K. Secondary and Cumulative Effects Analysis

An additional study has been conducted in order to supplement the Secondary and Cumulative Effects Analysis since the release of the November 22, 2004 DEIS. The Lead Agencies have conducted additional analyses to more thoroughly assess the potential impacts to the Rocky Gorge Reservoir. This would include modeling pollutant loads from future development to more quantitatively assess the water quality impact on the reservoir. Additional information on this analysis can be found in the Reservoir section in *Section K.8.b*.

In addition to the consideration of a project's "direct" impacts, the Council on Environmental Quality (CEQ) regulations also require that the secondary and cumulative effects of a project be examined (40 CFR § 1508.25 (c)). Secondary (indirect) effects are defined as, "Effects which are "caused" by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR § 1508.8(b)). Cumulative effects are defined as, "Impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR § 1508.7).

Detailed information regarding this analysis is provided in the *ICC Secondary and Cumulative Effects Analysis Technical Memorandum, I-270 to US 1*.

1. Overview

The ICC Secondary and Cumulative Effects Analysis (SCEA) was conducted in accordance with the SHA's June 2000 *SCEA Guidelines for Environmental Impact Statements and Environmental Assessments* (SHA, 2000). The assessment of secondary and cumulative effects involves the assessment of the potential impacts of the proposed action in the context of past, present and reasonably foreseeable future impacts. The time frame established for this SCEA was 1964 through 2030.

Past resource impacts were assessed primarily through overlay of past and present land use and resource maps to identify changes in land use, and the implications of those land use changes on resources. Resource impacts expected to occur in the present time frame involved overlay of existing land use/resources with planned/pipeline projects/developments as identified in the National Capital Region Transportation Planning Board's (TPB) Constrained Long Range Plan (CLRP), in county Master Plans and through coordination with county planners. The assessment of present impacts considers projects expected to occur within the next five to six years (through 2010). The approach for assessing reasonably foreseeable future impacts integrated estimates from an expert land use panel (ELUP) advisory group. The ELUP process is included as part of SHA's *SCEA Guidelines* (SHA, 2000) for select projects. Due to the complexity of the project, an advisory panel was selected to identify future land use scenarios since there were differing viewpoints among local jurisdictions, agencies and special interest groups. The ELUP estimated

differences in the amount and location of future households and jobs among the ICC alternatives, including the No-Action alternative. The estimates were then converted into future land use scenarios for use in assessing reasonably foreseeable future impacts.

2. Summary

A SCEA is a comprehensive, long-term look at how the construction of an ICC and other past, present and future planned development and transportation projects might result in additional resource impacts. In general, resources within the SCEA boundary have experienced negative cumulative effects during the SCEA time frame primarily due to the pressures caused by the large population growth that the area has experienced. It is expected that these trends will continue with additional growth in the present/near future and future time frames although not always at the same rate due to current laws and regulations that could reduce the rate and extent to which resources are affected. The resources that have been analyzed as part of the ICC SCEA include residential/business communities, parkland and recreational facilities, cultural resources, minority and low income communities, floodplains, surface water/aquatic habitat, wetlands, farmland, forests/terrestrial habitat, groundwater, rare, threatened and endangered species, impervious area and reservoirs.

The ELUP expects additional development to occur for each of the ICC alternatives within the SCEA boundary. Resource impacts would occur in those areas of anticipated development. Specific development quantities are listed below for each of the ICC alternatives.

The ELUP estimated that the No-Action alternative could anticipate about 2,512 acres of additional development. The No-Action alternative was prepared by the ELUP as a baseline for which to compare both Build Alternatives indicating that the ELUP anticipates additional development even without an ICC alternative.

Corridor 1 could anticipate about 4,945 acres of secondary development in addition to the No-Action scenario. Based on ELUP's allocations, approximately 1,144 acres of undeveloped land could potentially be rezoned in order to accommodate the additional ELUP allocations for Corridor 1.

Corridor 2 could anticipate approximately 5,546 acres of secondary development in addition to the No-Action scenario. Based on ELUP's allocations, approximately 1,578 acres of undeveloped land could potentially be rezoned in order to accommodate the additional ELUP allocations for Corridor 2. A Corridor 2 selection would open up Corridor 1 lands planned for an ICC to other uses.

3. Methodology

a. Secondary Effects

As previously mentioned, secondary effects include indirect impacts that are caused by the action (i.e., construction of an ICC Build Alternative), and are later in time or farther removed in distance, but are still reasonably foreseeable. Secondary effects may include growth-inducing

effects and other effects related to induced changes in the pattern of land use, population density or growth rate. The time frame used for the assessment of reasonably foreseeable secondary impacts was 2030, which is the design year for the project (and also the time frame for which ELUP allocations were projected).

The secondary impacts analysis involved assessing impacts associated with growth-inducing effects of the ICC project. As such, land use scenarios for each of the ICC Alternatives Retained for Detailed Study (ARDS), including the No-Action, were generated based on the ELUP's 2030 household and employment estimates. Land use maps were generated for each of the ICC ARDS, highlighting areas that could potentially accommodate the ELUP estimates (see ***Section K.6.b***, for details). The future 2030 land use maps were then overlaid with environmental resources to assess resource impacts associated with secondary induced growth that might result from construction of the ICC.

The ELUP estimates suggest that secondary growth is likely for both Corridors 1 and 2. As a result of the projected induced growth, associated secondary environmental impacts would also be likely for both Corridors 1 and 2. Based on the ELUP's estimates, the extent of secondary induced growth would be similar between the two ICC build corridors, with slightly greater induced growth and associated secondary impacts expected under a Corridor 2 scenario.

Secondary impacts were assessed quantitatively whenever possible; however, many resources were assessed qualitatively. Quantitative impacts were calculated for certain resources (e.g., wetlands, floodplains, farmlands, streams and forests) when GIS data was readily available. It was not practical to conduct quantitative analyses for all resources; therefore, secondary impacts were assessed qualitatively for resources such as residential/business communities, parklands, and cultural resources.

For the quantitative assessments, growth areas for the No-Action, Corridor 1 and Corridor 2 were overlaid with environmental resources GIS data to quantitatively assess potential impacts to resources. It should be noted that the areas identified for secondary growth were based on the ELUP estimates, and should be viewed more as a projection of general development trends rather than specific predictors of potential development. The impact quantities are not based on field delineated resources or specific project site plans, and do not consider local, State and Federal environmental laws and regulations that would likely reduce the extent of impact. In addition to GIS overlay, other methods used to draw secondary and cumulative effects conclusions for this project include trends analysis and the use of matrices. These analysis tools are among CEQ's recommended methodologies for conducting secondary and cumulative effects analysis (CEQ, 1997).

b. Cumulative Effects

Cumulative environmental effects relate to the incremental impact of the ICC project in the context of other past, present and reasonably foreseeable future actions whether they are public or private actions. Therefore, cumulative effects take into account all past impacts that have occurred within the ICC SCEA boundary, impacts associated with the ICC project itself, impacts associated with present/near future pipeline projects, and impacts associated with anticipated

future 2030 projects. Secondary impacts are considered a component of cumulative effects. As such, cumulative effects under the Corridor 1 or Corridor 2 scenarios include the summation of all past, present and anticipated future impacts within the ICC SCEA boundary, including impacts associated with secondary induced growth. Cumulative effects were assessed quantitatively as much as possible; however, a qualitative assessment was applied in many circumstances. This was because specific data were not always available to quantitatively assess resource impacts. Therefore, cumulative effects were assessed both quantitatively and qualitatively to fully document resource trends from the past to the reasonably foreseeable future time frame (see *Section K.8*, for details).

4. Scoping

SCEA scoping was conducted in accordance with the SHA's June 2000 *SCEA Guidelines for Environmental Impact Statements and Environmental Assessments* (SHA, 2000). Scoping activities include the following and define the parameters for conducting the resource analysis:

- Defining resources to be analyzed in the SCEA
- Establishing the SCEA geographical boundary
- Establishing the SCEA past and future time frames

The scope of the secondary and cumulative effects analysis was determined in coordination with the Interagency Working Group (IAWG), including representatives from the regulatory and resource agencies. The three parameters were presented to the agencies in November 2003.

a. Resources

The following resources were assessed in the secondary and cumulative effects analysis:

- Residential/Business Communities
- Farmlands
- Parks/Recreational Facilities
- Forests/Terrestrial Habitat
- Low-Income/Minority Populations
- Rare, Threatened, and Endangered Species (RTE)
- Floodplains
- Surface Water/Aquatic Habitat
- Wetlands
- Cultural Resources

b. Geographical Boundaries

Geographic limits were first identified in which the secondary and cumulative effects analysis would be conducted. The SCEA boundary covers sufficient area to allow for flexibility in the development of alternatives and encompasses all areas that may be directly affected. Secondary and cumulative effects could be further removed from the project alternatives than direct

impacts; therefore, it was assumed that the geographic limits for the analysis of secondary and cumulative effects reach beyond the defined project study area.

Multiple resource boundaries were reviewed to determine appropriate SCEA sub-boundaries using the environmental resources that may be directly affected by the project. Established sub-boundaries were overlaid onto one composite map to determine the outermost boundary extent (***Figure IV-20, Volume II***). The outermost extent of all sub-boundaries comprises the overall SCEA boundary. The sub-boundaries considered in establishing the SCEA boundary are listed below.

- Alternatives/Study Area Boundary
- Area of Traffic Influence
- Natural Resources (e.g., Watersheds)
- Public Sewer and Water Service Areas
- Census Tracts
- Expert Land Use Panel Boundary

c. Time Frames

The SCEA must consider past, present and reasonably foreseeable future actions. The past time frame of 1964 was chosen based on two significant events that occurred within the SCEA boundary; the opening of the Capital Beltway (I-495) as well as the adoption by M-NCPPC of *On Wedges and Corridors: A General Plan for the Maryland-Washington Regional District* (M-NCPPC, 1964). The opening of the Capital Beltway and later Metrorail (the first Maryland station opened in 1978 in Silver Spring) were important factors influencing development patterns in both Montgomery and Prince George's Counties. Coupled with the local planning philosophy of wedges, corridors and centers, the stage was set for channeling and managing of the development that would occur as a result of the substantial population growth since World War II.

It was determined that five years from present (2010) would adequately assess the present/near future time frame. Commencement of construction of an ICC would be within the 2010 time frame.

The future time frame 2030 was chosen primarily based on the project's design year, 2030, and is derived from future land use assumptions. In addition, population projections are available through 2030, allowing a more accurate depiction of the future population within the SCEA boundary. The Washington Suburban Sanitary Commission (WSSC) has indicated that the 25-year time frame selected for this analysis is not long enough and a longer time frame would be more appropriate to effectively analyze impacts to the reservoir. However, because this is a transportation study following the Federal guidelines for the NEPA process, standard transportation planning time frames were used to set the SCEA temporal boundaries with Federal agency concurrence.

5. Land Use Policies

Montgomery and Prince George's Counties and the State of Maryland have in place well-known and rigorous land use plans, policies and laws, with the express purpose of channeling growth and public facilities into appropriate locations at an appropriate pace. The counties' general and master plans since the 1960's have provided the planning basis for their zoning, growth management, and land use restrictions, and ensure a balance between land use and transportation. In addition, beginning in the 1990's, the State enacted several laws, called the Smart Growth Initiatives, designed to direct State funding for major projects toward areas of existing and planned growth. Maryland law applies an unusually high burden for individual rezoning of land that do not agree with local plans and zoning. The impact of these zoning and land use laws on secondary and/or cumulative effects is inherently uncertain and depends, in large part, on judgments concerning future political decisions. Indeed, participants in this SCEA process, including ELUP advisory group members and county planning officials, reached somewhat differing conclusions regarding how these laws may or may not influence future growth. Even so, these subjective factors play an important role in the development of this SCEA and the consideration of the resource impact estimates described below.

a. Local Planning and Zoning

Public plans, policies and laws are critical in reviewing and contemplating potential future land use for each of the ICC alternatives. One of the most important factors is the influence of State and local development policies. Montgomery and Prince George's Counties have had very strict planning and regulatory frameworks in place to guide the location, pattern and pace of growth for each county over the past 75 years. M-NCPPC is a nationally famous bi-county agency established by the Maryland General Assembly in 1927 to acquire, develop, maintain and administer the local and regional park system within Montgomery and Prince George's Counties, and to develop and guide land use planning for the physical development of the two counties through comprehensive land use regulation.

M-NCPPC coordinates and acts on matters of land use interest to both counties. Members of the Commission from each county serve as separate Planning Boards to facilitate, review and regulate the land use matters affecting their respective counties. As a result, it is the responsibility of M-NCPPC to protect and steer land use and development in a way that safeguards resources vital to the counties.

The General Plan, Functional Master Plans and Area Master Plans are used as a critical tool by the counties to guide development and land use. The General Plan outlines the overall goals and objectives for land use, transportation and the environment as well as a general pattern of development. Functional master plans are prepared for specific elements that require countywide planning such as highways, bikeways and watersheds. Area master plans are comprehensive and multi-disciplinary and incorporate the main parts of functional plans, refining the application of functional plans area by area and identifying land uses in detail, based on the General Plan and projected needs for housing, environmental protection, public facilities and economic development. Most importantly, county plans balance land use and transportation.

They play an important role in the lives of community residents in that the plans provide a documented agreement between citizens and the counties so it is clear what development and conservation areas are recommended and anticipated for specific areas within the respective counties over a 10 to 20 year time frame. For decades, development has been centered around the counties' urban ring, suburban communities, designated transportation corridors, and designated town and transit centers. Designated agricultural and rural districts (one third of each county) have been concentrated in northern and western Montgomery County and eastern and southern Prince George's County. The citizens of the counties depend on the General Plan and Master Plan process, and make housing, business, job, school, and overall life choices based on the plans. Plans take several years of extensive public involvement, including drafting, advisory committees, public hearings and forums, and work sessions, before approval by the respective County Council and adoption by M-NCPPC. Officials and citizens alike closely adhere to them.

M-NCPPC plans are then implemented through comprehensive zoning, subdivision regulation, project plan hearings, adequate public facility ordinances, growth management controls, and capital improvement programs. The link between master planning and zoning is especially critical. Zoning controls are based on sound planning principles as set forth in the approved and adopted plans of both counties.

Under the strict Maryland Change or Mistake Rule, standard rezoning for a parcel of land can only be considered where there was a mistake in the existing zoning or a substantial change in the character of the neighborhood has occurred. This rule reinforces the authority of the Master Plan and its comprehensive zoning. According to M-NCPPC officials, who have substantial experience with land use in this region, a choice of the No-Action or Corridor 2 Alternatives would likely be deemed "a substantial change in the character of the neighborhood," opening up areas never planned for development.

b. State Smart Growth Laws

State "Smart Growth" policies are also in place to help channel and manage development pressures and conserve critical areas. They serve to reinforce county plans and regulations. Since 1974, the Maryland Department of Planning (MDP) can participate in any State, local or land use proceeding in order to communicate the State's views to decision-makers and to encourage the decision-maker to take action consistent with the general welfare of the State and its citizens. The State's 1992 Economic Growth, Resource Protection, and Planning Act requires that local jurisdictions address several planning visions that are centered around concentrating development in suitable areas, protecting sensitive areas, and establishing funding mechanisms to achieve these visions. The 1997 Maryland General Assembly built upon the 1992 Planning Act, and enacted five pieces of legislation and budget initiatives to promote smart growth in Maryland, including the Priority Funding Areas (PFA) Act. This legislative package is known collectively as the Smart Growth Initiatives. A key intent of Smart Growth is to direct State funding for growth related projects to areas designated by local jurisdictions as PFAs. PFAs are existing and planned communities and other locally designated places as determined by local jurisdictions in accordance with Smart Growth Guidelines. Encouraging growth within a designated PFA ensures that communities are guaranteed a high quality of life and that critical

resources existing outside a PFA are protected through land conservation (see ***Figure IV-4, Volume II*** for PFA locations). MDP is responsible for coordinating land use and related efforts of State agencies and helping developers and local officials bring smart growth projects to fruition, as well as educate and inform the public.

Maryland's nationally recognized Smart Growth laws help ensure that land inside PFAs is used efficiently in order to reduce the amount of sprawl outside PFAs. This is commonly referred to as "Making Smart Growth Smarter". Additionally, there are over 80 other State programs that contribute to Smart Growth goals, including supporting existing communities by targeting resources to support development in areas where infrastructure exists or is planned; preserving and protecting valuable natural resources; and saving taxpayers from the high costs associated with sprawl development. Numerous programs were established prior to 1997 and were either already consistent with the Smart Growth initiatives or redirected to be more supportive of the Smart Growth philosophy. The State Smart Growth program applies to State-funded projects, and its goals are paralleled through the strict planning, zoning, growth management and preservation policies employed by M-NCPPC and its two counties for decades.

Corridors 1 and 2 both link two key PFA boundaries along I-270 and I-95; however, portions of both corridors fall outside of a PFA boundary, substantially more of Corridor 2 than of Corridor 1 (***Figure IV-4, Volume II***). In cases where proposed projects are not fully proposed within PFA boundaries but connect PFAs, approval from the Board of Public Works is required. On August 31, 2005, the Maryland Board of Public Works determined that the project serves to "Connect Priority Funding Areas," and approved the exception for the Corridor 1 Alternative under the Maryland's Smart Growth - Priority Funding Area Law, thereby permitting the State to provide state funding for the construction of the ICC. Of the proposed 18-mile Corridor 1 alignment, three sections fall outside of a PFA. One section extends from just east of the I-370/Shady Grove Road interchange to just east of MD 97/Georgia Avenue interchange, a distance of approximately four miles. The second is within the Northwest Branch Recreational Park, a distance of approximately 0.5 mile. The third section is located along Upper Paint Branch Stream Valley Park, from MD 650/New Hampshire Avenue to west of US 29/Columbia Pike, a distance of approximately 1.6 miles. In total, approximately 6.5 miles, or 36 percent, along Corridor 1 falls outside of a PFA. MD 97/Georgia Avenue is the only interchange along Corridor 1 that is completely outside of a PFA (though it lies between two nearby PFAs). The MD 650/New Hampshire Avenue interchange is partially outside of a PFA. At this location the area west of MD 650 is within a PFA, and the area east of MD 650 is outside of a PFA.

Of the proposed 20-mile Corridor 2 alignment, one main section falls outside of a PFA boundary. This section is approximately 13 miles in length, or 65 percent of Corridor 2, and extends from just east of the I-370/Shady Grove Road interchange to east of US 29 at Sandy Spring Road. Several proposed interchanges along Corridor 2 fall outside of a PFA boundary, including MD 97 (Georgia Avenue), MD 182 (Layhill Road), MD 650 (New Hampshire Avenue), and US 29 (Columbia Pike). The MDP studied the ICC and prepared an in-depth "White Paper on Intercounty Connector Alternative Selection and Compliance with the Maryland Planning Act and the Smart Growth Regulations" ***(Appendix I).*** The MDP concluded that while both Corridors 1 and 2 would connect PFAs (at the proposed termini at I-270 and

either I-95 or U.S. 1) Corridor 1 is more compatible with the intent of the Smart Growth Act. Overall, MDP concluded in the White Paper (and the Maryland Department of Transportation agreed) that Corridor 2 would have more negative smart growth impacts than would Corridor 1.

Importantly, a comparison was also made for the length and percentage of alignment outside of a PFA for those sections that diverge between Corridors 1 and 2. The alignments diverge just east of the MD 97 interchange and converge again just west of I-95. Of that 10-mile section along Corridor 1, three miles, or 30 percent, fall outside of a PFA. Of that 12-mile section along Corridor 2, nine miles, or 75 percent, fall outside of a PFA.

6. Developing Secondary Impact Scenarios

a. ELUP Advisory Group

The ELUP was established as an advisory group for the ICC project to estimate differences in the amount and location of future households and jobs (secondary development) for the ARDS, including the No-Action Alternative. The ELUP process is included as part of SHA's *SCEA Guidelines* (SHA, 2000) for select projects. Due to the complexity of the project, an advisory panel was selected to identify future land use scenarios since there were differing viewpoints among local jurisdictions, agencies and special interest groups. The results of the panel's estimates were then used in developing future land use maps for use in the SCEA. The selection process for panel members was conducted through nominations by Federal, State and local agencies, a credential review and through a series of interviews by the panel's facilitator. The ELUP convened six times, from November 2003 through May 2004.

The ELUP used a well-developed research technique known as the Delphi process to estimate future land use impacts associated with each of the ICC ARDS. This process is a highly structured technique in which participants provide their individual assessment of likely future events. The use of expert panels and the Delphi process are widely recognized methods for analyzing transportation and land use alternatives (NCHRP Project 8-326, 2002; NCHRP Project 8-32(3), 1998; FHWA – Toolbox for Regional Policy Analysis, 2002).

This process was administered through each panelist completing iterative rounds of questions, and having a moderator tally and summarize the results of each round to provide overall results. Panelists were asked to allocate estimates of households and employment within 34 forecast zones surrounding the ICC study area and for three different scenarios: No-Action, Corridor 1 and Corridor 2. ***Appendix P, P-1*** identifies each forecast zone and the corresponding planning areas and place names within these zones. This table is necessary because in some cases the name of the forecast zone is not always representative of the surrounding area. Each panel member was provided with Metropolitan Washington Council of Government's/Baltimore Metropolitan Council (MWCOG/BMC) Round 6.3 2030 household and employment forecasts. Additionally, the panel was provided information regarding the details of the ARDS. Descriptions of each corridor along with specific interchange locations and the fact that the roadway would be a six-lane, multi-modal, controlled access facility were all presented to the panel.

Prior to integrating estimates from the ELUP, a base future 2030 land use map was prepared. It was assumed that the base map is consistent with the Metropolitan Planning Organization (MPO) 2030 household and employment projections. The base map included future 2030 projects/developments as identified in the CLRP, in county Master Plans and through coordination with county planners. Household and employment allocations were then compared between the MPO forecasts and ELUP's estimates. In some areas, the differences between the MPO projections and greater ELUP estimates suggested that additional development would be likely beyond what is currently planned for by the counties. In these areas, the future land use maps were adjusted accordingly to accommodate the ELUP allocations. The No-Action Alternative estimates served as the baseline for comparison with Corridor 1 and Corridor 2 allocations. A comparison of future land use between each of the ARDS was then evaluated, and future secondary resource impacts were assessed.

Although the overall future land use maps were prepared according to ELUP's suggested allocations, and resource impacts were assessed based on these land use scenarios, it must be noted that there are other factors to consider (e.g., local planning and zoning laws, Smart Growth laws, etc.) that will affect future land use that may or may not have been considered by the ELUP as a whole. The ELUP was comprised of 15 individuals, all of whom had their own viewpoints and opinions. For the purposes of the SCEA, estimates from all 15 individuals were processed into one representative estimate per forecast zone (one household and one employment) using a statistical average. This statistical average does not always allow for individual panelist viewpoints and opinions to be clearly represented.

b. Development of Secondary Land Use Mapping

Based on ELUP's estimates, future 2030 secondary land use scenarios were developed for Corridors 1 and 2 to depict induced growth areas. These maps show potential secondary development growth areas consistent with ELUP's suggested allocations for Corridors 1 and 2. Resource impacts associated with induced growth would constitute secondary resource impacts.

Potential secondary growth areas were first identified based on existing zoning and land use. Land zoned to accommodate future development (i.e. residential, commercial) and current undeveloped land use (i.e. open space, agricultural, forested) was identified first as areas likely to accommodate secondary future development.

The amount of available land for future secondary development was then assessed to determine if the ELUP's allocations could be accommodated within the identified areas. Dwelling units per acre were used to calculate the number of households that could potentially be accommodated based on land acreage zoned as residential. For commercial/industrial-zoned lands, Floor Area Ratio (FAR) was used to calculate the number of employees that could potentially be accommodated within the areas identified as available for future secondary development.

If it was determined that undeveloped and adequately zoned lands were not available to accommodate ELUP's estimates, then it was assumed that rezoning of undeveloped lands may occur in areas that are not currently suited to accommodate development based on their existing

zoning designation or protective status. Identification of lands that could potentially be rezoned was coordinated with individual counties. It must be noted that any lands identified as having the potential for rezoning would require extensive coordination and approval within the counties, and policy changes and Master Plan amendments by the counties.

It should be noted that the mapped secondary development areas do not represent specific projects or any development approvals from the counties or any other agencies. They are possible scenarios. The future secondary land use maps accommodate ELUP's suggested projections and are only intended to depict potential future secondary land use scenarios and assess potential secondary resource impacts. Potential development acreages that were derived from the ELUP estimates are to be viewed more as projections of general development trends, rather than as specific predictors of potential development.

7. Secondary Impacts (Induced Growth)

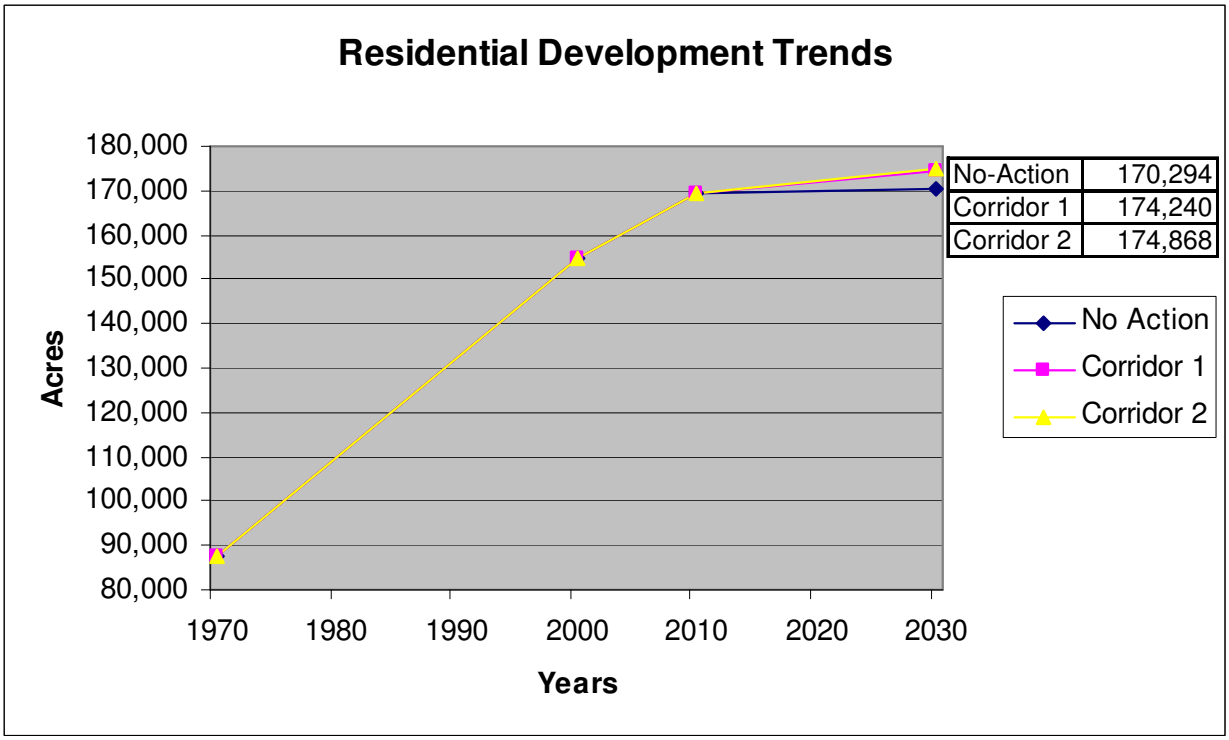
a. Existing and Projected Land Use Trends

The ICC SCEA boundary primarily consists of residential, forested/undeveloped, and commercial/industrial land uses. Both residential and commercial development has steadily increased within the SCEA boundary since the early 1970's, as depicted on ***Figures IV-21*** and ***IV-22, Volume II***. With the steady rise in population within the SCEA boundary, the most substantial development that has occurred within the SCEA boundary consists of residential growth (***Figure IV-22, Volume II***).

As illustrated on ***Figure IV-23, Volume II***, this general trend is not unlike development trends that have surrounded the Maryland Suburban/Baltimore area, which have also experienced substantial growth, primarily residential, over the past several decades. Prior to the 1970's, development in the Maryland Suburban/Baltimore area was mostly suburban in nature and focused more around growth centers in Baltimore and Washington. Over the past several decades, however, development has spread farther outward from these centers, and has grown between Washington and Baltimore. Since the early 1990's, additional planned residential (and commercial) development has occurred throughout this region. These areas have become more prominent in scale. ***Figure IV-23, Volume II*** graphically depicts residential growth that has occurred throughout this region and within the ICC SCEA boundary from 1973 to 2000 (based on MDP Land Use/Land Cover data, MDP 1973 and 2000).

Figure IV-24 illustrates projected future residential growth associated with each of the ICC alternatives, and based on household estimates established by the ELUP. This graph shows that the projected trend for residential growth from the present to the future 2030 time frame is consistent with past trends, and does not substantially differ among the ICC alternatives. As depicted, from 1973 to 2000, residential development has increased at a rate of approximately three percent per year. Based on planned/pipeline residential development projects through 2010, residential development is expected to increase by ten percent per year from 2000 to 2010. Based on household estimates from the ELUP for the future 2030 time frame, residential growth is expected to increase approximately five percent per year for any of the ICC alternatives. ***Figure IV-25, Volume II*** graphically outlines the future land use scenario highlighting anticipated residential development based on the ELUP's estimates.

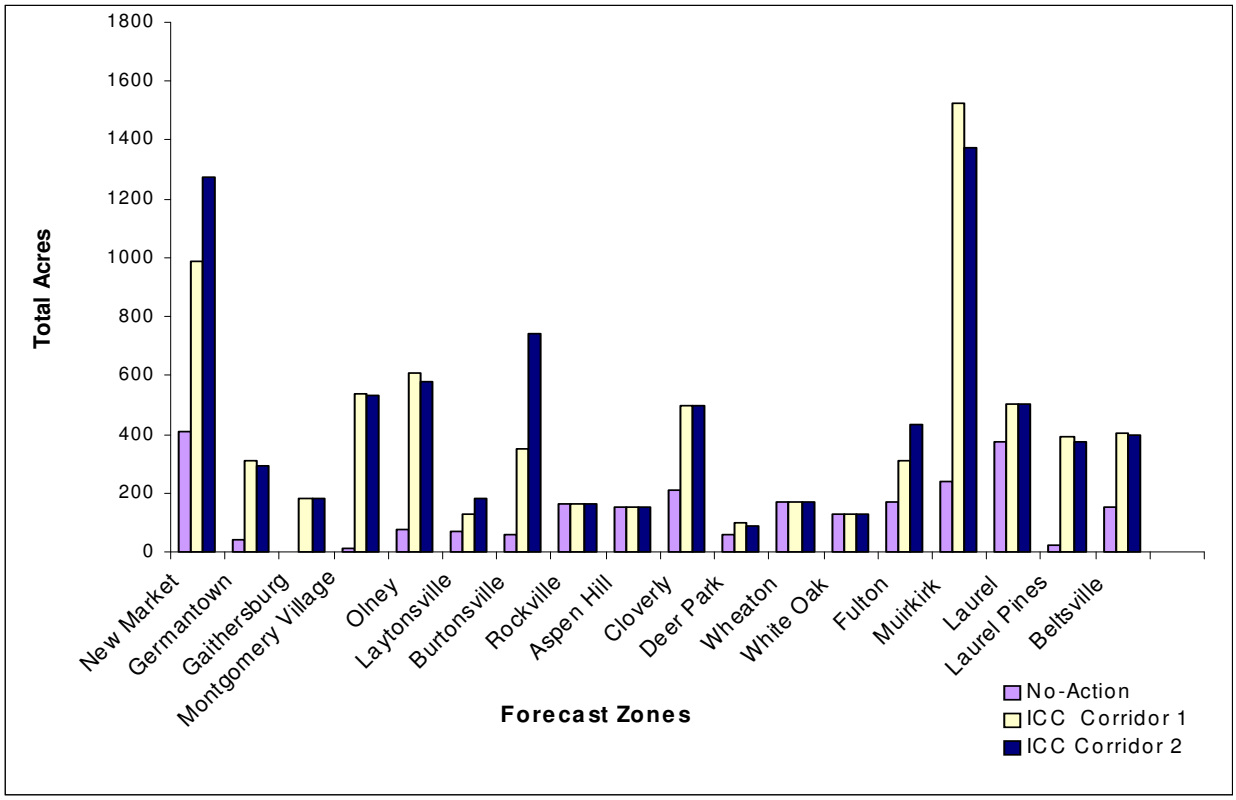
Figure IV-24
Residential Development Trends



These future 2030 projections show that an ICC Build Alternative would not encourage extensive residential growth that would be inconsistent with past growth trends. Overall, no substantial difference in the amount of future development would occur between the No-Action and Build Alternatives. However, there are more dramatic differences between Corridors 1 and 2 regarding the location of that development.

Figure IV-26 highlights the total amount of development (residential and commercial) expected in the future time frame per forecast zone for the No-Action, Corridor 1 and Corridor 2 alternatives, based on the ELUP's estimates. The forecast zones where development differed by more than 100 acres, between the No-Action and either Build Alternative, include New Market, Germantown, Gaithersburg, Montgomery Village, Olney, Burtonsville, Aspen Hill, White Oak, Muirkirk, Laurel and Laurel Pines. The forecast zone where Corridor 1 was substantially higher than Corridor 2 includes Muirkirk by 152 acres. Forecast zones where Corridor 2 was substantially higher than Corridor 1 include New Market by 283 acres, Burtonsville by 393 acres and Fulton by 125 acres.

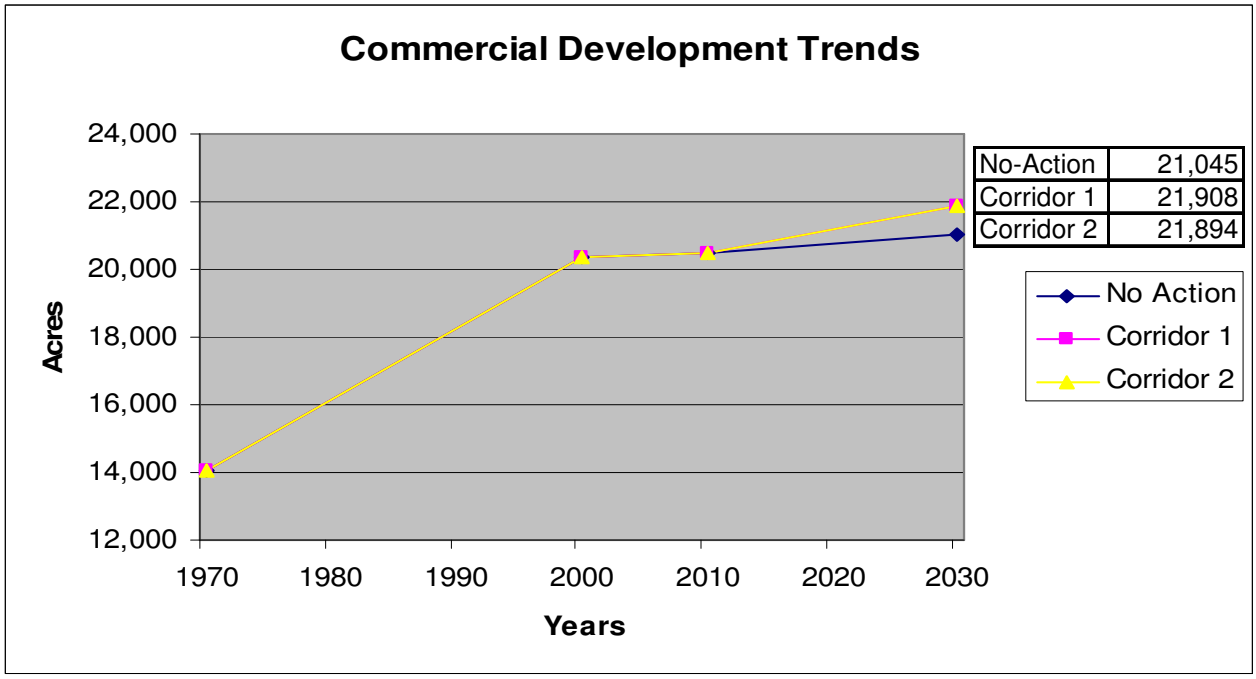
Figure IV-26
Total Acres of Development per Forecast Zone



The projected trends regarding commercial development are similar to trends described for residential growth. ***Figure IV-27*** illustrates projected future commercial growth associated with each of the ICC alternatives, and based on employment estimates established by the ELUP. This graph shows that the projected trend for commercial growth from the present to the future 2030 time frame is consistent with past trends and does not substantially differ among the ICC alternatives. As depicted, from 1973 to 2000, commercial development has increased at a rate of approximately three percent per year. Based on planned/pipeline commercial development projects through 2010, commercial development is expected to increase by ten percent per year from 2000 to 2010. Based on employment estimates from the ELUP for the future 2030 time frame, commercial growth is expected to increase five percent per year for any of the ICC alternatives (***Figure IV-27***).

These future 2030 projections show that an ICC Build Alternative would not encourage extensive commercial growth that would be inconsistent with past growth trends or would substantially differ between the No-Action and Build Alternatives.

Figure IV-27
Commercial Development Trends



b. Future Secondary Development (as predicted by the ELUP)

Secondary impacts associated with Corridor 1 and Corridor 2 alternatives were quantitatively assessed based on the ELUP's estimates. ***Appendix P, P-2*** contains the estimated acreage of planned development associated with the No-Action Alternative and potential secondary development (associated with Corridors 1 and 2) based on the ELUP suggested estimates. Secondary development acreages were computed by forecast zones, counties and for the entire SCEA boundary.

The ELUP established allocations for both Corridor 1 and Corridor 2 Alternatives, which were then compared to the No-Action allocations ***(see Section A.5.c.2, of the ICC Secondary and Cumulative Effects Analysis Technical Memorandum, I-270 to US 1).*** The difference between ELUP's suggested build allocations and No-Action allocations represents household and employment secondary growth that could potentially occur if an ICC Build Alternative is selected. Therefore, the additional household and employment growth would occur "but for" construction of the ICC.

No-Action

Based on the ELUP estimates, the No-Action alternative could anticipate approximately 2,512 acres of additional development. The No-Action alternative was prepared by the ELUP as a baseline from which to compare both Build Alternatives, indicating that the ELUP anticipates additional development even without an ICC alternative. Please note that this development does not contribute to the overall secondary development impacts associated with Corridors 1 and 2.

Impacts associated with the No-Action alternative are discussed in the Cumulative Impacts section, ***Section K.8.b.***

Corridor 1

Based on the ELUP estimates, Corridor 1 could anticipate approximately 4,945 acres of secondary development. Forecast zones that most substantially (greater than 250 acres) contribute to this total include: New Market, Germantown, Montgomery Village, Olney, Burtonsville, Cloverly, Muirkirk, Laurel Pines and Beltsville. ***Table IV-118*** is a summary of the ELUP land use estimates per corridor. The following forecast zones do not sufficiently accommodate all of ELUP's Corridor 1 allocations (for either households or employment) and, therefore, rezoning may potentially occur within these areas: Gaithersburg, Olney, Laytonsville, Burtonsville, Aspen Hill, Cloverly, Deer Park, White Oak, Laurel and Beltsville. Based on ELUP's allocations, approximately 1,144 acres of undeveloped land could potentially be rezoned in order to accommodate the additional ELUP allocations for Corridor 1 (***Appendix P, P-2***). Forecast zones that would likely require some redevelopment include Gaithersburg, Aspen Hill, Cloverly, Deer Park, White Oak, Laurel and Beltsville.

Small areas of secondary residential development could potentially occur under the Corridor 1 scenario that would likely not develop under a Corridor 2 scenario. If Corridor 1 is selected, that could open up available residential land parcels along the proposed Corridor 2 alignment that could become developed, such as evident just west of US 29 in the Cloverly area. In addition, the Muirkirk area could experience some additional secondary residential development under the Corridor 1 scenario, as could Germantown.

Corridor 2

Based on the ELUP's estimates, Corridor 2 could anticipate approximately 5,546 acres of secondary development. Forecast zones that most substantially contribute to this total are similar to Corridor 1 with a few exceptions. Corridor 2 anticipates greater amounts of secondary development within New Market, Germantown, Montgomery Village, Olney, Burtonsville, Cloverly, Fulton, Muirkirk and Laurel Pines (***Table IV-118***). Zoning within the New Market, Germantown, Montgomery Village, Fulton, Muirkirk and Laurel Pines zones appear to be sufficient in accommodating the additional potential secondary development under the Corridor 2 scenario. The following zones do not sufficiently accommodate all of ELUP's Corridor 2 allocations (for either households or employment) and, therefore, rezoning may potentially occur within these areas: Gaithersburg, Olney, Laytonsville, Burtonsville, Aspen Hill, Cloverly, Deer Park, White Oak, Laurel and Beltsville. Based on ELUP's allocations, approximately 1,578 acres of undeveloped land could potentially be rezoned in order to accommodate the additional ELUP allocations for Corridor 2 (***Appendix P, P-2***). Forecast zones that would likely require some redevelopment include Gaithersburg, Aspen Hill, Cloverly, Deer Park, White Oak, Laurel and Beltsville. A Corridor 2 selection would open up Corridor 1 lands planned for an ICC to other unknown uses.

Table IV-118

Summary of Advisory ELUP Land Use Estimates

Greatest Areas of Secondary Development (Acres)		
Forecast Zones	**Corridor 1**	**Corridor 2**
Frederick County		
New Market	580	863
Montgomery County		
Burtonsville	292	685
Montgomery Village	530	520
Olney	536	506
Cloverly	288	287
Germantown	270	250
Prince George's County		
Beltsville	255	245
Laurel Pines	365	348
Muirkirk	1,280	1,130
Howard County		
Fulton	140	265
Greatest Difference in Secondary Development between Corridors 1 and 2 (Acres)		
Frederick County		
New Market	580	863
Howard County		
Fulton	140	265
Montgomery County		
Burtonsville	292	685
Laytonsville	61	112
Prince George's County		
Muirkirk	1,280	1,130
Areas with the Greatest Potential for Rezoning (Acres)		
Montgomery County		
Burtonsville	272	685
Olney	276	246
Laytonsville	61	112
Cloverly	287	287
Prince George's County		
Laurel	81	81
Beltsville	130	130
Areas where existing zoning appears sufficient in accommodating Secondary Development		
Frederick County		
New Market		
Howard County		
Fulton		
Montgomery County		
Germantown, Montgomery Village		
Prince George's County		
Muirkirk, Laurel Pines		
Areas where Redevelopment may be likely in order to support Secondary Development:		
Montgomery County		
Gaithersburg, Aspen Hill, Cloverly, Deer Park, White Oak		
Prince George's County		
Laurel, Beltsville		

Comparison Between Corridor 1 and Corridor 2

Based on the ELUP estimates, potential secondary development is likely for both Corridors 1 and 2 throughout the SCEA boundary. According to the ELUP estimates, for either corridor, both residential and commercial secondary development would be most prominent in the western portion of Prince George's County, in the vicinity of Laurel and Muirkirk. In Montgomery County, according to the estimates, secondary development is more likely within the central portions of the county in the vicinity of Burtonsville, Olney, Montgomery Village and Cloverly, and within the New Market forecast zone in Frederick County.

The most significant difference between the two corridors, according to the ELUP's estimates, would be within the Burtonsville zone. Approximately 685 acres of secondary development is likely under the Corridor 2 Alternative as compared to approximately 292 acres with Corridor 1. New Market, Laytonsville, Fulton and Muirkirk would also require a much greater amount of secondary development for Corridor 2 in order to accommodate the ELUP Corridor 2 allocations (see ***Table IV-118***).

The areas where the ELUP's suggested allocations are substantially different between the two alternatives, and where there is existing available land zoned to accommodate growth, are consistent with the areas that would experience more (or less) secondary development. If it was thought that undeveloped and adequately zoned lands were not available to accommodate ELUP's suggested build allocations, then it was assumed that rezoning of undeveloped lands or redevelopment may occur in those areas.

According to Montgomery County planning officials and leaders, additional development pressures on land would be likely with the selection of the northern Corridor 2 alignment (as compared with the southern Corridor 1 alignment) because settled expectations from Master Plans, zoning, growth management controls, and land uses contemplate the ICC in the Corridor 1 area. Montgomery County and M-NCPPC officials have also expressed the likelihood for additional development pressures along Corridor 2 through rezoning in the northern area of the county.

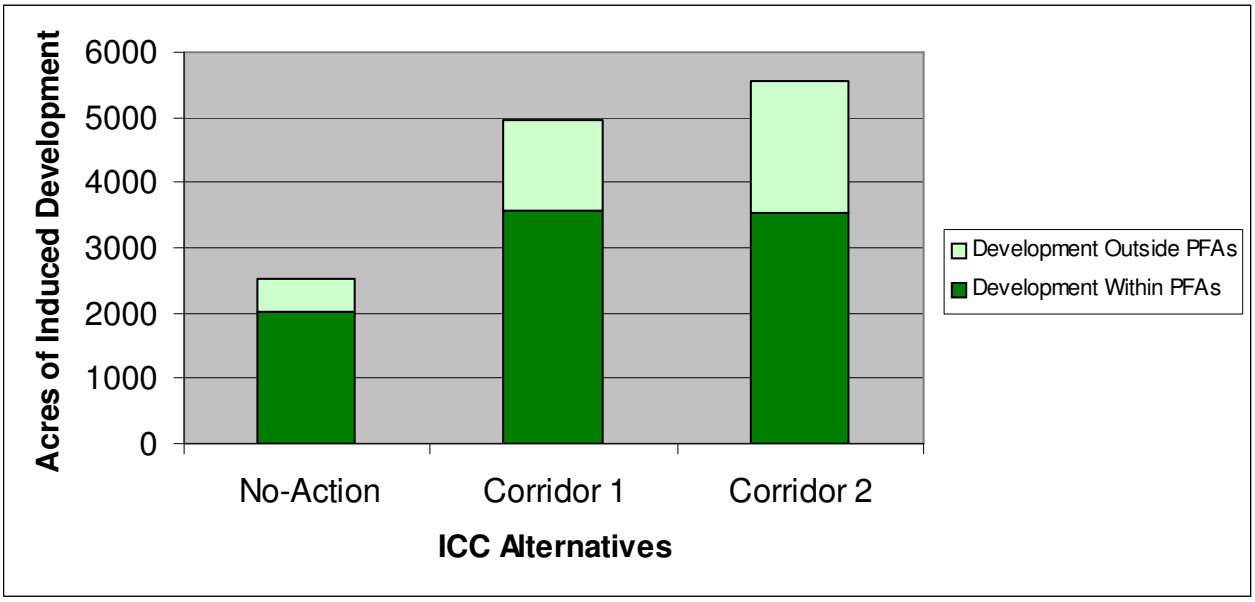
Under Maryland zoning law's Change or Mistake Rule, rezoning of individual parcels is justified where there was a mistake in the existing zoning or a substantial change in the character of the neighborhood has occurred. The selection of Corridor 1 would not likely be deemed a substantial change in the neighborhood because the existing Master Plans contain this alignment and surrounding land uses contemplate it. Potential changes could arise, for example, where interchange locations in the vicinity of US 29 are different from those in the Master Plan, or if the Rock Creek Option C is chosen, as it deviates from the Master Plan.

However, selection of Corridor 2 would likely be deemed a "substantial change in the character" of the neighborhoods it would traverse. If Corridor 2 is selected, additional development in the northern area of the county may very well occur beyond the existing control of Montgomery County since it would be inconsistent with the Master Plans and related existing zoning. Montgomery County officials acknowledge that a Corridor 2 alignment would likely lead to greater development pressures in the northern area of the county given the planning disruption.

Corridor 2 secondary development would likely occur in areas outside of PFA boundaries, in locations not currently served by community water and sewer facilities. Any development that would occur outside PFAs would incur additional costs to the county to provide the necessary public facilities required to handle development. By comparison, Corridor 1 development would allow for the continued maintenance of land use policies within areas currently served (or planned for service) by adequate public facilities (as well as within PFAs).

Referring to all three alternatives, based on the ELUP's No-Action estimates, an additional 2,512 acres of potential development is likely beyond what is currently planned/projected by the MPO and counties. Of this potential additional development under a No-Action alternative, approximately 81 percent would fall within a PFA. Based on the ELUP's Corridor 1 estimates, approximately 4,945 acres of potential secondary development is likely. Approximately 72 percent of the potential Corridor 1 development would fall inside a PFA. Under Corridor 2, approximately 5,546 acres of potential secondary development is likely. Of this, approximately 64 percent falls within a PFA (***Figure IV-28***).

Figure IV-28
Total Acres of Development within or outside of a PFA



Overall, looking at the Build Alternatives there is a greater potential for induced development with Corridor 2 than there is with Corridor 1. Specifically, the ELUP estimated that Corridor 2 would cause approximately 12 percent more secondary development than Corridor 1. This percentage takes into account only the total acreage of induced development; it does not reflect the *location* of that development in relation to PFAs ***(Table IV-119)***.

Table IV-119
Breakdown of Development Within or Outside of a PFA per ICC Alternative

	Corridor 1	Corridor 2	Difference
Development within a PFA	3,560	3,549	-0.3 %
Development outside a PFA	1,385	1,997	44%
Total Secondary Development	4,945	5,546	12%

The location of secondary development is critical because, in general, development within PFAs is consistent with the State's Smart Growth policies, whereas development outside PFAs is inconsistent with those policies, as described previously. The amount of secondary development within a PFA between the two build corridors is similar, a difference of less than one percent. But the amount of secondary development outside a PFA is substantially different. Corridor 1 anticipates 1,385 acres outside of a PFA as compared with 1,997 acres for Corridor 2, a difference of 44 percent (***Table IV-119***). Please refer to ***Appendix I*** to review MDP's in depth "White Paper on Intercounty Connector Alternative Selection and Compliance with the Maryland Planning Act and the Smart Growth Regulations." MDP concluded that while both Corridors 1 and 2 would connect PFAs (at the proposed termini at I-270 and either I-95 or U.S. 1) Corridor 1 is more compatible with the intent of the Smart Growth Act. Overall, DOP concluded in the White Paper (and the Maryland Department of Transportation agreed) that Corridor 2 would have more negative smart growth impacts than would Corridor 1.

The following four forecast zones within the SCEA boundary contribute to substantially more development outside of a PFA with Corridor 2: Burtonsville, New Market, Fulton and Laytonsville. Of these four forecast zones, all potential secondary development associated with Corridor 2 for Burtonsville (685 acres) and Laytsonville (112 acres) would fall outside of a PFA. The remaining two forecast zones anticipate a portion of secondary development outside of a PFA. Fulton anticipates 101 acres, or 38 percent, of secondary development outside of a PFA while New Market anticipates 734 acres, or 85 percent, of secondary development outside of a PFA.

If either the No-Action or Corridor 2 alternative is selected, it would likely trigger a full master plan amendment for all area and functional plans where the selected alternative is significantly different from the existing Master Plans. The Master Plan process would then evaluate the availability of (or potential for) extending community water and sewer and other infrastructure. Similarly, the validity of functional master plans, such as the Preservation of Agricultural and Rural Open Space and their supporting policies, would also need to be reviewed and revised.

If the Corridor 2 alternative is chosen, the appropriate zoning for the former master plan right-of-way along Corridor 1, planned interchanges and intersections, and the effect on properties surrounding both corridors would all have to be evaluated. Significant legal pressures from landowners to rezone along both corridors with the selection of Corridor 2 should be anticipated. Corridor 2 vastly increases accessibility to northern areas where such accessibility was not planned. Landowners would likely request rezoning that takes the greatest advantage of this new accessibility.

All of the long-standing land use factors mentioned above are worthy of noting when contemplating future land use scenarios among the ICC alternatives. The ELUP's suggested allocations provide a framework from which to work as it relates to the secondary and cumulative effects analysis. The ELUP was established as an advisory committee, and their work has been integrated into the SCEA as one means of assessing future resource impacts. There are numerous opinions and viewpoints regarding future land use within the SCEA boundary, all of which should be factored into consideration when contemplating the likelihood of future development pressures.

c. Future Secondary Impacts

The future 2030 secondary impact assessment is based on future secondary development estimates. Secondary impacts to specific resources are based on the location and extent of future secondary development scenarios within the SCEA boundary and associated with each of the ICC Build Alternatives. Secondary impacts to resources generally correlate to the areas that may experience the greatest land use changes/secondary development. This is because greater development often coincides with increased population, which can lead to community impacts relating to decreased mobility and quality of life impacts. In addition, development can impact forests and other wildlife habitat areas and increase the amount of impervious surface within watersheds. Increased impervious surface has the potential to diminish the quality of watersheds, including water quality and wildlife and fisheries habitat.

The ELUP's estimates suggest that secondary growth is likely for both Corridors 1 and 2. As a result of the projected induced growth, associated secondary environmental impacts would also be likely for both Corridors 1 and 2. Based on the ELUP's estimates, the extent of secondary induced growth would be generally similar between the two ICC corridors, with slightly greater overall induced growth and associated secondary impacts expected under a Corridor 2 scenario. However, certain locations within the SCEA boundary would likely experience differing substantial land use changes as between Corridors 1 and 2. Therefore, these areas would also likely experience the most dramatic impact differences for certain resources.

The ELUP's estimates also indicate that future growth is likely under the No-Action alternative beyond what is projected and planned for by the local jurisdictions. Therefore, environmental impacts associated with additional No-Action development are also likely. Based on the ELUP's household and employment estimates, the amount of additional development under the No-Action scenario is approximately 2,512 acres. Based upon these estimates, areas that would be impacted the most include New Market (Lower Monocacy Subwatershed) and Laurel (Rocky Gorge and Upper Patuxent River Subwatersheds), at 410 acres and 375 acres of additional potential development, respectively. The additional development under the No-Action alternative would likely contribute to greater environmental impacts within these areas.

Based on the ELUP's household and employment estimates, the amount of secondary development associated with construction of an ICC Build Alternative would range from approximately 4,945 acres for Corridor 1 to 5,546 acres for Corridor 2. In general, based on ELUP's estimates, the areas that would undergo the most substantial secondary development for either Corridor 1 or 2 include New Market in Frederick County (Lower Monocacy

Subwatershed), Burtonsville (Rocky Gorge Subwatershed), Montgomery Village, Olney, Laytonsville and Cloverly (Rock Creek, Rocky Gorge and Paint Branch Subwatersheds) in Montgomery County, and Beltsville and Muirkirk in Prince George's county (Little Paint Branch and Indian Creek Subwatersheds). It is expected that secondary development would be greater for Corridor 2 in the New Market area, with approximately 283 acres of more development estimated, which may contribute to greater environmental impacts in that area as compared to Corridor 1. Similarly, the Burtonsville area is expected to undergo greater secondary development within the Rocky Gorge watershed under the Corridor 2 Alternative as compared to Corridor 1 (685 acres for Corridor 2 and 292 acres for Corridor 1). The difference of approximately 395 acres in this area would likely contribute to greater environmental impacts. It should be noted that this area is currently not highly developed and is not zoned to absorb substantial development today. The anticipated future development is based on suggested allocations from the ELUP, and if this development occurs, the Rocky Gorge watershed would undergo impacts to wildlife and fisheries habitat, and may potentially impact water quality by the decrease of forested lands and the increase of impervious area. Corridor 2 would also be more impactive to the Laytonsville area, which is also within the Rocky Gorge watershed (61 acres for Corridor 1 compared to 112 acres for Corridor 2).

The Human Environment

Parklands and Recreational Facilities

Potential secondary impacts to parks and recreational facilities would be similar under the Corridor 1 or Corridor 2 scenario. Secondary impacts are expected to be minimal for both Corridor 1 and Corridor 2. No significant displacement of parkland is anticipated due to potential secondary development. Most secondary impacts would occur in central Montgomery County and northwestern Prince George's County. Parks and recreational facilities in close proximity to these secondary development areas include: Laytonsville Golf Course, North Branch Stream Valley Park, Upper Paint Branch Stream Valley Park, Norbeck Meadows Nature Preserve, Little Paint Branch Stream Valley Park, Snowden Oaks Park, Patuxent River Park, Montpelier Park, Airy Hill Local Park, Fairland Regional Park, and Chestnut Hills Neighborhood Park. Potential secondary impacts to these parks and recreational facilities include increased use, impacted natural resources, and reduced air and noise qualities.

Land along the existing MD 28/MD 198 Corridor near Browns Corner has been identified as a potential secondary residential development area under the Corridor 1 scenario only. This area is the only potential secondary development area that differs between Corridors 1 and 2 that may minimally affect secondary impacts to parklands between the build scenarios. Parklands and recreational facilities in this vicinity include the Hampshire Greens Golf Course and the Browns Corner Neighborhood Conservation Area, which may experience increased use.

Rezoning of land may occur in Gaithersburg, Olney, Laytonsville, Burtonsville, Rockville, Cloverly and Laurel forecast zones. Rezoning within these areas is anticipated to be nearly the same under each build scenario. Parklands and recreational facilities in the vicinity of these areas of rezoning include Seneca Creek State Park, Olney Manor Recreational Park, Red Door

Store Historical/Cultural Park, Upper Paint Branch Stream Valley Park, Browns Corner Neighborhood Conservation Area, Hampshire Greens Golf Course, Woodlawn Cultural Special Park, T. Howard Duckett Watershed Property, Patuxent River Watershed Conservation Park, Ednor Local Park, Patuxent River State Park, Upper Paint Branch Park and Spencerville Local Park. No parklands are anticipated to be rezoned due to Federal, State and local laws and policies dedicated to the preservation of parklands. All parklands and recreational facility impacts would be indirect and would be minimized and mitigated due to laws and regulations that protect these resources.

Low Income and Minority Communities

Secondary impacts to low-income/minority communities would be similar for both Corridor 1 and Corridor 2. Secondary development in both Corridors 1 and 2 could potentially impact low-income or minority census tracts in Gaithersburg (residential), Rockville (residential and/or commercial), and Laurel (residential). Potential secondary development in these areas may cause impacts such as: increased congestion, increased noise levels, air pollution, potential displacements and reduced access to community parks/recreational facilities.

Secondary development is not expected to displace residents in nearby low-income/minority census tracts. Potential secondary development in the vicinity of low-income/minority census tracts is nearly identical for both the ICC Build Alternatives, with one area of exception. Potential secondary developments in the Laurel vicinity areas differ between Corridor 1 and Corridor 2. For both alternatives, however, nearby low-income and/or minority census tracts may experience increased daily traffic volumes on local roadways, as well as noise and air pollution.

Potential secondary development could affect low-income and/or minority census tracts near Rockville and Greenbelt. Should lands in these areas become rezoned they may directly impact already developed low-income tracts in these areas. Although specific impacts would be dependent on individual projects these impacts all have the potential to be similar in all of the surrounding communities and consist of an increase in local congestion, air and noise pollution.

Positive secondary impacts are also likely for both Corridors 1 and 2. *The Economic Impact Study of the ICC* prepared by the Maryland Transportation Initiative at the University of Maryland indicates that both Build Alternatives would generate economic opportunity in the study area, including service industry jobs (MTI, 2004). Corridors 1 and 2 would provide easier accessibility to these employment opportunities and to affordable housing areas. It is possible that low-income and/or minority persons may fill some of these service jobs. It is also possible that if these jobs become available along with affordable housing, then low-income and/or minority populations may increase in these census tracts due to easier accessibility to service jobs.

Residential and Business Communities

Under a Corridor 1 scenario, approximately 4,945 acres (for Corridor 1) of land has been identified that could potentially support either residential or commercial secondary development

based on ELUP's estimates. This takes into account the number of acres that would potentially need to be rezoned; however, it does not account for areas that may require redevelopment in order to accommodate ELUP's estimated growth. Please see to ***Table IV-120*** for a summary of secondary impacts to residential/business communities within the SCEA boundary.

Table IV-120
Summary of Corridor 1 Secondary Impacts to Residential/Business Communities

County	Communities		Type of Secondary Impact
Montgomery/Prince George's – I-95/ICC Corridor 1 Interchange)	Laurel Saddle Creek South Laurel	Mayfield/Muirkirk Calverton	Large areas of residential/commercial development in and around Konterra would increase in traffic congestion on nearby roads (e.g., US 1 and Old Gunpowder Rd)
Montgomery – Western Portion of study area	Manor Woods Manor Village Longmead Sycamore Acres	Muncaster Manor/Bowie Mill Estates Olney Acres/Cashell Manor	Small areas of residential development may add congestion on existing local roadways, remove forested buffers, potential visual quality impacts
Frederick County	Silver Manor Estates Maryland Manor	Green Valley Kemptown	Small areas of residential development would likely increase traffic, remove forested buffers
Montgomery	Spencerville Burtonsville		Four residential in-fill areas and one commercial would accommodate smaller amounts of secondary development

Under a Corridor 2 scenario, approximately 5,546 acres of land has been identified by ELUP that could potentially support either residential or commercial secondary development. This takes into account the number of acres that would potentially require rezoning, however does not include the acreage to account for redevelopment. There are two areas adjacent to the proposed Corridor 1 alignment that would likely handle residential in-fill type development if Corridor 2 was selected: Colesville and Avonshire. Other additional areas would likely be developed under the Corridor 2 Alternative to fully accommodate projected growth and would likely experience rezoning pressures and secondary development. Communities affected by this additional development would likely exist within the Patuxent Watershed and include Burtonsville and Spencerville Knolls. This would increase traffic congestion and could take away from the visual quality that exists for other communities within this rural area.

In sum, secondary development as a result of construction of Corridor 1 or 2 would add additional impacts to residential and business communities. Secondary development is anticipated by the ELUP for both build scenarios (as well as the No-Action scenario), although anticipated growth areas differ. Corridor 1 anticipates growth to occur within the southern portion of the ICC study area, which would rely in part on redevelopment. Corridor 2 is more likely to experience secondary development within the northern portion of the ICC study area, relying mostly on rezoning. The Corridor 2 alternative would have a greater impact on communities within the area because Corridor 2, which is within a more rural area, is not consistent with county planning objectives. Therefore, communities and facilities within this area have not planned for the existence of such a facility, which would cause great disruptions to settled community expectations and uses. The Corridor 1 alternative would be potentially less

impactive to residences and businesses due to its comporting with county planning objectives. County zoning and land use policies have been developed and implemented based upon the inclusion of this facility further south.

Based on the ELUP's Corridor 1 estimates, approximately 4,945 acres of potential secondary development is possible. Approximately 72 percent of the potential development would fall inside a PFA. Under Corridor 2, approximately 5,546 acres of potential secondary development is possible. Of this, approximately 64 percent falls within a PFA.

Cultural Resources

With Corridors 1 and 2, potential secondary development is most likely within central Montgomery and northwestern Prince George's Counties. Cultural resources located in close proximity to potential secondary development areas are evident in twelve locations throughout the SCEA boundary, most of which are located in central Montgomery and northwestern Prince George's Counties. Cultural resources were identified immediately adjacent to potential secondary development areas in Kemptown, Gaithersburg, Rockville, Mount Zion, Laurel, Fairland, Beltsville, Montpelier, Greenbelt and Contee; therefore, these areas may experience some degree of secondary impacts to cultural resources under both Corridors 1 and 2 scenarios. As previously mentioned, potential secondary impacts to cultural resources are expected to be similar between Corridors 1 and 2, however, there are areas that may experience slightly greater secondary impacts under both Corridors. Potential secondary development identified under a Corridor 1 scenario may occur in Clarksburg and Browns Corner, in the vicinity of existing cultural resources. Under the Corridor 2 scenario greater potential secondary impacts to cultural resources could occur in the Sandy Spring/Ashton area. It is anticipated that this area could expect twice the amount of secondary development (800 acres compared to 360 acres) compared to Corridor 1. All other potential secondary impacts to cultural resources are anticipated to be similar between Corridors 1 and 2. Impacts to cultural resources for both Corridors 1 and 2 are anticipated to be minimized due to Federal, State and local planning ordinances that now protect many of these resource

The Natural Environment

Secondary impacts to natural resources within the ICC SCEA boundary have been determined based upon qualitative and quantitative analysis. For select natural resources for which there was readily available data, a GIS overlay analysis was applied to compute quantitative impacts (***Table IV-121***). This involved overlaying the potential secondary development associated with each of the ICC Build Alternatives and the select natural resource layers, including farmlands, forest, floodplains, wetlands, RTE, and streams. These impacts are estimations based upon the occurrence of the potential secondary development in the same locations as the select natural resources. These calculations are not based upon specific site plans nor do they consider laws or regulations that could limit impacts. The additional impervious area that could potentially be added due to the secondary development was also quantified for the entire ICC SCEA boundary, including reservoir subwatersheds.

Table IV-121

Potential Secondary Effects to Select Natural Resources

Resource	*Corridor 1*	*Corridor 2*
Farmland[1]	1,319	1,565
Forest[1]	2,213	2,236
Floodplain[2]	253	251
Wetlands[3]	160	166
RTE[4]	33	33
Stream[5]	78,803	80,794
Impervious Area[6]	2,500	2,818
Reservoirs[7]	313	659

Notes:

[1]Based on GIS overlay with MDP Land Use Data (Acres)

[2]Based on GIS overlay with FEMA 100 Year Floodplain (Acres)

[3]Based on GIS overlay with NWI Wetlands (Acres)

[4]Based on GIS overlay with Sensitive Species Project Review Areas (Acres), SSPRA's are not a definitive boundary of RTE habitat, they merely represent a general location of documented RTE species.

[5]Based on GIS overlay with Statewide Stream Layer (Linear Feet)

[6]Acres of Impervious area added by secondary development, Impervious data was calculated from the Near Future land use data that was modified to include planned future transportation/development (2030), including the ICC project for the build alternatives, and the potential development associated with each alternative.

[7]Acres of Impervious area added by secondary development to the reservoir subwatersheds (Rocky Gorge Dam and Brighton Dam), Impervious data was calculated from the Near Future land use data that was modified to include planned future transportation/development (2030), including the ICC project for the build alternatives, and the potential development associated with each alternative.

Impacts are estimations based upon overlaying potential secondary development with natural resources layers and do not take into consideration specific site plans nor development regulations that could limit impacts.

For most resources, the difference between Corridor 1 and Corridor 2 is relatively minimal. Overall, secondary impacts to natural resources are expected to be greater for Corridor 2 than for Corridor 1.

The secondary impacts to floodplains and RTE habitat are expected to be nearly identical for both Build Alternatives. The secondary impacts to wetlands are expected to be close in acreage with slightly more (six acres) with a Corridor 2 scenario. Secondary impacts to forests are expected to be slightly greater for Corridor 2 by approximately 20 acres. Impacts to Maryland's Green Infrastructure (GI) hubs and corridors were also assessed. The secondary impacts to GI hubs by the Build Alternatives could result in approximately 240 acres of impacts associated with each build alternative. The secondary impacts to GI corridors could be slightly greater for Corridor 1, with approximately 380 acres, compared to 350 acres of impacts associated with Corridor 2 (***Appendix P, P-3***). Secondary impacts to streams are expected to be approximately 2,000 linear feet greater for Corridor 2 than for Corridor 1. For both impervious area and reservoirs, secondary impacts associated with Corridor 2 would be approximately 300 acres greater than Corridor 1.

The secondary impacts to farmland within the entire SCEA boundary would be approximately 250 acres greater for Corridor 2 than Corridor 1. The secondary impacts to farmland within the entire SCEA boundary would be approximately 250 acres greater for Corridor 2 than Corridor 1. It is also important to note that a substantial amount of secondary development would occur within Montgomery County's Agricultural Wedge for either of the Build Alternatives. The Agricultural Wedge is an area identified in the County's General Plan for agricultural and low-

density residential use with large areas of open space and small rural centers. Corridor 2 would result in 441 more acres of secondary development within the Agricultural Wedge than Corridor 1 (1,397 acres for Corridor 2 vs. 956 acres for Corridor 1). Of the 956 acres of secondary development within the Agricultural Wedge for Corridor 1, 482 acres would impact farmland. In comparison with Corridor 2, 796 of the 1,397 acres of the secondary development within the Agricultural Wedge would impact farmland.

The only resource for which a quantitative analysis was not completed is groundwater. The secondary impacts to groundwater could occur in the areas in which potential secondary development associated with the ICC Build Alternatives is expected to occur. This additional development could result in secondary impacts to groundwater through reduced infiltration due to increased impervious area as a result of the secondary development. The greater amounts of secondary development and impervious area associated with Corridor 2 could result in greater secondary impacts to groundwater in the Corridor 2 scenario.

These quantitative impacts were also calculated for each subwatershed within the SCEA boundary as shown in ***Appendix P, P-4.*** The subwatersheds with the greatest amount of impacts to natural resources by secondary development are the Anacostia River, Lower Monocacy River and Rocky Gorge Dam subwatersheds. For most natural resources the secondary impacts are only slightly greater for Corridor 2 as compared to Corridor 1. Within the Rocky Gorge Dam, however, there is a significant difference between Corridor 1 and Corridor 2 due to the large amount of secondary development identified in the Burtonsville area associated with the Corridor 2 alternative.

8. Cumulative Impacts

Cumulative effects include impacts on the environment which would conceivably result from the incremental impact of the ICC project when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Therefore, cumulative effects would include all past impacts that have occurred within the ICC SCEA boundary, impacts associated with the ICC project itself, impacts associated with present/near future pipeline projects, and impacts associated with anticipated future 2030 projects, including government-funded as well as private development projects. In addition, secondary impacts are considered a component of cumulative effects. As such, cumulative effects are the summation of all past, present and anticipated future impacts within the ICC SCEA boundary, including impacts associated with secondary induced growth.

a. Other Actions in the Near Future and Future Time Frame

Numerous other significant actions slated to occur regardless of the ICC have been identified within the SCEA boundary for both the near future and future time frames. These projects have been identified through Master Plans, the CLRP and through coordination with county planners.

Within the near future time frame, over 1,000 development projects and over 60 transportation projects are currently planned regardless of the ICC project. These projects alone total more than 23,600 acres of new development within the near future time frame (***Appendix P, P-5***).

Although a large amount of planned development is anticipated within the SCEA boundary in the near future time frame the overall density of this development varies. Development densities are dependent on the established county zoning codes in place. Areas with lower development densities include the eastern portion of Montgomery County (specifically Laytonsville, Burtonsville and Cloverly) and smaller portions of Frederick and Prince George's Counties. Lower development densities would include 0.2 to 5 dwelling units per acre. Areas with higher development densities include portions throughout Montgomery County (specifically Germantown, Gaithersburg, Deer Park, White Oak, Wheaton and Bethesda) and smaller portions throughout Prince George's County. Higher development densities would include 6 to 100 dwelling units per acres. These areas have a more urban feel with more intense development.

In addition, over 50 development projects and over 40 transportation projects are planned to occur in the future 2030 time frame independent of the ICC project. These future planned projects total over 7,660 acres of new development regardless of the ICC project (***Appendix P, P-2***). Note that future 2030-planned development does not account for future unforeseen private development projects (especially residential) since these types of projects typically require shorter planning periods. It is likely that because of population growth, residential development will continue in the future 2030 time frame, however, the extent, location and size of these projects is not known since planning for these types of projects has not yet initiated.

Some of the larger planned development and transportation projects slated to occur in the near future and future time frames are described below. Please note that any resource impacts associated with these planned projects will occur regardless of an ICC selected alternative since none of these projects are dependent on construction of the ICC. Any impacts associated with these projects, along with all other past, present/near future and future projects will contribute to overall cumulative effects to resources.

Some of the larger/major planned development and/or transportation projects slated to occur in the near future time frames are described below.

I-95/ Contee Road Improvement Study

The I-95/ Contee Road Improvement Study is in the project planning phase. This study examines a series of alternates that stretch from Old Gunpowder Road across I-95 to Van Dusen Road. Increased traffic is expected for this area within Prince George's County. The purpose of this proposed roadway is to provide adequate capacity for the anticipated increases in travel demand.

Konterra

Konterra is located on either side of I-95, stretching as far south as the planned ICC Corridors and as far north as MD 198. This proposed mixed-use Regional Center would be comprised of commercial, retail, residential and transportation-oriented uses. An industrial site along Sweitzer Lane and a business campus are two components within the Konterra area that will be completed prior to 2010. The development of the Villages at Wellington, also part of Konterra, is also expected to be completed within the near future time frame and will consist of residential development. The proposed town center and regional upscale mall proposed within Konterra are

contingent upon the development of additional transportation facilities, for example, the ICC, and therefore are not included in the future planned development. However, they are considered as secondary development as a direct result of the ICC.

Fairland Golf Course Community

The Fairland Golf Course Community is a public/private partnership initiative with the purpose, in part, of fulfilling the recommendations of the Fairland Area Master Plan to provide additional community facilities and residential development at this site. This community would also consist of an 11-acre elementary school site. The golf course community is located in both Montgomery and Prince George's Counties, northwest of Old Gunpowder Road and south of MD 198, bordered to the west by Cedar Creek Drive. The site is approved for development and is projected to be open to the public in 2008. This development would include expanding on the already existing Gunpowder Golf Course including the construction of over 500 dwelling units and additional golf course facilities.

FDA Headquarters

The Food and Drug Administration (FDA) is relocating several of its laboratories and offices to its new headquarters in the White Oak area of Silver Spring. This 130-acre site is accessed from New Hampshire Avenue and was the former site of the Naval Surface Warfare Center (NSWC). According to the 1997 White Oak Master Plan, this facility could also accommodate additional Federal agencies in the future by further expansion.

Clarksburg Town Center

The goal for development within the Clarksburg Town Center is to promote a wide range of community and economic resources by enhancing and increasing residential, commercial, retail and transit-oriented areas in this I-270 corridor city. The 635-acre town center is bordered to the west by I-270 and to the east by Mid-county Highway, with MD 355 as the Main Street through the town providing access to the community facilities, homes and employment centers. The estimated time for completion is between the years 2010 and 2030, future time frame.

Urbana

Development for the Urbana area, within Frederick County, consists of a variety of planned resources including community facilities, expanded corporate centers, an enhanced town center and increased residential space. The existing Villages of Urbana, located east of MD 355, will expand to include 75 acres of additional residential development. The Urbana Highlands, another residential development, located further east and just north of MD 80, also has plans to increase the amount of residential development. Other developments proposed within Urbana include the proposed elementary school and middle school on either side of MD 80. In addition to community resources, Urbana also plans to expand on economic opportunities by creating additional retail and commercial office space in both the Urbana Town Center and Urbana Corporate Center, both adjacent to I-270.

Pines of Laurel

This planned retirement community, planned for the near future SCEA time frame, is to be built on an area currently zoned for industrial use. However, through a special exception, this area will become residential. The retirement community, already under construction, will span 105 acres, and is located in Prince George's County's Developing Tier, off of US 1.

Cherokee Property

The Cherokee Property is a light industrial development to be built along US 1, an area that is geared towards increasing economic resources in the future. Located in Prince George's County's Developing Tier, the property will span slightly over 96 acres and will be occupied by 13 or more commercial office buildings. If built, the proposed Contee Road could provide additional access to this development.

In addition, there are several other transportation studies and planned transportation projects slated to occur in both the near future and future time frames within the ICC study area. These include: MD 28/MD 97 Improvement Study, MD 355 – Montrose Road/Randolph Road Intersection Improvement Study, MD 97/Randolph Road Intersection Improvement Study, MD 28/MD 198 Corridor Improvement Study, MD 97 Brookeville Transportation Study, I-270 Interchange at Watkins Mill Road Extended, US 1/MD 201 Corridor Study, I-270/US 15 Multi-Modal Corridor Study, US 29 Improvements Project, I-495 Capital Beltway Study, Bi-County Transitway (formerly Purple Line and Georgetown Branch), and Corridor Cities Transitway: Shady Grove to Metropolitan Grove.

b. Environmental Resources

The Human Environment

Parklands and Recreational Facilities

No-Action

Throughout the SCEA time frame, impacts to parklands and recreational facilities predominately occurred in the past time frame, prior to the enactment of Federal, State, and local regulations that protect these resources. Furthermore, due to increasing populations since the 1960s it became more important to establish additional parklands (e.g., local and regional parks) to provide recreational facilities for new communities. During this time, Program Open Space (POS) added nearly 60,000 acres to Maryland's State park holdings. In the 1990s, an increasing awareness of environmental conservation prompted parkland preservation as well as additional Federal, State and local regulation during the park development process. An example of this is in Montgomery County, where parklands have been steadily increasing since the 1960s, and parkland acreages are projected to continue to increase into the future time frame (47 percent of the County has been designated "Forever Green" which includes parkland reserve, agricultural reserve, homeowner association greenspace, forested roadside buffers and other conservation areas). M-NCPPC parkland in Montgomery County alone accounts for 32,600 acres, a number that has been increasing even as development has increased.

According to overlay analyses, several planned transportation projects have the potential to impact public parklands/recreational facilities in the SCEA area in the present/near future time frame (***Figure IV-29, Volume II***). Widening or reconstruction projects such as MD 28/198, are anticipated to have fewer impacts to surrounding parklands/recreational facilities than new construction of roadways, such as the Mid-county Highway. Please refer to ***Table IV-122*** for transportation projects that have the potential for impacting parklands/recreational facilities. All US DOT transportation projects are required to comply with Section 4(f) of the 1966 Department of Transportation (DOT) Act; therefore, parkland impacts will likely be avoided, minimized and/or mitigated.

Other planned projects, primarily residential, in the near future time frame occur within the vicinity of northeastern Montgomery County. Parklands that may be impacted by residential development in this area include, but are not limited to: Northwest Branch Recreational Park, Woodlawn Cultural Special Park, Northwest Branch Stream Valley Park, Patuxent River Watershed Conservation Park, T. Howard Duckett Watershed Property, Upper Paint Branch Park, Upper Paint Branch Stream Valley Park and the East Norbeck Local Park. Please refer to ***Table IV-123*** for other parks that may potentially be impacted by near future development projects.

In addition to those impacts to parklands in the past and present time frames, it was also necessary to assess parkland impacts in the future time frame (2010-2030) (***Table IV-124***). According to the overlay analysis, most parklands/recreational facilities impacted by future planned development are located in Montgomery or Prince George's Counties (***Figure IV-30, Volume II***). Many future projects, such as the I-270/US 15 Multimodal Corridor Study and the I-495 Capital Beltway Study, are slated to occur on already existing roadway alignments, regardless of the ICC project. In most cases these roadways would be widened, potentially requiring "slivers" of land along the roadway alignment and be considered minimal in relation to the overall size of the park or recreational facility.

Realignment of existing roadways or newly constructed roadway alignments would have greater impacts on parklands/recreational facilities in the SCEA area. The bisection of parklands may require a larger area of required ROW, as well as impact vegetation, water quality and access among park amenities. Impacts to parklands or recreational facilities from future development projects would likely be in the form of increased use due to increased access or surrounding population, or to natural resources due to increased impervious areas in the vicinity. A decrease in air quality and an increase in noise levels are also possible due to increased traffic near parklands. Parklands and recreational facilities potentially impacted in eastern Montgomery County and northern Prince George's County includes: Northwest Branch Park, Bel Pre Park, Little Paint Branch Park, Little Paint Branch Stream Valley Park, Fairland Regional Park and Snowden Oaks Park.

Table IV-122

Planned Transportation Projects in the Near Future Time Frame (Present –2010) with Potential to Directly Impact Adjacent Parklands/Recreational Facilities in the SCEA Boundary

Planned Project	*Description*	*Parks Potentially Impacted*	*County*
Reichs Ford Road	Reconstruction	• Monocacy Pine Cliff Park	Frederick
Midcounty Highway/ Middlebrook Road	Construction	• Great Seneca Park • North Germantown • Seneca Creek State Park	Montgomery
Middlebrook Road	Extension	• Germantown East Local Park	Montgomery
MD 115 Muncaster Mill Road	Widen	• Laytonia Recreational Park • Rock Creek Regional Park • Muncaster Recreational Park • Rock Creek Stream Valley Park • North Branch Stream Valley Park	Montgomery
Goshen Facility	Widen	• Stewartown Local Park • Cabin Branch Stream Valley Park	Montgomery
Longdraft Road	Widen	• Seneca Creek State Park	Montgomery
Briggs Chaney Road	Widen	• Upper Paint Branch Stream Valley Park • Spencerville Park • Airy Hill Local Park • Cross Creek Park • Little Paint Branch Stream Valley Park • Old Gun Powder Road Community Park	Montgomery
US 29	Upgrade	• Upper Paint Branch Stream Valley Park • Spencerville Park • Airy Hill Local Park • Cross Creek Park • Little Paint Branch Stream Valley Park • Old Gun Powder Road Community Park • Sligo Creek Stream Valley Park • Northwest Branch Park • Paint Branch Stream Valley Park • T. Howard Duckett Watershed Property	Montgomery
Greencastle Road	Widen	• Fairland Recreational Park	Montgomery
Cherry Hill Road	Widen	• Paint Branch Stream Valley Park • Cherry Hill Road Community Park	Prince George's
US 1/ MD 201	Corridor Study	• Snowden Oaks Park	Prince George's
Contee Road	Widen	• Montpelier Forest Neighborhood Park	Prince George's
Snouffer School Road	Widen	• Cabin Branch Stream Valley Park • Hunters Woods Neighborhood Conservation Area	Montgomery

Table IV-123
Planned Development Projects in the Near Future Time Frame That May Potentially Impact Parks/Recreational Facilities

Parkland/Recreational Facility	Area(s)	Type of Development	Direct/Indirect Impact
Montgomery County			
Muddy Branch Park	North Potomac	Development on adjacent property	Indirect (increased use)
Seneca Creek State Park	Gaithersburg	Mixed Use facility near the I-270/Watkins Mill Road	Direct (a parcel of the forested region of the park may be acquired)
Green Park Fields Road Local Park	Rockville	Development near Shady Grove Adventist Hospital	Direct (sliver of land adjacent to Hospital)
Woottons Mill Park, Glenora Park, Upper Watts Branch Park		Residential Development	Indirect (increased use)
Black Hills Regional Park	Germantown	Residential Development near I-270/West Old Baltimore Road interchange	Indirect (increased use)
Ovid Hazen wells Recreation Park	Poolesville	Development of Rocky Hill Middle School	Indirect (increased use, increased access)
Green Farm Conservation Park	Montgomery Village	Development of Mixed-use facility	Indirect (increased use)
North Branch Stream Valley Park		Norbeck Community College	Direct (narrow strip of land along the eastern side of the Park)
Howard County			
County-owned open space	Columbia	Johns Hopkins University Applied Physics Laboratory improvements	Indirect (noise/air pollution)

The following planned development projects may impact parks/recreational facilities in the future time frame:

- Fortune Parc - located near Potomac Woods Park along I-270 south of Rockville. Parkland use may increase due to increased residence.
- Bio-Tech Park Research Center - Planned on WSSC-owned property along Paint Branch Park near the Montgomery/Prince George's County boundary. An area of forested land may be acquired from the Paint Branch Park for construction of the Research Center.
- FDA headquarters may directly impact the White Oak Golf Course with the acquisition of some land.
- Human Genome Sciences, Inc. – located in Travilah, just west of Big Pines Local Park. No direct impacts are anticipated; however, recreational use may increase.

Table IV-124

Planned Transportation Projects in the Future Time Frame (2010–2030) with Potential to Directly Impact Adjacent Parklands/Recreational Facilities in the SCEA Boundary

Planned Project	Parks Potentially Impacted	County
MD 28/MD 198[2]	East Norbeck Local Park Northwest Branch Recreational Park Burtonsville Local Park	Montgomery/ Prince George's
MD 97/Brookeville[1]	Reddy Branch Stream Valley Park	Montgomery
Midcounty Highway Extended[1]	Seneca Crossing Local Park North Germantown Greenway Stream Valley Park Great Seneca Park	Montgomery
Montrose Parkway West[1]	Tildenwoods Park	Montgomery
Bi-County Transitway[2]	Silgo Creek Stream Valley Park Northwest Branch Park Northwest Branch Stream Valley Park Paint Branch Little Paint Branch Rock Creek Park	Montgomery/ Prince George's
Corridor Cities Transitway (transit portion of the I-270/US 15 Multimodal Corridor Study)[2]	Seneca Creek State Park	Montgomery/ Frederick
I-270 Interchange @ Watkins Mill Road[2]	Great Seneca Park	Montgomery
North-South Parallel Road[1]	Monocacy Pine Cliff Park Monocacy National Battlefield	Frederick
I-270/US 15 Multimodal Corridor Study[2]	Urbana Community Park Baker Park Monocacy National Battlefield Park Black Hills Regional Park Middlebrook Hill Park Seneca Creek State Park Malcolm King Park	Montgomery/Frederick
I-495 Capital Beltway Study[1]	Cabin John Regional Park Rock Creek Regional Park Sligo Creek Park Northwest Branch Park Paint Branch Park	Montgomery/Prince George's

[1] Based on overlay analysis only
[2] Based on received documentation referenced in *Table IV-116* of the SCEA Technical Memorandum

Due to Federal, State and local laws and regulations preserving parklands, it is not anticipated that parklands and recreational facilities would be significantly impacted within the SCEA boundary in the present to 2030 time frame. Section 4(f) of the USDOT Act of 1966 does not permit approval of a project if there are "prudent or feasible" alternatives to using parkland and requires that "all possible planning" be conducted to minimize harm to parkland resulting from the use of Section 4(f) resources for any transportation project.

Corridors 1 and 2

Cumulative effects under Corridors 1 and 2 include past impacts, present/near future impacts associated with pipeline projects, and future secondary impacts. Please refer to previous section

(Section K.6.c.) for parks that would potentially be impacted by development under the No-Action Alternative. These impacts would also occur under a Corridor 1 or Corridor 2 scenario. The majority of impacts expected, regardless of the ICC, would occur in eastern Montgomery County and northern Prince George's County. The cumulative effects of Corridors 1 and 2 also include the secondary impacts as discussed in ***Section K.6.c.*** Secondary impacts would primarily occur in central Montgomery County and northeastern Prince George's County. Cumulative effects under the Corridor 1 and 2 alternatives are nearly identical, and primarily include the following: increased use, increased impervious areas in the surrounding area, air and noise quality impacts and increased traffic surrounding the parklands. Parkland impacts are expected to occur primarily in Montgomery County, located in the areas of North Potomac, Gaithersburg, Rockville, Germantown, Poolesville, and Montgomery Village. Parkland near the MD 28/MD 198 near Browns Corridor (the Hampshire Greens Golf Course and the Browns Corner neighborhood Conservation Area) may potentially be impacted by secondary development under the Corridor 1 scenario only. Other parkland impacts are scattered throughout Prince George's, Frederick and Howard Counties. M-NCPPC has approved a Section 4(f) mitigation package for Corridor 1 that replaces parkland acquired for the ICC with new parkland at an 8.5 to 1 replacement ratio.

Low Income and Minority Communities

No-Action

An overlay analysis of low-income/minority census tracts with near future and future planned development projects was conducted to assess impacts. None of these projects are dependent on construction of one ICC alternative, and are expected to occur regardless of an ICC selected alternative. Planned future development can be seen in ***Appendix P, P-6 and P-7, and Figure IV-25, Volume II***. Please refer to the ***SCEA Technical Memorandum*** for detailed information regarding impacts to low-income/minority communities. Please refer to ***Table IV-125*** for a summary of impacts to low-income/minority communities in the near future and future time frames.

In general, Environmental Justice (EJ) census tracts within the SCEA boundary will not experience disproportionately high or adverse impacts due to planned development from the present through 2030 time frame. Any impacts from projects in the near future or future time frames are anticipated to have equal potential to effect surrounding communities, and therefore would not be considered disproportionate.

Specific project impacts (both near future and future) to low-income/minority populations within these census tracts were not possible based on data availability; therefore, further environmental justice outreach for each project would be necessary to determine if these impacts would be disproportionate. Ensuring that impacts are not disproportionate is a critical step and a major component of the Executive Order. Low-income and minority communities will be given opportunity to provide meaningful input through a comprehensive and continuous public outreach process during the development of transportation projects.

Table IV-125
Summary of Potential Impacts to Low-income/Minority Communities (Near Future and Future Time Frames)

	Type/Description	County	Potential Impact (Census Tract)
Near Future	Upgrade East Street Construct Monocacy Blvd Construct Schifferstadt Road I-70 Improvements	Frederick (City of Frederick)	1 low-income
	I-270/US 15 Corridor Study Goshen Facility Widening Reconstruct I-270/MD 117	Montgomery	1 low-income
	Residential and Commercial Development	Montgomery (Wheaton-Glenmont)	3 low-income
	US 1/MD 201 Widening Greenbelt Metro Access Study	Prince George's	3 low-income
	Fire Station Construction US 1/MD 201	Prince George's (Laurel)	3 minority
Future	North-South Parallel Road Construct mixed-use facility East Street Community Park Construct Police Station Construct airpark	Frederick (City of Frederick)	1 low-income
	Montrose Parkway East	Montgomery (Wheaton-Glenmont)	1 low-income
	Montrose Parkway West	Montgomery (Rockville)	1 low-income
	I-495 Corridor Metzerott Road widening Bi-County Transitway Study US 1 Improvements Rhode Island Avenue widening Good Luck Road improvements	Montgomery and Prince George's (College Park, Greenbelt, Bladensburg, New Carrollton)	Potential to impact several low-income and/or minority census tracts
	Residential Development	Montgomery (Rockville)	1 low-income
	Various development	Prince George's (College Park, Greenbelt, Takoma Park)	Several low-income
	Various development	Prince George's (near AA/Howard County line)	3 minority

Corridors 1 and 2

Cumulative effects to low-income/minority communities under Corridors 1 and 2 alternatives include past impacts, present/near future impacts associated with pipeline projects, and future secondary impacts. Impacts described above for the No-Action Alternative would also apply under the Corridor 1 and Corridor 2 scenarios. Impacts to EJ communities under the No-Action alternative are scattered throughout the SCEA Boundary, but are primarily expected to occur in Montgomery, Prince George's and Frederick Counties. ***Table IV-125*** lists those projects that would potentially impact low-income/minority communities under the No-Action Alternative,

which would also apply to the Corridor 1 and Corridor 2 scenarios. Proposed projects under the No-Action Alternative are anticipated to have equal potential to effect surrounding communities and are not considered to be disproportionate. The cumulative effects of Corridors 1 and 2 also include the secondary impacts as discussed in ***Section K.6.c.*** Secondary impacts are expected to be similar for both Corridor 1 and Corridor 2, and would occur primarily in Montgomery and Prince George's Counties. Potential secondary effects include the following: increased congestion, increased noise/air pollution, reduced access to community parks/recreational facilities, potential displacements, increased use, increased impervious areas in the surrounding area.

Residential and Business Communities

No-Action

Cumulative impacts to residential/business communities in the past time frame are the result of numerous large development and transportation projects within the SCEA boundary. Many key transportation facilities were constructed along with opening/expansions of large employers such as National Security Agency (NSA) and BWI Thurgood Marshall Airport. Town centers, such as Columbia, became more populated, and many communities emerged during this time. Together, these transportation improvements along with the residential and commercial growth this area experienced helped to build a stronger business community and improve the local economy. In addition, many of the established communities that exist today were established during this past time frame. Some of the most notable projects that helped to form the communities and businesses that are in place today include:

- Opening/expansion of I-495, I-95 (in Prince George's County) I-270 (Montgomery and Frederick County), I-97 (Anne Arundel County), I-70 (Frederick County)
- Opening/expansion of Metrorail lines into Montgomery and Prince George's Counties
- Emergence of the NSA –Anne Arundel County
- Expansion of BWI Thurgood Marshall Airport (formally called Friendship Airport)
- Opening of Arundel Mills Mall near BWI Thurgood Marshall Airport
- Development within the city of Columbia – Howard County
- Adoption of Carroll County's Master Plan and first Water and Sewer Master Plan

Under the No-Action alternative, approximately 33,800 total acres of projects/developments is expected from the present through the future 2030 time frame. This includes planned near future and future transportation projects as well as known private development projects. This acreage also includes additional development likely (though not currently planned) under a No-Action alternative based on ELUP's estimates.

Table IV-126 highlights the near future and future transportation projects within the SCEA boundary. This table also summarizes residential and business impacts in terms of the approximate number of displacements anticipated per project.

Table IV-126
Potential Impacts to Residential/Business Communities (Near Future and Future Time Frames)

	County	Project	Build Year	Displacements
Near Future	Prince George's	I-95/I-495 Greenbelt Metro Access Study	2010	0
	Montgomery	MD 28/ MD 97	2010	0 Residential 3 Commercial
	Frederick	US 15/ MD 26	2010	Unknown
	Montgomery	MD 115, Muncaster Mill Road	2010	6-16 Residential, 0-2 Commercial*
	Prince George's	I-495/I-95 at Arena Drive	2010	0 Residential 0 Commercial
	Howard	MD 216 Relocated	2005	0 Residential 0 Commercial
	Prince George's	Blue Line Extension - 3.1-mile extension of the Blue Line of the Metrorail system	Unknown	Unknown
Future	Montgomery & Prince George's	MD 28/MD 198 Corridor Improvement Study	2025	3-26 Residential 5-7 Business 1 Church
	Montgomery	MD 97 – Brookeville Transportation Study	2015	0
	Prince George's	I-95/Contee Road Transportation Improvement Study	2015	0
	Montgomery	MD 28/Rockville Town Center	Unknown	12-22 Residential 0-1 Commercial*
	Montgomery	I-270/ Interchange at Watkins Mill Road Extended	2025	0 Residential 0 Commercial
	Montgomery	MD 355 Montrose Road/Randolph Road	2015	0 Residential 22 Business (6 Buildings)
	Prince George's	US 1/MD 201 Corridor Study	Unknown	5-11 Residential 1-29 Commercial*
	Montgomery	Goshen Road South	Unknown	Potentially Impacted
	Frederick/ Montgomery	I-270/US 15 Multimodal Corridor Study, with Corridor Cities Transitway	2025	59-385-Residential 2-11 Commercial*
	Montgomery/Prince George's	Bi-County Transitway - 14-mile corridor extends from the Bethesda Metrorail Station to the New Carrollton Metrorail Station	Unknown	Unknown

** Dependant on Alternatives Selected*

Near future residential development has been identified throughout the SCEA boundary, but the majority of this residential development is concentrated in Germantown, Clarksburg and northeastern Montgomery County, specifically within the Burtonsville, Cloverly and Olney forecast zones. In Frederick County large amounts of near future residential development has been identified in the New Market forecast zone.

The majority of near future business development is slated to occur in concentrated, small pockets throughout the SCEA boundary. The larger areas of business development exist within the Germantown, Gaithersburg, Rockville, and Clarksburg areas, which generally follow the I-270 Corridor up through Frederick County. Additional areas exist within Howard County and throughout Montgomery County. As these areas increase in the number of jobs it is likely that the local economy would benefit from that increase.

Traffic volumes would most likely increase through local communities because of the region's population increase, which leads to additional residential development. In total, approximately 23,600 acres of near future planned development is expected under a No-Action alternative. Transportation improvements to serve planned development are foreseeable through existing local master plans. Near future planned development will have an affect on residential and business communities within the SCEA boundary by altering access/mobility and in some cases, increasing noises levels and decreasing visual quality.

Planned future transportation and development projects would have a minimal impact on residential or business communities throughout the SCEA boundary ***(Appendix P, P-8 and P-9 and Figure IV-30, Volume II).*** In total, approximately 7,700 acres of future planned development is expected under a No-Action alternative. Major proposed transportation projects in the future time frame include:

- I-270/US 15 Multi-Modal Corridor Study
- Bi-County Transitway
- Corridor Cities Transitway
- I-495 Capital Beltway Study
- Improvements to the MD 28/ MD 198 Corridor

These are projects that could support the additional travelers anticipated from the major employment areas. Quantitative impacts for additional transportation projects were assessed when impact calculations were available through NEPA documentation and can be found in ***Table IV-127***. Although residential and business displacements are anticipated with a number of these projects, the overall SCEA boundary will generally continue to experience both residential and employment growth.

Future planned development projects mainly consist of public facilities and mixed-use development. A large portion of development is expected within Frederick County. Public facilities within Frederick County include thirteen schools, a police station, a fire station, a conference center and a homeland security facility. An industrial airpark is also proposed within the county.

Future mixed-use planned development is mainly concentrated within Montgomery County and, for example, consists of Fortune Parc, Shady Grove Life Sciences Center, Clarksburg Town Center and around Metro Stations. Montgomery County also is proposing a substantial amount of commercial development including the Gateway 270 Corporate Park and the FDA Headquarters at White Oak. Howard County is proposing four residential developments. These projects would also have beneficial cumulative effects, such as increasing employment opportunities within the SCEA boundary.

Table IV-127

Transportation Projects Within the SCEA Boundary and Their Potential Associated Impacts

County	Project	Build Year	Wetlands (Acres)	Woodlands (Acres)	Floodplains (Acres)	Streams (Stream Crossings/Linear Feet)	Displacements	Parkland Impacts	Cultural Resources (Archeological/ Historical)	Low-Income/Minority Populations
Near Future Transportation Projects (Present to 2010)										
Prince George's	I-95/I-495 Greenbelt Metro Access Study	2010	2.0-2.1*	4.7-5.8*	2.8-4.2*	2 Stream Crossings	0	0	1 – BARC (No Adverse Effect) 0.30-0.80 ac. *	0
Montgomery	MD 28/ MD 97	2010	0.2	8.9	0	320 l.f.	0 Residential 3 Commercial	0	1 Adverse Effect (White's Hardware Store Complex)	0
Frederick	US 15/ MD 26	2010	80 l.f (removing a culvert to improve wetland)	0	0	0	0	0	0	0
Montgomery	MD 115, Muncaster Mill Road	2010	0.1-2.1*	1.8-29.3*	1.0-1.4*	6-8 Stream Crossings*	6-16 Residential, 0-2 Commercial*	3.9-11.1 acres*	1-4 Historic Properties*	Unknown
Prince George's	I-495/I-95 at Arena Drive	2010	0-5.4*	0	0-1.1*	2-7 Stream Crossings*	0 Residential 0 Commercial	0	0	0
Howard	MD 216 Relocated	2005	2.0	35.0	4.0	5 Stream Crossings	0 Residential 0 Commercial	0	Unknown	Unknown

* *Dependent on Alternative Selected*

Table IV-127

Transportation Projects Within the SCEA Boundary and Their Potential Associated Impacts

County	Project	Build Year	Wetlands (Acres)	Woodlands (Acres)	Floodplains (Acres)	Streams (Stream Crossings/Linear Feet)	Displacements	Parkland Impacts	Cultural Resources (Archeological/ Historical)	Low-Income/Minority Populations
Future Transportation Projects (2010 to 2030)										
Prince George's	I-95/Contee Road Transportation Improvement Study	2015	1.3-2.7	7.9-20.9*	0-0.10*	162-308 *	0	0	Potential for archeological resources are present.	Unknown
Montgomery	MD 28/Rockville Town Center	Unknown (only funded through planning)	0.2	0	0	0	12-22 Residential 0-1 Commercial*	0	0	0
Montgomery	I-270/ Interchange at Watkins Mill Road Extended	2025	0.76	30.9	6.4	1,730	0 Residential 0 Commercial	1 -Great Seneca Park	0	EJ Impacts – but not adverse or disproportionate
Montgomery	MD 355 Montrose Road/Randolph Road	2015	0	9.00	0	0	0 Residential 22 Business (6 Buildings)	0	0	0
Prince George's	US 1/MD 201 Corridor Study	Unknown	0.4-17.5*	4.6-38.9*	4.8-34.8 *	367-6,524*	5-11 Residential 1-29 Commercial*	0-0.41 acres*	4 Historic Properties	Potential EJ Impacts*
Montgomery	Goshen Road South	Unknown	Yes	Yes	Yes	Yes	Potentially Impacted	4 Parks	0	0
Frederick/ Montgomery	I-270/US 15 Multimodal Corridor Study , with Corridor Cities Transitway	2025	0.5-11.6	180-199	3-24	13,407-16,331*	59-385- Residential 2-11 Commercial*	0-48 acres*	0-7* Historic Properties Potential for archeological resources are present.	EJ Impacts – but not adverse or disproportionate
Montgomery /Prince George's	Bi-County Transitway	Environmental impacts are unknown at this time.								

* *Dependent on Alternative Selected*

The majority of future proposed development would benefit the local economy by increasing the employment opportunities within the SCEA boundary. Frederick and Montgomery Counties are proposing large employment areas that would provide jobs in this area. Although planned residential development does not appear extensive outside of the I-270 corridor within the future 2030 time frame, it is important to note that private development projects (especially residential) typically require shorter planning periods and, therefore, do not account for future unforeseen private development projects for the No-Action future 2030 time frame. It is likely that residential development will continue in the future 2030 time frame, however, the extent, location and size of these projects is not precisely known since planning for these types of projects has not yet initiated. The rate at which this development could occur is also dependant on how beneficial travel timesavings are with implementation of the ICC.

Within the SCEA boundary, approximately 2,660 acres of land has been identified that could potentially support residential or commercial development under the No-Action Alternative (beyond what is currently planned) based on ELUP allocations. This also includes areas that would potentially require rezoning, however does not include areas that may require redevelopment in order to fully accommodate anticipated growth. Communities that anticipate the greatest amounts of additional potential development beyond what has been currently planned by the counties, include:

- Muirkirk
- Rockville
- West Laurel
- Shady Grove
- Laurel
- Urbana (Frederick County)

The majority of the development identified is smaller areas of residential development. In most cases, these areas are adjacent to existing communities. Therefore, these potential development areas would fit in with the surrounding existing land uses, and associated impacts would be minimal.

Areas that would potentially require rezoning under the No-Action alternative, according to the ELUP, mainly exist in the eastern portion of Montgomery County. These areas are very rural and are in close proximity to the Patuxent River. Areas that may require redevelopment exist within areas such as Rockville, Gaithersburg, Springbrook, Calverton and Cloverly.

Redevelopment in these areas would be required to fully accommodate ELUP's No-Action growth projections since available land for new development is currently limited in these areas.

Communities affected by redevelopment would likely have added congestion on existing roadways. With no major transportation improvements anticipated, additional vehicles throughout residential communities within the immediate study area would affect local roads, thus deteriorating mobility throughout the study area under a No-Action alternative. In general, areas further removed from the immediate ICC study area but within the SCEA boundary would not experience the effects of increased traffic to the same extent. In addition, cumulative impacts under the No-Action Alternative would contribute to additional residential and business development. This would lead to mobility and safety issues within existing communities and business centers. Existing public facilities close to the study area may also feel increased growth pressures by increasing residential and business areas throughout the study area.

Based on development and transportation improvement projects slated to occur, it is likely that the area within the SCEA boundary would closely resemble conditions as they exist today. No major improvements are expected so any type of major benefit to the area is not foreseeable. The local roadway network will however continue to experience congestion and other traffic related issues by increasing the amount of vehicles using local roads.

Corridor 1

Under the Corridor 1 scenario assumed by the ELUP, approximately 4,945 acres of secondary development has been estimated (compared to approximately 2,512 acres under the No-Action Alternative). Numerous proposed projects are anticipated to occur, primarily in Montgomery and Prince George's Counties. Several transportation projects are proposed regardless of an ICC selected alternative, and the impacts associated with these projects will therefore contribute to cumulative effects under all three ICC alternatives scenarios. Projects such as I-270/US 15 Multimodal Corridor Study, MD 28/MD 198, and MD 115 are anticipated to have displacements that could cumulatively impact residential/business communities. However, access and mobility is expected to improve throughout the SCEA boundary under a Corridor 1 alternative.

Corridor 1 anticipates growth to occur within the southern portion of the ICC study area, which would rely in part on redevelopment. The Corridor 1 alternative would be potentially less impactive to residences and businesses because of its inclusion in county master plans. County planning and zoning policies and land uses have been developed based upon the inclusion of this ICC build alternative in the county plans.

It is anticipated that with the planned development and transportation projects slated to occur along with construction of Corridor 1, communities within the SCEA boundary would likely improve in access and mobility throughout the area. Most communities adjacent to this alignment have built around the reserved transportation corridor knowing that a planned ICC would eventually be constructed. Communities within this area could potentially be impacted by noise and visual impacts associated with construction of a new roadway; however, these types of impacts would be considered minimal since these properties were planned around the reserved transportation corridor.

Corridor 2

Under Corridor 2, approximately 5,546 acres of land could be required for potential secondary development according to the ELUP. ELUP assumed secondary development within the northern portion of the ICC study area, relying mostly on rezoning. This would have a greater impact on communities within this area because Corridor 2 is not consistent with county planning objectives. In addition, more of the Corridor 2 alignment falls outside of PFA boundaries as compared to the Corridor 1 alignment (65 percent versus 36 percent). And 36 percent of potential secondary development also outside of PFA boundaries (as compared to 28 percent falling outside under a Corridor 1 scenario).

Cumulative impacts for Corridor 2 would likely have a much greater impact on communities within the SCEA boundary than the Corridor 1 Alternative. Corridor 2 is not consistent with county planning objectives, communities and facilities within this more rural area have not planned for the existence of the facility causing great disruption to settled community

expectations and land uses. Communities, which exist within close proximity to Corridor 2, would suffer from major community cohesion issues, numerous residential displacements and access issues. The large amount of development, which is slated to occur within eastern Montgomery County, would put increased development pressures within this area and further impact existing communities. This, coupled with the construction of an ICC in the northern area of Corridor 2, would cumulatively impact communities in this northern area.

Cultural Resources

No-Action

Cumulative impacts to cultural resources were more substantial in the past time frame, prior to the enactment of several pieces of legislation protecting these resources such as the National Historic Preservation Act of 1966 and the appointment of a Historic District Commission. Data was not readily available on specific resources lost within the past time frame; therefore specific cumulative impacts in the past time frame are not available.

Cumulative impacts from planned near future developments have the potential for impacting cultural resources within the SCEA boundary. Most planned development is anticipated in eastern Montgomery County, near the Howard and Prince George's County boundaries in the vicinity of the ICC alignments. Please refer to ***Table IV-128*** for potentially impacted cultural resources in the near future (and future) time frames.

Smaller, isolated areas of cultural resources are located in northern Montgomery and Prince George's Counties. Limited impacts are anticipated from near future development in these locations. The majority of impacts from other near future transportation projects would occur along the MD 115/Muncaster Mill Road in Montgomery County and the I-95/I-495 (Greenbelt Metro Access Study) in Prince George's County.

In addition to the cultural resources impacts that may occur in the near future time frame (through 2010), additional development planned for the future time frame (2010-2030) will also contribute to cumulative effects to cultural resources under the No-Action alternative. Please refer to ***Table IV-128*** for proposed projects that may potentially impact cultural resources in the future time frame.

Additional cultural resources impacts under the No-Action alternative may occur in Potomac, Brookeville, Rockville, Twinbrook, Sandy Spring, Silver Spring, Ashton and Laurel. These resources include the Glenview Farm Area, Layhill and Atwood Road Houses, Ashton Historic District, Sandy Spring Historic District, Mount Zion United Methodist Church, Union Cemetery, Ivy Hill Cemetery and the Beltsville Agricultural Research Center (BARC). Impacts at all of these locations are anticipated to be indirect and minimal.

Table IV-128

Potentially Impacted Cultural Resources within the Near Future and Future Time Frames

	County	Development	Cultural Resource Impacts
Near Future	Frederick (New Market, Linganore, Urbana)	Residential	New Market Historic District, Urbana Survey District and Dixon-Dudderer Houses
	Montgomery (Clarksburg, Veirs Mill, Potomac, Bethesda and Silver Spring)	Residential/Commercial development	Various cultural resources
	Montgomery (Clarksburg)	Clarksburg Town Center	Clarksburg Historic District
	Montgomery (Veirs Mill)	Montrose Crossing Shopping Center	Wilkins Estate (Parklawn Cemetery)
	Montgomery (Potomac Village)	Residential Development	Potomac Historic District
	Montgomery (Bethesda/Silver Spring)	Commercial/Residential Development	Stoney Quarriew, Granger Estate (Holton-Arms School), Stone Ridge (Country Day School), Old Silver Spring Commercial Area and Jesup Blair House-Local Park.
	Prince George's	I-95/I-495 Greenbelt Metro Access Study	BARC
	Montgomery	MD 28/MD 97	White's Hardware Store Complex
Future	Frederick	I-270/US 15 Multimodal Corridor Study, I-70, East Street Project, East Street Community Park	Frederick Historic District
	Frederick	I-270/US 15 Multimodal Corridor Study	Monocacy Battlefield
	Frederick	New Market Collector	New Market Historic District
	Montgomery	Clarksburg Town Center, Kingstead Farm, Warfield Property (residential development), Corridor Cities Transitway and Burdette Farm (residential development)	Clarksburg Historic District, Purdum Historic District or Damascus Historic District,
	Montgomery	MD 28/MD 198	Drayton, Edgewood II, George Bennett House, William Phair property, Archeological Site #18MO441, Free Methodist Church Camp Meeting Ground, Spencer/Carr House and Union Cemetery
	Prince George's	I-495 Capital Beltway Study, US 1 and Rhode Island Avenue	BARC, Daniels Park Historic Community, College Lawn Station, and Old Hyattsville Commercial Survey District

Cultural resources on a large scale are protected throughout the SCEA boundary through various degrees of zoning and planning restrictions placed by the county and State. Transportation projects under USDOT would be required to follow guidelines for Section 4(f) of the 1966 Department of Transportation Act and Section 106 of the Historic Preservation Act. Montgomery and Prince George's Counties' Historic Preservation Commissions, M-NCPPC's Department of Park and Planning Archeology Program, and Frederick County's Historical Preservation, in conjunction with state and Federal regulations, are anticipated to minimize impacts to cultural resources in the future time frame.

Corridors 1 and 2

Impacts under the Corridor 1 and 2 scenarios are anticipated to be nearly identical within the SCEA boundary. Potential secondary impacts to cultural resources as discussed in ***Section K.6.c., Secondary Impacts,*** will contribute to overall cumulative effects. Secondary impacts would primarily occur in central Montgomery County and northeastern Prince George's County. Cultural resources adjacent to potential secondary development areas (either Corridor 1 or 2) occur in Kemptown, Gaithersburg, Rockville, Mount Zion, Laurel, Fairland, Beltsville, Montpelier, Greenbelt and Contee. Cumulative impacts have the potential for impacting cultural resources within the SCEA boundary; however, county preservation laws and regulations would help minimize the loss of resources from secondary and cumulative effects by ensuring that proposed projects and developments are in compliance with Federal, State and local laws as well as County Preservation Ordinances.

The Natural Environment

In general, natural resources within the SCEA boundary have experienced negative cumulative effects during the SCEA time frame primarily due to the pressures caused by the large population growth that the area has experienced. It is expected that these trends will continue with additional growth in the present/near future and future time frames although not always at the same rate due to current laws and regulations that could reduce the rate and extent to which natural resources are affected. The natural resources that have been analyzed as part of the ICC SCEA include floodplains, surface water/aquatic habitat, wetlands, farmland, forests/terrestrial habitat, groundwater, rare, threatened and endangered species, impervious area and reservoirs.

Cumulative impacts to natural resources within the ICC SCEA boundary have been determined based upon qualitative and quantitative analysis. For select natural resources for which there was readily available data, a GIS overlay analysis was applied to compute quantitative impacts (***Table IV-129)***. This involved overlaying the near future/future development and the secondary development associated with each of the ICC build alternatives with the select natural resource layers, including farmlands, forest, floodplains, wetlands, RTE and streams (***Figures IV-29 and IV-30, Volume II***). These impacts are estimations based upon the occurrence of the development in the same locations as the select natural resources. These calculations are not based upon specific site plans nor do they consider laws or regulations that could limit impacts. The additional impervious area that could potentially be added due to development was also quantified for the entire ICC SCEA boundary, including the reservoir subwatersheds.

Table IV-129

Potential Secondary and Cumulative Impacts of Select Natural Resources within the SCEA Boundary

Resource	*No-Action*			*Corridor 1*		*Corridor 2*	
	Near Future Development Impacts (2010)	Future Development Impacts (2030)	Cumulative Impact of No-Action	Secondary Impact of Corridor 1 Potential Development	Cumulative Impact of Corridor 1	Secondary Impact of Corridor 2 Potential Development	Cumulative Impact of Corridor 2
Farmland (Acres)[1]	7,764	2,434	10,197	1,319	11,516	1,565	11,763
Forest (Acres)[1]	9,000	2,365	11,364	2,213	13,578	2,236	13,600
Floodplain (Acres)[2]	1,169	431	1,600	253	1,853	251	1,851
Wetland (Acres)[3]	615	128	743	160	903	166	909
RTE (Acres)[4]	520	62	582	33	614	33	614
Stream (Acres)[5]	287,656	92,520	380,177	78,803	458,980	80,794	460,971
Impervious Area (Acres)[6]	7,225	2,315	9,540	2,500	12,040	2,818	12,358

Notes:

[1]Based on GIS overlay with MDP Land Use Data

[2]Based on GIS overlay with FEMA 100 Year Floodplain

[3]Based on GIS overlay with NWI Wetlands

[4]Based on GIS overlay with Sensitive Species Project Review Areas, SSPRA's are not a definitive boundary of RTE habitat, they merely represent a general location of documented RTE species.

[5]Based on GIS overlay with Statewide Stream Layer (Linear Feet)

[6]Based on additional impervious area added by planned/secondary development. Determined from impervious percentage of MDP land use categories.

Impacts are estimations based upon overlaying development with natural resources layers and do not take into consideration specific site plans nor development regulations that could limit impacts.

Floodplains

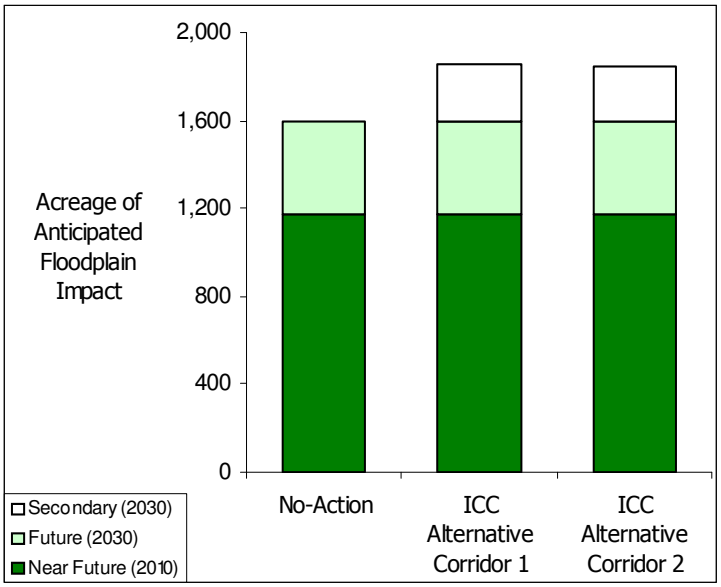
Floodplains provide important natural functions and values including temporary storage of floodwaters, moderation of peak storm flows, maintenance of water quality, groundwater recharge, and prevention of erosion. Floodplains also provide important habitat for plants and wildlife as well as recreation opportunities and aesthetic benefits (MDE 2004).

No-Action

Floodplains have been historically impacted by development within the SCEA boundary. These impacts to floodplains primarily occurred in areas throughout the SCEA boundary where substantial development has occurred. Past stresses in the SCEA boundary have included reducing the floodplain area with artificial drainage, altering the flood elevation as a result of construction within the floodplains, and the impacts of storm drainage structures and increasing impervious area with no quantity control.

As shown in ***Table IV-129*** and ***Figure IV-31*** approximately 1,200 acres of floodplains could be impacted by Near Future development. These impacts could be primarily due to the large amount of additional residential development that has been identified in the near future time frame. ***Figure IV-29, Volume II*** shows the near future development overlaid with floodplains.

Figure IV-31
Acreage of Anticipated Floodplain Impact



Future development could impact approximately 430 acres of floodplains. The total cumulative impact for the No-Action alternative could be approximately 1,600 acres (***Table IV-129*** and ***Figure IV-31***). ***Figure IV-30, Volume II*** shows the future development overlaid with floodplains. All development is required to abide by local, county and State laws and regulations that protect floodplains, which could reduce the cumulative impacts.

Corridors 1 and 2
The direct impacts associated with the ICC build alternatives will impact floodplains. Corridor 1 could impact about 29.4 to 42.4 acres depending on options and Corridor 2 could impact about 35.7 to 48.3 acres. The build alternatives will avoid longitudinal crossings, wherever possible, since these impacts would involve floodplain filling and affect conveyance. The Environmental Stewardship component of the ICC project includes opportunities for retrofitting existing stormwater management facilities, which could benefit the floodplains/floodflows associated with the build alternatives (See ***FEIS Section IV.F.3*** for more details).

The options considered in ***Section IV.F***. of this Chapter do not include all sub-options, but include options that are representative of all the options being considered. Impact calculations for these options may have slight variations than what is presented in this section. Any differences in overall impact numbers would be negligible. More detailed impact calculations will be completed upon refinement of these options during the design process.

As previously discussed secondary impacts associated with the ICC build alternatives are expected to occur. Approximately 250 acres of floodplains could be impacted by development for residential and employment for both Corridor 1 and Corridor 2 (***Figure IV-31***). The cumulative impact of the ICC build alternatives would be approximately 1,850 acres (***Table IV-129 and Figure IV-31***). ***Figure IV-30, Volume II*** shows the secondary development overlaid with floodplains. All development is required to abide by county and State laws and regulations that protect floodplains, therefore cumulative impacts would likely be reduced.

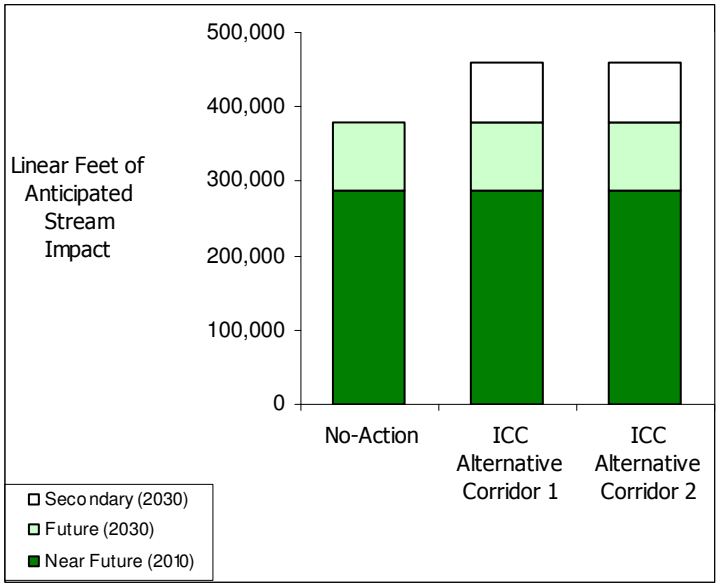
Surface Water/Aquatic Habitat

Surface Water is a vital resource to the natural and human environment. Surface water supports balanced and diverse populations of aquatic plants and wildlife. It provides a water supply for agricultural and industrial uses and provides opportunities for recreation fishing and hunting which are vital to Maryland's economy.

No-Action
Past stresses to surface water/aquatic habitat within the SCEA boundary have included: agricultural runoff, stormwater runoff, sediment/siltation and channelization of waterways. In recent years due to increased regulation, protection and restoration, conditions for some indicators of water quality have been improved, but future stresses will continue to be detrimental to improving the water quality.

Planned development projects for the present/near future time frame could have negative impacts to surface water/aquatic habitat. Based upon an overlay analysis of near future development and a Statewide stream layer, approximately 288,000 linear feet of streams could potentially be impacted by near future development (***Table IV-129 and Figure IV-32***). ***Figure IV-29, Volume II*** shows the near future development overlaid with streams. These impacts would be primarily from the large amount of near future residential development identified in the SCEA boundary.

Figure IV-32
Linear Feet of Anticipated Stream Impact



As shown in ***Table IV-129 and Figure IV-32,*** approximately 93,000 linear feet of streams could potentially be impacted by future development. The total cumulative impact of the No-Action alternative is approximately 380,000 linear feet. ***Figure IV-30, Volume II*** shows the future development overlaid with streams. These future impacts could result in increased stresses to surface water/aquatic habitat through sedimentation/siltation as a result from soil erosion/disturbance due to residential and commercial development and increased stormwater runoff from developed areas which could increase nutrient and pollutant runoff. Laws and regulations that protect surface water/aquatic habitat could reduce the cumulative impacts.

Corridors 1 and 2
Water quality impacts are anticipated to occur as a direct and indirect result of the build alternatives. Direct impacts to perennial and intermittent streams for Corridor 1 range from 32,667 to 39,158 linear feet depending on options, and for Corridor 2 they range from 24,525 to 37,584 linear feet depending on options. These impact ranges are based on all options being considered.

The Lead Agencies have committed to implementing Stormwater Management (SWM) facilities that will exceed the requirements of MDE and redundant Erosion and Sediment Control (ESC) devices in sensitive areas will minimize these direct impacts. Accidental spills will be controlled through special measures put in place and the Lead Agencies commitment of exceeding MDE's minimum requirements for SWM (See ***FEIS Section IV.F.7*** for more details). The Environmental Stewardship component of the ICC project includes opportunities for retrofitting existing stormwater management facilities, and the creation/enhancement of wetland areas, which could benefit the surface water/aquatic habitat.

As previously discussed, secondary impacts associated with the ICC build alternatives could potentially impact surface water/aquatic habitat. Corridor 1 secondary development could result in approximately 79,000 linear feet of secondary impacts. Corridor 2 could result in approximately 81,000 linear feet of secondary impacts (***Table IV-129 and Figure IV-32***). ***Figure IV-30, Volume II*** shows the secondary development overlaid with streams. These secondary impacts would contribute to the cumulative impacts for Corridor 1 and Corridor 2, which could be approximately 459,000 and 461,000 linear feet, respectively (***Table IV-129 and Figure IV-32***).

Wetlands

Wetlands are important natural resources that provide numerous functions and values to society including fish and wildlife habitat, flood protection, erosion control and water quality maintenance. Wetlands are also recognized as important habitat for waterfowl, migratory birds and wildlife (Tiner and Burke 1995).

No-Action

Wetlands within the SCEA boundary have declined over time. This decline has been the result of the development and agricultural activities that have occurred in the area. Current laws and regulations have slowed this decline and the goal of no net loss of wetlands has been set for the future.

As shown in ***Table IV-129*** and ***Figure IV-33,*** near future development could potentially impact approximately 615 acres of wetlands. This calculation is based upon a GIS overlay of the near future development and National Wetlands Inventory (NWI) wetlands. These impacts to wetlands could be primarily from the large amount of near future residential development identified in the near future time frame. ***Figure IV-29, Volume II*** shows the near future development overlaid with NWI wetlands.

Future development could impact approximately 128 acres of wetlands, which along with the near future impacts, would result in approximately 743 acres of cumulative impacts associated with the No-Action alternative (***Table IV-129 and Figure IV-33***). ***Figure IV-30, Volume II*** shows the future development overlaid with NWI wetlands. These impacts could result in negative effects to wetlands resulting in loss of stormwater/floodflow retention, decreased groundwater recharge/discharge, reduced water quality toxic retention/nutrient removal, decreased sediment stabilization/retention and decrease in terrestrial and aquatic habitat and diversity. These affects could be reduced due to current laws and regulations that have been put into place to protect wetlands.

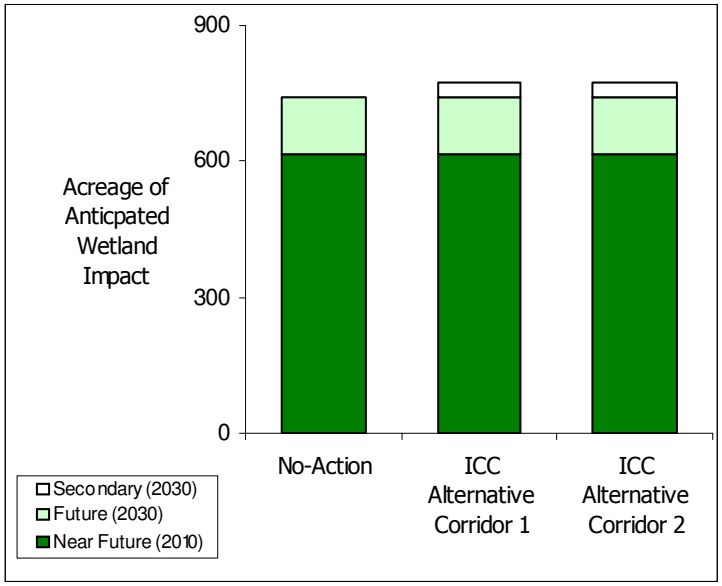
Corridors 1 and 2

The ICC build alternatives would result in direct impacts to wetlands. Impacts to wetlands would occur from filling, shading, roadway runoff, sedimentation and other direct and indirect effects. These impacts would lead to a decrease in available wetland and waterway habitat within the study area and ultimately a possible decrease in plant and animal species that inhabit these areas. Corridor 1 (and associated options) could impact approximately 16.30 to 17.97 acres of wetlands, approximately 28.83 to 30.35 acres of lower-quality, emergent wetlands associated with mining in the area of the I-95 interchange, and 32,667 to 39,158 linear feet of Waters of the US. The range

of impacts associated with Corridor 2 and all its options would vary from 15.97 to 21.02 acres of wetlands, approximately 31.53 to 33.94 acres of lower-quality, emergent wetlands associated with mining in the area of the I-95 interchange, and 24,525 to 37,584 linear feet of Waters of the US. Of course, Federal and State laws will require mitigation or wetland replacement for wetlands that cannot be avoided. In addition the Environmental Stewardship component of the ICC project includes additional opportunities for the creation/enhancement of wetland areas not impacted by an ICC (see ***FEIS Section IV.F.7*** *for details*).

Secondary development could result in impacts to wetlands. As shown in ***Table IV-129 and Figure IV-33,*** secondary impacts associated with Corridor 1 could be approximately 160 acres. Corridor 2 secondary impacts could be slightly greater, estimated at approximately 166 acres. ***Figure IV-30, Volume II*** shows the secondary development overlaid with NWI wetlands. These secondary impacts could result in cumulative impacts of approximately 903 and 909 acres for Corridor 1 and Corridor 2, respectively. Cumulative impacts would result in negative effects to the functions and values of wetland systems throughout the SCEA boundary, but would be mitigated under Federal, State and county laws and regulations. Although replacement would occur it could take decades for newly planted land to function exactly like the system that was lost did.

Figure IV-33
Acreage of Anticipated Wetland Impact



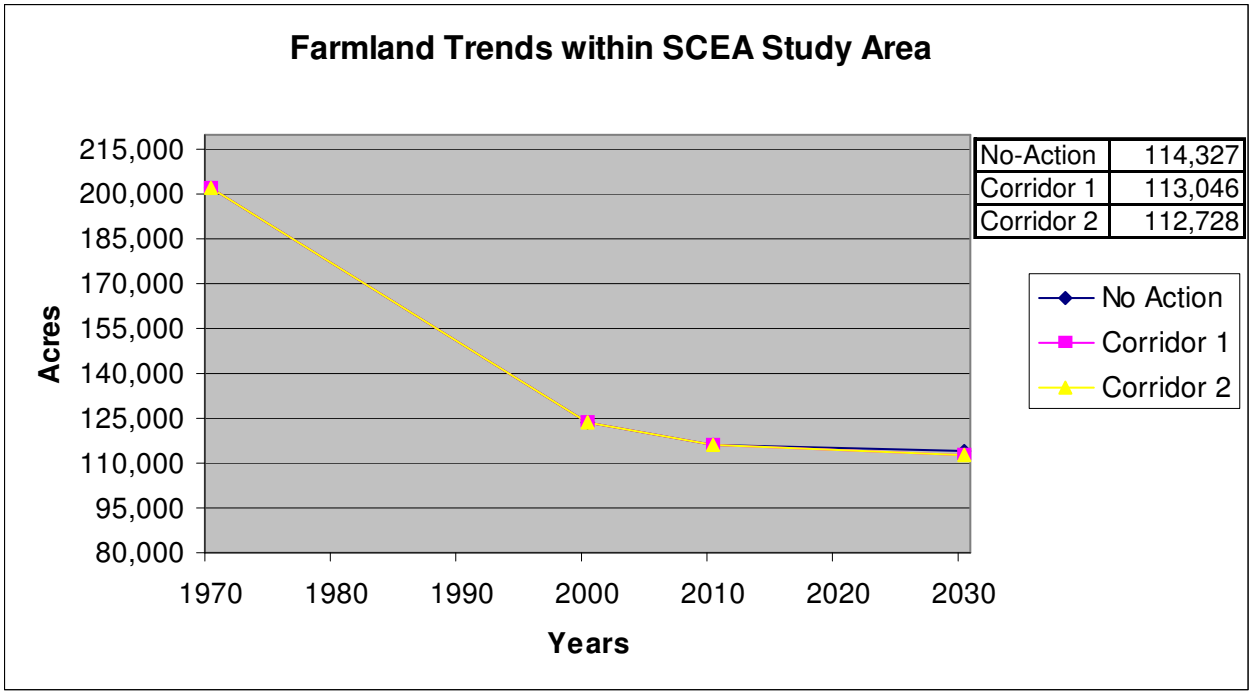
Farmland

Farmland is an important resource that is vital to the State's economy. Farming and associated industries are an important and viable way of life for many people within the SCEA boundary. The agricultural sector is important to Maryland in terms of goods and services provided as well as the preservation of the rural nature of many areas within the SCEA boundary.

No-Action

The number and total land area of farmlands in both the State and within the SCEA boundary has declined during the past time frame. This decrease in farmland is due to the increased residential and commercial growth that has resulted from the increased population. ***Figure IV-34*** shows the decline in farmland during the SCEA time frame. The graph shows the decrease of farmland from 1973 to 2030. This data was derived from MDP land use data, and shows the land use change that could result for each ICC alternative. At the same time, approximately one-third of Montgomery County has been placed in a designated Agricultural Reserve and of Prince George's County in a designated Rural Tier.

Figure IV-34
Farmland Trends within SCEA boundary

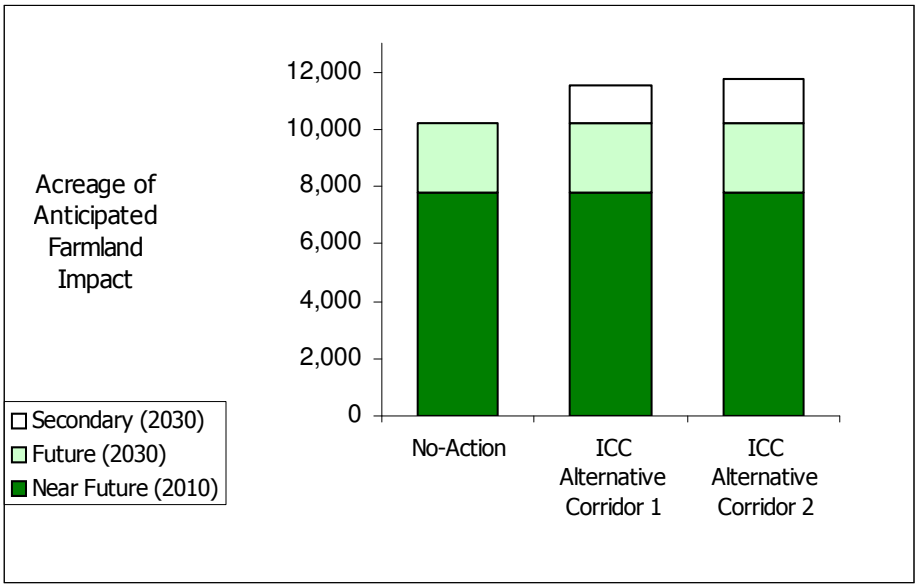


During the present/near future time frame there is the potential for farmland to be impacted by near future planned development. Approximately 7,800 acres of farmland could be impacted by near future development (***Table IV-129*** and ***Figure IV-35***). ***Figure IV-29, Volume II*** shows the near future development overlaid with farmland. These impacts would occur primarily as a result of conversion of farmland to residential use.

As shown in ***Table IV-129*** and ***Figure IV-35,*** future development could result in approximately 2,400 acres of impact to farmland. ***Figure IV-30, Volume II*** shows the future development overlaid with farmland. These future impacts combined with the near future impacts could result in approximately 10,200 acres of cumulative impact for the No-Action alternative (***Table IV-129 and Figure IV-35***). These cumulative impacts could result in loss of agricultural land, reduction

in the farming sector of the economy and the loss of the rural nature of portions of the SCEA boundary. Impacts to farmlands could be reduced by Federal, State and local regulations along with agricultural land preservation by public and private organizations.

Figure IV-35
Acreage of Anticipated Farmland Impact



Corridors 1 and 2
Direct impacts to existing farmland properties are anticipated to occur as a result of the build alternatives. The largest amount of impacts to farmlands properties would occur in the Rocky Gorge watershed. Corridor 1 could impact between 61.6 and 66.2 acres of farmland properties, and Corridor 2 between 105.2 and 123.1 acres (See ***FEIS Section IV.F.4*** for more details).

As previously discussed in the secondary impacts section and as shown in ***Table IV-129*** and ***Figure IV-35***, secondary impacts associated with the Corridor 1 alternative could result in approximately 1,300 acres, and Corridor 2 approximately 1,600 acres of secondary impacts. ***Figure IV-30, Volume II*** shows the secondary development overlaid with farmland. These secondary impacts combined with the near future and future development impacts could result in approximately 11,500 and 11,800 acres for Corridor 1 and Corridor 2, respectively (***Table IV-129 and Figure IV-35***). Cumulative impacts could result in negative effects to farmland but these impacts could be reduced by Federal, State and local regulations along with agricultural land preservation by public and private organizations. These include but are not limited to the Federal Farmland Protection Act, the Federal Farm and Ranch Lands Protection Program and the Maryland Land and Water Conservation Act.

Forests/Terrestrial Habitat

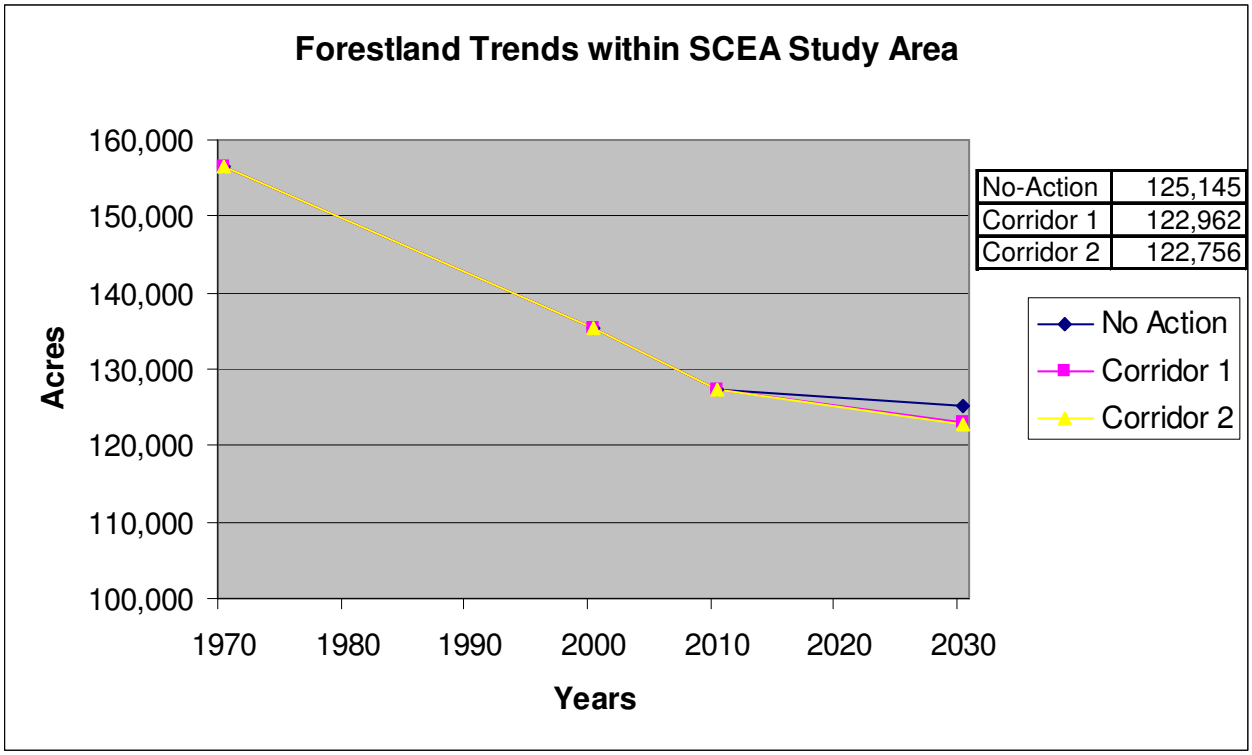
Forests are an integral part of Maryland's environment and economy. Forestland provides habitat for many species of plants and wildlife including Forest Interior Dwelling Species (FIDS), whose

habitat is limited to forest interiors. Forests are important resources for protecting water quality and clean air. Forestland is also vital to the State's economy by providing forest products and recreational opportunities. Maryland and Montgomery and Prince George's Counties have forest preservation laws in place, requiring reforestation and aforestation for new development.

No-Action

Within the SCEA time frame, forestland has declined since the past time frame due to agriculture and development pressures from the population growth that has occurred. Forestland not only decreased in amount of total area but just as significantly, fragmentation of forests has occurred over time. This fragmentation decreases the value of the forestland to wildlife. ***Figure IV-36*** shows the decline in forestland during the SCEA time frame. The graph shows the decrease of forestland from 1973 to 2030. This data was derived from MDP land use data, and shows the land use change that could result for each ICC alternative.

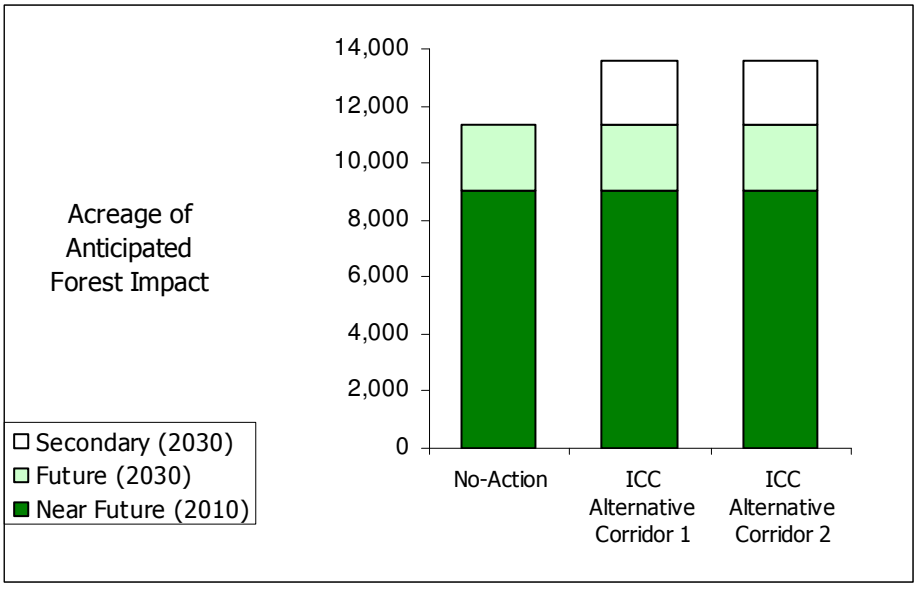
Figure IV-36
Forestland Trends within SCEA boundary



Quantitative impacts were calculated for forestland through a GIS overlaying MDP land use with near future, future and secondary development. Near future development could potentially impact approximately 9,000 acres of forestland (***Table IV-129*** and ***Figure IV-37***). ***Figure IV-29, Volume II*** shows the near future development overlaid with forestland. These impacts would be primarily a result of the large amount of residential identified for the near future time frame.

As shown in ***Table IV-129*** and ***Figure IV-37***, future development could impact approximately 2,400 acres of forestland. This future development along with the impacts associated with the near future development could result in approximately 11,400 acres of cumulative forest impacts. ***Figure IV-30, Volume II*** shows the future development overlaid with forestland. These impacts could result in decreased habitat through direct loss of forest and increased fragmentation of the remaining forestland, making it less suitable for many types of forest inhabiting species especially FIDS for which interior forest habitat is vital. DNR has developed a tool called the Green Infrastructure Assessment that is used to identify undeveloped land that is vital, to the State's numerous ecological resources. This tool identifies and prioritizes the States Green Infrastructure (GI). Maryland's GI is a network of undeveloped land that serves as the primary natural support system for the State's numerous ecological resources. GI is made up of two important types of resource lands the first of which are the "hubs". These "hubs" are unfragmented areas hundreds to thousands of acres in size and are vital to maintaining the State's ecological health. The second type of GI are the "corridors," which are linear remnants of natural land that ensure the long-term survival and continued diversity of plants and wildlife (DNR, Maryland's Green Infrastructure Assessment). The GI hubs and corridors were overlaid with near future, future and secondary development to determine the impacts that the ICC alternatives could have on Maryland's GI. ***Figures IV-38*** and ***IV-39, Volume II*** show the GI overlaid with near future and future development. Impacts to forestland could be reduced by Federal, State and local reforestation and aforestation regulations along with forestland preservation by public and private organizations.

Figure IV-37
Acreage of Anticipated Forest Impact



As shown in ***Appendix P, P-3,*** near future development could impact approximately 2,500 acres of hubs and 2,700 acres of corridors. Future development could impact approximately 90 acres of hubs and 1,100 acres of corridors. The combination of the near future and future impacts could result in approximately 2,600 acres of cumulative impact to hubs and 3,900 acres of impact to

corridors associated with the No-Action alternative. The cumulative impacts to GI are indicators that the near future and future development could result in both direct loss of existing GI hubs and the increased fragmentation of the remaining hubs due to impacts to the corridors that connect the hubs.

Corridors 1 and 2
For the build alternatives, impacts to some forest resources would be unavoidable (See ***FEIS Section IV.F.8*** for details). Impacts range from 672.4 to 747.2 acres for Corridor 1 (depending on option) and 532.1 to 650.1 acres for Corridor 2 (depending on option).

As shown in ***Table IV-129*** and ***Figure IV-37,*** the secondary impact associated with the ICC build alternatives could result in impacts of approximately 2,200 acres of forestland. ***Figure IV-30, Volume II*** shows the secondary development overlaid with forestland. The Corridor 2 alternate could impact approximately 30 more acres of forestland. The secondary impacts to GI hubs by the build alternatives could result in approximately 240 acres of impacts associated with each build alternative. The secondary impacts to GI corridors could be slightly greater for Corridor 1, with approximately 380 acres, compared to 350 acres of impacts associated with Corridor 2 (***Appendix P, P-3***). The cumulative impacts of the build alternatives on forestland could be approximately 13,600 acres for each alternative. The cumulative impacts to GI could be approximately 2,800 acres of impact to hubs and approximately 4,200 acres of impacts to corridors for each alternative. As with the No-Action alternative, these cumulative impacts could result in loss of forest habitat value and function, but these impacts could be reduced by Federal, State and local reforestation and aforestation regulations along with forestland preservation by public and private organizations. Although replacement would occur, it could take decades for newly planted land to function like a mature ecosystem.

Groundwater

Groundwater is one of the most important natural resources; it replenishes our streams and wetlands, provides fresh water for irrigation and drinking water for many citizens.

Groundwater quality is affected by surface water quality and quantity controls. Stormwater management using best management practices creates infiltration, which allows for recharge of groundwater. The addition of impervious surface would lead to a decrease in infiltration, which would reduce the rate of groundwater recharge. A sustainable aquifer cannot have a recharge rate that is less than its withdrawal rate. The same regulatory measures that protect surface water can protect groundwater.

No-Action
Near future development could impact groundwater through the addition of impervious area (***Appendix P, P-10***). As shown in ***Appendix P, P-10,*** approximately 23,617 acres of near future development has been identified to occur throughout the SCEA boundary. ***Figure IV-29, Volume II*** shows the near future development overlaid with environmental resources.

Future development could add additional negative effects to groundwater; approximately 10,161 acres of future development has been identified. ***Figure IV-30, Volume II*** shows the future

development overlaid with environmental resources. As shown in ***Appendix P, P-2***, for the No-Action alternative approximately 33,778 acres of cumulative development has been identified. Much of the SCEA boundary is served by public water and sewer, therefore this additional development would not have a significant effect on the drinking water, but in areas where groundwater is the source of drinking water this additional development could negatively impact groundwater.

Corridors 1 and 2

Groundwater impacts from the build alternatives would occur as quantity and/or quality alterations. The build alternatives have the potential for reducing infiltration into shallow portions of aquifers, reducing or redirecting available hydrology for wetlands and streams. There is no appreciable difference in potential quantity impacts between Corridor 1 and Corridor 2. Water quality impacts to groundwater would likely be minimal with both alternatives since roadway pollutants would be of low concentrations and would likely be retained in vegetation found in SWM facilities.

As shown in ***Appendix P, P-2***, secondary development associated with the ICC build alternatives could result in additional impacts to groundwater throughout the SCEA boundary. Corridor 1 could add approximately 4,945 acres of secondary development. Corridor 2 could add 5,546 acres of secondary development. ***Figure IV-30, Volume II*** shows the secondary development overlaid with environmental resources. The cumulative development associated with the build alternatives could be approximately 37,594 acres for Corridor 1 and 38,643 acres for Corridor 2. As for the No-Action alternative this additional development could negatively effect groundwater but due to current laws and regulations these effects would likely be reduced.

Rare, Threatened and Endangered (RTE) Species

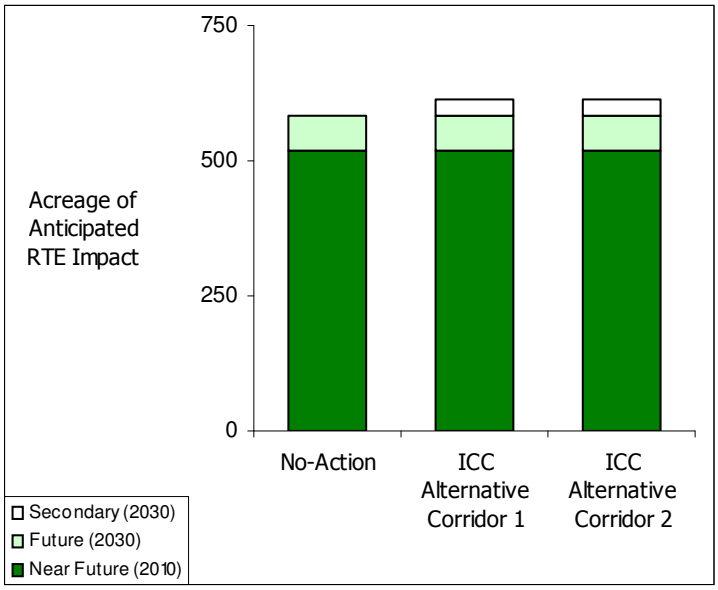
No-Action

Past effects to RTE species include loss of habitat from land conversion activities (e.g. wetland and forest clearing as part of development), mortality from development pressures or human activity (vehicular collisions). Additional effects as a result of the growth in the area during the past time frame can include human disturbance, especially during sensitive life cycle periods such as breeding, changes in drainage or hydrology in general, forest or habitat fragmentation, and noise pollution. During the past time frame the Endangered Species Act was passed (1973) which decreased the rate of decline of RTEs throughout the nation, likely paralleling similar declines within the SCEA boundary.

RTE impacts were estimated by overlaying near future/future and secondary development with Sensitive Species Project Review Areas (SSPRA). These estimated impacts may not be representative of loss of actual RTE habitat; the SSPRA's merely represent the general location of documented RTE species. ***Figure IV-40, Volume II*** shows these designated areas that include various types of regulated areas under the Critical Area Criteria and other areas of concern, including: Natural Heritage Areas, Listed Species Sites, Other or Locally Significant Habitat Areas, Colonial Waterbird Sites, Waterfowl Staging and Concentration Areas, Nontidal Wetlands of Special State Concern and Geographic Areas of Particular Concern. These areas represent state-regulated and designated areas involving sensitive and listed species.

As shown in ***Table IV-129*** and ***Figure IV-41,*** near future development could impact approximately 520 acres of SSPRA's throughout the SCEA boundary. ***Figure IV-29, Volume II*** shows the SSPRA areas within the SCEA boundary and proposed near future land development. These impacts could be primarily from residential development and transportation improvements. Future development could impact approximately 62 acres of SSPRA's. The total cumulative impact to SSPRA's by the No-Action alternative could be approximately 580 acres (***Table IV-129*** and ***Figure IV-41***). ***Figure IV-30, Volume II*** shows the SSPRA areas within the SCEA boundary and proposed future land development. Endangered and threatened species are protected and regulated by the 1973 Federal Endangered Species Act, the Maryland Endangered Species Act of 1973, and the 1975 Maryland Nongame and Endangered Species Conservation Act. In addition, Federal and State permitting programs (e.g., wetlands) require the review of public development applications before the development is permitted. Given the existing regulatory framework to protect rare, threatened, and endangered species, and assuming planned development within the SCEA boundary has been reviewed to address these requirements, cumulative impacts to State-listed species within the SCEA boundary are not anticipated to change significantly over any current trend.

Figure IV-41
Acreage of Anticipated RTE Impact



Corridors 1 and 2

Direct impacts of the ICC build alternatives could occur to State endangered or threatened species, specifically trailing stichwort, halberd-leaved greenbrier, and rough-leafed aster. Featherbells are not expected to be impacted directly but Spencerville Options A, B and C to Burtonsville A could affect the surrounding habitat. It is anticipated that Corridor 1 would encroach upon 13.2 to 31.4 acres of ecologically significant areas (ES Areas) (depending on the option) and Corridor 2 would encroach upon 17.6 to 40.2 acres, depending on option ***(See FEIS Section IV.F.10 for details).***

As previously discussed in the Secondary impacts section, the ICC build alternatives could impact approximately 33 acres of SSPRA's for each alternative. These secondary impacts combined with the near future and future development could result in approximately 615 acres of cumulative impact to SSPRA's by the ICC build alternatives (***Table IV-129 and Figure IV-41***). ***Figure IV-30, Volume II*** shows the SSPRA areas within the SCEA boundary and proposed future land development. As for the No-Action alternative, cumulative impacts to State-listed species within the SCEA boundary are not anticipated to change significantly over any current trend, due to current laws and regulations.

Impervious Area

An assessment of impervious area is included as a component in the SCEA analysis as it relates to both direct and indirect effects on the natural resources within the study area. Aside from actual displacement / loss of a resource by a new impervious footprint, potential effects include: reduced infiltration to groundwater table, increased runoff and subsequent erosion, flooding, and increases in surface water temperatures of receiving streams. These effects may result in negative impacts to the surrounding environment.

No-Action

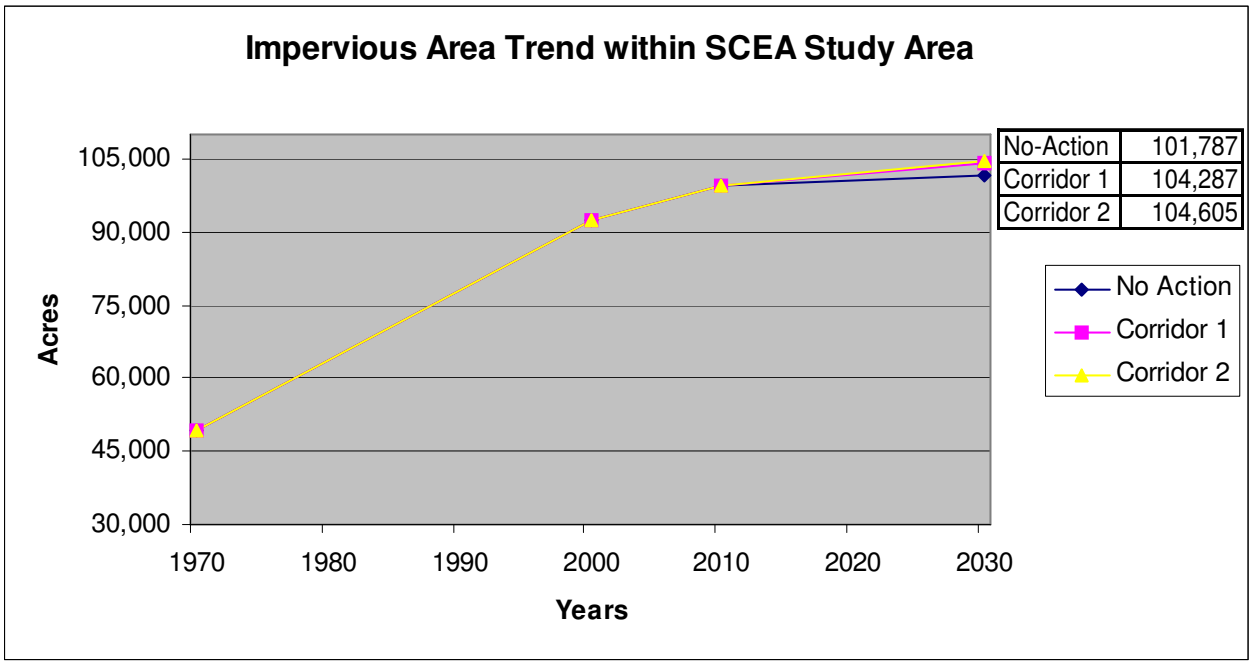
As the population increased within the SCEA boundary, the development associated with the growth increased the impervious area due to the land use change that occurred throughout the area. Additional increases as a result of the planned development will occur in the present/near future and future time frame.

MDP Land use data was used to estimate the trend in impervious area for the entire SCEA area. The method used to estimate the impervious area was based upon DNR's *Surf Your Watershed Percent Impervious Surface Indicator* (DNR 2004). The impervious surface was calculated for MDP land use categories including residential (low, medium and high), commercial, industrial, institutional, barren land and transportation. The amount of acres of each land use type per watershed was multiplied by the percent of impervious surface of each land use type. The percent impervious surface for each land use type was based on the US Soil Conservation Services TR-55 Manual.

Based upon the 1973 MDP land use data the amount of impervious area for the entire SCEA boundary was 10.1 percent. ***Appendix P, P-10*** shows the percent impervious surface by subwatershed and Special Protection Areas within the SCEA boundary. ***Figure IV-42*** shows the increase in impervious area from 1973 to 2030. Based on the 2000 MDP land use data the amount of impervious area for the entire SCEA boundary increased to 18.9 percent. This increase is attributed to the addition of residential and commercial development that has occurred throughout the SCEA boundary, as shown in ***Figures IV-23*** and ***Figure IV-30, Volume II.***

Near Future development could result in approximately an 8 percent change from 2000 to 2010, resulting in 20.4 percent impervious cover for the entire SCEA boundary (***Appendix P, P-10***). This increase could be attributed to the large amount of residential development identified during the near future time frame.

Figure IV-42
Impervious Area Trends within the SCEA Boundary



Future development could result in approximately a 2.3 percent change from 2010 to 2030, resulting in 20.9 percent impervious cover for the entire SCEA boundary under the No-Action scenario (***Appendix P, P-10***). As previously stated, these increases in imperviousness could result in reduced infiltration to groundwater table, increased runoff and subsequent erosion, possible flooding, and increases in surface water temperatures of receiving streams. As new development occurs, county agencies will require new stormwater controls and reserve stream buffer areas to offset the impacts of the altered land surface on increased surface runoff, runoff quality, and groundwater replenishment. The goal of the stormwater controls and related site planning, stream buffer, and forest conservation and reforestation requirements is to minimize the extent of necessary impervious surfaces associated with approved land uses, capture and slow down runoff peak flows to mimic predevelopment flows to the extent feasible, and reduce pollutants in runoff.

Corridors 1 and 2
Direct impacts from the construction of an ICC build alternative would result in the addition of impervious surface. Corridor 1 would result in approximately 340.5 to 391.9 acres of new impervious surface. Corridor 2 would result in approximately 361.2 to 408.9 acres of new impervious surface. This addition of impervious area as a result of a build alternative would be minimized and mitigated by the Lead Agencies implementation of SWM that exceeds MDE's requirements (See ***FEIS Section IV.F.5*** for details).

Secondary development associated with the build alternatives could result in additional increases in impervious area. Corridor 1 secondary development could result in approximately a 4.8 percent change from 2010 to 2030, resulting in 21.38 percent impervious cover for the entire SCEA boundary under the Corridor 1 scenario. Corridor 2 secondary development could result in

a 5.2 percent change from 2010 to 2030, resulting in 21.44 percent impervious cover for the entire SCEA boundary under the Corridor 2 scenario.

Reservoirs

There are two WSSC reservoirs within the SCEA boundary: the Triadelphia Reservoir and the Rocky Gorge Reservoir (also known as the T. Howard Duckett Reservoir). These reservoirs are vital to the drinking water supply throughout much of the SCEA boundary, especially within Montgomery, Prince George's and the District of Columbia. In addition to drinking water supply these reservoirs provide aesthetic value and recreational opportunities. Both are located within the Patuxent River Watershed; the Triadelphia Reservoir is located in the Brighton Dam subwatershed and the Rocky Gorge Reservoir is located in the Rocky Gorge subwatershed. Both reservoirs were created prior to 1964. Up to that time, development within the subwatersheds in which these reservoirs are located was minimal.

No-Action

As shown in ***Appendix P, P-10,*** the percent impervious area within the reservoir subwatersheds increased from 0.7 percent to 2.2 percent and from 3.6 percent to 9.7 percent from 1973 to 2000, for Brighton Dam and Rocky Gorge Dam, respectively.

Near future development could result in approximately 50 percent change for Brighton Dam from 2000 to 2010, resulting in 3.2 percent impervious cover. For Rocky Gorge Dam near future development could result in approximately 20 percent change from 2000 to 2010, resulting in 11.6 percent impervious cover (***Appendix P, P-10***). This additional development is primarily the result of near future residential development within these watersheds.

Future development could result in approximately a 3 percent change from 2010 to 2030, resulting in 3.3 percent impervious cover for Brighton Dam and a 2 percent change from 2010 to 2030 for Rocky Gorge Dam, resulting in 11.9 percent impervious cover (***Appendix P, P-10***). This addition of impervious area as a result of new development within the reservoir watersheds would continue to add negative pressures to the drinking water supply through pollution runoff, sedimentation/siltation, possible accidental spills and decreased surface/ground water quality. Laws and regulations could reduce the negative effects of the additional development.

Corridors 1 and 2

Future direct impacts of an ICC alternative on the reservoirs would be from Corridor 2, which would cross several tributaries to the Rocky Gorge Reservoir and could potentially have a range of impacts to water quality. The direct impacts to the streams range from 8,441 to 13,468 linear feet of impacts within the reservoir watershed. In addition to the stream impacts, between 54.7 acres and 86.6 acres of new impervious surface could be added by Corridor 2. These direct impacts would be minimized by the Lead Agencies' implementation of SWM that exceeds MDE's requirements and redundant ESC measures within the Rocky Gorge subwatershed. In addition to exceeding MDE's SWM requirements, within the Rocky Gorge subwatershed the Lead Agencies are committed to providing an additional 10,000 gallons of stormwater storage and isolation valves in each stormwater treatment pond (***FEIS Chapter IV-E.5.c***).

Secondary development associated with the ICC build alternatives could result in additional impervious area being added to the Rocky Gorge Dam subwatershed. Corridor 1 could result in approximately 10 percent change from 2010 to 2030, resulting in 12.8 percent impervious cover for the Rocky Gorge Dam. Corridor 2 could result in an approximately 19 percent change from 2010 to 2030, resulting in 13.8 percent impervious cover for the Rocky Gorge Dam (***Appendix P, P-10***). There is no additional impervious area as a result of secondary development within the Brighton Dam subwatershed. As with the No-Action alternative, the cumulative effects to the reservoir watersheds could be reduced due to current laws and regulations.

The Lead Agencies have voluntarily undertaken development of a spreadsheet based nonpoint source (NPS) pollutant load model for the purpose of estimating and comparing annual pollutant loads for a variety of NPS pollutants for pre- and post-ICC land use conditions. Two analyses were performed: 1) to compare pollutant loads from roadway build alternatives by analyzing the strip right of way, and 2) to understand the effects that an ICC on Corridor 2 would have on the Rocky Gorge watershed. The first analyses performed focus on the strip of land anticipated to be the ICC right of way (assuming a "build" alternative is selected) and summarize the NPS pollutant loads for each of the major watersheds crossed by the build alternatives, including the Rock Creek, Anacostia River, and Patuxent River. Analyses of the right of way strip were performed using representative alignments under study for Corridor 1 and Corridor 2. To better understand the cumulative effects of NPS pollution impacts resulting from highway construction within the Rocky Gorge Reservoir watershed, an analysis was performed to determine the effects of land use change within the SCEA boundary.

The Lead Agencies performed non-point source stormwater pollutant load analyses to determine the effects of potential ICC construction on receiving watersheds. The pollutant load analyses computations were performed using custom designed spreadsheets that incorporate different nationally recognized modeling approaches and land use associated pollutant loads. Different scenarios were modeled including the effects of land use change within the right of way strip for three potential alternative combinations. Additionally, scenarios were modeled within the Rocky Gorge watershed based on the SCEA boundary and the potential secondary and cumulative affects within.

The analysis indicates ICC construction along either Corridor 1 or Corridor 2 would not significantly change existing water quality when compared to existing land use within the right of way strips and for the pollutants being studied. Additional information on this analysis can be found in ***Section IV.F.5.c***. However, construction of Corridor 2 could potentially have an effect on water quality within the Rocky Gorge watershed when considering the pollutants chosen for study and the future SCEA land use scenario in the watershed. Of the six pollutants studied five of them increased in the future time frame, Fecal Coliform, Total Nitrogen, Total Phosphorous, Total Copper and Total Zinc. The projected increases in annual loads for these pollutants are higher based on the increase in area of medium density residential and institutional land uses. Total suspended solid annual loads are predicted to decrease because of the conversion from agricultural land use to other land uses. ***Table IV-130*** highlights the change in pollutant loads from the existing to future time frame. Please refer to the ***Comparative Water Resource Hazard Assessment*** conducted in July 2005 for more details.

Table IV-130
Modeled Pollutant Loads to the Rocky Gorge Reservoir from the ICC Corridor 2 and the SCEA

Pollutant	Annual Pollutant Load (lbs./year)		
	Existing	Future	Change
Fecal Coliform[1]	397,554	559,635	162,085
Total Suspended Solids	1,282,297	1,263,009	-19,288
Total Nitrogen	58,974	63,236	4,262
Total Phosphorous	4,957	5,774	817
Total Copper	85	156	71
Total Zinc	571	1,044	473

Source: SHA, ICC Pollutant Load Study, July 2005, Rev. September 2005Note: Modeling was conducted for representative alignments of Corridor 1 and Corridor 2 rather than all options and configurations.
[1]Fecal Coliform is expressed in billion colonies/year. All other parameters are in lbs/year.

These increases in pollutant loads in the Rocky Gorge watershed should not implicate human health as WSSC is required to meet drinking water standards through treatment practices currently in place. Increases in non point source loads to the reservoir may exacerbate existing water quality conditions (which may impact aquatic life) and require WSSC to augment treatment practices but this will not change what they are required to produce in terms of safe drinking water.

Subwatershed Cumulative Impacts

Cumulative impacts were also assessed at the subwatershed level for select natural resources. The subwatersheds with the greatest potential impact were selected and highlighted on both ***Figure IV-43*** and ***Appendix P, P-4***.

The subwatersheds with the greatest potential cumulative impact were selected by determining which subwatersheds fall in the 80th percentile of resource impact as a percent of the total resource quantity for each alternative (No-Action, Corridor 1 and Corridor 2). For example, as shown in ***Appendix P, P-4***, the greatest cumulative impact to farmland under all the ICC alternatives is the same. The Little Patuxent River, Anacostia River and the Cabin John Creek subwatersheds all exceed the 80th percentile of resource impacts as a percent of the total resource quantity. The Little Patuxent River subwatershed contains a total of 1,577 acres of farmland and expects a cumulative impact of 926 acres (58.7 percent) under the No-Action, and 992 acres (62.9 percent) under Corridor 1 and Corridor 2 scenarios, which all exceed the 80th percentile for cumulative resource impacts (***Figure IV-43***). The Anacostia River subwatershed contains a total of 2,096 acres of farmlands and anticipates a cumulative impact of 1,025 acres (48.9 percent) under the No-Action scenario, 1,348 acres (64.3 percent) under the Corridor 1 scenario and 1,259 acres (60.1 percent) under the Corridor 2 scenario. Cabin John Creek subwatershed contains a total of 128 acres of farmland and anticipates a cumulative impact of 53 acres (41.2 percent) for all of the ICC alternatives. Please refer to ***Figure IV-43*** and ***Appendix P, P-4*** for additional impacts at the subwatershed to Forests, Floodplains, Wetlands, RTE species, Streams and Impervious Areas.

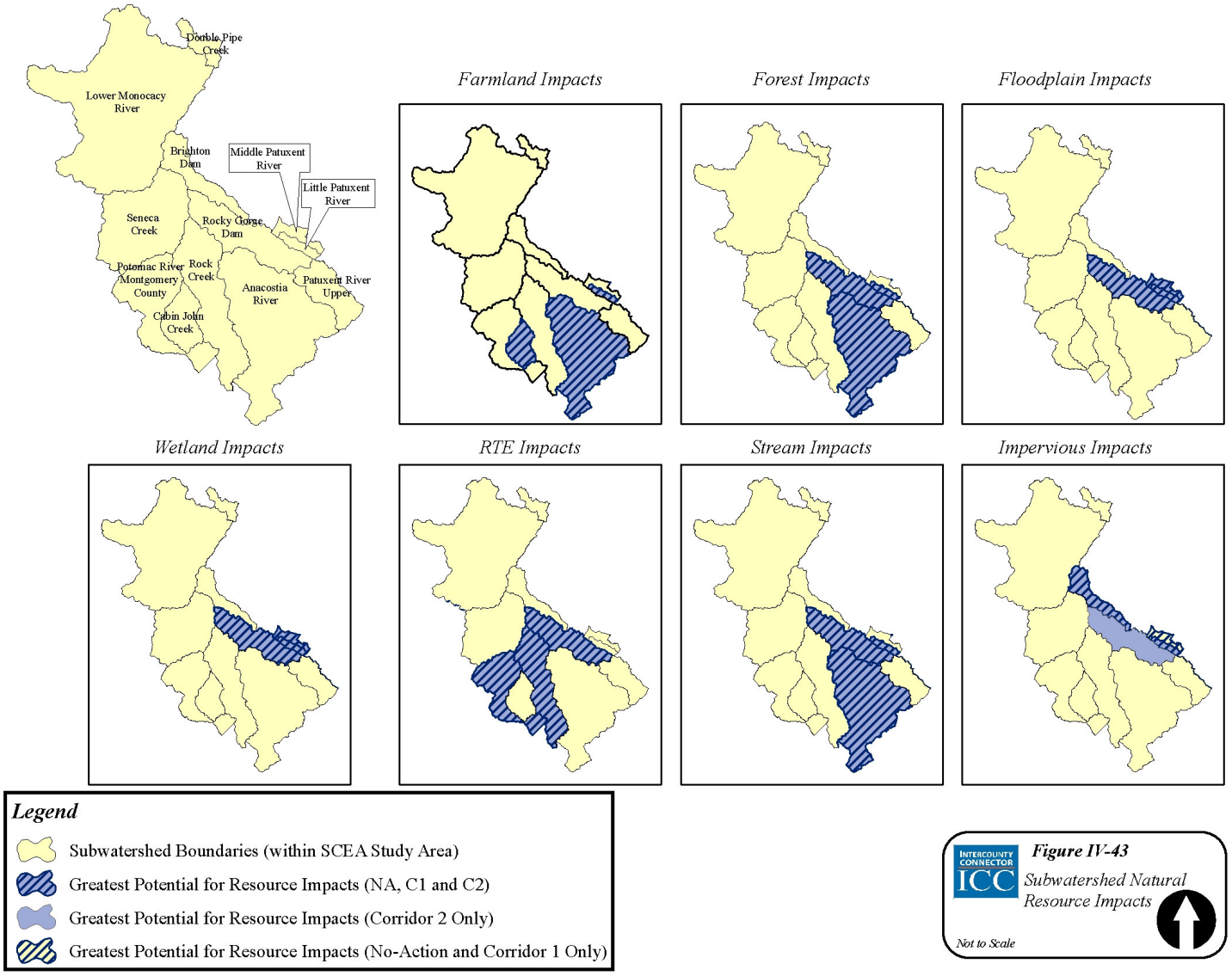


Figure IV-43
Subwatershed Natural Resource Impacts
Not to Scale

L. Energy

There are no notable differences in energy usage requirements anticipated between the two build alternatives. Initially, the No-Action Alternative would require the least amount of expended energy as compared to the construction of a build alternative. However, in the long-term, the energy expended due to projected traffic congestion in the design year as a result of selecting the No-Action Alternative is likely to exceed the initial energy expenditure for construction of one of the build alternatives.

M. Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Each of the project alternatives would have local short-term effects on the surrounding environment. In addition, the effects of the build alternatives, while similar to each other, would likely be greater than those of the No-Action Alternative. However, the need for the proposed transportation improvements is based upon local planning, which has considered the need for present and future traffic requirements within the context of present and future land use development. Therefore, the short-term effects of this project are considered to be consistent with the maintenance and enhancement of long-term productivity for the local area.

N. Irreversible and Irretrievable Commitments of Resources

The construction of any of the build alternatives would involve the irreversible and irretrievable commitment of various natural, human and fiscal resources. The commitment of resources associated with the No-Action Alternative would be substantially less than that which would be necessary for the build alternatives.

Both the Corridor 1 and Corridor 2 Alternatives would require a similar commitment of land for new highway construction. The land used is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway is no longer needed, the land can be converted to another use. At present, there is no reason to believe that such a conversion will be desirable or necessary.

In addition, fossil fuels, labor and construction materials would be used in considerable quantities for the construction of the proposed highway. Large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a one-time expenditure of both State and Federal funds that would not be retrievable.

Selection of a build alternative would require an irretrievable commitment of funds for right of way acquisition, materials, and construction. Funds for maintenance would also be required. The loss of tax revenues from private land taken for highway use would also be an irretrievable revenue loss.

The commitment of these resources is based on the understanding that residents in the immediate area, State and region would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, enhanced environmental resources, and greater homeland security. It is anticipated that these benefits would outweigh the commitment of these resources.