

SAMPLING AND ESTIMATION DETAILS FOR THE MARYLAND PORTION OF
THE NATIONAL INVENTORY OF SOIL AND WATER CONSERVATION NEEDS

BU-184-M

Thomas M. Beetle

July, 1965

Abstract

This paper provides some details on the sampling and estimation procedures for each county in Maryland. It is intended as a supplement to BU-180-M.

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In general, Maryland counties were stratified and sampled within land resource units, and estimates were computed using a separate expansion ratio for each land resource unit. An exception to this estimation procedure was the use of a single expansion ratio for estimating tidal marsh within a county. This procedure was followed in fourteen Maryland counties.

Summary tables were printed for each Soil Conservation District in Frederick County.

The four numbers under the county name in the following tables denote sample design, sample unit size, sampling rate, and estimation procedure according to the following code:

First
Number

Sample Design

1	Stratified within county
2	Stratified within land resource unit within county
3	Combination of Code 1 and Code 2

Second
Number

Sample Size

1	100 acres
2	250 acres
3	400 acres

Third
Number

Approximate sampling rate percentage

Fourth
Number

Estimation Procedure

1	Single expansion ratio for entire county
2	Separate expansion ratio for each land resource unit in the county

Water estimates are excluded from the River Basin estimates in all counties.

ALLEGANY COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>			<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>	
272,640			5,800			272,669	
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>	
<u>Estimated Ac.:</u>	29,627	16,202	187,928	23,361	14,212	1,360	
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>	
020700 - Potomac River						109,227	
020710 - Potomac River, North Branch						162,082	

ANNE ARUNDEL COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>			<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>	
250,021			4,948			250,001	
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>	
<u>Estimated Ac.:</u>	65,462	10,623	119,481	21,102	31,478	1,830	
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>	
020600 - Patuxent River						69,882	
021300 - Chesapeake Bay						178,289	

Excluded Acreage:
 Federal land 16,859

Notes: Tidal Marsh was expanded by a separate ratio.

BALTIMORE COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>			<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>	
390,400			7,915			390,356	
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>	
<u>Estimated Ac.:</u>	100,682	52,442	115,459	41,038	79,676	1,059	
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>	
020500 - Susquehanna River						4,722	
021300 - Chesapeake Bay						384,575	

Notes: The following land resource units were combined for estimation purposes: Alb1 and Alb3.

BALTIMORE CITY, MARYLAND

Not sampled.

CALVERT COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

139,586

Adjusted Sample Ac.

2,934

Estimated Ac.

139,564

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	32,275	6,318	84,173	12,214	2,324	2,239

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020600 - Patuxent River

106,065

021300 - Chesapeake Bay

31,260

Excluded Acreage:

Federal land 574

Notes: Tidal Marsh was expanded by a separate ratio.

CAROLINE COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

204,800

Adjusted Sample Ac.

4,469

Estimated Ac.

204,811

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	105,851	8,559	76,425	9,255	4,492	242

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020400 - Nanticoke River

36,158

021300 - Chesapeake Bay

168,411

Notes: Tidal Marsh was expanded by a separate ratio.

CARROLL COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

291,840

Adjusted Sample Ac.

5,979

Estimated Ac.

291,855

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	140,591	68,405	58,174	16,437	7,564	691

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020740 - Monocacy River

143,013

021300 - Chesapeake Bay

148,151

CECIL COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

221,692

Adjusted Sample Ac.

4,819

Estimated Ac.

221,712

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	111,833	24,875	70,440	8,372	4,668	1,552

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020300 - Delaware River

4,757

020500 - Susquehanna River

34,909

021300 - Chesapeake Bay

180,494

Excluded Acreage:

Federal land 3,588

Notes: Tidal Marsh was expanded by a separate ratio.

CHARLES COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

288,739

Adjusted Sample Ac.

6,060

Estimated Ac.

288,724

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	63,013	4,905	204,164	15,004	1,637	- -

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020600 - Patuxent River

21,020

020700 - Potomac River

267,704

Excluded Acreage:

Federal land 4,381

Notes: Tidal Marsh was expanded by a separate ratio.

DORCHESTER COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.

293,625

Adjusted Sample Ac.

5,832

Estimated Ac.

293,636

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	128,611	2,270	133,984	26,599	- -	2,173

River Basin - Middle Atlantic Drainage Basin

Estimated Ac.

020400 - Nanticoke River

74,330

021300 - Chesapeake Bay

217,133

Excluded Acreage:

LRU A2b9 77,580 (includes 16,934 acres Federal land)

FREDERICK COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
418,162	8,764			418,205		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	206,937	94,273	93,964	17,166	3,382	2,504
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
020700 - Potomac River						102,672
020740 - Monocacy River						313,029
<u>Excluded Acreage:</u>						
Federal land	6,803					

Notes: Tables for Frederick County were run for each Soil Conservation District.

GARRETT COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
423,680	9,096			423,699		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	66,912	41,056	292,736	19,450	2,990	562
<u>River Basins</u> - Middle Atlantic and Ohio River Drainage Basins						<u>Estimated Ac.</u>
020710 - Potomac River, North Branch						157,805
070000 - Ohio River Drainage Basin						44,574
070230 - Youghiogheny River						220,758

HARFORD COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
248,467	4,985			248,440		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	78,159	48,875	98,329	14,120	7,616	1,358
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
020500 - Susquehanna River						125,851
021300 - Chesapeake Bay						121,231
<u>Excluded Acreage:</u>						
Federal land	38,253					

Notes: The following land resource units were combined for estimation purposes: Alb2 and Alb3.

Tidal Marsh was expanded by a separate ratio.

HOWARD COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
160,640	3,434			160,650		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	51,223	35,869	48,587	18,636	5,575	783
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>
020600 - Patuxent River						114,583
021300 - Chesapeake Bay						45,284

KENT COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
181,760	3,902			181,726		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	122,354	4,037	39,092	12,662	3,260	316
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>
021300 - Chesapeake Bay						181,410

Notes: Tidal Marsh was expanded by a separate ratio.

MONTGOMERY COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
312,011	6,762			312,035		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	81,618	89,888	73,926	13,436	52,629	554
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>
020600 - Patuxent River						42,773
020700 - Potomac River						268,708

Excluded Acreage:
Federal land 4,149

PRINCE GEORGE'S COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
302,679	6,407			302,675		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	72,325	13,864	146,894	27,158	41,871	577
<u>River Basin - Middle Atlantic Drainage Basin</u>						<u>Estimated Ac.</u>
020600 - Patuxent River						140,828
020700 - Potomac River						161,270

Excluded Acreage:
Federal land 7,721

Notes: Beltsville Research Center is included in these estimates.

Tidal Marsh was expanded by a separate ratio.

QUEEN ANNE'S COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
238,720	4,835			238,730		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	163,573	2,602	53,153	14,864	809	3,735
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
021300 - Chesapeake Bay						234,995

Notes: Tidal Marsh was expanded by a separate ratio.

ST. MARY'S COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
227,626	4,593			227,601		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	68,317	1,503	134,507	9,729	13,552	- -
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
020600 - Patuxent River						44,338
020700 - Potomac River						165,800
021300 - Chesapeake Bay						17,463

Excluded Acreage:

Federal land 7,254

Notes: Tidal Marsh was expanded by a separate ratio.

SOMERSET COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
212,480	4,524			212,478		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	53,638	12,782	74,705	62,923	4,179	4,246
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
021300 - Chesapeake Bay						208,232

Notes: Tidal Marsh was expanded by a separate ratio, except in LRU A2b9.

TALBOT COUNTY, MARYLAND

2, 1, 2, 2

<u>Adjusted Census Ac.</u>	<u>Adjusted Sample Ac.</u>			<u>Estimated Ac.</u>		
178,560	3,537			178,552		
<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	95,331	9,729	61,446	8,217	3,829	- -
<u>River Basin</u> - Middle Atlantic Drainage Basin						<u>Estimated Ac.</u>
021300 - Chesapeake Bay						178,552

Notes: Tidal Marsh was expanded by a separate ratio.

WASHINGTON COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.
293,111

Adjusted Sample Ac.
6,062

Estimated Ac.
293,098

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	130,795	42,739	99,166	7,214	12,180	971

River Basin - Middle Atlantic Drainage Basin
020700 - Potomac River Estimated Ac.
292,127

Excluded Acreage:
Federal land 2,569

Notes: The following land resource units were combined for estimation purposes: B14e9 and B14e10.

WICOMICO COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.
242,090

Adjusted Sample Ac.
5,139

Estimated Ac.
242,095

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	96,110	834	119,164	22,063	3,297	651

River Basin - Middle Atlantic Drainage Basin Estimated Ac.
020400 - Nanticoke River 82,769
021300 - Chesapeake Bay 158,675

Excluded Acreage:
Federal land 1,110

Notes: Tidal Marsh was expanded by a separate ratio.

WORCESTER COUNTY, MARYLAND

2, 1, 2, 2

Adjusted Census Ac.
309,120

Adjusted Sample Ac.
6,565

Estimated Ac.
309,146

<u>Land Use:</u>	<u>Cropland</u>	<u>Pasture</u>	<u>Forest</u>	<u>Other</u>	<u>Urban</u>	<u>Water</u>
<u>Estimated Ac.:</u>	106,699	7,959	160,063	27,341	4,854	2,236

River Basin - Middle Atlantic Drainage Basin Estimated Ac.
020000 - Middle Atlantic Drainage Basin 126,135
021300 - Chesapeake Bay 180,775

Notes: Tidal Marsh was expanded by a separate ratio, except in LRU A2b9.