13	SL	43	13	13	0	SM	0.46	2.62
TS40	5448IV	881961	Low	Bottomland flat	0	Short-grass prairie	Lawn	0-6	7	52	41	SiC	92	71	46	25	MH	4.15	--
								6-12	8	51	41	SiC	92	66	38	28	MH	3.62	2.57
TS41	5448IV	929843	Low	Terrace flat	2	Woodland	Cultivated	0-6	71	9	20	SL	34	29	20	9	SC	1.77	--
								6-12	66	11	23	SCL	39	25	14	11	SC	1.25	2.60
TS42	5448IV	934846	High	Lower slope	3	Tall scrub savanna	Cultivated	0-6	58	16	26	SCL	43	43	25	18	SC	3.41	--
								6-12	57	14	29	SCL	43	42	23	19	SC	2.87	2.61
							Hat Yai Area												
PD260	5132III	657756	High	Terrace flat	1	Woodland	Cultivated	0-6	61	31	8	SL	51	22	18	4	CL-ML	1.45	--
								6-12	65	22	13	SL	51	19	15	4	CL-ML	0.78	2.64
TS43	5032III	354874	Low	Natural levee	1	Low scrub	Cultivated	0-6	56	28	16	SL	58	33	22	11	CL	2.23	--
								6-12	52	30	18	SL	59	31	20	11	CL	1.15	--
TS44	5032II	430760	High	Lower slope	5	Forest	Undisturbed	0-6	53	38	9	SL	55	21	18	3	ML	1.77	--
								6-12	50	34	16	GL	28	26	17	9	GC	0.78	2.96
TS45	5132III	667752	High	Lower slope	8	Woodland	Cultivated	0-6	58	25	17	SL	49	27	18	9	SC	1.98	--
								6-12	53	26	21	SCL	46	29	18	11	SC	1.65	--
TS46	5132III	659761	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6	38	48	14	L	74	34	24	10	ML	2.35	--
								6-12	43	43	14	L	70	21	16	5	CL-ML	0.95	2.63
TS47	5132III	702814	High	Lower slope	2	Forest	Cultivated	0-6	35	38	27	CL	75	58	32	26	MH	3.96	--
								6-12	33	32	35	CL	62	58	33	25	MH	1.15	2.87
TS48	5132III	706814	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6	32	54	14	SiL	79	23	15	8	CL	1.33	--
								6-12	29	47	24	L	80	26	14	12	CL	0.70	2.67
TS49	5132III	785925	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6	25	47	28	CL	82	103	68	35	MH	14.35	--
								6-12	19	40	41	C	88	70	35	35	MH	4.90	--
TS50	5132IV	770946	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6	95	4	1	S	7	--	--	NP	SP-SM	2.75	--
								6-12	93	4	3	S	10	--	--	NP	SP-SM	3.54	2.57

(Continued)

Table A4 (Concluded)

Section C. Trafficability Data																					
			Wet-Season Condition									High-Moisture Condition									
								Sheargraph									Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
Chanthaburi Area																					
PD258	13	0-6	86.4	30.9	160	--	--	--	--	--	--										
		6-12	84.2	29.4	206	1.06	220														
PD259	12	0-6	62.2	43.4	78	--	--	3.7	0.70	0.0	0.65										
		6-12	63.4	43.5	132	1.34	181														
TS35	8	0-6	106.8	12.7	77	--	--	2.1	0.65	0.2	0.56										
		6-12	110.4	12.4	103	0.69	78														
TS36	8	0-6	102.7	16.2	126	--	--	3.9	0.65	0.5	0.60										
		6-12	101.6	15.2	190+	0.88	166+														
TS37	8	0-6	102.8	12.4	235+	--	--	4.2	0.23	1.5	0.36										
		6-12	101.8	13.7	345+	1.23	460+														
TS38	8	0-6	46.9	89.8	120	--	--	--	--	--	--	--	93.7	118	--	--					0
		6-12	45.3	114.2	120	0.48	56					--	105.4	113	0.30	34					
TS39	6	0-6	102.6	18.6	146	--	--	--	--	--	--	--	21.7	85	--	--					
		6-12	116.6	13.7	292+	0.65	193+					--	15.0	183+	0.48	88+					
TS40	10	0-6	67.9	50.0	126	--	--	--	--	--	--	68.6	49.9	94	--	--					10
		6-12	67.5	50.9	126	0.74	94					66.2	53.6	108	0.54	58					
TS41	10	0-6	92.2	19.3	98	--	--	--	--	--	--	--	24.9	73	--	--					16
		6-12	98.8	18.9	160+	0.94	153+					--	23.3	111	0.52	58					
TS42	10	0-6	69.3	22.0	121	--	--	--	--	--	--										
		6-12	71.8	21.7	199+	1.02	204+														
Hat Yai Area																					
PD260	4	0-6	93.1	15.4	110	--	--	1.1	0.54	0.4	0.56										
		6-12	98.7	14.5	166	1.44	250														
TS43	6	0-6	93.0	22.4	101	--	--	2.3	0.47	1.6	0.32	89.0									
		6-12	98.4	20.1	117	0.88	106					95.8									
TS44	7	0-6	98.8	17.0	326+	--	--	2.4	0.58	0.6	0.58										
		6-12	104.8	14.0	617+	0.45	253+														
TS45	4	0-6	97.2	16.4	264+	--	--	2.0	0.59	0.3	0.64										
		6-12	98.6	15.2	491+	1.32	580+														
TS46	16	0-6	89.3	32.0	82	--	--	--	--	--	--	80.3	41.4	62	--	--					0
		6-12	112.6	17.8	177+	0.86	149+					115.4	17.7	140+	0.46	64+					
TS47	10	0-6	81.9	32.8	137	--	--	2.5	0.67	1.5	0.50										
		6-12	87.8	28.6	230+	1.22	291+														
TS48	14	0-6	109.1	21.5	176+	--	--	3.2	0.38	3.1	0.60	10.[illegible]	20.9	110	--	--					0
		6-12	114.8	16.4	292+	0.71	281+					112.[illegible]	16.6	134	0.53	71					
TS49	13	0-6	48.2	82.6	100	--	--	3.4	0.38	0.0	0.49	--	73.5	88	--	--					16
		6-12	74.5	51.3	116	0.82	96					--	46.0	87	0.67	58					
TS50	7	0-6	82.8	18.5	100	--	--	2.4	0.47	0.4	0.53	79.2	16.8	78	--	--					22
		6-12	83.2	22.4	142	1.87	264					80.9	26.2	125	1.61	201					

Table A5

CRREL Airphoto Pattern Study

Summary of Site, Soil, and Trafficability Data

Section A. Site Data								Section B. Soil Data											
	Location								USDA Texture by Wt, %				USCS						
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	Atterberg Limits LL	PL	PI	Type	Organic Content %	Specific Gravity
							Lop Buri Area												
1	5154I	946123	Low	Bottomland flat	--	--	Cultivated	0-6	9	65	26	SiL	94	44	21	23	CL	0.92	2.68
								6-12	9	66	25	SiL	93	57	22	35	CH	0.74	2.65
2	5153IV	820785	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	5	67	28	SiCL	97	57	29	28	CH	2.41	2.65
								6-12	7	67	26	SiL	95	69	25	44	CH	0.97	2.74
4	5155II	992256	High	Upland flat	--	--	Cultivated	0-6	48	39	13	L	60	48	25	23	CL	3.41	2.69
								6-12	48	39	13	L	60	48	25	23	CL	3.41	2.69
5	5155II	923265	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	21	69	10	SiL	88	90	40	50	MH	2.67	2.59
								6-12	18	71	11	SiL	87	70	27	43	CH	2.22	2.77
6	5154IV	868128	Low	Natural levee	--	--	Cultivated	0-6	10	66	24	SiL	95	62	22	40	CH	1.55	2.63
								6-12	11	64	25	SiL	93	59	28	31	CH	0.82	2.70
7	5155II	960348	Low	Bottomland flat	--	--	Cultivated	0-6	21	69	10	SiL	88	79	37	42	MH	2.35	2.74
								6-12	11	81	8	Si	94	84	30	54	CH	1.82	2.73
11	5155III	618387	Low	Natural levee	--	--	Cultivated	0-6	10	63	27	SiL	94	51	29	22	MH	1.67	2.69
								6-12	17	63	20	SiL	89	46	24	22	CL	1.00	2.70
14	5154II	139879	Low	Bottomland flat	--	--	Cultivated	0-6	6	81	13	SiL	96	28	23	5	ML	1.33	2.60
								6-12	3	79	18	SiL	98	28	21	7	CL-ML	--	2.60
17	5154I	023087	Low	Natural levee	--	--	Cultivated	0-6	23	67	10	SiL	83	38	28	10	ML	1.15	2.71
								6-12	25	62	13	SiL	81	47	20	27	CL	0.51	2.70
19	5154I	045089	Low	Terrace flat	--	--	Cultivated	0-6	14	66	20	SiL	90	52	25	27	CH	1.00	2.67
								6-12	13	65	22	SiL	92	54	24	30	CH	0.70	2.67
20	5154I	048093	Low	Natural levee	--	--	Cultivated	0-6	20	67	13	SiL	85	35	22	13	CL	1.10	2.72
								6-12	7	65	28	SiCL	94	57	22	35	CH	0.74	2.64
21	5154I	021130	Low	Bottomland flat	--	--	Cultivated	0-6	10	80	10	Si	94	40	16	24	CL	1.15	2.60
								6-12	44	50	6	SiL	59	32	22	10	CL	0.51	2.59
23	5154I	053164	High	Lower slope	--	--	Cultivated	0-6	19	70	11	SiL	87	45	16	29	CL	1.15	2.62
								6-12	17	66	17	SiL	88	51	21	30	CH	0.59	2.71
27	5154III	623946	Low	Natural levee	--	--	Cultivated	0-6	14	68	18	SiL	91	48	25	23	CL	1.10	2.74
								6-12	13	71	16	SiL	92	39	24	15	CL	1.05	2.73
28	5154III	657860	Low	Bottomland flat	--	--	Undisturbed	0-6	9	66	25	SiL	95	58	26	32	CH	2.94	2.72
								6-12	13	62	25	SiL	92	53	27	26	CH	1.45	2.76
30	5153I	891751	Low	Bottomland flat	--	--	Cultivated	0-6	35	44	21	L	70	63	24	39	CH	3.82	2.68
								6-12	25	50	25	SiL	79	69	35	34	MH	2.16	2.66
31	5153I	948788	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	16	62	22	SiL	89	68	31	37	CH	1.65	2.71
								6-12	17	56	27	SiL	87	62	27	35	CH	0.87	2.69
33	5153I	963793	Low	Bottomland flat	--	--	Cultivated	0-6	18	54	28	SiCL	87	73	44	29	MH	4.70	2.58
								6-12	22	47	31	CL	83	79	39	40	MH	4.20	2.59
37	5154II	040917	Low	Terrace flat	--	--	Cultivated	0-6	38	57	5	SiL	74	17	16	1	ML	0.70	2.68
								6-12	41	43	16	L	70	25	15	10	CL	0.63	2.65
39	5154II	071927	Low	Lower slope	--	--	Cultivated	0-6	33	66	1	SiL	79	--	--	NP	ML	0.63	2.65
								6-12	29	70	1	SiL	81	19	19	0	ML	0.36	2.60
41	5154II	081873	Low	Bottomland flat	--	--	--	0-6	18	55	27	SiL	87	40	24	16	CL	1.20	2.68
								6-12	33	52	15	SiL	78	20	17	3	ML	0.74	2.64
44	5154II	908952	Low	Natural levee	--	--	Cultivated	0-6	14	55	31	SiCL	90	56	27	29	CH	1.98	2.61
								6-12	15	50	35	SiCL	89	63	40	23	MH	1.44	2.61
46	5154II	046963	Low	Natural levee	--	--	Cultivated	0-6	10	67	23	SiL	94	44	25	19	CL	0.87	2.64
								6-12	6	60	34	SiCL	96	61	35	26	MH	0.78	2.66
47	5154II	052974	High	Lower slope	--	--	--	0-6	69	29	2	SL	39	--	--	NP	SM	0.67	2.60
								6-12	75	24	1	LS	32	--	--	NP	SM	--	2.65
48	5154II	069035	Low	Bottomland flat	--	--	Cultivated	0-6	15	84	1	Si	90	19	18	1	ML	0.70	2.60
								6-12	20	72	8	SiL	85	17	16	1	ML	0.74	2.60
49	5154I	123124	Low	Terrace flat	--	--	Cultivated	0-6	59	32	9	SL	58	27	26	1	ML	1.10	2.61
								6-12	58	35	7	SL	58	21	--	NP	ML	--	2.65
50	5154I	116087	Low	Natural levee	--	--	Cultivated	0-6	18	58	24	SiL	86	39	21	18	CL	--	2.70
								6-12	18	50	32	SiCL	84	54	22	32	CH	--	2.76
54	5154I	011092	Low	Natural levee	--	--	Cultivated	0-6	18	50	32	SiCL	86	39	21	18	CL	--	2.65
								6-12	5	61	34	SiCL	96	49	23	26	CL	--	2.69
56	5154I	972100	Low	Terrace flat	--	--	Cultivated	0-6	21	67	12	SiL	86	27	21	6	CL-ML	--	2.62
								6-12	23	77	0	SiL	83	40	18	22	CL	--	2.69

(Continued)

* G = gravelly; VG = very gravelly.

Table A5 (Continued)

Section C. Trafficability Data																					
	Wet-Season Condition											High-Moisture Condition									
								Sheargraph**								Sheargraph**					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
												Lop Buri Area									
1	1	0-6	--	26.2	92	--	--														
		6-12	--	33.6	112	--	--														
2	1	0-6	--	21.8	112	--	--														
		6-12	--	28.0	127	--	--														
4	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
5	1	0-6	--	38.2	82	--	--														
		6-12	--	33.7	82	--	--														
6	1	0-6	--	34.0	45	--	--														
		6-12	--	30.6	98	--	--														
7	1	0-6	--	40.8	120	--	--														
		6-12	--	42.4	144	--	--														
11	1	0-6	--	--	137+	--	--														
		6-12	--	18.6	221+	--	--														
14	1	0-6	--	27.0	142	--	--														
		6-12	--	26.5	156+	--	--														
17	1	0-6	--	21.4	112	--	--														
		6-12	--	24.6	66	--	--														
19	1	0-6	--	29.6	42	--	--														
		6-12	--	24.5	102	0.93	95														
20	1	0-6	--	28.8	37	--	--														
		6-12	--	28.[illegible]	101	0.43	43														
21	1	0-6	--	25.9	32	--	--														
		6-12	--	29.2	224+	0.19	43+														
23	1	0-6	--	32.2	66	--	--														
		6-12	--	27.8	71	0.73	52														
27	1	0-6	--	27.3	189+	--	--														
		6-12	--	25.4	300+	--	--														
28	1	0-6	--	26.5	103	--	--														
		6-12	--	20.2	286+	--	--														
30	1	0-6	--	49.0	45	--	--														
		6-12	--	35.5	116	0.49	57														
31	1	0-6	--	3[illegible].0	82	--	--														
		6-12	--	34.6	91	0.83	76														
33	1	0-6	--	44.9	85	--	--														
		6-12	--	41.6	150	0.99	149														
37	1	0-6	--	18.6	152	--	--														
		6-12	--	21.2	96	1.00	96														
39	1	0-6	--	16.8	359+	--	--														
		6-12	--	15.6	750+	--	--														
41	1	0-6	--	20.5	142	--	--								88						
		6-12	--	21.0	185+	0.63	117+								136	0.63	86				
44	1	0-6	--	25.8	--	--	--														
		6-12	--	37.2	--	--	--														
46	1	0-6	--	21.0	85	--	--														
		6-12	--	31.9	85	1.02	87														
47	1	0-6	--	18.8	547+	--	--														
		6-12	--	13.8	750+	--	--														
48	1	0-6	--	18.8	487+	--	--														
		6-12	--	13.8	750+	--	--														
49	1	0-6	--	22.0	103+	--	--								82						+3.0
		6-12	--	20.6	194+	0.46	89+								135+	0.46	62+				
50	1	0-6	--	24.3	104	--	--								61						+2.0
		6-12	--	25.1	59	1.08	64								49	1.08	53				
54	1	0-6	--	24.5	93	--	--								78						+2.5
		6-12	--	27.0	105	0.99	104								89	0.99	88				
56	1	0-6	--	21.4	114	--	--														
		6-12	--	22.0	148	1.00	148														

(Continued)

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

Table A5 (Continued)

Section A. [illegible] Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
													By Wt %	Atterberg Limits					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Organic Content %	Specific Gravity
59	5154IV	881164	Low	Upland depression	--	--	Cultivated	0-6	11	68	21	SiL	93	80	30	50	CH	--	2.79
								6-12	9	69	22	SiL	95	88	30	58	CH	--	2.78
60	5154IV	881164	High	Upland flat	--	--	Cultivated	0-6	22	73	5	SiL	84	61	22	39	CH	--	2.69
								6-12	17	73	10	SiL	87	62	26	36	CH	--	2.57
62	5154I	903210	High	Upland flat	--	--	Cultivated	0-6	15	76	9	SiL	87	62	30	32	CH	--	2.67
								6-12	17	76	7	SiL	83	66	30	36	CH	--	2.79
63	5155II	856240	Low	Bottomland flat	--	--	Cultivated	0-6	11	78	11	SiL	94	72	32	40	CH	--	2.66
								6-12	16	74	10	SiL	91	73	31	42	CH	--	2.79
64	5155II	895262	Low	Bottomland flat	--	--	Cultivated	0-6	14	86	0	Si	90	58	28	30	CH	--	2.79
								6-12	21	67	12	SiL	86	58	26	32	CH	--	2.82
65	5155III	791363	Low	Bottomland flat	--	--	--	0-6	22	63	15	SiL	85	61	24	37	CH	1.25	2.76
								6-12	18	69	13	SiL	87	63	24	39	CH	--	2.70
66	5155II	028252	High	Terrace flat	--	--	Cultivated	0-6	37	50	13	SiL	73	39	21	18	CL	--	2.74
								6-12	40	49	11	L	67	40	21	19	CL	--	2.72
67	5155II	961276	High	Terrace slope	--	--	--	0-6	29	51	20	SiL	79	60	27	33	CH	--	2.62
								6-12	45	40	15	L	63	59	25	34	CH	--	2.71
68	5155II	945303	Low	Bottomland flat	--	--	Cultivated	0-6	17	76	7	SiL	90	52	24	28	CH	--	2.67
								6-12	14	80	6	Si	91	52	24	28	CH	--	2.69
70	5155III	765348	Low	Bottomland flat	--	--	Grazed	0-6	17	69	14	SiL	90	72	32	40	CH	--	2.70
								6-12	15	72	13	SiL	92	74	33	41	CH	--	2.66
71	5155III	773402	High	Terrace flat	--	--	--	0-6	25	72	3	SiL	72	40	18	22	CL	--	2.68
								6-12	29	69	2	GSiL	58	38	20	18	CL	--	2.68
72	5155III	837334	High	Lower slope	--	--	Cultivated (idle)	0-6	33	56	11	SiL	77	58	24	34	CH	--	2.68
								6-12	34	56	10	SiL	76	57	28	29	CH	--	2.67
73	5155III	819380	Low	Bottomland flat	--	--	Cultivated (grazed)	0-6	33	60	7	SiL	75	43	19	24	CL	--	2.66
								6-12	34	61	5	SiL	75	44	20	24	CL	--	2.67
74	5155III	773389	Low	Bottomland flat	--	--	Cultivated	0-6	19	76	5	SiL	86	38	16	22	CL	--	2.66
								6-12	16	76	8	SiL	88	46	16	30	CL	--	2.69
75	5155IV	737409	Low	Bottomland flat	--	--	--	0-6	20	64	16	SiL	86	78	27	51	CH	--	2.54
								6-12	27	56	17	SiL	78	63	23	40	CH	--	2.58
77	5155IV	764440	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	25	63	12	SiL	82	44	16	28	CL	--	2.59
								6-12	22	67	11	SiL	83	48	17	31	CL	--	2.61
79	5155IV	838501	High	Lower slope	--	--	--	0-6	72	27	1	LS	36	22	16	6	SM-SC	--	2.71
								6-12	58	38	4	SL	51	27	15	12	CL	--	2.68
81	5155IV	788475	Low	Bottomland flat	--	--	--	0-6	28	63	9	SiL	80	46	22	24	CL	--	2.67
								6-12	24	68	8	SiL	85	51	20	31	CH	--	2.69
83	5155IV	782570	High	Lower slope	--	--	Undisturbed	0-6	60	31	9	SL	42	32	22	10	SC	--	3.12
								6-12	70	22	8	GSL	27	31	22	9	SC	--	3.39
84	5155IV	773558	Low	Bottomland flat	--	--	--	0-6	57	40	3	SL	50	29	16	13	SC	--	2.69
								6-12	54	39	7	SL	53	33	16	17	CL	--	2.67
86	5154III	732893	Low	Natural levee	--	--	Cultivated	0-6	5	66	29	SiCL	97	58	26	32	CH	--	2.59
								6-12	5	67	28	SiCL	97	55	25	30	CH	--	2.60
87	5154III	717860	Low	Natural levee	--	--	Cultivated	0-6	9	66	25	SiL	95	55	25	30	CH	--	2.59
								6-12	8	69	23	SiL	96	54	25	29	CH	--	2.59
88	5154I	908135	Low	Bottomland flat	--	--	Cultivated	0-6	19	54	27	SiL	87	76	43	33	CH	--	2.66
								6-12	22	60	18	SiL	87	77	38	44	CH	--	2.59
89	5154II	025884		Terrace flat	--	--	Cultivated	0-6	14	63	23	SiL	91	39	21	18	CL	--	2.62
								6-12	15	60	25	SiL	89	45	20	25	CL	--	2.60
91	5154II	038907	Low	Terrace flat	--	--	Cultivated	0-6	26	64	10	SiL	83	19	10	9	CL	--	2.59
								6-12	30	57	13	SiL	81	26	16	10	CL	--	2.60
92	5154I	107078	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	18	67	15	SiL	88	36	20	16	CL	--	2.55
								6-12	26	65	9	SiL	82	40	20	20	CL	--	2.60
93	5154I	080120	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	23	68	9	SiL	85	33	20	13	CL	--	2.62
								6-12	29	60	11	SiL	81	39	20	19	CL	-	2.72
							Chanthaburi Area												
100	5448IV	986980	Low	Bottomland flat	--	--	--	0-6	82	13	5	LS	23	--	--	NP	SM	2.16	2.64
								6-12	63	28	9	SL	41	26	16	10	SC	0.91	2.66
101	5448IV	987982	High	Upper ridge	--	--	Miscellaneous	0-6	51	27	22	GSCL	29	40	30	10	SM	1.66	2.70
								6-12	43	28	29	VGCL	29	48	31	17	SM	1.19	2.70
109	5448IV	885997	Low	Bottomland flat	--	--	--	0-6	78	20	2	LS	28	--	--	NP	SM	1.33	2.62
								6-12	78	17	5	LS	27	--	--	NP	SM	0.91	2.64

(Continued)

Table A5 (Continued)

Section C. Trafficability Data																					
			Wet-Season Condition									High-Moisture Condition									
								Sheargraph									Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
59	1	0-6	--	42.9	51	--	--														
		6-12	--	47.2	50	1.28	64														
60	1	0-6	--	30.5	93	--	--														
		6-12	--	27.5	110	1.16	128														
62	1	0-6	--	35.8	56	--	--														
		6-12	--	29.3	131+	1.20	157+														
63	1	0-6	--	44.8	27	--	--							19							+3.0
		6-12	--	39.7	49	1.33	65							42	1.33	56					
64	1	0-6	--	34.2	59	--	--							59							+3.0
		6-12	--	30.7	107	1.39	149							96	1.39	133					
65	1	0-6	--	31.6	54	--	--														
		6-12	--	27.5	79	1.06	84														
66	1	0-6	--	26.6	58	--	--														
		6-12	--	27.8	174+	1.29	225+														
67	1	0-6	--	30.5	74+	--	--														
		6-12	--	26.9	159+	1.01	161+														
68	1	0-6	--	28.3	90	--	--														
		6-12	--	24.6	137	0.86	118														
70	1	0-6	--	33.2	101	--	--														
		6-12	--	36.3	129	0.98	126														
71	1	0-6	--	20.6	84	--	--														
		6-12	--	17.2	125	0.71	89														
72	1	0-6	--	38.6	94	--	--														
		6-12	--	30.0	109	1.00	109														
73	1	0-6	--	23.0	107	--	--														
		6-12	--	20.6	92	0.80	74														
74	1	0-6	--	23.8	56	--	--														
		6-12	--	--	69	0.93	64														
75	1	0-6	--	37.0	91	--	--														
		6-12	--	31.1	116	1.09	125														
77	1	0-6	--	25.0	88	--	--														
		6-12	--	26.8	84	1.50	126														
79	1	0-6	--	18.0	217+	--	--														
		6-12	--	12.1	300+	--	--														
81	1	0-6	--	28.8	--	--	--														
		6-12	--	26.4	--	--	--														
83	1	0-6	--	23.2	225+	--	--														
		6-12	--	--	282+	--	--														
84	1	0-6	--	16.2	134	--	--														
		6-12	--	18.2	199+	0.85	169+														
86	1	0-6	--	32.4	96	--	--							94							+4.0
		6-12	--	28.6	127	1.01	128							113	1.01	114					
87	1	0-6	--	30.2	86	--	--														
		6-12	--	26.4	110	0.85	94														
88	1	0-6	--	36.2	67	--	--														
		6-12	--	34.8	76	0.94	71														
89	1	0-6	--	--	111+	--	--														
		6-12	--	--	190+	--	--														
91	1	0-6	--	--	104	--	--														
		6-12	--	--	100	--	--														
92	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
93	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
Chanthaburi Area																					
100	1	0-6	--	21.0	181	--	--														
		6-12	--	16.4	290+	--	--														
101	1	0-6	--	17.4	171+	--	--														
		6-12	--	16.4	221+	--	--														
109	1	0-6	--	15.0	240+	--	--														
		6-12	--	14.0	178+	--	--														

(Continued)

Table A5 (Continued)

Section A. Site Data								Section B. Soil Data											
Location									USDA Texture by Wt, %				USCS						
													By Wt %	Atterberg Limits				Or-	Spe-
Site No.	Map Sheet	Grid Coor-di-nates	Topog-raphy Class	Topo-graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	ganic Con-tent %	cific Grav-ity
113	5349II	128096	High	Lower slope	--	--	--	0-6	71	21	8	SL	35	19	19	0	SM	1.10	2.70
								6-12	69	21	10	SL	36	21	17	4	SM-SC	0.67	2.66
116	5448IV	770991	Low	Bottomland flat	--	--	Miscellaneous	0-6	49	35	16	L	59	60	41	19	MH	4.61	2.73
								6-12	48	38	14	L	60	52	33	19	MH	1.83	2.72
117	5448III	009778	Low	Bottomland flat	--	--	Cultivated	0-6	82	9	9	LS	21	38	22	16	SC	3.62	2.60
								6-12	77	16	7	SL	25	38	30	8	SM	2.87	2.59
118	5448III	002774	Low	Terrace flat	--	--	--	0-6	50	41	9	L	64	60	38	22	MH	--	2.65
								6-12	46	48	6	SL	66	79	44	35	MH	--	2.66
119	5448III	979767	Low	Bottomland flat	--	--	--	0-6	43	38	19	L	60	49	32	17	ML	3.07	2.60
								6-12	24	46	30	CL	78	57	25	32	CH	1.06	2.61
120	5448III	969788	Low	Tidal flat	--	--	Miscellaneous	0-6	83	14	3	LS	20	--	--	NP	SM	1.67	2.63
								6-12	92	8	0	S	10	--	--	NP	SP-SM	0.82	2.68
124	5448III	874790	Low	Bottomland flat	--	--	--	0-6	18	74	8	SiL	92	32	23	9	CL	2.41	2.60
								6-12	20	72	8	SiL	89	32	26	6	ML	4.38	2.57
126	5448III	897782	Low	Tidal flat	--	--	Miscellaneous	0-6	22	62	16	SiL	84	73	42	31	OH	8.98	2.55
								6-12	30	62	8	SiL	83	64	36	28	MH	6.27	2.58
127	5448III	895783	Low	Tidal flat	--	--	Cultivated	0-6	16	72	12	SiL	90	60	33	27	MH	5.79	2.55
								6-12	18	72	10	SiL	90	67	32	35	CH	6.20	2.61
128	5448III	895824	Low	Tidal flat	--	--	--	0-6	48	52	0	SiL	58	29	24	5	ML	0.92	2.68
								6-12	35	53	12	SiL	71	42	25	17	CL	--	2.62
129	5448III	903820	Low	Tidal flat	--	--	--	0-6	71	25	4	SL	30	47	34	13	SM	3.41	2.62
								6-12	32	46	22	L	71	54	26	28	CH	0.54	2.65
131	5448IV	908835	Low	Terrace flat	--	--	--	0-6	64	33	3	SL	38	38	21	17	SC	1.55	2.58
								6-12	65	29	6	SL	38	40	19	21	SC	0.75	2.60
132	5448IV	882959	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	55	34	11	SL	48	44	31	13	SM	2.15	2.65
								6-12	58	28	14	SL	44	43	30	13	SM	1.95	2.64
133	5448IV	866877	Low	Beach	--	--	Cultivated (idle)	0-6	84	14	2	LS	20	--	--	NP	SM	1.15	2.63
								6-12	81	17	2	LS	23	--	--	NP	SM	0.71	2.65
137	5448IV	900857	High	Terrace slope	--	--	--	0-6	56	31	13	SL	49	48	28	20	SM	2.67	2.55
								6-12	60	29	11	SL	46	49	28	21	SM	0.95	2.59
138	5448IV	902891	Low	Terrace flat	--	--	--	0-6	68	24	8	SL	34	50	30	20	SM	2.23	2.56
								6-12	71	23	6	SL	33	49	28	21	SM	2.47	2.56
139	5448IV	911931	Low	Bottomland flat	--	--	--	0-6	77	22	1	LS	25	33	21	12	SC	2.81	2.60
								6-12	80	17	3	LS	22	33	19	14	SC	3.00	2.60
140	5448IV	896943	Low	Bottomland flat	--	--	--	0-6	80	10	10	SL	21	39	25	14	SC	1.15	2.62
								6-12	83	9	8	LS	18	27	19	8	SC	0.70	2.62
141	5448IV	895962	Low	Bottomland flat	--	--	Miscellaneous	0-6	68	26	6	SL	40	21	20	1	SM	2.67	2.60
								6-12	61	31	8	SL	49	22	17	5	SM-SC	0.96	2.64
143	5448IV	804875	Low	Tidal flat	--	--	--	0-6	55	40	5	SL	56	60	38	22	OH	15.32	2.33
								6-12	41	50	9	SiL	68	80	46	34	OH	17.70	2.32
144	5448IV	811869	Low	Tidal flat	--	--	--	0-6	36	49	15	L	76	45	13	32	CL	7.25	2.49
								6-12	39	44	17	L	71	49	27	22	CL	5.72	2.50
145	5448IV	812917	Low	Tidal flat	--	--	--	0-6	50	40	10	L	65	21	21	0	ML	[illegible]	2.72
								6-12	37	48	15	L	75	26	17	9	CL	0.91	2.67
146	5448IV	757002	Low	Bottomland flat	--	--	Miscellaneous	0-6	54	38	8	SL	48	43	25	18	SC	2.23	2.60
								6-12	47	45	8	L	59	38	23	15	CL	2.03	2.51
147	5448IV	757993	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	61	35	4	SL	46	23	20	3	SM	2.06	2.59
								6-12	57	36	7	SL	47	23	--	NP	SM	1.55	2.58
148	5448IV	752981	High	Upper slope	--	--	Miscellaneous	0-6	47	37	16	L	57	54	35	19	MH	3.48	2.65
								6-12	55	36	9	SL	50	46	35	11	ML	1.45	2.66
149	5448IV	773974	High	Terrace flat	--	--	--	0-6	41	49	10	L	70	58	47	11	MH	2.54	2.92
								6-12	56	30	14	SL	53	63	47	16	MH	1.20	2.93
150	5448IV	786958	Low	Bottomland flat	--	--	--	0-6	54	36	10	SL	55	55	41	14	MH	2.74	2.86
								6-12	52	36	12	L	56	56	43	13	MH	2.42	2.87
151	5448IV	790998	High	Upper slope	--	--	--	0-6	37	51	12	SiL	72	58	44	14	MH	3.14	2.70
								6-12	51	37	12	L	59	60	29	31	CH	1.93	2.74
152	5448IV	788991	High	Terrace flat	--	--	--	0-6	55	26	19	SL	51	44	29	15	ML	3.55	2.58
								6-12	63	24	13	SL	44	41	26	15	SM	2.22	2.61
154	5448IV	783984	High	Terrace flat	--	--	--	0-6	59	32	9	SL	53	58	47	11	MH	2.35	2.75
								6-12	48	37	15	L	61	57	44	13	MH	2.11	2.78
156	5448IV	883960	High	Terrace flat	--	--	--	0-6	55	28	17	SL	51	24	19	5	CL-ML	1.77	2.64
								6-12	53	32	15	SL	53	23	16	7	CL-ML	1.39	2.65

(Continued)

Table A5 (Continued)

Section C. Trafficability Data																					
Wet-Season Condition												High-Moisture Condition									
								Sheargraph									Sheargraph				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table in.
113	1	0-6	--	18.5	84	--	--														
		6-12	--	16.6	177	--	--														
116	1	0-6	--	49.8	118	--	--														
		6-12	--	44.5	135	1.01	134														
117	1	0-6	--	21.2	59	--	--														
		6-12	--	17.2	127	--	--														
118	1	0-6	--	31.0	119	--	--														
		6-12	--	40.0	128	0.64	82														
119	1	0-6	--	73.2	--	--	--														
		6-12	--	145.0	--	--	--														
120	1	0-6	--	16.4	145	--	--														
		6-12	--	18.2	108	--	--														
124	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
126	1	0-6	--	100.2	19	--	--														
		6-12	--	77.7	37	0.52	19														
127	1	0-6	--	52.7	42	--	--														
		6-12	--	59.6	56	0.94	53														
128	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
129	1	0-6	--	24.8	176	--	--														
		6-12	--	26.6	110	0.58	64														
131	1	0-6	--	19.6	124	--	--														
		6-12	--	24.4	142	0.59	84														
132	1	0-6	--	30.2	114	--	--														
		6-12	--	23.6	203+	0.96	195+														
133	1	0-6	--	12.7	121	--	--														
		6-12	--	13.4	116	--	--														
137	1	0-6	--	26.1	119	--	--														
		6-12	--	30.3	127	0.49	62														
138	1	0-6	--	28.6	66	--	--														
		6-12	--	16.7	82	--	--														
139	1	0-6	--	23.9	52	--	--														
		6-12	--	20.0	185+	0.45	83+														
140	1	0-6	--	14.5	190	--	--														
		6-12	--	12.6	152	--	--														
141	1	0-6	--	20.9	127	--	--														
		6-12	--	19.1	74	0.46	34														
143	1	0-6	--	63.0	56	--	--														
		6-12	--	99.8	29	0.49	14														
144	1	0-6	--	32.0	124	--	--														
		6-12	--	44.0	82	0.73	60														
145	1	0-6	--	23.3	100	--	--														
		6-12	--	45.6	50	0.64	32														
146	1	0-6	--	24.6	159+	--	--														
		6-12	--	22.6	290+	0.46	133+														
147	1	0-6	--	26.4	95	--	--														
		6-12	--	17.6	170+	0.60	102+														
148	1	0-6	--	33.8	147+	--	--														
		6-12	--	26.2	300+	0.97	291+														
149	1	0-6	--	45.5	231	--	--														
		6-12	--	41.6	216	1.29	279														
150	1	0-6	--	37.0	101	--	--														
		6-12	--	34.6	104	--	--														
151	1	0-6	--	44.9	192	--	--														
		6-12	--	42.8	213	--	--														
152	1	0-6	--	25.6	109	--	--														
		6-12	--	22.2	159	1.23	196														
154	1	0-6	--	54.4	56	--	--														
		6-12	--	52.8	94	1.52	143														
156	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														

(Continued)

Table A5 (Continued)

Section A. Site Data								Section B. Soil Data												
	Location								USDA Texture by Wt, %				USCS							
													By Wt %	Atterberg Limits				Organic	Specific
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type	Fines	LL	PL	PI	Type	Content %	Gravity
157	5448IV	791948	High	Lower slope	--	--	Miscellaneous	0-6	43	45	12	L	67	57	44	13	MH	3.38	2.84
								6-12	45	44	11	L	66	61	46	15	MH	3.59	2.77
158	5448IV	784968	High	Upland flat	--	--	Miscellaneous	0-6	35	52	13	SiL	76	65	46	19	MH	3.88	2.73
								6-12	52	38	10	L	56	57	44	13	MH	2.68	2.81
159	5448IV	807970	High	Terrace flat	--	--	--	0-6	54	31	15	SL	51	21	20	1	ML	2.87	2.62
								6-12	46	35	19	L	58	36	20	16	CL	1.35	2.69
160	5448IV	811969	High	Terrace flat	--	--	--	0-6	58	23	19	SL	46	34	21	13	SC	2.94	2.60
								6-12	58	24	18	SL	46	37	21	16	SC	1.24	2.61
162	5448IV	823969	High	Upper ridge	--	--	--	0-6	62	20	18	SL	44	22	19	3	SM	2.03	2.59
								6-12	57	24	19	SL	49	22	18	4	SM-SC	0.96	2.59
164	5448IV	853963	Low	Terrace flat	--	--	--	0-6	38	41	21	L	63	40	26	14	ML	2.74	2.72
								6-12	29	46	25	L	66	54	29	25	CH	1.71	2.79
165	5448IV	853963	Low	Bottomland flat	--	--	Miscellaneous	0-6	63	21	16	SL	40	32	20	12	CL	2.16	2.53
								6-12	63	23	14	SL	40	34	20	14	CL	1.29	2.55
168	5448IV	780997	High	Upland flat	--	--	--	0-6	44	46	10	L	66	56	43	13	MH	2.42	2.78
								6-12	53	39	8	SL	60	61	44	17	MH	2.12	2.76
171	5448IV	809007	High	Lower slope	--	--	Miscellaneous	0-6	71	17	12	SL	32	42	27	15	SM	3.07	2.53
								6-12	66	24	10	SL	32	46	28	18	SM	1.77	2.52
172	5448IV	826012	High	Lower slope	--	--	Miscellaneous	0-6	69	24	7	SL	35	34	19	15	SC	1.61	2.58
								6-12	71	20	9	SL	31	43	24	19	SC	0.96	2.65
174	5448IV	845988	High	Lower slope	--	--	Miscellaneous	0-6	42	41	17	L	67	50	32	18	MH	4.71	2.56
								6-12	51	37	12	L	59	44	27	17	ML	2.29	2.62
176	5448IV	805932	High	Upland flat	--	--	--	0-6	56	38	6	SL	53	55	41	14	MH	2.42	2.84
								6-12	61	32	7	SL	48	55	41	14	SM	2.22	2.89
177	5449III	977056	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	32	53	15	SiL	75	36	24	12	CL	2.16	2.58
								6-12	41	42	17	L	65	39	24	15	CL	1.45	2.61
178	5449III	973048	Low	Bottomland flat	--	--	--	0-6	72	21	7	SL	39	--	--	NP	SM	2.68	2.57
								6-12	71	21	8	SL	39	16	--	NP	SM	0.74	2.63
179	5448IV	963967	High	Upper ridge	--	--	--	0-6	71	20	9	VGSL	15	39	20	19	GC	1.15	2.63
								6-12	67	22	11	SL	40	55	23	32	SC	0.91	2.61
180	5448IV	939969	Low	Bottomland flat	--	--	--	0-6	90	4	6	S	12	26	--	NP	SP-SM	1.05	2.65
								6-12	85	8	7	LS	16	--	--	NP	SM	0.91	2.65
181	5448IV	930969	High	Upper ridge	--	--	--	0-6	48	31	21	GL	41	40	23	17	SC	3.82	2.63
								6-12	39	44	17	BGL	28	51	33	18	GC	2.17	2.63
182	5448IV	825930	High	Upland flat	--	--	--	0-6	57	35	8	SL	41	35	26	9	SM	3.27	2.70
								6-12	58	32	10	GSL	36	45	26	19	SC	1.60	2.76
183	5448IV	853934	Low	Natural levee	--	--	--	0-6	24	52	24	SiL	82	43	28	15	ML	2.03	2.71
								6-12	20	56	24	SiL	86	47	28	19	ML	1.83	2.71
184	5448IV	862943	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	44	43	13	L	58	60	29	31	CH	3.75	2.73
								6-12	40	45	15	L	58	58	43	15	MH	3.77	2.76
185	5448IV	858957	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	23	55	22	SiL	83	65	44	21	MH	5.39	2.60
								6-12	20	55	25	SiL	86	61	41	20	MH	4.25	2.60
186	5448IV	923973	Low	Bottomland flat	--	--	Miscellaneous	0-6	79	13	8	LS	22	26	--	NP	SM	2.75	2.58
								6-12	77	16	7	SL	26	26	19	7	SM-SC	2.35	2.58
187	5448IV	815892	Low	Bottomland flat	--	--	Miscellaneous	0-6	40	53	7	SiL	75	43	25	18	OL	8.55	2.49
								6-12	42	46	12	L	69	59	34	25	OH	12.67	2.44
189	5448IV	832933	Low	Bottomland flat	--	--	Undisturbed	0-6	35	40	25	L	73	68	44	24	MH	7.75	2.56
								6-12	59	26	15	SL	45	56	11	45	SC	7.82	2.45
190	5349II	153084	Low	Bottomland flat	--	--	Miscellaneous	0-6	44	39	17	L	67	42	27	15	ML	4.40	2.62
								6-12	40	40	20	GL	52	47	28	19	ML	1.45	2.82
191	5349II	151067	Low	Bottomland flat	--	--	--	0-6	29	48	23	L	81	49	27	22	CL	0.87	2.76
								6-12	26	50	24	SiL	83	54	29	25	CH	1.00	2.73
192	5349II	145044	High	Lower slope	--	--	--	0-6	65	25	10	SL	43	24	17	7	SM-SC	1.20	2.61
								6-12	63	28	9	SL	45	23	17	6	SM-SC	0.96	2.62
193	5349II	138038	High	Lower slope	--	--	--	0-6	75	23	2	LS	36	--	--	NP	SM	3.59	2.59
								6-12	78	20	2	LS	34	--	--	NP	SM	0.54	2.62
194	5349II	124028	Low	Bottomland flat	--	--	--	0-6	56	37	7	SL	55	34	22	12	CL	3.00	2.58
								6-12	57	36	7	GSL	41	28	17	11	SC	--	2.79
195	5348I	137992	Low	Tidal flat	--	--	--	0-6	35	60	5	SiL	64	24	20	4	CL-ML	1.50	2.77
								6-12	29	61	10	SiL	75	27	18	9	CL	0.86	2.76
196	5348I	152982	High	Lower slope	--	--	--	0-6	83	17	0	LS	25	--	--	NP	SM	0.87	2.59
								6-12	85	15	0	LS	23	--	--	NP	SM	0.32	2.60

(Continued)

Table A5 (Concluded)

Section C. Trafficability Data																						
Wet-Season Condition												High-Moisture Condition										
								Sheargraph									Sheargraph*				
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table** in.
157	1	0-6	--	60.4	116	--	--														
		6-12	--	46.4	150	0.82	123														
158	1	0-6	--	53.0	130	--	--														
		6-12	--	48.5	130	0.46	60														
159	1	0-6	--	26.6	132+	--	--														
		6-12	--	19.0	229+	0.59	135+														
160	1	0-6	--	28.3	92	--	--														
		6-12	--	24.6	133	1.14	152														
162	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
164	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
165	1	0-6	--	19.1	154	--	--														
		6-12	--	17.4	187	0.64	120														
168	1	0-6	--	40.0	298+	--	--														
		6-12	--	44.2	300+	--	--														
171	1	0-6	--	29.6	130	--	--														
		6-12	--	20.2	151	--	--														
172	1	0-6	--	19.4	107	--	--														
		6-12	--	19.6	235+	0.78	103+														
174	1	0-6	--	38.2	117	--	--														
		6-12	--	30.8	120	1.19	143														
176	1	0-6	--	44.6	79	--	--														
		6-12	--	44.5	108	1.15	134														
177	1	0-6	--	32.6	188	--	--														
		6-12	--	26.0	173	0.79	137														
178	1	0-6	--	29.3	125	--	--														
		6-12	--	20.0	141	0.11	16														
179	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
180	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
181	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
182	1	0-6	--	22.9	176+	--	--														
		6-12	--	16.2	241+	--	--														
183	1	0-6	--	28.4	112	--	--														
		6-12	--	20.4	219+	--	--														
184	1	0-6	--	52.0	86	--	--														
		6-12	--	49.0	109	0.53	58														
185	1	0-6	--	57.2	64	--	--														
		6-12	--	48.6	94	0.76	71														
186	1	0-6	--	18.6	107	--	--														
		6-12	--	15.8	217	--	--														
187	1	0-6	--	40.2	33	--	--														
		6-12	--	91.2	18	--	--														
189	1	0-6	--	110.0	17	--	--														
		6-12	--	66.0	54	--	--														
190	1	0-6	--	32.7	115	--	--														
		6-12	--	17.5	245+	--	--														
191	1	0-6	--	28.7	144	--	--														
		6-12	--	22.6	157+	1.05	165+														
192	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
193	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
194	1	0-6	--	22.0	170	--	--														
		6-12	--	18.6	202+	1.12	226+														
195	1	0-6	--	18.2	205+	--	--														
		6-12	--	17.8	280+	0.75	210														
196	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														

Table A6

Terrain-Vehicle Tests

Summary of Site, Soil, and Trafficability Data

Section A. Site Data								Section B. Soil Data										
Location									USDA Texture by Wt, %				USCS					
Site No.	Map Sheet	Grid Coordinates	Topography Class	Topographic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	Sand	Silt	Clay	Type*	By Wt % Fines	Atterberg Limits LL	PL	PI	Type	Organic Content %	Specific Gravity
							Khon Kaen Area												
HG-1	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	22	49	29	CL	87	38	20	18	CL	--	2.71
								6-12	22	49	29	CL	87	38	20	18	CL	--	2.71
HG-2	5560II	661096	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	41	31	28	CL	67	31	17	14	CL	--	2.68
								6-12	41	31	28	CL	67	31	17	14	CL	--	2.68
HG-3	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	13	45	42	SiC	90	77	38	39	MH	--	2.72
								6-12	13	45	42	SiC	90	77	38	39	MH	--	2.72
HG-4	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	13	38	49	C	90	69	37	32	MH	--	2.72
								6-12	13	38	49	C	90	69	37	32	MH	--	2.72
HG-5	5560II	663097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	31	27	42	C	73	71	35	36	MH	--	2.77
								6-12	31	27	42	C	73	71	35	36	MH	--	2.77
HG-6	5560II	661096	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	14	51	35	SiCL	93	38	21	17	CL	--	2.65
								6-12	14	51	35	SiCL	93	38	21	17	CL	--	2.65
HG-7	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	39	46	15	L	66	24	18	6	CL-ML	--	2.72
								6-12	39	46	15	L	66	24	18	6	CL-ML	--	2.72
HG-8	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	14	62	24	SiL	93	21	--	NP	ML	--	2.63
								6-12	14	62	24	SiL	93	21	--	NP	ML	--	2.63
HG-9	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6	19	51	30	SiCL	90	40	23	17	CL	--	2.64
								6-12	19	51	30	SiCL	90	40	23	17	CL	--	2.64
SG-1	5560II	688147	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	47	42	11	L	63	15	--	NP	ML	--	2.60
								6-12	39	45	16	L	69	19	14	5	CL-ML	--	2.58
SG-2	5560II	687144	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	45	43	12	L	64	21	15	6	CL-ML	--	2.61
								6-12	46	38	16	L	63	25	16	9	CL	--	2.67
SG-3	5560I	691265	Low	Terrace slope	3	Short-grass prairie	Cultivated (idle)	0-6	46	41	13	L	69	20	--	NP	ML	--	2.63
								6-12	50	36	14	L	67	28	17	11	CL	--	2.64
CC-2A	5560I	645400	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	46	35	19	L	70	20	--	NP	ML	--	2.63
								6-12	63	30	7	SL	61	21	16	5	CL-ML	--	2.63
CC-2B	5560I	646401	Low	Terrace flat	0	Woodland	Undisturbed	0-6	59	35	6	SL	57	--	--	NP	ML	--	--
								6-12	57	30	13	SL	58	20	17	3	ML	--	--
CC-2C	5560I	643399	Low	Terrace flat	0	Woodland	Undisturbed	0-6	68	27	5	SL	45	--	--	NP	SM	--	--
								6-12	61	25	14	SL	51	20	16	[illegible]	CL-ML	--	--
CC-4A	5561II	655468	Low	Terrace slope	2	Woodland	Undisturbed	0-6	80	14	6	GSL	18	--	--	NP	SM	--	--
								6-12	79	14	7	VGLS	13	--	--	NP	SM	--	--
CC-4B	5561II	655472	Low	Terrace slope	2	Woodland	Undisturbed	0-6	82	13	5	LS	26	--	--	NP	SM	--	--
								6-12	79	16	5	LS	29	--	--	NP	SM	--	--
CC-5A	5561II	662472	High	Upper slope	5	Barren	Undisturbed	0-6	41	20	39	CL	63	55	19	36	CH	--	--
								6-12	47	16	37	SC	61	60	19	41	CH	--	--
CC-5B	5561II	661472	Low	Lower slope	5	Tall-grass prairie	Undisturbed	0-6	72	14	14	SL	43	24	17	7	SM-SC	--	--
								6-12	58	11	31	SCL	57	36	15	21	CL	--	--
CC-5C	5561II	658472	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	54	34	12	SL	59	19	15	4	CL-ML	--	--
								6-12	53	30	17	SL	61	21	15	6	[illegible]-ML	--	--
CC-5D	5561II	657472	Low	Terrace slope	3	Woodland	Undisturbed	0-6	79	14	7	LS	30	--	--	NP	SM	--	--
								6-12	73	11	16	SL	37	22	12	10	SC	--	--
CC-5E	5561II	653472	Low	Terrace slope	3	Woodland	Undisturbed	0-6	81	17	2	LS	27	--	--	NP	SM	--	--
								6-12	81	16	3	LS	27	--	--	NP	SM	--	--
M-1	5560I	684320	High	Upland flat	0	Woodland	Undisturbed	0-6	78	18	4	LS	34	13	14	NP	SM	--	--
								6-12	75	18	7	SL	36	--	--	NP	SM	--	--

(Continued)

* G = gravelly; VG = very gravelly.

Table A6 (Concluded)

Section C. Trafficability Data																						
		Wet-Season Condition										High-Moisture Condition										
								Sheargraph**									Sheargraph**					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c_u psi	Tan ϕ_u	a_{ur} psi	Tan α_{ur}	Depth to Water Table† in.
Khon Kaen Area																						
HG-1	1	0-6	--	28.3	135	0.72	97	3.0	0.23	--	--	--	28.3	135	0.72	97	3.0	0.23	--	--	0
		6-12	--	28.5	313+	0.58	182+					--	28.5	313+	0.58	182+					
HG-2	1	0-6	--	26.6	71	0.68	48	2.9	0.40	--	--	--	26.6	71	0.68	48	2.9	0.40	--	--	0
		6-12	--	26.5	165	0.67	111					--	26.5	165	0.67	111					
HG-3	1	0-6	--	29.2	86	0.48	41	0.2	0.18	--	--	--	29.2	86	0.48	41	0.2	0.18	--	--	+1
		6-12	--	31.6	175	0.43	75					--	31.6	175	0.43	75					
HG-4	1	0-6	--	26.6	139	0.70	97	1.5	0.22	--	--	--	26.6	139	0.70	97	1.5	0.22	--	--	0
		6-12	--	30.1	246	0.58	143					--	30.1	246	0.58	143					
HG-5	1	0-6	92.3	27.5	142	0.80	114	1.7	0.40	--	--	92.3	27.5	142	0.80	114	1.7	0.40	--	--	0
		6-12	--	31.0	180	0.74	133					--	31.0	180	0.74	133					
HG-6	1	0-6	99.3	24.0	44	0.70	31	0.0	0.16	--	--	99.3	24.0	44	0.70	31	0.0	0.16	--	--	0
		6-12	98.4	25.5	115	0.66	76					98.4	25.5	115	0.66	76					
HG-7	1	0-6	104.1	21.7	73	0.62	45	1.2	0.18	--	--	104.1	21.7	73	0.62	45	1.2	0.18	--	--	0
		6-12	--	19.9	207	0.45	93					--	19.9	207	0.45	93					
HG-8	1	0-6	100.5	21.5	111	0.61	68	0.0	0.34	--	--	100.5	21.5	111	0.61	68	0.0	0.34	--	--	0
		6-12	--	22.4	299	0.77	230					--	22.4	299	0.77	230					
HG-9	1	0-6	97.2	23.4	45	0.60	27	0.0	0.18	--	--	97.2	23.4	45	0.60	27	0.0	0.18	--	--	0
		6-12	--	28.0	138	0.61	84					--	28.0	138	0.61	84					
SG-1	3	0-6	102.0	17.3	96	0.43	36	1.3	0.37	0.3	0.40	106.9	17.0	72	0.33	24	0.0	0.27	0.0	0.27	+2
		6-12	109.6	16.6	182	0.46	74					107.0	18.4	161	0.38	61					
SG-2	1	0-6	103.6	17.1	85	0.51	43	2.2	0.55	0.0	0.47	103.6	17.1	85	0.51	43	2.2	0.55	0.0	0.47	+2
		6-12	--	--	174	--	--					--	--	174	--	--					
SG-3	2	0-6	102.6	20.7	111	0.68	76	2.0	0.33	0.6	0.30	103.4	20.4	104	0.56	58	1.2	0.30	0.3	0.27	+3
		6-12	95.1	25.2	139	0.72	98					--	24.1	142	0.62	88					
CC-2A	2	0-6	99.6	21.3	79	0.47	36	0.5	0.32	0.0	0.34	108.0	18.2	72	0.63	45	0.5	0.32	0.0	0.34	+6
		6-12	107.8	17.9	133	0.33	46					106.4	18.7	86	0.26	22					
CC-2B	1	0-6	110.7	14.0	225	--	--	2.7	0.36	1.0	0.32										
		6-12	104.1	13.3	237	--	--														
CC-2C	1	0-6	101.6	11.1	214	--	--	1.6	0.55	0.0	0.51										
		6-12	107.6	13.0	239	--	--														
CC-4A	1	0-6	--	--	399+	--	--	0.2	0.38	0.2	0.42										
		6-12	--	--	699+	--	--														
CC-4B	1	0-6	--	9.5	169	--	--	2.3	0.36	1.5	0.25										
		6-12	--	--	130	--	--														
CC-5A	1	0-6	--	20.4	616+	--	--	--	--	0.0	0.36										
		6-12	--	20.1	750+	--	--														
CC-5B	1	0-6	98.2	10.5	365	--	--	2.0	0.47	0.0	0.47										
		6-12	105.3	17.1	296	--	--														
CC-5C	1	0-6	109.2	17.2	98	0.32	31	2.8	0.34	1.2	0.23	109.2	17.2	98	0.32	31	2.8	0.34	1.2	0.23	+3
		6-12	99.1	20.9	136	0.43	58					99.1	20.9	136	0.43	58					
CC-5D	1	0-6	--	12.2	145	--	--	2.0	0.45	0.6	0.38										
		6-12	--	14.9	188	--	--														
CC-5E	1	0-6	94.8	23.2	33	0.36	12	2.4	0.40	0.6	0.38	94.8	23.2	33	0.36	12	2.4	0.40	0.6	0.38	0
		6-12	100.5	19.3	46	0.75	35					100.5	19.3	46	0.75	35					
M-1	2	0-6	102.0	12.5	154	--	--	2.0	0.42	0.6	0.40										
		6-12	99.8	12.7	129	--	--														

** c_u, ultimate soil-to-soil cohesion; ϕ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

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Pertinent soil trafficability data were collected during the wet season at 846 sites in Thailand. The soils were identified according to the Unified Soil Classification System and the U. S. Department of Agriculture textural classification system. Two general topographic positions (high topography and low topography) and two general levels of wetness were considered. A scheme for classifying soils according to their trafficability was developed. The scheme lists the soil types in order of decreasing trafficability under each of three topography-wetness level categories and shows the probability of successful passage on each soil for vehicles of known soil strength requirements. The scheme permits the estimation of the probability of a successful operation for given soil type, topography, and wetness-level conditions. If a choice of several routes and vehicles is available, the determination of the vehicles with the best chances of success over a given route or of the best route for given vehicles can be made.

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