Regional Morphology Analysis Package (RMAP)

Memorandum for Record

RMAP Demonstration Project for the New Jersey Coast

Prepared for: New York District, Philadelphia District
U.S. Army Corps of Engineers

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Under:
System-wide Water Resources Program,
https://swwrp.usace.army.mil/DesktopDefault.aspx
and Coastal Inlets Research Program, http://cirp.usace.army.mil/index.html

16 September 2009

Figure 1. Project site location map and projects entered in RMAP, Version 3.

RMAP Demonstration Project for the New Jersey Coast

Motivation

This Memorandum for Record documents a demonstration project for the Regional Morphology Analysis Package (RMAP) applied to the New Jersey coast. This project tested performance of the recently released RMAP Version 3.0 for treating a large number of data sets and aerial photographs. To meet RMAP demonstration needs, the U.S. Army Corps of Engineers New York District and Philadelphia District were approached for providing beach profile survey sets for beaches along the coast of New Jersey. Besides geographic extent, it was anticipated that treatment of data from two sources would provide representative challenges of RMAP Version 3 and application of a unified regional methodology.

RMAP Version 3[1] was released in August 2009 and represents a substantial interface revision and modernization. The Version 3 interface allows efficient treatment of large data sets through database architecture. For example, only data requested are loaded into memory, as opposed to requiring the entire data set in a "flat file" approach of previous versions. Speed and modernization of the interface presentation were also improved. Analysis code and graphics capability were prepared for addressing morphology in three dimensions, although such features are not provided yet.

Procedure

Based on the data sets received, to commence the project a decision had to be made for a common horizontal coordinate system and vertical datum. After consultation with the New York and Philadelphia Districts, the program Corpscon6 was accessed to convert the New York District files into horizontal coordinate system NAD83 and vertical datum NAVD88, compatible with the original Philadelphia District dataset. The original New York District coordinate system and vertical datum were NAD27 and NGVD29, respectively.

Aerial photographs serving as the map layer for this project were taken from an August 2006 coverage of the entire New Jersey coast. These photographs were received in the horizontal coordinate system NAD83.

Site locations and their folder and file abbreviations in RMAP are, from north to south (Figure 1):

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[1] Morang, A., B.K. Batten, K.J. Connell, W. Tanner, M. Larson, and N.C. Kraus. 2009. Regional Morphology Analysis Package (RMAP), Version 3: User's guide and tutorial. Coastal and Hydraulics Engineering Technical Note ERDC/CHL CHETN-IX-9 Vicksburg, MS: U.S. Army Engineer Research and Development Center, http://chl.erdc.usace.army.mil/chetn/

Sea Bright (SB)
Asbury (Asbury)
Long Beach Island (LBI)
Brigantine (BI)
Seven Mile Island (SMI)

The large files provided the Philadelphia Districts were segregated into individual profile transects for import to RMAP. The segregated files were then saved into single text files for each date the profile surveys were made. VEDIT, a utility that can edit large files, was used to manipulate and group the coordinates into separate profiles for each date given. For example: the Philadelphia District file called SM_Monitoring_200705.txt was divided into 59 profiles labeled as SM001_200705, SM002_200705, etc.).

After the profiles were converted to the project coordinate system and vertical datum, they were imported by RMAP according to location name (Figure 2). Each location (Sea Bright, Asbury, Long Beach Island, Brigantine, and Seven Mile Island) has its own file and aerial photographs. Each survey location has a folder. In the folder, the project locations are given in descending order by the date the survey was performed.

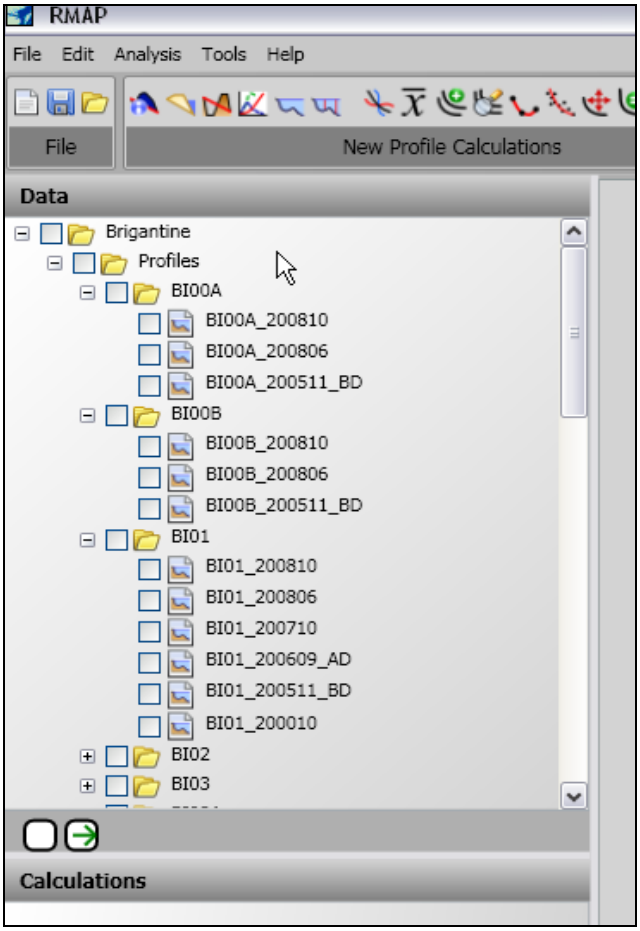

Figure 2. Example folder names and data tree.

Once in RMAP, most of the profile surveys required a “distance from shoreline” to be calculated. To calculate this distance, the profile origin and azimuth for each of the profile transects had to be determined. Figure 3 shows a plot of LBI190 and where the X origin, Y origin, and Azimuth were typed in.

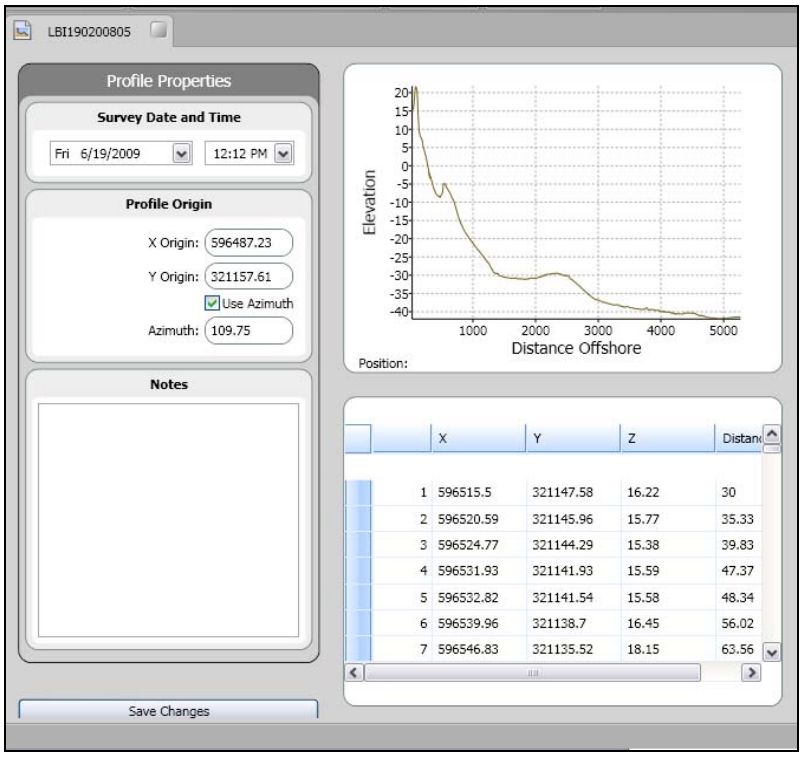

Figure 3. Plot of Long Beach Island profile 190 (May 2005).

Two appendices list the profile data associated with this study.

Example Results

After loading the data, plots were made to examine data quality and uniformity. The location of each profile was also examined by loading several profiles onto the map view of RMAP. This section gives a map view of the selected profile lines and a representative plot for each project location as a screen capture from RMAP.

Figure 4. Map view of Sea Bright showing profiles SB100, SB102, SB104, and SB106.

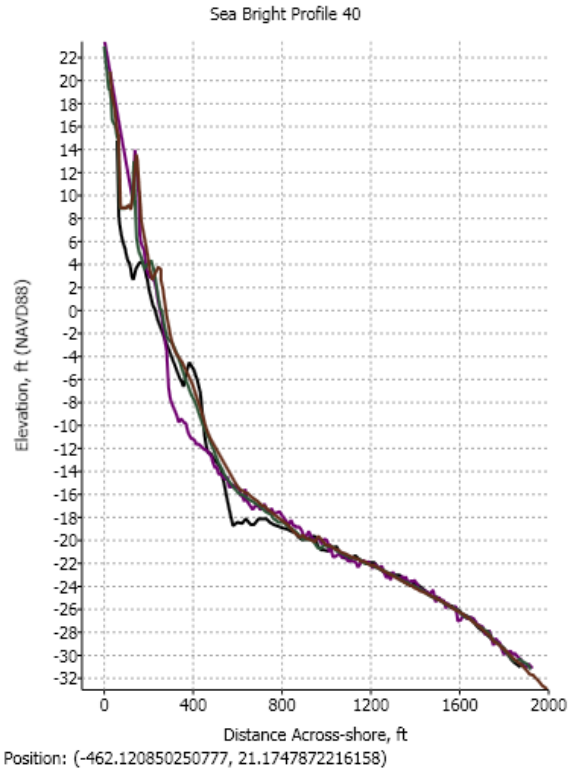

Figure 5. Profiles lines SB40_Sp03, SB40Sp02, SB40Sp01, and SB40Sp00.

Figure 6. Map View of Asbury showing profiles Asbury214, Asbury216, Asbury218, and Asbury220.

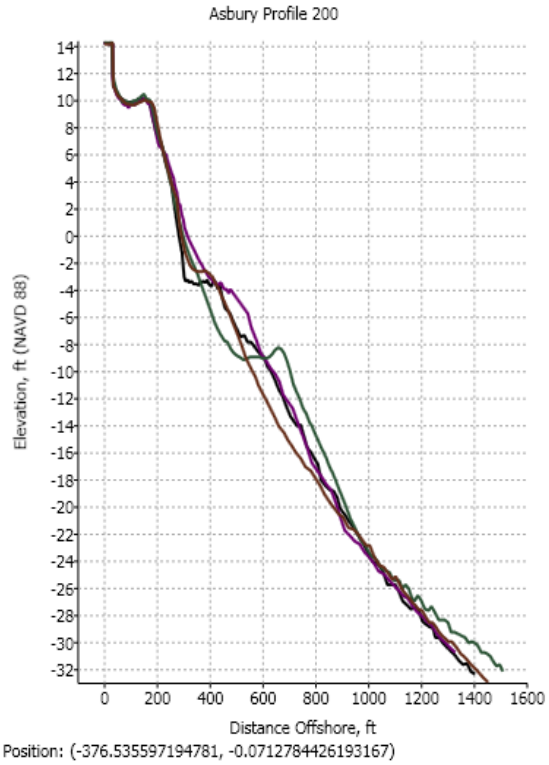

Figure 5. Profiles lines Asbury200Sp03, Asbury200Sp02, Asbury200Sp01, and Asbury200Sp00.

Figure 6. Map View of Long Beach Island showing profiles LBI190, LBI200, LBI203, and LBI207.

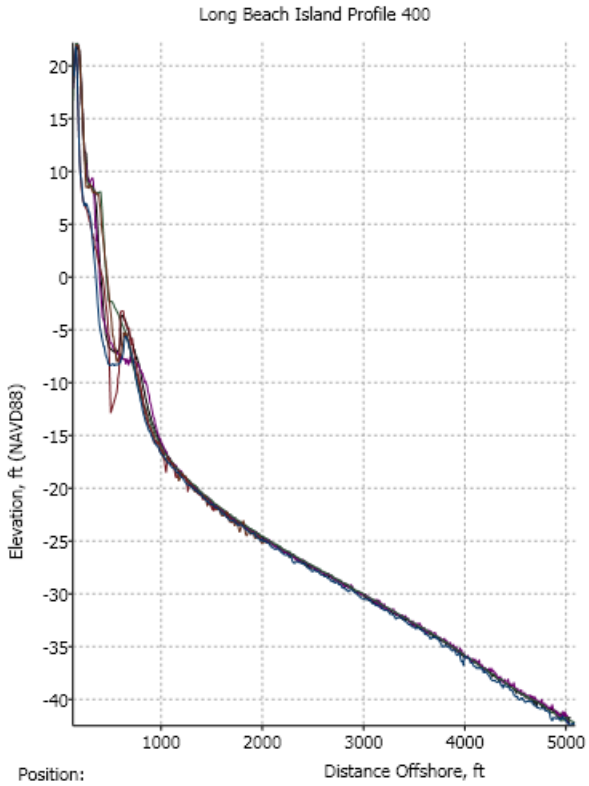

Figure 7. Profiles lines LBI400_200811, LBI400_200805, LBI400_200709, LBI400_200701_AD, LBI400_200612_BD, and LBI400_200610_PreCon.

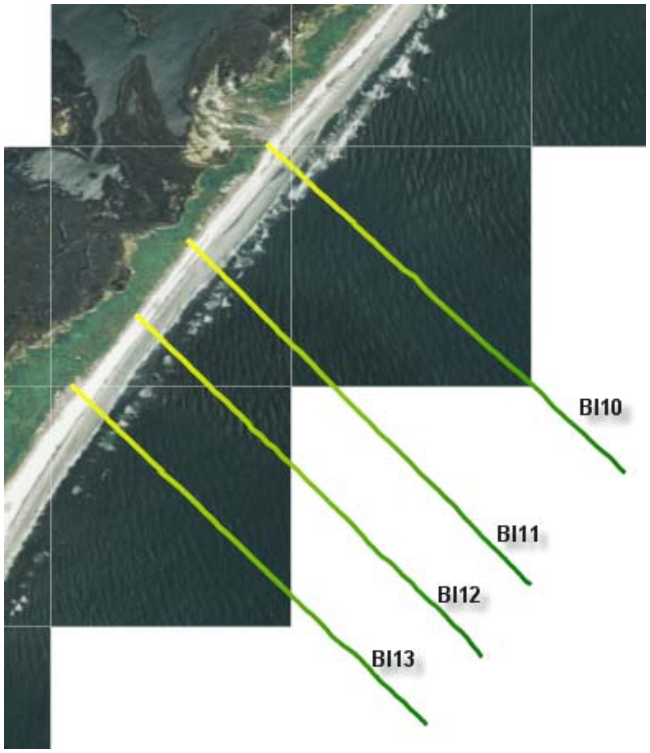

Figure 8. Map View of Brigantine showing profiles BI10, BI11, BI12, and BI13.

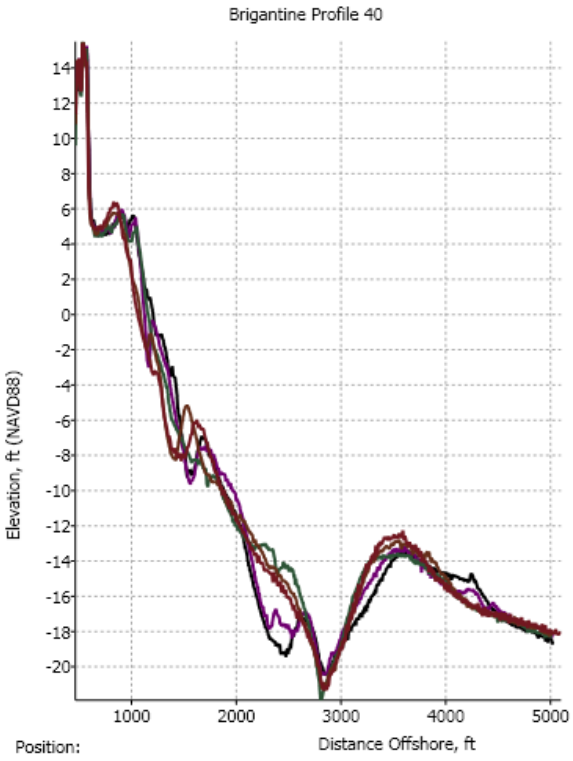

Figure 9. Profiles lines BI40_200810, BI40_200806, BI40_200710, BI40_200609_AD, and BI40_200511_BD.

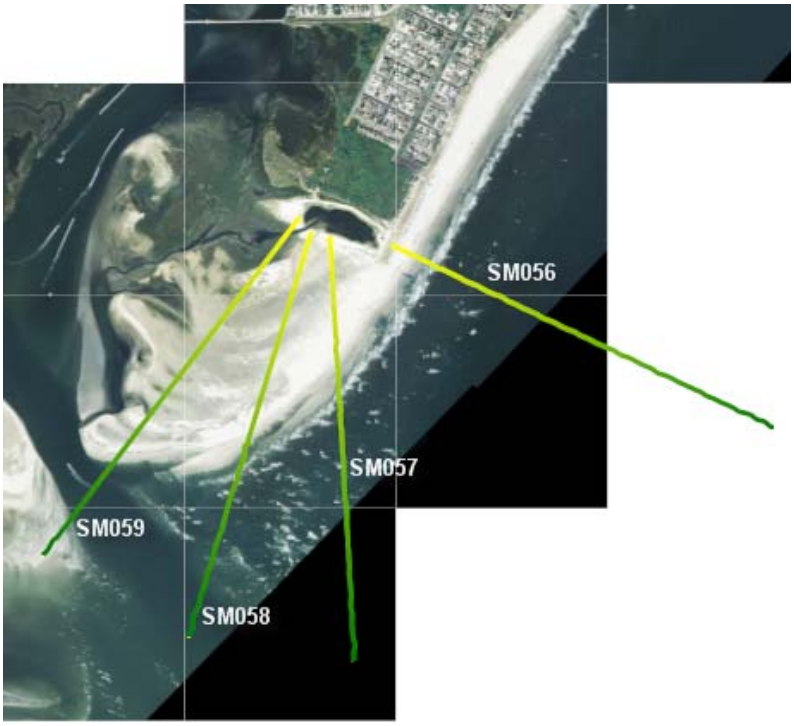

Figure 10. Map View of Seven Mile Island showing profiles SM056, SM057, SM058, and SM059.

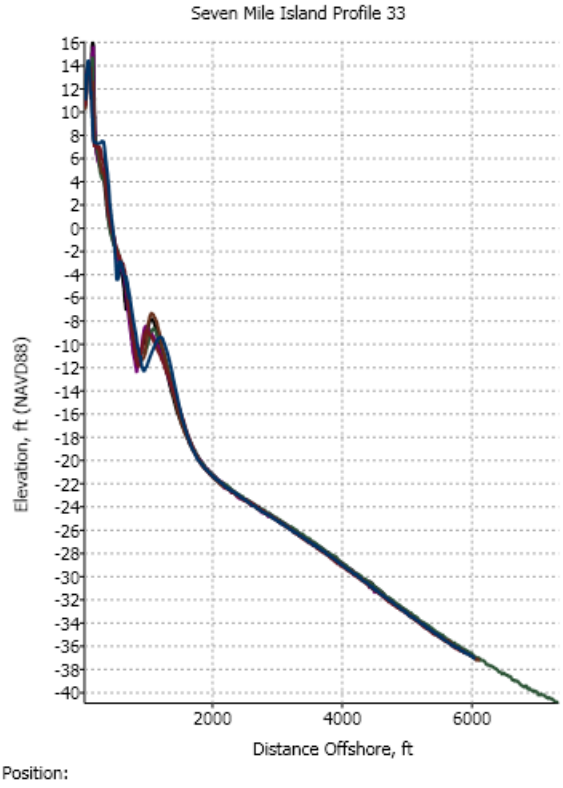

Figure 11. Profiles SM033_200910, SM033_200709, SM033_200611, SM033_200512, SM033_200410, and SM033_200309.

Conclusions

This RMAP demonstration succeeded in treating a large data set composed of profile survey data from five project locations with several survey dates. The resultant RMAP project contains several hundred individual beach profile surveys, all brought to a common horizontal coordinate system and vertical datum. The profile transects can be plotted in RMAP on rectified vertical aerial photographs. This demonstration allowed testing and debugging of RMAP Version 3, and it succeeded in verifying that large, regional data sets can be efficiently manipulated in RMAP V3.

Obtaining the Project Data

The completed RMAP project files can be found at:

FTP site: chlraid.wes.army.mil
UserID: profiles (note lower case)

The RMAP projects and their corresponding aerial photographs are given.

Acknowledgements

This project was conducted as a high school summer-student effort supported by the Cascade Work Unit of the System-Wide Water Resources Program and the Inlet Morphology Work Unit of the Coastal Inlets Research Program. The assistance of Dr. Harry C. Friebel and Monica A. Chasten of the Philadelphia District, and Lynn M. Bocamazo in providing profile data and are greatly appreciated. Dr. Friebel also provided the 2006 photographs.

Appendix A: Compilation of New York District Profile Surveys

Table A1. Available profile data for Sea Bright, NJ				
Profile File Name	**Year**			
	2000	**2001**	**2002**	**2003**
SB40	Spring	Spring	Spring	Spring
SB70	Spring	Spring	Spring	Spring
SB80	Spring, Fall	Spring		Spring
SB82	Spring, Fall	Spring		Spring
SB84	Spring, Fall	Spring		Spring
SB90	Spring, Fall	Spring		Spring
SB94	Spring, Fall	Spring		Spring
SB96	Spring, Fall	Spring		Spring
SB100	Spring, Fall	Spring		Spring
SB102	Spring, Fall	Spring		Spring
SB104	Spring, Fall	Spring		Spring
SB108	Spring, Fall	Spring		Spring
SB110	Spring, Fall	Spring		Spring
SB112	Fall	Spring		Spring
SB114	Spring, Fall	Spring		Spring
SB116	Spring, Fall	Spring		Spring
SB120	Spring, Fall	Spring		Spring

SB122	Spring, Fall	Spring		Spring
SB124	Spring, Fall	Spring		Spring
SB125	Spring, Fall	Spring		Spring
SB126	Spring, Fall	Spring		Spring
SB128	Spring, Fall	Spring		Spring
SB130	Spring, Fall	Spring		Spring
SB132	Spring, Fall	Spring		Spring
SB134	Spring, Fall	Spring	Spring	Spring
SB140	Spring, Fall	Spring	Spring	Spring
SB142	Spring, Fall	Spring	Spring	Spring
SB144	Spring, Fall	Spring	Spring	Spring
SB146	Spring, Fall	Spring	Spring	Spring
SB148	Spring, Fall	Spring	Spring	Spring
SB149	Spring, Fall	Spring	Spring	Spring
SB150	Spring, Fall	Spring	Spring	Spring
SB152	Spring, Fall	Spring	Spring	Spring
SB154	Spring, Fall	Spring	Spring	Spring
SB156	Spring, Fall	Spring	Spring	Spring
SB158	Spring, Fall	Spring	Spring	Spring
SB160	Spring, Fall	Spring	Spring	
SB162	Spring, Fall	Spring	Spring	
SB164	Spring, Fall	Spring	Spring	

SB170	Spring	Spring	Spring	
SB171	Spring	Spring	Spring	
SB172	Spring	Spring	Spring	
SB173	Spring	Spring	Spring	
SB174	Spring	Spring	Spring	
SB176	Spring	Spring	Spring	
SB178	Spring	Spring	Spring	
SB180	Spring	Spring	Spring	
SB181	Spring	Spring	Spring	
SB182	Spring	Spring	Spring	
SB183	Spring	Spring	Spring	
SB183A	Spring	Spring	Spring	
SB184	Spring	Spring	Spring	
SB186	Spring	Spring	Spring	
SB188	Spring	Spring	Spring	
SB190	Spring	Spring	Spring	
SB192	Spring	Spring	Spring	
SB194	Spring	Spring	Spring	
SB196	Spring	Spring	Spring	
SB197	Spring	Spring	Spring	
SB198	Spring	Spring	Spring-Land and Water	

Table A2. Available profile data for Asbury, NJ				
Profile File Name	**Year**			
	2000	**2001**	**2002**	**2003**
Asbury200	Spring	Spring	Spring	Spring
Asbury201	Spring	Spring	Spring	Spring
Asbury202	Spring	Spring	Spring	Spring
Asbury208	Spring	Spring	Spring-land and water	Spring
Asbury209	Spring	Spring	Spring-land and water	Spring
Asbury210	Spring	Spring	Spring	Spring
Asbury211	Spring	Spring	Spring	Spring
Asbury214	Spring	Spring	Spring	Spring
Asbury216	Spring	Spring	Spring	Spring
Asbury218	Spring	Spring	Spring	Spring
Asbury220	Spring	Spring	Spring	Spring
Asbury223	Spring	Spring	Spring	Spring
Asbury226	Spring	Spring	Spring	Spring
Asbury228	Spring	Spring	Spring	Spring
Asbury230	Spring	Spring	Spring	Spring
Asbury232	Spring	Spring	Spring	Spring
Asbury235	Spring	Spring	Spring	Spring
Asbury238	Spring	Spring	Spring	Spring

Asbury240	Spring	Spring	Spring	Spring
Asbury242	Spring	Spring	Spring	Spring
Asbury244	Spring	Spring	Spring	Spring
Asbury246	Spring	Spring	Spring	Spring
Asbury250	Spring	Spring	Spring	Spring
Asbury252	Spring	Spring	Spring	Spring
Asbury254	Spring	Spring	Spring	Spring
Asbury256	Spring, Fall	Spring	Spring	Spring
Asbury257	Spring, Fall	Spring	Spring	Spring
Asbury260	Spring, Fall	Spring	Spring	Spring
Asbury261	Spring, Fall	Spring	Spring	Spring
Asbury262	Spring, Fall	Spring	Spring	Spring
Asbury624	Spring, Fall	Spring	Spring	Spring
Asbury266	Spring	Spring	Spring	Spring
Asbury268	Spring	Spring	Spring	Spring
Asbury270	Spring	Spring	Spring	Spring
Asbury272	Spring	Spring	Spring	Spring
Asbury274	Spring	Spring	Spring	Spring
Asbury276	Spring	Spring	Spring	Spring
Asbury278	Spring	Spring	Spring	Spring
Asbury280	Spring	Spring	Spring	Spring

Asbury281	Spring	Spring	Spring	Spring
Asbury286	Spring	Spring	Spring	Spring
Asbury290	Spring	Spring	Spring	Spring
Asbury291	Spring	Spring	Spring	Spring
Asbury294	Spring	Spring	Spring	Spring
Asbury296	Spring	Spring	Spring	Spring
Asbury298	Spring	Spring	Spring	Spring
Asbury310	Spring	Spring	Spring	Spring

Appendix B: Compilation of Philadelphia District Profile Surveys

Table B1. Available profile data for Long Beach Island, NJ			
Profile File Name	**Year**		
	2006	**2007**	**2008**
LBI 190			May
LBI 200			May
LBI 203			May
LBI 207			May
LBI 210			May
LBI 213			May
LBI 217			May
LBI 220			May
LBI 223			May
LBI 227			May
LBI 230			May
LBI 233			May
LBI 237			May
LBI 240			May
LBI 243			May
LBI 247			May
LBI 250			May

LBI 253			May
LBI 257			May
LBI 260			May
LBI 263			May
LBI 267			May
LBI 270			May
LBI 273			May
LBI 277			May
LBI 280			May
LBI 283			May
LBI 287			May
LBI 290			May
LBI 293			May
LBI 297			May
LBI 300			May
LBI 303			May
LBI 310			May
LBI 320			May
LBI 330			May
LBI 340		Sep	May

LBI 350		Sep	May
LBI 360		Sep	May
LBI 370		Sep	May
LBI 373			May, Nov
LBI 377			May, Nov
LBI 380	Oct, Dec	Jan, Sep	May, Nov
LBI 383			May, Nov
LBI 387			May, Nov
LBI 390	Oct, Dec	Jan, Sep	May, Nov
LBI 393			May, Nov
LBI 397			May, Nov
LBI 400	Oct, Dec	Jan, Sep	May, Nov
LBI 403			May, Nov
LBI 407			May, Nov
LBI 410	Oct, Dec	Jan, Sep	May, Nov
LBI 413			May, Nov
LBI 417			May, Nov
LBI 420	Oct, Dec	Jan, Sep	May, Nov
LBI 423			May, Nov
LBI 427			May, Nov

LBI 430	Oct, Dec	Jan, Sep	May, Nov
LBI 433			
LBI 437			
LBI 440	Oct, Dec	Jan, Sep	May, Nov
LBI 443			
LBI 447			
LBI 450	Oct, Dec	Jan, Sep	May
LBI 460	Oct, Dec	Jan, Sep	May
LBI 470	Oct	Sep	May
LBI 480	Oct	Sep	May
LBI 490	Oct	Sep	May
LBI 500	Oct	Sep	May
LBI 510	Oct	Sep	May
LBI 520		Sep	May
LBI 530		Sep	May
LBI 540		Sep	May
LBI 550			May
LBI 560			May
LBI 570			May
LBI 580			May

LBI 590			May
LBI 600			May
LBI 610			May
LBI 620			May
LBI 630			May
LBI 640			May
LBI 650			May
LBI 660			May
LBI 670			May
LBI 680			May
LBI 690			May
LBI 700			May
LBI 710			May
LBI 720			May
LBI 730			May
LBI 740			May
LBI 750			May
LBI 760			May
LBI 770			May
LBI 780			May

LBI 790			May
LBI 800			May
LBI 810			May
LBI 820			May
LBI 830			May
LBI 840			May
LBI 850			May
LBI 860			May
LBI 870			May
LBI 880			May
LBI 890			May
LBI 900			May
LBI 910			May
LBI 920			May
LBI 930			May
LBI 940			May

Table B2. Available profile data for Brigantine, NJ					
Profile File Name	**Year**				
	2000	**2005**	**2006**	**2007**	**2008**
BI00A		Nov			Jun, Oct
BI00B		Nov			Jun, Oct
BI01	Oct	Nov	Sep	Oct	Jun, Oct
BI02	Oct	Nov	Sep	Oct	Jun, Oct
BI03	Oct	Nov	Sep	Oct	Jun, Oct
BI03A		Nov	Sep	Oct	Jun, Oct
BI04	Oct	Nov	Sep	Oct	Jun, Oct
BI05	Oct	Nov	Sep	Oct	Jun, Oct
BI05A		Nov	Sep	Oct	Jun, Oct
BI06	Oct	Nov	Sep	Oct	Jun, Oct
BI07	Oct	Nov	Sep	Oct	Jun, Oct
BI08	Oct	Nov	Sep	Oct	Jun, Oct
BI09	Oct		Sep	Oct	Jun, Oct
BI10	Oct	Nov	Sep	Oct	Jun, Oct
BI11	Oct	Nov	Sep	Oct	Jun, Oct
BI12	Oct	Nov	Sep	Oct	Jun, Oct
BI13	Oct		Sep	Oct	Jun, Oct
BI14	Oct	Nov	Sep	Oct	Jun, Oct

BI15	Oct		Sep	Oct	Jun, Oct
BI16	Oct	Nov	Sep	Oct	Jun, Oct
BI17	Oct		Sep	Oct	Jun, Oct
BI18	Oct	Nov	Sep	Oct	Jun, Oct
BI19	Oct		Sep	Oct	Jun, Oct
BI20	Oct	Nov	Sep	Oct	Jun, Oct
BI21	Oct		Sep	Oct	Jun, Oct
BI22	Oct	Nov	Sep	Oct	Jun, Oct
BI23	Oct		Sep	Oct	Jun, Oct
BI24	Oct	Nov	Sep	Oct	Jun, Oct
BI25	Oct		Sep	Oct	Jun, Oct
BI26	Oct	Nov	Sep	Oct	Jun, Oct
BI27	Oct		Sep	Oct	Jun, Oct
BI28	Oct	Nov	Sep	Oct	Jun, Oct
BI29	Oct		Sep	Oct	Jun, Oct
BI30	Oct	Nov	Sep	Oct	Jun, Oct
BI31			Sep	Oct	Jun, Oct
BI32		Nov	Sep	Oct	Jun, Oct
BI33			Sep	Oct	Jun, Oct
BI34		Nov	Sep	Oct	Jun, Oct
BI35			Sep	Oct	Jun, Oct

BI36		Nov	Sep	Oct	Jun, Oct
BI37			Sep	Oct	Jun, Oct
BI38	Oct	Nov	Sep	Oct	Jun, Oct
BI39			Sep	Oct	Jun, Oct
BI40	Oct	Nov	Sep	Oct	Jun, Oct
BI41			Sep	Oct	Jun, Oct
BI42	Oct	Nov	Sep	Oct	Jun, Oct
BI43		Nov	Sep	Oct	Jun, Oct

Table B3. Available profile data for Seven Mile Island, NJ

Profile File Name	Year						
	2002	2003	2004	2005	2006	2007	2008
SM001	Sep	Apr, Sep	Mar, Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM002	Sep	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM003	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM004	Sep, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM005	Sep,	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM006	Sep, Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM007	Sep, Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM008	Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM009	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct

SM010	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM011	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM012	Sep, Oct, Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM013	Sep, Oct, Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM014	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM015	Sep, Oct, Nov	Apr, Sep	Oct	Dec	Nov	Sep, May	Mar, Oct
SM016	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM017	Sep, Oct, Nov	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM018	Sep,	Apr, Sep	Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM018A							Mar, Oct
SM019	Sep,	Apr, Sep	Mar, Oct	Jan, Dec	Nov	Sep, May	Mar, Oct
SM019A							Mar, Oct
SM020	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM021	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM021A							Mar, Oct
SM022	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM022A							Mar, Oct
SM022B							Mar, Oct
SM022C							Mar, Oct
SM023	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM024	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct

SM025	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM026	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM027	Sep,	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM028	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM029	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM030	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM031	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM032	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM033	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM034	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM035	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM036	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM037	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM038	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM039	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM040	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM041	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM042	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM043	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM044	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM045	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct

SM046	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM047	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM048	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM049	Sep	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM050	Sep	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM051	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM052	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM053	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM054	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM055	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM056	Sep, Oct, Nov	Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM057		Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM058		Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct
SM059		Apr, Sep	Mar, Oct	Dec	Nov	Sep, May	Mar, Oct