

Southern Pinelands Natural Heritage Trail Scenic Byway Corridor Management Plan

Tasks 5 and 6: Physical and Visual Survey

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Attachments

- Maps of Byway Segments (3 pages)
- Map of Visual Survey Ratings (1 page)
- Physical Survey Rating Summary (3 pages)
- Visual Survey Rating Summary (3 pages)
- Physical/Visual Survey Rating Sheets and Segment Maps (81 sets)

Introduction

The New Jersey Scenic Byways Program requires an assessment of the physical and visual characteristics of a scenic byway. The physical survey lists the types of features for which management measures may be necessary and indicates the importance to the byway of protecting, enhancing, mitigating or otherwise addressing each feature. The visual survey defines the overall experience of traveling along the byway, using the concepts of visual unity, intactness, and vividness.

Definition of Byway Segments

In order to carry out the physical and visual surveys, segments of the scenic byway must be defined based on similarities among visual characteristics. Because the features and characteristics of a byway can vary widely, the Program recognizes that segments may vary significantly in length:

Segments may be as short as one-tenth of a mile where there is a great diversity of views encountered at low speeds within short distances (such as mountain roads or urban areas). Where the terrain is expansive, segments may be as large as one mile or more.

For the purpose of this analysis, the Southern Pinelands Natural Heritage Trail was divided into 81 segments, varying in length from 0.17 mile to 7.42 miles. As shown in Table 1, more than 80 percent of the segments are between one-half mile and 3 miles in length, representing almost 75 percent of the total length of the byway.

Table 1: Byway Segments by Length

Segment Length (miles)	Number of Segments	% of Segments	Total Length (miles)	% of Byway Length
>0 - 0.5	8	9.9%	2.5	1.9%
>0.5 - 0.75	11	13.6%	6.5	5.1%
>0.75 - 1	11	13.6%	9.6	7.5%
>1 - 2	28	34.6%	39.1	30.4%
>2 - 3	16	19.8%	39.0	30.3%
>3 - 4	4	4.9%	13.2	10.3%
>4	3	3.7%	18.7	14.5%
Byway Total	81	100.0%	128.6	100.0%

Nearly half of both the number of segments and the total length of the byway are in Atlantic County (see Table 2). Cape May and Burlington Counties represent about 40% of the segments and roadway length. Cumberland and Ocean Counties each represent less than 10% of the byway.

Table 2: Byway Segments by County

County	Number of Segments	% of Segments	Length (miles)	% of Byway Length	Average Length
Ocean	5	6.2%	5.3	4.1%	1.06
Burlington	15	18.5%	22.3	17.3%	1.49
Atlantic	38	46.9%	59.9	46.6%	1.58
Cape May	16	19.8%	30.7	23.9%	1.92
Cumberland	7	8.6%	10.4	8.1%	1.49
Byway Total	81	100.0%	128.6	100.0%	1.59

Approach

The New Jersey Scenic Byways Program Handbook includes sample physical and visual rating sheets to be used for the physical and visual surveys. The consultants for the Southern Pinelands Natural Heritage Trail Scenic Byway Corridor Management Plan reviewed these sheets and proposed a modified approach, recognizing the length and complexity of the byway and the number of segments that might be identified. The modified approach combines the physical and visual survey ratings into one page per segment, and includes a single rating for each segment rather than separate ratings for each direction of travel along the byway.

The physical and visual survey ratings for each segment are listed in two three-page tables following the report narrative. These are followed by a two-page report for each segment, consisting of a map, an orthophoto, and the physical/visual rating form.

Physical Survey Ratings

The physical survey involves identifying whether specific physical features are visible from the scenic byway segment, and assessing the visual significance of such features to the overall experience of the byway. Each feature listed on the survey form that exists on the byway segment is given a rating from +5 (meaning that the feature is of high visual quality enhancing the traveler's experience) to -5 (a substantial intrusion on the traveler's experience). The positive and negative ratings are then summed separately, giving a total positive score and a total negative score. Although not included on the survey rating sheet, these two sums can be combined to give a single "net physical rating" score.

There are 41 features listed on the form, each with a potential range from +5 to -5. Thus, the total score for a segment could in theory range from +205 (i.e., 41 x 5) to -205. However, because segments are supposed to be visually consistent, some of the features are mutually exclusive (to take an extreme example, "mountains" and "flat terrain" are unlikely to appear in the same visual segment). In addition, some physical features are much more likely to receive positive scores (e.g., waterfalls, woodlands) and others will typically receive negative scores (e.g., "junk, graffiti or litter"). In practice, the total ratings for any roadway segment will probably fall well within the range of +100 to -100. For the Southern Pinelands Natural Heritage Trail, the actual range as assessed by the consulting team is between +59 (Main Street/Aetna Drive in Corbin City – exceptional historic and riverside landscape along the Tuckahoe River with historic homes and views of water) and -12 (two segments on Route 9: the West Tuckerton commercial strip, and a section in Galloway with a mix of old billboards and commercial and residential structures).

How should these ratings be interpreted and used? It is not reasonable to compare physical survey ratings between different regions because the potential scores for any segment depend

on the regional landforms and settlement patterns, and some features on the rating form are not present in all regions: for example, mountains, cliffs and waterfalls will not enhance the rating of a roadway segment in the southern Pinelands area. Therefore, rather than focusing on the net physical rating, or the total positive or negative ratings on which it is based, it is more important to use these numbers as indicators of a segment's *relative* visual quality compared to other segments of the byway of which it is a part. Then, one can look more closely at the individual physical features on that segment to determine management priorities: for example, do the significant positive features need protection or enhancement? How can significant negative features be mitigated?

The following tables and charts summarize the physical survey ratings for the Southern Pinelands Natural Heritage Trail. Table 3 and Figure 1 group the 81 segments into six ranges of "net physical rating" (i.e., the sum of all the positive and negative ratings for features in a segment), and Figure 2 plots the net visual significance scores against the segment length for the individual segments. Average lengths are greater for those segments with net ratings higher than 10, and are lowest for those with negative net ratings, indicating a modest relationship between segment length and quality. This reflects the generally high quality of the scenic byway, along which visual intrusions are typically short in relation to the overall route.

Table 3: Number and Length of Scenic Byway Segments by Physical Survey Rating Ranges

"Net" Physical Survey Rating	Number of Segments	Total Length of Segments	Percent of Byway Length	Average Segment Length
>30	8	16.4	13%	2.1
>20 – 30	16	26.2	20%	1.6
>10 – 20	23	41.3	32%	1.8
>5 – 10	11	12.6	10%	1.1
>0 – 5	13	21.8	17%	1.7
0 or less	10	10.3	8%	1.0
Byway Total	81	128.6	100%	1.6

Figure 1: Length of Scenic Byway Segments by Physical Survey Rating Ranges

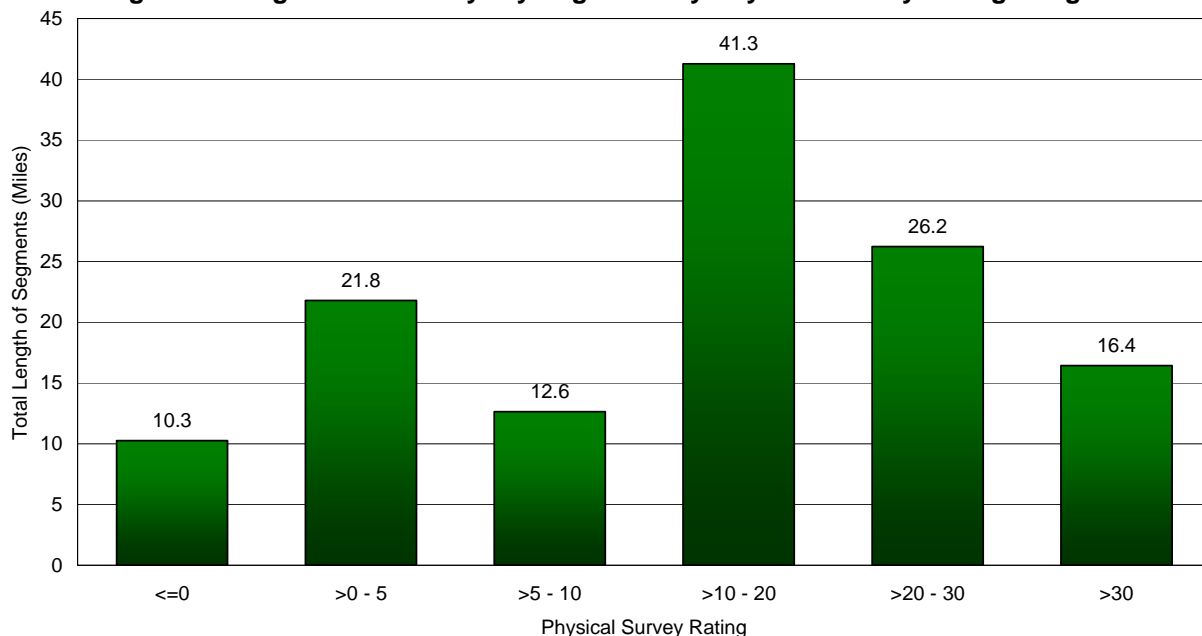


Figure 2: Physical Survey Ratings by Segment Length

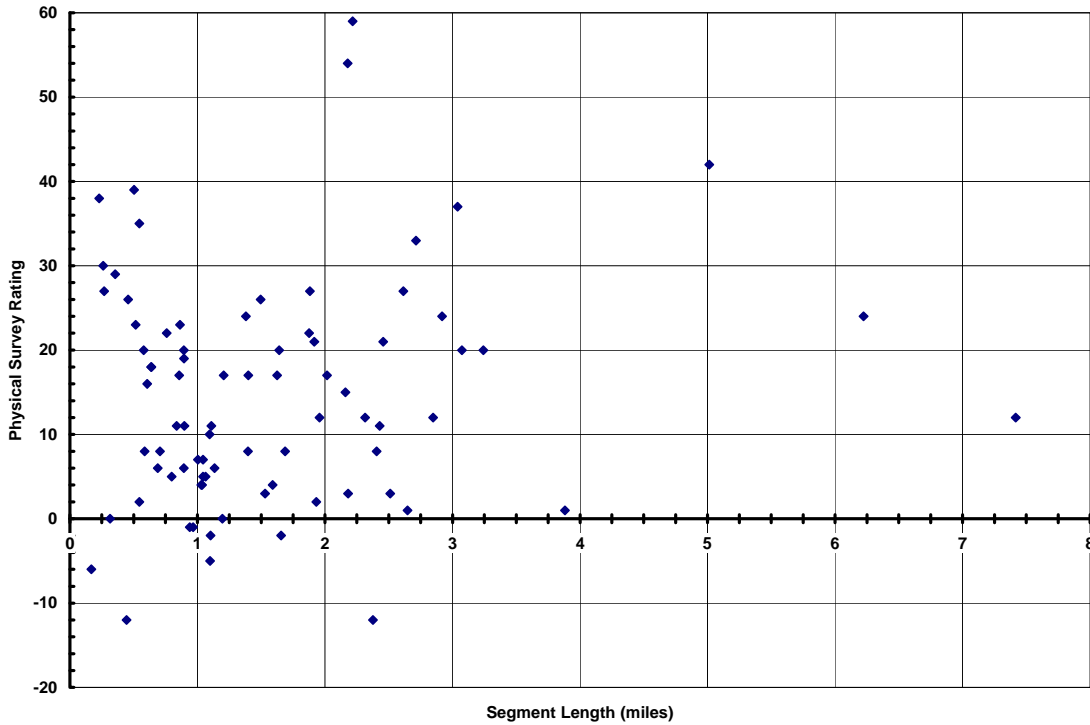


Table 4 summarizes the physical survey ratings by county. Atlantic County, with nearly half of the byway segments and mileage, has the highest average visual significance scores per segment and per mile. Much of the scenic byway in Atlantic County passes through large areas of protected open space, including three county parks and several wildlife management areas, as well as crossing and providing access to the Mullica, Great Egg Harbor, and Tuckahoe Rivers and numerous smaller streams.

The segments in Ocean and Cumberland Counties received lower visual significance ratings. This reflects the characteristics of the particular segments in these two areas, including the reasons for designating the segments.

- In Ocean County, the state scenic byway was defined to provide a connection to the Tuckerton Seaport Museum, and much of the route is on commercial portions of US 9 as well as residential sections of Stage Road.
- In Cumberland County, the state scenic byway follows Delsea Drive (New Jersey Route 47) which has low-density commercial areas as well as some rural landscapes. In this case, Route 347 is clearly more appropriate as a route for the byway: it is of higher scenic quality, it is more closely related to the byway’s Pinelands story, and it provides direct access to natural and recreational resources (Belleplaine State Forest and East Creek Pond). However, officials in Maurice River Township were concerned about adding more traffic to Route 347, which is a direct route from North Dennis to Bricksboro and therefore serves as the Route 47 bypass for traveling between Cape May and NJ 55 to Philadelphia or the Delaware Bay Bridge.

Table 4: Physical Survey Ratings – Summary by County

County	Number of Segments	Total Length of Segments	Total Physical Ratings	Average Rating per Segment
Ocean	5	5.3	22.0	4.4
Burlington	15	22.3	173.0	11.5
Atlantic	38	59.9	663.0	17.4
Cape May	16	30.7	243.0	15.2
Cumberland	7	10.4	78.0	11.1
Byway Total	81	128.6	1,179.0	14.6

Visual Survey Ratings

The “Visual Survey Rating Summary” sheets following this narrative present the ratings for each component of the visual rating and the composite visual rating score for each segment, computed as the average of the three component scores.

Unweighted Visual Survey Ratings

The raw (unweighted) ratings range from 1 to 5, with a mean of 2.77 and a median of 2.67. Figure 3 plots these ratings against the length of the segments, Table 5 summarizes the segment ratings using four equal-interval groupings, and Figure 4 shows the total length of the byway for each visual survey rating level.

Figure 3: Unweighted Visual Survey Rating by Segment Length

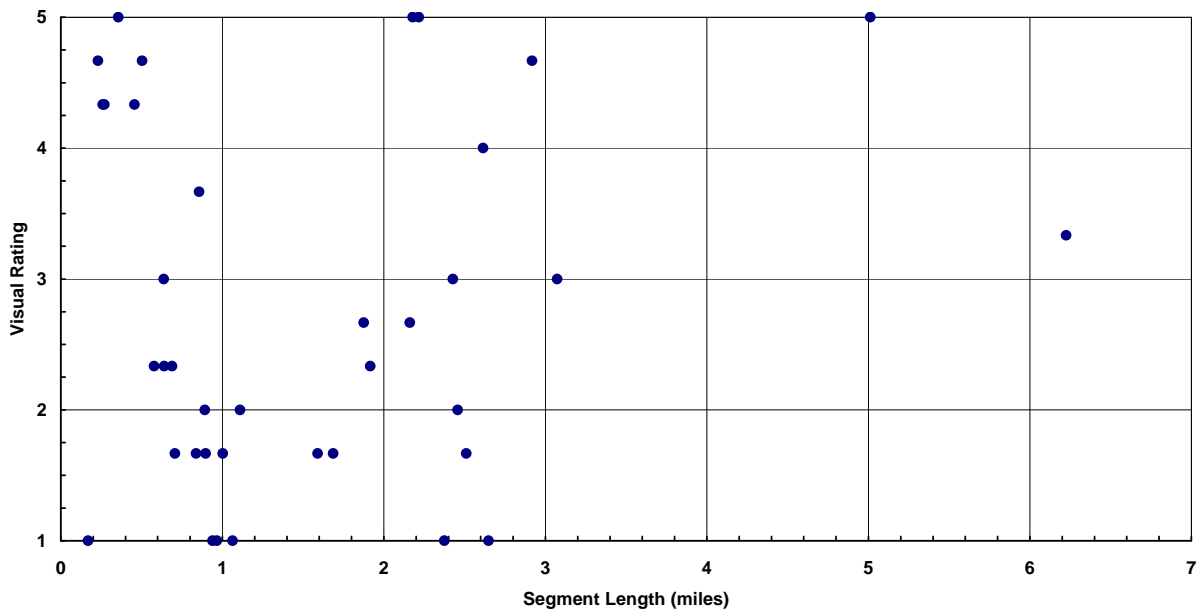
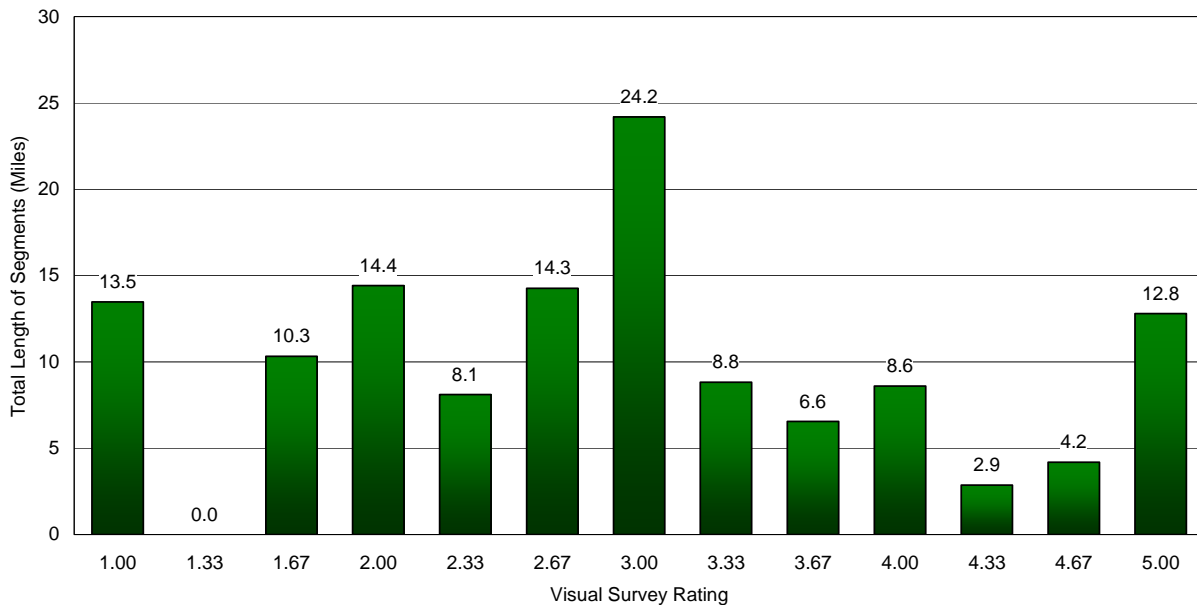


Table 5: Number and Length of Scenic Byway Segments by Visual Survey Rating Ranges

Visual Survey Rating	Number of Segments	Total Length of Segments	Percent of Byway Length	Average Length
4 – 5	17	28.5	22%	1.7
3 – <4	21	39.6	31%	1.9
2 – <3	24	36.8	29%	1.5
1 – <2	19	23.8	19%	1.3
Byway Total	81	128.6	100%	1.6

Figure 4: Length of Scenic Byway Segments by Visual Survey Ratings



Weighted Visual Survey Ratings

By themselves, these rating scores do not provide an accurate picture of the scenic quality of the Southern Pinelands Natural Heritage Trail. For example, short segments that contain intrusions on the visual experience do not set the tone for the entire 130-mile route of the byway and therefore should not be given the same weight as longer segments with very high visual quality. To better represent each segment's contribution to the overall byway experience, therefore, the Visual Survey Rating Summary sheets also include a weighted rating created by multiplying the raw visual survey rating by the segment length (in miles). These weighted scores range from a low of 0.17 (raw score of 1.00 multiplied by segment length of 0.17 mile) to a high of 25.1 (raw score of 5.00 multiplied by segment length of 5.01 miles).

Figure 5 plots the weighted visual survey ratings against segment length for the individual segments, and Table 6 and Figure 6 present these weighted ratings in five equal-interval groupings. As the table and figures illustrate, the byway route is primarily characterized by long stretches of high scenic quality, interrupted by generally shorter segments of lesser visual attractiveness.

Figure 5: Weighted Visual Survey Rating by Segment Length

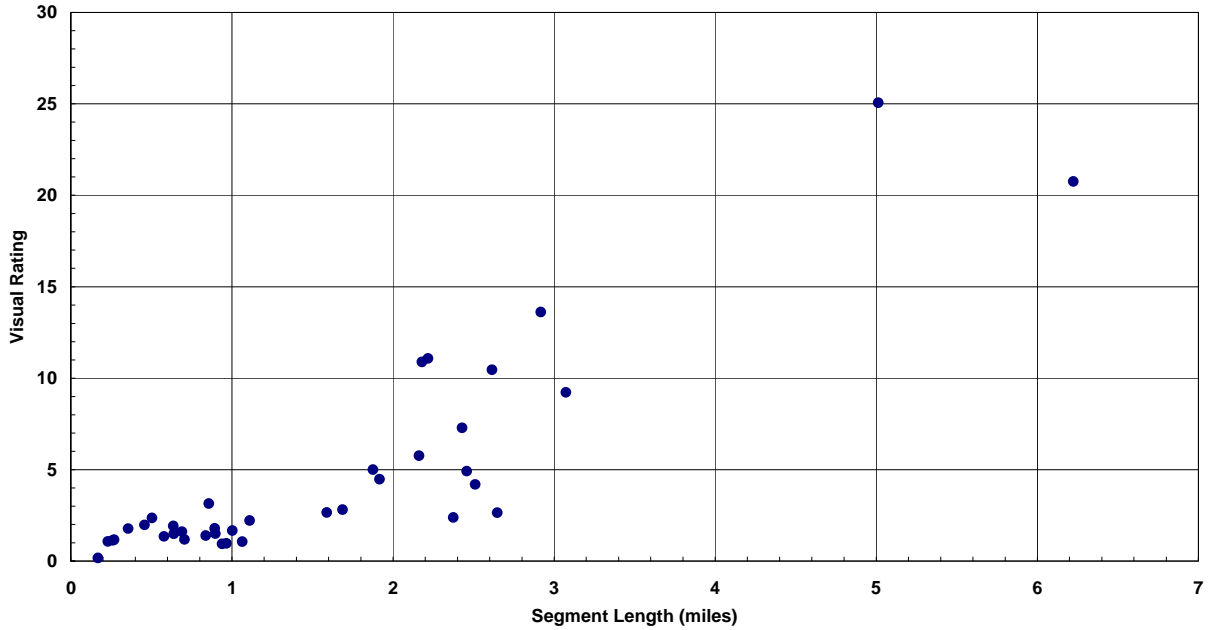
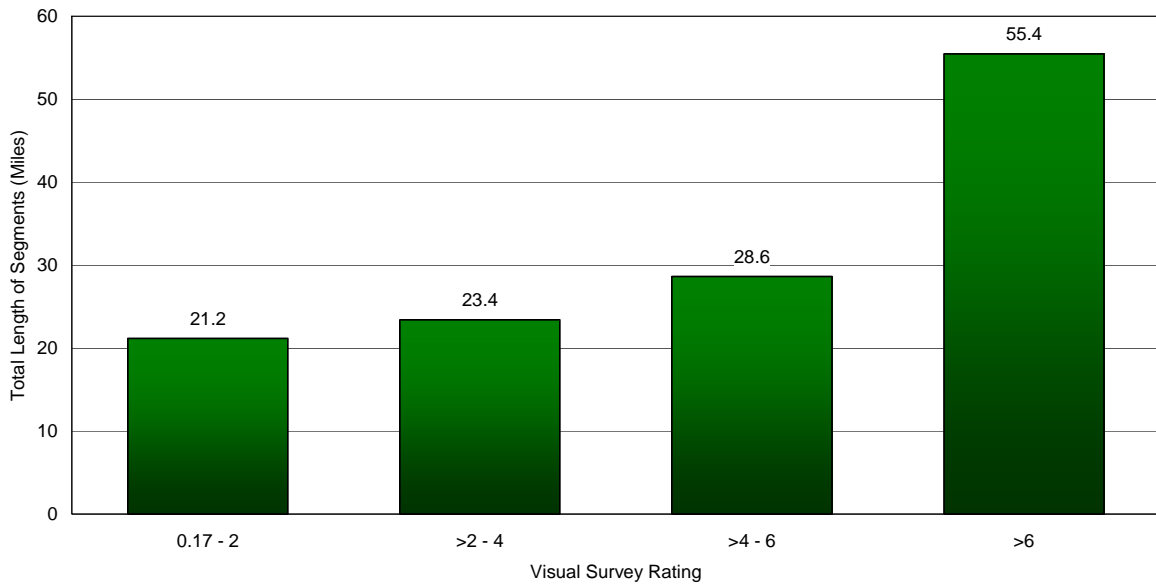


Table 6: Weighted Visual Survey Ratings – Summary by Ratings

Segment Rating	Number of Segments	Total Length of Segments	Percent of Byway Length	Average Length
>6	17	55.4	43%	3.26
>4 – 6	15	28.6	22%	1.91
>2 – 4	20	23.4	18%	1.17
0.17 – 2	29	21.2	16%	0.73
Byway Total	81	128.6	100%	1.59

Figure 6: Length of Scenic Byway Segments by Weighted Visual Survey Ratings



Weighted Visual Survey Ratings by County

Table 7 and Table 8 summarize the weighted visual survey ratings by county. Atlantic and Cape May Counties have the most byway mileage with the highest weighted ratings (Table 7), while Burlington County has the highest average weighted rating (Table 8). The highest average visual quality ratings are in Burlington, Atlantic and Cape May Counties, which together account for 88 percent of the total byway length. The lower ratings for Ocean and Cumberland Counties are due to the fact that, as noted earlier, the segments of the byway route in these two counties were delineated principally for reasons other than their scenic or other intrinsic qualities, i.e., linking the byway to Tuckerton Seaport in Ocean County, and avoiding Route 347 in Cumberland County.

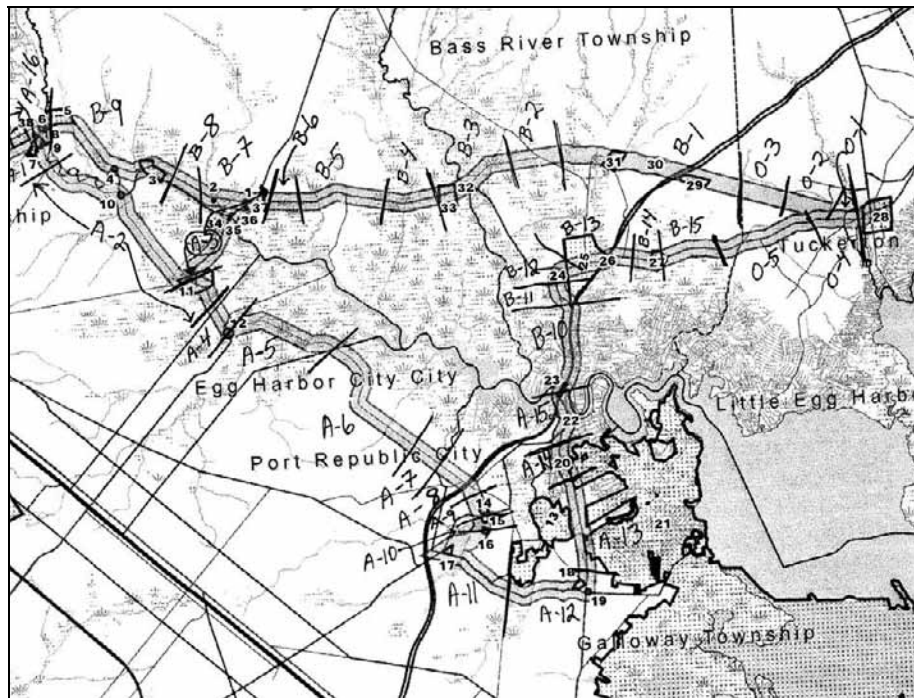
Table 7: Weighted Visual Survey Ratings by County

Weighted Rating	Total Length of Byway Segments In County				
	Ocean	Burlington	Atlantic	Cape May	Cumberland
>0 - 1	0.4	0.3	2.1	-	-
>1 - 2	1.9	2.7	9.5	2.5	1.7
>2 - 3	2.9	0.8	9.9	2.6	2.1
>3 - 4	-	4.2	0.9	-	-
>4 - 5	-	1.4	6.9	8.5	-
>5 - 6	-	3.6	4.0	2.8	1.4
>6	-	9.3	26.7	14.2	5.3
Total	5.3	22.3	59.9	30.7	10.4

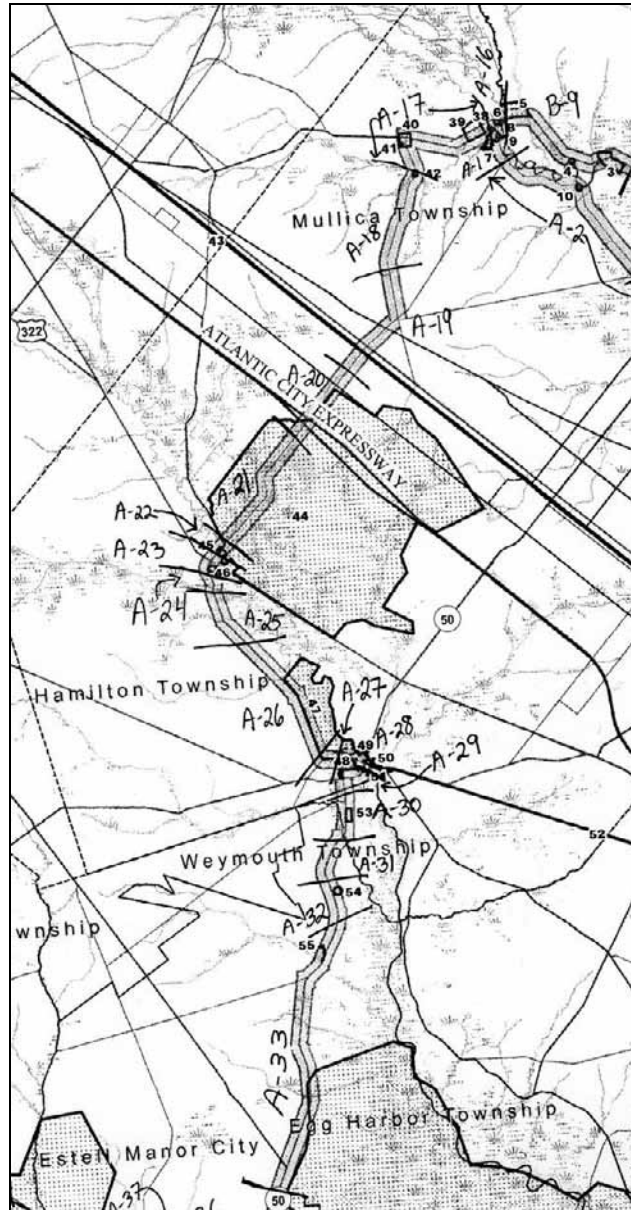
Table 8: Average Weighted Visual Survey Ratings by County

County	Number of Segments	Total Length of Segments	Average Weighted Rating
Ocean	5	5.3	1.69
Burlington	15	22.3	3.18
Atlantic	38	59.9	2.92
Cape May	16	30.7	2.92
Cumberland	7	10.4	2.72
Byway Total	81	128.6	2.90

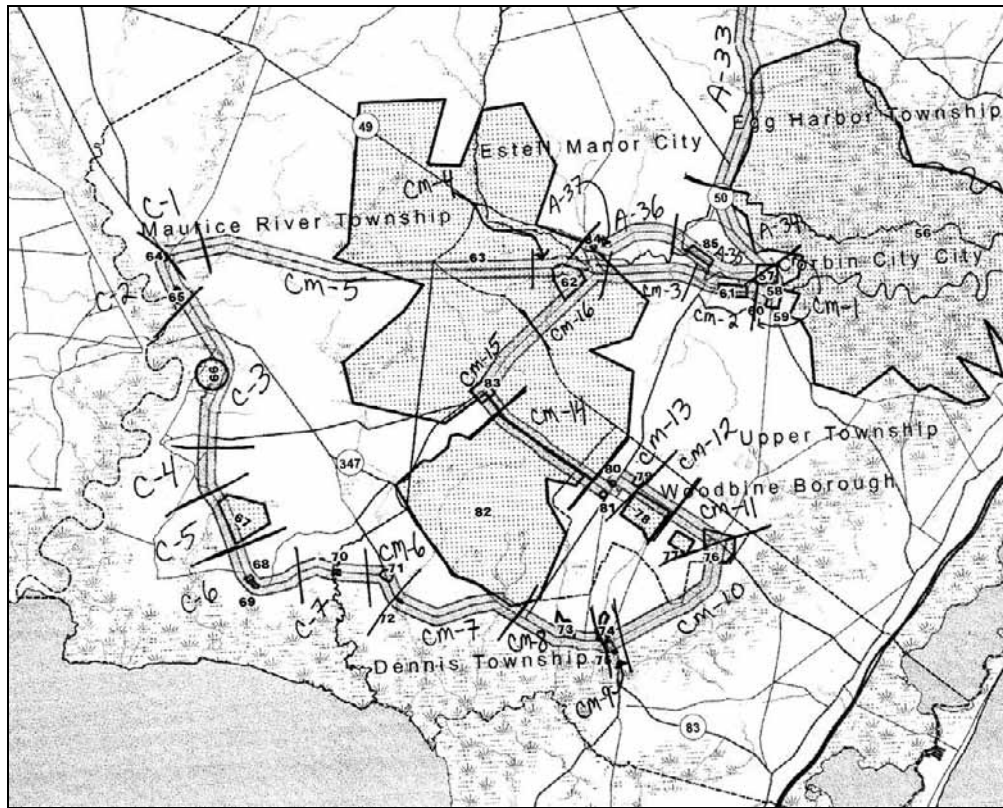
Map 1: Byway Segments – Northern Loop



Map 2: Byway Segments – Middle Link



Map 3: Byway Segments – Southern Loop



Southern Pinelands Natural Heritage Trail



**New Jersey Scenic Byways Program
Physical Survey Rating Summary**

SCENIC BYWAY NAME: Southern Pinelands Natural Heritage Trail

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SEGMENT ID	POSITIVE	NEGATIVE	TOTAL	SEGMENT LENGTH	WEIGHTED RATING
A-01	7	-1	6	0.69	38
A-02	42		42	5.01	41
A-03	54		54	2.18	16
A-04	20		20	0.58	9
A-05	11		11	2.43	57
A-06	21		21	2.46	39
A-07	9	-4	5	1.06	56
A-08	8	-9	-1	0.97	74
A-09	39		39	0.50	5
A-10	38		38	0.23	1
A-11	8	-7	1	2.65	70
A-12	24	-2	22	1.88	31
A-13	1	-13	-12	2.38	79
A-14	29	-3	26	0.46	7
A-15	3	-4	-1	0.94	75
A-16	31	-1	30	0.26	2
A-17	27		27	2.61	35
A-18	15		15	2.16	44
A-19	11	-8	3	2.51	68
A-20	6	-2	4	1.59	64
A-21	24		24	2.92	42
A-22	29		29	0.36	4
A-23		-6	-6	0.17	81
A-24	8		8	0.71	32
A-25	11		11	1.11	36
A-26	20		20	3.07	47
A-27	27		27	0.27	3
A-28	17		17	0.86	19
A-29	24	-6	18	0.64	11
A-30	9	-2	7	1.00	43
A-31	11		11	0.90	26
A-32	11		11	0.84	25
A-33	24		24	6.22	61
A-34	8		8	1.69	55
A-35	18		18	0.64	12
A-36	59		59	2.22	14
A-37	26	-5	21	1.92	33
A-38	6		6	0.89	45

**New Jersey Scenic Byways Program
Physical Survey Rating Summary**

SCENIC BYWAY NAME: Southern Pinelands Natural Heritage Trail

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SEGMENT ID	POSITIVE	NEGATIVE	TOTAL	SEGMENT LENGTH	WEIGHTED RATING
B-01	6	-5	1	3.88	71
B-02	5		5	0.80	48
B-03	17		17	1.62	34
B-04	17		17	1.21	23
B-05	12		12	1.96	50
B-06	10		10	1.09	37
B-07	5		5	1.04	54
B-08	23		23	0.86	13
B-09	37		37	3.04	28
B-10	24	-16	8	2.41	63
B-11	10	-10	0	0.31	72
B-12	16		16	0.61	15
B-13	21	-4	17	1.40	30
B-14	3	-1	2	0.54	62
B-15	4	-1	3	1.53	65
C-01	8		8	0.59	24
C-02	11	-4	7	1.04	46
C-03	23	-3	20	3.24	49
C-04	4		4	1.04	60
C-05	4	-6	-2	1.10	77
C-06	17		17	2.02	40
C-07	24		24	1.38	20
CM-01	25	-2	23	0.52	8
CM-02	20		20	1.64	27
CM-03	26		26	1.50	21
CM-04	2	-2	0	1.19	72
CM-05	12		12	7.42	66
CM-06	19		19	0.89	18
CM-07	33		33	2.71	29
CM-08	28	-1	27	1.88	22
CM-09	35		35	0.54	6
CM-10	12		12	2.85	58
CM-11	2	-7	-5	1.10	78
CM-12	20		20	0.89	17
CM-13	10	-2	8	1.40	51
CM-14	3		3	2.18	67
CM-15	12		12	2.32	53
CM-16	2	-4	-2	1.66	76

**New Jersey Scenic Byways Program
Visual Survey Rating Summary**

SCENIC BYWAY NAME: Southern Pinelands Natural Heritage Trail

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SEGMENT ID	UNITY	INTACTNESS	VIVIDNESS	UNWEIGHTED AVERAGE	SEGMENT LENGTH	WEIGHTED RATING
A-01	3	3	1	2.33	0.69	1.61
A-02	5	5	5	5.00	5.01	25.06
A-03	5	5	5	5.00	2.18	10.89
A-04	2	3	2	2.33	0.58	1.35
A-05	4	4	1	3.00	2.43	7.28
A-06	2	3	1	2.00	2.46	4.91
A-07	1	1	1	1.00	1.06	1.06
A-08	1	1	1	1.00	0.97	0.97
A-09	5	5	4	4.67	0.50	2.35
A-10	5	5	4	4.67	0.23	1.07
A-11	1	1	1	1.00	2.65	2.65
A-12	3	3	2	2.67	1.88	5.00
A-13	1	1	1	1.00	2.38	2.38
A-14	4	4	5	4.33	0.46	1.98
A-15	1	1	1	1.00	0.94	0.94
A-16	5	5	3	4.33	0.26	1.13
A-17	4	4	4	4.00	2.61	10.46
A-18	3	3	2	2.67	2.16	5.76
A-19	2	2	1	1.67	2.51	4.18
A-20	2	2	1	1.67	1.59	2.65
A-21	5	5	4	4.67	2.92	13.62
A-22	5	5	5	5.00	0.36	1.78
A-23	1	1	1	1.00	0.17	0.17
A-24	2	2	1	1.67	0.71	1.18
A-25	2	2	2	2.00	1.11	2.22
A-26	3	3	3	3.00	3.07	9.22
A-27	4	4	5	4.33	0.27	1.16
A-28	4	4	3	3.67	0.86	3.14
A-29	2	3	4	3.00	0.64	1.91
A-30	2	2	1	1.67	1.00	1.67
A-31	2	2	1	1.67	0.90	1.50
A-32	2	2	1	1.67	0.84	1.39
A-33	4	4	2	3.33	6.22	20.75
A-34	2	2	1	1.67	1.69	2.81
A-35	2	2	3	2.33	0.64	1.49
A-36	5	5	5	5.00	2.22	11.08
A-37	3	2	2	2.33	1.92	4.47
A-38	2	2	2	2.00	0.89	1.78

New Jersey Scenic Byways Program Visual Survey Rating Summary

SCENIC BYWAY NAME: Southern Pinelands Natural Heritage Trail

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SEGMENT ID	UNITY	INTACTNESS	VIVIDNESS	UNWEIGHTED AVERAGE	SEGMENT LENGTH	WEIGHTED RATING
B-01	3	3	2	2.67	3.88	10.35
B-02	3	3	2	2.67	0.80	2.13
B-03	4	3	4	3.67	1.62	5.96
B-04	3	3	3	3.00	1.21	3.62
B-05	3	3	2	2.67	1.96	5.22
B-06	3	3	3	3.00	1.09	3.28
B-07	3	3	3	3.00	1.04	3.13
B-08	4	4	4	4.00	0.86	3.45
B-09	5	5	5	5.00	3.04	15.20
B-10	4	4	4	4.00	2.41	9.62
B-11	1	1	1	1.00	0.31	0.31
B-12	3	3	3	3.00	0.61	1.82
B-13	3	3	3	3.00	1.40	4.20
B-14	2	2	2	2.00	0.54	1.09
B-15	1	1	1	1.00	1.53	1.53
C-01	3	4	3	3.33	0.59	1.95
C-02	3	3	2	2.67	1.04	2.78
C-03	3	2	2	2.33	3.24	7.56
C-04	3	2	2	2.33	1.04	2.42
C-05	2	2	1	1.67	1.10	1.84
C-06	3	4	3	3.33	2.02	6.72
C-07	4	4	3	3.67	1.38	5.06
CM-01	4	4	3	3.67	0.52	1.89
CM-02	4	3	2	3.00	1.64	4.92
CM-03	3	3	3	3.00	1.50	4.49
CM-04	2	2	2	2.00	1.19	2.39
CM-05	4	4	1	3.00	7.42	22.25
CM-06	2	2	2	2.00	0.89	1.79
CM-07	4	4	4	4.00	2.71	10.85
CM-08	4	4	5	4.33	1.88	8.15
CM-09	5	5	4	4.67	0.54	2.53
CM-10	2	2	2	2.00	2.85	5.70
CM-11	1	1	1	1.00	1.10	1.10
CM-12	3	3	2	2.67	0.89	2.38
CM-13	3	3	3	3.00	1.40	4.19
CM-14	4	4	3	3.67	2.18	7.99
CM-15	2	2	2	2.00	2.32	4.63
CM-16	3	3	2	2.67	1.66	4.42

