See previous page for left side of display

ALTERNATIVE RETAINED FOR DETAILED EVALUATION - GREEN + SPUR ALTERNATIVE

ENGINEERING - TRAFFIC & SAFETY CONSIDERATIONS

ENGINEERING / TRAFFIC

Advantages

- Lowest impact on existing communities (within 600 feet)
- Higher potential to minimize effects on adjacent communities since alternative passes under most local roads
- Lowest impacts on traffic during construction
- Improves safety by separating local from through traffic, including truck traffic
- Mid-range number of properties directly impacted
- Green South reduces indirect effects on the Airmont community (Scott Run Business Park would provide a buffer) and St. George's Vo-Tech High School
- Significant reduction in traffic on existing US 301, Boyds Corner Road, Cedar Lane Road, Choptank Road and SR 299
- Highest volume using new US 301
- Mid-range cost

Disadvantages

- Skewed (angled) crossing of Scott Run (environmental impacts) – South Option
- Proximity to new Appoquinimink High School (under construction) west of Middletown, and Cedar Lane Elementary School and Middle School (under construction) – South Option
- Potential indirect effect on the Airmont Community and St. George's Vo-Tech High School – North Option

Comparison of the Retained Alternatives - Engineering

APRIL 10-11, 2006 ALTERNATIVES IMPACT MATRIX	YELLOW RANGE OF IMPACTS	PURPLE + SPUR RANGE OF IMPACTS	BROWN NORTH RANGE OF IMPACTS	BROWN SOUTH RANGE OF IMPACTS	GREEN + SPUR NORTH RANGE OF IMPACTS	GREEN + SPUR SOUTH RANGE OF IMPACTS
General Considerations						
Preliminary Cost ($ millions)[1]	$694	$618 - $674	$581	$541	$531 - $582	$618 - $674
ENGINEERING CONSIDERATIONS						
Total length of alternative (miles)	12.7 - 12.9	15.3 - 15.5	15.5	15.9	17.5	17.3
Total Area of Limit of Construction (acres)	855 - 880.49	813 - 889	921	907	863 - 935	847 - 919
Number of Properties Impacted	354	140 - 167	113	123	125 - 149	123 - 148
Interchange(s)						
Number	3	4	5	5	5	5
1 Location(s)	Levels Road/SR15	Levels Road/SR15	Levels Road/SR15	Levels Road/SR15	Levels Road/SR15	Levels Road/SR15
Type	Split Diamond	Diamond	Diamond	Diamond	Diamond	Diamond
2 Location(s)	North of Middletown	North of Middletown	SR896 at the base of Summit Bridge	North of Middletown	North of Middletown	North of Middletown
Type	Slip Ramps	Diamond	Partial Cloverleaf	Half Diamond	Diamond	Diamond
3 Location(s)	SR1 at Boyds Corner Road	SR1 at Boyds Corner Road	SR896 north of Summit Aviation	SR896 north of Summit Aviation	Jamison Corner Road	Jamisons Corner Road
Type	Directional	Directional	Partial Cloverleaf	Partial Cloverleaf	Diamond	Diamond
4 Location(s)		SR15/SR896/Choptank Road	Jamison Corner Road	Jamison Corner Road	SR1 North of Toll Plaza	SR1 North of Toll Plaza
Type		Diamond	Diamond	Diamond	Directional	Directional
5 Location(s)			SR1 North of Toll Plaza	SR1 North of Toll Plaza	SR15/SR896/Choptank Road	SR15/SR896/Choptank Road
Type			Directional	Directional	Diamond	Diamond
6 Location(s)						
Type						
7 Location(s)						
Type						
Overpass(es)						
Number	11	11	8	8	9	9
1 Location(s)	Strawberry Lane	Strawberry Lane	Strawberry Lane	Strawberry Lane	Strawberry Lane	Strawberry Lane
2 Location(s)	Middletown Business & Technology Park	Bunker Hill Road	Bunker Hill Road	Bunker Hill Road	Bunker Hill Road	Bunker Hill Road
3 Location(s)	Bunker Hill Road	Bohemia Mill/Armstrong Corner Road	Bohemia Mill Road	Bohemia Mill Road	Bohemia Mill/Armstrong Corner Road	Bohemia Mill/Armstrong Corner Road
4 Location(s)	Broad Street	US 301 Local	Old School House Road	Old School House Road	US 301 Local	US 301 Local
5 Location(s)	Marl Pit Road	Norfolk-Southern Railroad	Churchtown Road	Churchtown Road	Norfolk-Southern Railroad	Norfolk-Southern Railroad
6 Location(s)	Existing US 301	SR 896	Norfolk-Southern Railroad	Norfolk-Southern Railroad	SR896	SR896
7 Location(s)	Norfolk-Southern Railroad	Jamison Corner Road	Ratledge Road	Ratledge Road	Hyetts Corner Road	Hyetts Corner Road
8 Location(s)	SR896	SR 896	Hyett's Corner Road	Hyett's Corner Road	Old Schoolhouse Road	Old Schoolhouse Road
9 Location(s)	Jamison Corner Road	Shallcross Lake Road			Churchtown Road	Churchtown Road
10 Location(s)	SR896	Old Schoolhouse Road				
11 Location(s)	Shallcross Lake Road	Churchtown Road				

Note 1: Cost Estimate includes Right of Way costs and Relocation costs for displaced properties.

Note 2: The Brown alternative includes costs for property acquition at Summit Airport; however, it does not include any costs for improvements to the airport that may be required due to property acquisition.

April 10, 2006

CULTURAL & ENVIRONMENTAL RESOURCES

Advantages

- Mid-range wetland impacts
- Mid-range high quality wetlands impacts
- Low Waters of the US impacts
- Mid-range forestland impacts
- Mid-range impact to Species Habitat Areas (wildlife & plants)
- Low residential noise impacts

Disadvantages

- High DNREC Tidal Wetland impacts
- High floodplain impacts
- High Agricultural District impacts
- Requires acquisition of one of the last three operating dairy farms (Emerson Farm) in New Castle County. Difficulty in implementing Nutrient Management Plan with reduced acreage - South Option

Note: Detailed evaluation process is on-going to identify cultural resources and assess potential effects

Comparison of the Retained Alternatives - Cultural Resources

APRIL 10-11, 2006 ALTERNATIVES IMPACT MATRIX	YELLOW RANGE OF IMPACTS	PURPLE + SPUR RANGE OF IMPACTS	BROWN-NORTH RANGE OF IMPACTS	BROWN-SOUTH RANGE OF IMPACTS	GREEN + SPUR NORTH RANGE OF IMPACTS	GREEN + SPUR SOUTH RANGE OF IMPACTS	RANGE OF IMPACTS
Potential Impacts on Cultural Resources							
Historic Properties[1]							
Properties to be evaluated for Direct Effects[2]	4	0	0	0	0	0	0 - 4
Properties to be evaluated for Visual and Audible Effects[3]	13	12-13	9	9	10	12	9 - 13
Properties to be evaluated for this Alternative[4]	15	12-13	9	9	10	12	9 - 15
Total Area of Limit of Disturbance (acres)	855-880	813-889	921	907	863-935	847-919	813 - 935
Predictive Model: Pre-Historic Sensitivity in the Limit of Disturbance							-
High Sensitivity Area [acres | % of total area]	15 (1.7%) - 15 (1.8%)	17 (1.9%) - 17 (2.1%)	20 (2.2%)	21 (2.3%)	19 (2.1%) - 19 (2.3%)	21 (2.3%) - 21 (2.5%)	15 (1.7%) - 21 (2.5%)
Moderate Sensitivity Area [acres | % of total area]	91 (10.7%) - 97 (11.2%)	162 (19.1%) - 167 (19.0%)	261 (28.6%)	254 (28.0%)	210 (24.5%) - 214 (23.6%)	238 (28.2%) - 242 (27.2%)	91 (10.7) - 261 (28.6%)
Low Sensitivity Area [acres | % of total area]	524 (60.8%) - 551 (62.5%)	514 (63.2%) - 577 (65.0%)	527 (57.8%)	504 (55.6 %)	524 (62.2%) - 575 (63.5%)	479 (58.1%) - 498 (59.1%)	479 (58.1%) - 577 (65.0%)
Nil Sensitivity Area [acres | % of total area]	223 (25.3%) - 225 (26.3%)	116 (13.7%) - 131 (14.9%)	103 (11.3%)	127 (14.0%)	87 (10.1%) - 98 (10.8%)	87(10.3%) - 98 (11.0%)	87 (10.1%) - 225 (26.3%)
Predictive Model: Historic Sensitivity in the Limit of Disturbance							-
High Sensitivity Area [acres | % of total area]	38 (4.4%) - 41 (4.7%)	7 (0.9%) - 9 (1.0%)	5 (0.5%)	5 (0.5%)	5 (0.6%) - 7 (0.8%)	7 (0.8%) - 8 (0.9%)	5 (0.5%) - 41 (4.7%)
Moderate Sensitivity Area [acres | % of total area]	328 (37.3%) - 328 (38.1%)	199 (23.5%) - 228 (26.1%)	216 (23.6%)	212 (23.4%)	196 (22.8%) - 226 (24.9%)	196 (23.3%) - 226 (25.4%)	196 (22.8%) - 328 (38.1%)
Low Sensitivity Area [acres | % of total area]	490 (57.4%) - 511 (58.0%)	605 (74.4%) - 652 (73.3%)	691 (75.8%)	688 (76.1%)	637 (75.7%) - 673 (74.3%)	620 (75.2%) - 655 (73.6%)	490 (57.4%) - 691 (75.8%)
Area of Potential Effects							
Number of Historic Properties[5]	15	12-13	9	9	10-11	11-12	9 - 15
Potential Section 4(f) Properties							
Number of Historic Properties[6]	4	0	0	0	0	0	0 - 4
Date of Alternative Design Update	01/12/06	03/12/06	11/18/05	11/18/05	01/12/06	01/12/06	
Date of Impacts Update	03/21/06	03/21/06	01/12/06	01/12/06	01/12/06	01/12/06	

Note 1: Historic Properties are resources Listed on or Determined Eligible for the National Register of Historic Places based on Consultant Recommendations dated 11/23/2005.

Note 2: Properties to be evaluated for Direct Effects include any property within the limit of disturbance for the Alternative, and also include situations where demolition of all or some of the contributing components to the resource is proposed.

Note 3: Properties to be evaluated for Visual and Audible Effects are located within 600 feet of the centerline of the Alternative.

Note 4: Number of Properties to be evaluated for this Alternative reflects the unique number of historic properties with potential direct, visual or audible effects. Because some properties will be evaluated for more than one effect type, this number IS NOT the total of the two lines above it.

Note 5: Number of properties Listed on or Determined Eligible for the National Register of Historic Places (Consultant Recommendation) that may be directly, visually, or audible affected by the Alternative (within 600 feet of the centerline). This number IS THE SAME as the Number of Properties to be Evaluated for this Alternative (see above).

Note 6: Number of resources Listed on or Determined Eligible for thte National Register of Historic Places (Consultant Recommendation) that may be directly affected by the Alternative (within the limit of disturbance). Assumes that Archeological Sites are generally exempted from Section 4(f) protection. This number IS THE SAME as the Number of Properties to be evaluated for Direct Effects (see above).

Comparison of the Retained Alternatives - Natural Resources

APRIL 10-11, 2006 ALTERNATIVES IMPACT MATRIX	YELLOW RANGE of IMPACTS	PURPLE + SPUR RANGE of IMPACTS	BROWN NORTH RANGE of IMPACTS	BROWN SOUTH RANGE of IMPACTS	GREEN + SPUR NORTH RANGE of IMPACTS	GREEN + SPUR SOUTH RANGE of IMPACTS	RANGE OF IMPACTS
Total Length of Alternative (miles)	12.7 - 12.9	15.3 - 15.5	15.5	15.9	17.5 - 17.5	17.3 - 17.3	12.7 - 17.5
Total Area of Limit of Construction (acres)	855 - 880	813 - 889	921	907	863 - 935	847 - 919	813 - 935
Potential Wetland/Waters of the US Impacts							
Total Area of Potential ACOE Wetlands[1] (acres)	54.1 - 56.7	26.5 - 31.8	29.0	23.7	31.8 - 35.7	27.0 - 31.0	23.7 - 56.7
High Quality	10.2 - 10.3	8.4 - 10.6	14.0	12.5	10.5 - 12.0	11.3 - 12.6	8.4 - 14.0
Palustrian Forested	1.4 - 1.4	3.6 - 5.3	5.6	5.5	4.3 - 5.3	3.9 - 4.8	1.4 - 5.6
Palustrian Emergent	3.0 - 3.0	2.2 - 2.2	4.4	2.7	2.2 - 2.2	2.2 - 2.2	2.2 - 4.4
Palustrian Shrub-Scrub	0.0 - 0.0	0.0 - 0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
Palustrian Mixed	5.9 - 5.9	2.6 - 3.1	4.0	4.2	4.0 - 4.4	5.2 - 5.6	2.6 - 5.9
Medium Quality	28.4 - 30.8	8.5 - 13.7	6.8	9.9	16.7 - 21.1	10.2 - 14.7	6.8 - 30.8
Palustrian Forested	13.8 - 17.2	4.8 - 6.4	4.6	7.7	7.9 - 9.1	4.7 - 5.9	4.6 - 17.2
Palustrian Emergent	1.5 - 2.0	1.5 - 7.8	0.8	0.8	1.5 - 7.1	1.5 - 7.2	0.8 - 7.8
Palustrian Shrub-Scrub	0.0 - 0.0	0.0 - 0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
Palustrian Mixed	10.3 - 13.1	1.1 - 1.3	1.5	1.5	6.1 - 6.3	2.8 - 3.0	1.1 - 13.1
Low Quality	14.4 - 14.5	2.9 - 4.5	8.2	1.3	3.2 - 4.2	4.5 - 5.4	1.3 - 14.5
Palustrian Forested	0.5 - 0.5	0.0 - 0.9	0.9	0.7	0.0 - 0.9	0.0 - 0.9	0.0 - 0.9
Palustrian Emergent	8.8 - 8.9	2.9 - 3.6	7.3	0.6	3.2 - 3.3	4.5 - 4.6	0.6 - 8.9
Palustrian Shrub-Scrub	0.0 - 0.0	0.0 - 0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
Palustrian Mixed	5.2 - 5.2	0.0 - 0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 5.2
Other Wetlands							
Type and/or quality undetermined to date	1.0 - 1.0	5.3 - 5.6	0.0	0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 5.6
Number of Wetlands Impacted	38 - 45	45 - 55	38	32	42 - 50	42 - 50	32 - 55
Number of Wetland Crossings	2 - 4	6 - 9	9	6	7 - 8	8 - 9	2 - 9
Number of Wetlands with Complete Fragmentation	10 - 10	4 - 6	2	3	4 - 5	5 - 6	2 - 10
Waters of the US (non-wetland)[2]	18,613 - 21,282	14,063 - 16,019	13,879	13,178	12,902 - 13,959	13,759 - 14,994	12902 - 21282
Streams (linear feet)	215 - 215	260 - 271	923	1,898	355 - 355	532 - 532	215 - 1898
Ditches (linear feet)	18,397 - 21,067	13,793 - 15,759	12,955	11,280	12,547 - 13,605	13,228 - 14,462	11280 - 21067
Open Waters (ponds, SWM) (acres)	3 - 4	3 - 3	3	6	3 - 3	3 - 3	3 - 6
DNREC Sub-Aqueous Lands (linear feet)	5,921 - 6,579	4,693 - 6,433	7,958	8,019	6,403 - 6,918	6,970 - 7,482	4693 - 8019
Area of DNREC State of Delaware Tidal Wetlands[1] (acres)	0.6 - 0.6	0.6 - 0.6	1.5	1.5	1.5 - 1.5	1.5 - 1.5	1 - 1
Recharge Areas (acres)	614 - 629	513 - 582	484	476	441 - 506	460 - 525	441 - 629
Tax Ditches (linear feet)	81 - 81	51 - 624	0	192	51 - 624	51 - 624	0 - 624
Tax Ditch Watershed area (acres)	12 - 12	33 - 58	28	55	33 - 58	33 - 58	12 - 58
Area of Hydric Soils (acres)	156 - 178	125 - 146	117	112	132 - 145	125 - 138	112 - 178
Potential Floodplain Impacts - FEMA							
Area of 100-Year Floodplain (acres)	1.7 - 1.7	1.7 - 1.7	2.5	2.5	2.5 - 2.5	2.5 - 2.5	1.7 - 2.5
Potential Agricultural Impacts							
Agricultural Districts - Ten-Year (number)	1 - 1	1 - 1	1	1	1 - 1	1 - 1	1 - 1
Area (acres)	14.1 - 14.1	29.2 - 29.5	29.2	29.2	29.2 - 29.5	29.2 - 29.5	14.1 - 29.5
Number of Agricultural Districts within 3 miles of Alternative	9 - 9	7 - 7	6	6	7 - 7	7 - 7	6 - 9
Agricultural Preservation Easements - Permanent (number)	0 - 0	1 - 1	1	1	1 - 1	1 - 1	0 - 1
Area (acres)	0 - 0	6.1 - 6.1	9.4	11.7	6.1 - 6.1	6.1 - 6.1	0 - 11.7
Number of Agricultural Easements within 3 miles of Alternative	6 - 6	6 - 6	2	2	3 - 3	3 - 3	2 - 6
Agricultural Suitability (Land Evaluation Site Assessment Model)[3]							
Total LESA Model (score)	194 - 195	203 - 206	199	203	213 - 213	205 - 207	194 - 213
LESA Model without existing and planned development (score)	222 - 225	222 - 224	202	209	224 - 226	217 - 220	202 - 226
Prime Farmland Soil Area (acres)	191 - 197	401 - 442	428	438	455 - 491	416 - 452	191 - 491
Ratio of prime farmland to total prime farmland in New Castle County (percent) (74,454 acres total)	0.26 - 0.26	0.54 - 0.59	0.58	0.59	0.61 - 0.66	0.56 - 0.61	0.3 - 0.7
Potential Hazardous Waste Impacts							
Number of EPA Sites	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Number of Sites identified as potential sources of contamination	8 - 8	8 - 8	7	7	5 - 5	5 - 5	5 - 8
Number of NPDES Locations	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Potential Natural Resource Impacts							
Natural Areas Inventory (acres)	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
State Resource Areas[4]	2.7 - 2.7	2.7 - 2.7	0	0	0 - 0	0 - 0	0 - 2.7
Protected (acres)	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Proposed (acres)	2.7 - 2.7	2.7 - 2.7	0	0	0 - 0	0 - 0	0 - 2.7
Forestland: 2002 Land Use	38.8 - 42.3	39.2 - 46.8	42.1	55.4	47.2 - 52.4	40.0 - 45.1	38.8 - 55.4
Deciduous (acres)	23.1 - 26.0	38.5 - 46.1	40.4	51.1	46.5 - 51.7	39.3 - 44.5	23.1 - 51.7
Evergreen (acres)	9.3 - 10.2	0.0 - 0.7	1.0	3.7	0.0 - 0.7	0.0 - 0.7	0.0 - 10.2
Mixed (acres)	6.3 - 6.3	0.7 - 0.7	0.7	0.7	0.7 - 0.7	0.7 - 0.7	0.7 - 6.3
State Forest Lands	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
State-Owned State Forest Properties (acres)	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Conservation Easement Properties (acres)	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Potential Rare, Threatened and Endangered Species Areas[5]							to be determined
Habitat Areas (Wildlife & Plant) (acres)[5]	42.5 - 46.3	48.4 - 54.5	67.5	57.0	50.6 - 54.3	43.9 - 47.6	42.5 - 67.5
Potential Section 4(f) Properties							
Number of Publicly-Owned Parks and Recreation Areas[6]	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Acres of Publicly-Owned Parks and Recreation Areas	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Federally Owned	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
State Owned	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
County Owned	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Municipal Owned	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Number of Publicly-Owned Wildlife and Waterfowl Refuges	0 - 0	0 - 0	0	0	0 - 0	0 - 0	0 - 0
Number of Historic Properties[7]	4 - 4	0 - 0	0	0	0 - 0	0 - 0	0 - 4
Date of Alternative Design Update	01/12/06	01/12/06	11/18/05	11/18/05	01/12/06	01/12/06	
Date of Impacts Update	03/21/06	03/21/06	02/12/06	02/12/06	02/12/06	02/12/06	

April 10, 2006 - Work in Progress. Impacts DO NOT include portions of the alternatives in Maryland, except wetlands.

Note 1: Total Potential ACOE Wetlands equals total of high, medium, low and other quality wetlands. ACOE and DNREC Tidal Wetlands should not be added together. Wetlands are based on field delineations, updated on February 10, 2006. Field delineations were done using Global Positioning System (GPS) and verified by ACOE. Delineations extend length of alternative, including Maryland. Other Wetlands are from 2002 Land Use data (instead of field delineations) where the alternative has been revised to extend beyond the fieldwork area. The number of wetlands impacted is the number of unique wetland features within the limit of disturbance (LOD) for the alternative. The number of crossings is the number of unique wetland features spanned by structures included in the alternative. Delaware's Tidal Wetlands were identified using DNREC's delineation maps.

Note 2: Includes GPS'd, field delineated streams, ditches, ponds and SWMs. Does not include stream segments within wetlands. Some ditches are also included in the Tax Ditch impacts.

Note 3: The Land Evaluation Site Assessment (LESA) Model is a State and Federally approved land analysis system; this 300 point-based rating system identifies farm parcels that are most suitable for long-term agricultural practices. The Land Evaluation (LE) factor is determined by using a land use dependent soil productivity index, the Site Assessment (SA) factor is derived from non-soil factors many of which are non-agricultural. A higher LESA score indicates high agricultural suitability for a particular parcel. The LESA score for each parcel impacted by each alternative was calculated, that LESA score was multiplied by amount of land within the parcel impacted by each alternative to obtain the acre-weighted total score for the specific segment of land impacted. The same math was applied to each parcel affected; the acre-weighted total score for each segment of a parcel affected was then added and divided by the number of acres impacted by each alternative. The result was the acre-weighted score for each corresponding alternative.

Note 4: State Resource Areas include State Parks and Forests. Properties listed include protected and proposed designations.

Note 5: Anticipated impacts to Rare, Threatened and Endangered Species based on coordination to date with DNREC. Detailed evaluation and coordination with DNREC and US Fish and Wildlife Service is continuing. The data represented in the Potential Rare, Threatened and Endangered (RTE) Species Areas row are not exhaustive. This data represent known occurrences of RTE Species, not potential habitat for RTE Species. Many habitats that may be impacted by the US 301 project have never been surveyed for RTE's and; these yet to be surveyed areas may well harbor RTE's that would not be represented in the ratings given to them in the matrix. The habitats represented encompass both upland and wetland terrestrial habitats

Note 6: From DNREC's Outdoor Recreation Inventory and New Castle County Parks files.

Note 7: Same as total of Historic Properties. Assumes that Archeological Sites are generally exempted from Section 4(f) protection.