PART I

TECHNICAL METHODOLOGIES FOR ANALYSIS OF CUMULATIVE IMPACTS
APPENDIX N: COORDINATED CUMULATIVE EFFECTS ANALYSIS

PART I

TECHNICAL METHODOLOGIES FOR ANALYSIS OF CUMULATIVE IMPACTS

N.1 TRAFFIC AND TRANSPORTATION METHODOLOGY

N.1.1 AGENCY COORDINATION

Several project start-up activities will be performed at the beginning of the traffic and transportation analyses to ensure that the involved parties (consultants and agencies) are fully familiar with the intended objectives and goals of this study. These activities include the following:

- Participate in working sessions with the involved agencies, such as NYSDOT, PANYNJ, NYCDOT, LMDC, NYCDCP and NYCDEP, to coordinate on the methodologies proposed and to share available data; and,
- Establish a primary and secondary study area and analysis intersections, crosswalks, parking facilities, transit service and station elements to be studied.

N.1.2 FIELD INVENTORIES AND DATA COLLECTION

Available transportation data pertaining to the proposed study area will be utilized to the greatest extent practicable. Data will be collected to represent baseline conditions for pre-September 11 (Year 2000) and existing 2003 conditions. Although available information will be utilized, the decision on the need, type and extent of supplemental surveys will become evident after a thorough review of the available databases. Based on our recent experience on similar projects within the NYC area, the following field surveys are proposed:

- Data from other sources will be compiled and all of the available project-related databases within the study area will be reviewed. A database will be compiled from previous studies (e.g., traffic studies, transit studies, EIS documents for other developments, and agency planning documents) and data collection efforts conducted in the study area within the last three (3)-year period;

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1 The methodologies included in this appendix were prepared during Spring, Summer and Fall 2003 as part of the coordination for the Lower Manhattan Federal Recovery Projects.
Field visits will be conducted, including a comprehensive photographic reconnaissance survey of site conditions during the peak weekday periods in an effort to become familiar with the on-site and off-site physical constraints and/or opportunities;

Physical inventory data on major access roadways in the study area will be collected, including: the number of travel lanes, roadway and lane widths, direction of travel, roadway lane utilization, traffic control devices (signs and signals), signal timing, curb parking regulations, channelizations and turn prohibitions, posted speed limits and bus stop and truck loading areas;

Manual turning movement and vehicle classification counts for six (6) categories (i.e., cars, SUVs, buses, and light, medium, and heavy trucks) will be conducted at up to twenty-four intersections during the morning, midday and afternoon peak periods on a typical weekday. The field survey data will be recorded at 15-minute intervals for each movement. The field data will be reduced and summarized to determine the peak hours, peak-hour factors (PHF) and heavy vehicle (truck and bus) percentages;

Continuous, 24-hour, directional traffic flow volumes using automatic traffic recorder (ATR) counters will be obtained at approximately thirteen locations for a one (1) week period;

An inventory of existing transit services in the study areas, including subway and bus routes, subway station access, and bus stop locations will be compiled based on the results of field reconnaissance trips. In addition, current facility and ridership information will be obtained from the New York City Transit (NYCT) files;

Pedestrian movement counts will be conducted during the AM, Midday and PM peak periods at a maximum of 10 intersections on a typical weekday. A physical inventory of the crosswalk widths and pedestrian signal timing will be compiled. Pedestrian stairway counts will be conducted during the same three (3) peak periods at the four (4) NYCT subway stations located within the study area;

Travel speed, time and delay surveys will be performed using the “floating car” method for approximately 15 major travel routes selected in conjunction with the DEP and DOT staff. The travel routes will include all intersections within 1,000-feet of potential receptor locations. These surveys will be conducted to obtain a minimum three (3) travel runs in each travel direction for each peak hour during the AM, midday and PM peak periods on a typical weekday. Summaries of the survey data will be prepared to show the delay, running time, stop-delay time and beginning and end of queue locations during each peak hour; and,

An inventory of the existing curbside parking spaces and off-street parking facilities within the study area will be performed, in terms of location, supply, peak occupancy and current parking rates.

**N.1.3 EXISTING BASELINE CONDITIONS**

The existing baseline conditions for public transportation, pedestrian, vehicular traffic, intersection conditions, signal operations and parking components will be established for the study area. The existing baseline year for the study area will be defined as Pre-September 11 (Year 2000).

All pre-September 11 (2000) data will be extracted from secondary sources including:

- Traffic Volumes: PANYNJ and Route 9A;
- Pedestrian Volumes: PANYNJ;
- Transit Data: NYCT;
- FSTC Pedestrian Flows: NYCT;
- Parking: New York Stock Exchange EIS and Battery Park City EIS; and,
- PATH Ridership: PANYNJ.

The level of service (LOS) analysis for signalized and unsignalized intersections, volume/capacity (v/c) ratios, and stopped delay values, will be computed using the SYNCHRO software package. In addition, intersection analysis will be performed in accordance with the standard procedure prescribed in the *Highway Capacity Manual (HCM) 2000* using the HCM.
module of the SYNCHRO software package. Results of these analyses will be tabulated for each time period analyzed.

- The pedestrian capacity analysis for the intersection areas will be performed in accordance with the standard procedures prescribed in the latest version of Transportation Research Board, Special Report 209, “Highway Capacity Manual”.

- The subway stairway capacity analysis will be based upon the peak 15-minute flows for each period based upon the methodology outlined in the CEQR Technical Manual.

- Transit operations will be evaluated for bus routes and subway lines serving the study area.

- The parking capacity analysis will be based upon the methodology outlined in the CEQR Technical Manual.

N.1.4 FUTURE NO ACTION CONDITIONS

Future conditions without the project are essential in determining the relative impacts of the proposed project to the surrounding transportation facilities and communities.

Future No Action conditions will be developed for 2005/2006, 2008 and 2025. 2005/2006 conditions will be established in support of impact analysis of construction of the project, as 2005/2006 is the year during which project construction is expected to peak. 2008 conditions will represent the first complete year of project operation. 2025 conditions will be established in support of analyzing the impacts of the project once in operation. 2025 is considered an appropriate time horizon, as by this time it can be assumed that development in Lower Manhattan and hence utilization of the transit facilities would have returned to pre-September 11 levels or greater. This therefore reflects a conservative basis for impact analysis. For the 2025 condition, two (2) potential future scenarios will be established, to account for potential (re)development at the FSTC site by 2025: one in which the project site would not be redeveloped and would essentially remain as is today; and one in which it is assumed that the project site would have been developed by 2025 – either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site.

Future No Action conditions for vehicular traffic, pedestrians, transit users and operations, and parking elements in the study area will be determined for the future peak construction (2005/2006) and operational years (2008 and 2025) as follows:

2005/2006 NO ACTION CONDITIONS

- Project the existing background conditions for 2003 out to 2005/2006 using appropriate growth factors obtained from NYC Department of City Planning, NYCDOT, NYMTC and/or NYCT for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
- Identify additional vehicular trips, pedestrian movements, parking maneuvers or transit ridership expected to be generated as a result of construction vehicles and construction workers attributable to projected construction activity from other projects in the study area during 2005/2006. These trips will be added to the projected background data;
- Identify roadway and lane closures and other conditions affecting traffic expected to be implemented by construction activity as a result of other projects in the study area during 2005/2006;
- Determine the potential shift in future traffic flow and transportation system conditions due to planned or committed major roadway, infrastructure improvements, or construction initiatives in the study area;
• Calculate future travel speeds for each link in the air quality analysis network based on future condition delay values from the capacity analysis results identified during each peak hour for 2005/2006;
• Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for the intersection areas and subway stairway capacity for 2005/2006 in the study area; and,
• Analyze transit operations and parking capacity for 2005/2006 in the study area.

2008 NO ACTION CONDITIONS

• Project the existing background conditions for 2003 out to 2008 using appropriate growth factors obtained from NYC Department of City Planning, NYCDOT, NYMTC and/or NYCT for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
• Identify additional vehicular trips, pedestrian movements, parking maneuvers or transit ridership expected to be generated as a result of construction vehicles and construction workers attributable to projected construction activity from other projects in the study area during 2008. These trips will be added to the projected background data;
• Identify roadway and lane closures and other conditions affecting traffic expected to be implemented by construction activity as a result of other projects in the study area during 2008;
• Determine the potential shift in future traffic flow and transportation system conditions due to planned or committed major roadway, infrastructure improvements or construction initiatives in the study area;
• Calculate future travel speeds for each link in the air quality analysis network based on future condition delay values from the capacity analysis results identified during each peak hour for 2008;
• Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for the intersection areas, and subway stairway capacity for 2008 in the study area; and,
• Analyze transit operations and parking capacity for 2008 in the study area.

2025 NO ACTION CONDITIONS

• Project the existing background conditions for 2003 out to 2025 using appropriate growth factors obtained from NYC Department of City Planning, NYCDOT, NYMTC and/or NYCT for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
• Identify additional vehicular trips, pedestrian movements, parking maneuvers or transit ridership expected to be generated by major developments that have been approved, are in the process of being approved for construction, or are expected to be implemented by 2025 in the study area. These trips will be added to the projected background data. A list of development projects proposed in the study area will be compiled in conjunction with the other project sponsors in Lower Manhattan;
• Calculate future travel speeds for each link in the air quality analysis network based on future condition delay values from the capacity analysis results identified during each peak hour for 2025;
• Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for the intersection areas, and subway stairway capacity for 2025 in the study area; and,
• Analyze transit operations and parking capacity for 2025 in the study area.

N.1.5 FUTURE BUILD CONDITION

Future conditions with the project will vary based upon the analysis year. For the future peak construction (2005/2006) year, the lane and roadway closures and traffic generated by construction vehicles and construction workers attributable to the proposed action will be evaluated. For the future operational (2025) year, future conditions with the project will be evaluated for two (2) possible future scenarios: One with only the FSTC on the site and no further utilization of air rights for development and one with the FSTC on the site, assuming that the remaining air rights associated with the site would be
utilized for either an overbuild above the FSTC, or transfer of some or all of the remaining air rights above the FSTC to adjacent parcels to support redevelopment of those parcels. Future conditions with the project for vehicular traffic, pedestrians, transit users and operations, and parking elements in the study area will be determined for the future peak construction (2005/2006) and operational (2008 and 2025) years as follows:

2005/2006 BUILD CONDITIONS (CONSTRUCTION IMPACTS)

- Identify additional vehicular trips, pedestrian movements, parking maneuvers or transit ridership expected to be generated by construction vehicles and construction workers attributable to the FSTC construction activity during the future peak construction (2005/2006) year. These trips will also be added to the projected background data;
- Identify roadway and lane closures expected to be implemented by the FSTC construction activity in the study area during the future peak construction (2005/2006) year;
- Determine the potential shift in future traffic flow and transportation system conditions due to FSTC construction activities in the study area;
- Combine future No Action traffic/transportation conditions with the site-generated trips, resulting in the future Build conditions during the peak construction period (2005/2006) for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
- Calculate future travel speeds for each link in the air quality analysis network based on future Build condition delay values from the capacity analysis results identified during each peak hour in the project construction impact analysis (2005/2006) year;
- Calculate future parking demand and compare to the projected parking supply, including site and off-site parking supplies, during each peak hour in the project construction impact analysis (2005/2006) year;
- Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for the intersection areas, and subway stairway capacity for the future Build condition peak construction (2005/2006) year in the study area;
- Analyze transit operations and parking capacity for the future Build condition peak construction (2005/2006) year in the study area; and,
- Describe proposed **Environmental Performance Commitments** (EPCs) and how they would proactively reduce potential traffic impacts, as follows:
  - Describe the project-specific pedestrian and vehicular maintenance and protection plan and describe the benefits for improving and maintaining access and circulation of this plan;
  - Describe the benefits of reducing or avoiding potential traffic impacts by promoting public awareness through mechanisms such as: (a) signage; (b) telephone hotline and (c) Web site updates;
  - Describe the benefits of the ensuring sufficient alternate street, building and station access during the construction period, as proposed by MTA NYCT as measures to avoid and minimize impacts; and,
  - Describe the benefits of past, ongoing and future regular communication with the New York City Department of Transportation and participation in its construction coordination efforts.

2008 BUILD CONDITIONS (OPERATIONAL IMPACTS)

- Estimate the magnitude of reassigned trips as a result of the proposed project during the peak hours on a typical weekday for the future operation condition (2008);
- Combine future No Action traffic/transportation conditions with the site-generated trips, resulting in the future Build conditions for the operation analysis (2008) year for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
- Calculate future travel speeds for each link in the air quality analysis network based on future Build condition delay values from the capacity analysis results identified during each peak hour in the project operation (2008) year;
- Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for crosswalks, and subway stairway capacity for the future Build condition operation analysis (2008) year in the study area; and,
- Analyze transit operations for the future Build condition opening year (2008) in the study area.

**2025 BUILD CONDITIONS (OPERATION IMPACTS)**

- Estimate the magnitude of new or additional trips to be generated by the proposed project during the peak hours on a typical weekday for the future operation condition (2025);
- Project-generated trips for 2025 will be further segregated into modal split categories: autos, taxis, walk, subway, buses and trucks;
- Estimate the anticipated approach and departure directional distributions of the 2025 site-generated traffic;
- The 2025 peak-hour generated project trips (all modes) will be distributed onto the necessary intersections, based on consideration of the anticipated approach/departure directional distributions, as well as the potential congestion, delays and reserve capacities on the access roadways;
- Combine future No Action traffic/transportation conditions with the site-generated trips, resulting in the future Build conditions for the operation analysis (2025) year for traffic volumes, crosswalk volumes, FSTC volumes, transit ridership and parking demand;
- Calculate future travel speeds for each link in the air quality analysis network based on future Build condition delay values from the capacity analysis results identified during each peak hour in the project operation (2025) year;
- Calculate future parking demand and compare to the projected parking supply, including site and off-site parking supplies, during each peak hour in the project operation analysis (2025) year;
- Analyze level of service (LOS) for signalized and unsignalized intersections, pedestrian capacity analysis for crosswalks, and subway stairway capacity for the future Build condition operational analysis (2025) year in the study area; and,
- Analyze transit operations and parking capacity for the future Build condition (2025) year in the study area.

**N.1.6 MITIGATION**

**CONSTRUCTION**

- The projected conditions during project construction (2005/2006) will be compared with the 2005/2006 conditions without project construction for intersections, pedestrian crosswalks, subway stairways, parking and transit operations to determine if mitigation measures are required in connection with the proposed project.

**OPERATION**

- The projected conditions during project operation in 2008 will be compared with the 2008 conditions without the project; both with and without a FSTC full air right development scenario for intersections, pedestrian crosswalks, subway stairways and transit operations to determine order of magnitude changes in the study area.
- The projected conditions during project operation in 2025 will be compared with the 2025 conditions without the project; both with and without a full air right development scenario for intersections, pedestrian crosswalks, subway stairways, parking, and transit operations to determine order of magnitude changes in the study area.
In addition, the 2008 and 2025 Build scenarios for the FSTC will be compared with the pre-September 11 (2000) conditions for intersections, pedestrian crosswalks, subway stairways, parking and transit operations to determine if mitigation measures are required in connection with the proposed project.

## N.1.7 CUMULATIVE EFFECTS

In accordance with the methodology described above, the future traffic conditions without the Proposed Action will be established through a combination of projecting background growth out to the analysis year and incorporating vehicle trip changes resulting from land use changes expected to be in place by the future analysis year. In addition, vehicle trips associated with construction activities reasonably foreseeable to be occurring during the analysis year will be included in the projection. This information will be combined to establish future traffic conditions in the future analysis years without the Proposed Action.

For the Future with the Proposed Action, the trips generated by the project’s construction (for the construction analysis year) or operation (for the operational analysis years) are added to the projected traffic network. Any impacts resulting from project-generated traffic in combination with the traffic (both operational and construction-related) of reasonably foreseeable projects and the typical growth in background traffic, are considered cumulative impacts, as the very nature of the methodology layers the effects of the Proposed Action on top of the future baseline conditions established by the effects of other projects.

The determination as to which projects to include to establish future conditions is based on the traffic volumes generated by the Proposed Action and at which distance from the project site the trips generated by the Proposed Action are considered to dissipate into the overall network condition to the point where they are no longer measurable, reasonably predictable or relevant in terms of contributing to potentially significant impacts.

The Study Area considered for the traffic analysis is considered adequate for including all relevant projects and background conditions to allow for a comprehensive assessment of cumulative effects on traffic conditions.

## N.2 SOCIAL AND ECONOMIC METHODOLOGY

### N.2.1 INTRODUCTION

This memorandum presents the methodology for analysis of existing social and economic conditions within the study area and Lower Manhattan, and the evaluation of the potential for significant impacts of the Proposed Action on future conditions.

Social and economic conditions are important for evaluation because they are key components of a community’s character. These conditions include a community’s population, economic base, land uses, and public policies and plans that support those land uses. Other aspects of community character to be considered in an evaluation of environmental impacts include municipal and community facilities, parks and open spaces, urban design, street grid and other features of the built environment. The discussion of community character and potential impacts will also incorporate those elements to be examined in other chapters of the DEIS such as traffic and circulation, pedestrian conditions, noise and air quality, safety, and indirect development impacts which also contribute to neighborhood conditions. The analysis is intended to account for the benefits or adverse impacts to many of these components of neighborhood character that may be produced by the Proposed Action either temporarily during construction, permanently during operation, or cumulatively through interaction with other past, present or future actions undertaken in the community.
The evaluation of potential social, economic and community impacts will be comprised of the following general steps outlined in the U.S. Department of Transportation Community Impact Analysis Handbook (1996).

**Community Identification** – To encompass the broad range of trends and issues, the context for presentation of data and discussion of potential impacts will be a primary study-area comprising a radius of one-quarter mile from the Proposed Action, and the broader community of Lower Manhattan.

**Review of Social and Economic Characteristics** – Current community demographic and employment conditions will be presented along with future trends and projections so that character of the community now and at the time of operation of the Proposed Action.

**Inventory of Community Features** – A key indicator of socio-economic impacts is the effect that the Proposed Action will have upon local land use patterns. A land use analysis assesses the distribution of residential, commercial, institutional and community facility land use in the area, and projects future baseline conditions in order to highlight potential impacts of the Proposed Action on the land use mix of the neighborhood. Existing and projected changes in land use also assist in establishing the assessment parameters of other forms of environmental impacts, such as economics air quality, noise, vibration and vehicle traffic.

**Identification Community Issues and Attitudes** – Complementary to a discussion of land use is a summary of public policy in relation to the study areas, which will determine the compatibility of the Proposed Action with the neighborhood’s own vision of its future state.

**Evaluation of Impacts/Identification of Solutions** – The effects of the Proposed Action on the character of the community will be evaluated as described below. As necessary, solutions to promote the avoidance, minimization or mitigation of significant adverse effects or the enhancement of beneficial impacts will be presented.

### N.2.2 ENVIRONMENTAL PERFORMANCE COMMITMENTS

The analysis will be conducted taking into account the following Environmental Performance Commitments (EPCs) to proactively avoid or minimize adverse effects on socio-economic conditions:

Coordination with LMDC, Downtown Alliance or other entities to minimize residential and retail impacts as required through:

- relocation assistance, as applicable, to persons or businesses physically displaced by the project;
- focus on essential businesses and amenities to remain in Lower Manhattan; and,
- add appropriate signage for affected businesses and amenities.

In addition to these EPCs, which are specifically tailored to socioeconomic conditions, potential effects on socioeconomic conditions will also be proactively addressed through EPCs intended to avoid or minimize effects on access and circulation, noise and vibration, air quality and cultural resources, all of which may indirectly affect socioeconomic conditions. A detailed discussion of the aforementioned EPCs is presented in their respective methodology summaries within this appendix.

### N.2.3 ANALYSIS ELEMENTS

The discussion of social and economic conditions will be presented in three (3) sections, addressing impacts during construction in 2005/2006, the initial full year of operation in 2008 and operation in 2025. A summary overview of the analysis approach for each of the three (3) sections is presented below.
LAND USE

Existing land uses in the study areas will be profiled through a combination of secondary source review and field surveys. Land uses as described in the 2000 and 2002 editions of the Real Property Assessment Database (RPAD) published by the New York City Department of Finance, and other current environmental reviews of proposed Lower Manhattan projects such as the Second Avenue Subway EIS will be identified, mapped and confirmed and supplemented through field surveys. A zoning profile of Lower Manhattan will be developed through reference to the Zoning Resolution of the City of New York. Land use maps developed for this study are anticipated to incorporate existing data from the land use profile prepared by the Lower Manhattan Development Corporation (LMDC) for the region south of Canal Street.

Projections of future baseline land use conditions will be made for the study area for the year 2005 through 2025 to outline conditions during the construction and operational periods. This chapter of the EIS will present projections for Lower Manhattan and the primary study area. The future baseline land use inventory will be based on 2002 RPAD data. The land use inventory and maps will be updated to include all relevant development and rehabilitation projects and other land use changes in the primary study area proposed for completion in or before these years. Projections will also take into consideration development of “soft sites” (sites that are prime for re-development due to vacancy or under-utilization) in addition to proposed projects currently under review by the Department of City Planning.

Future No Action and Build conditions will be analyzed assuming the following scenarios:

- No Action Condition assuming no utilization of the remaining air rights associated with the FSTC site (i.e., the project site would essentially remain as it is today);
- No Action Condition assuming full utilization of the remaining air rights associated with the FSTC site, either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site;
- Build Condition assuming no utilization of the remaining air rights associated with the FSTC site (i.e., construction of the FSTC only); and,
- Build Condition assuming full utilization of the remaining air rights associated with the FSTC site with the full air rights development at the site (i.e., construction of the FSTC with an overbuild above the FSTC or a transfer of some or all of the remaining air rights to adjacent parcels to support redevelopment of those parcels).

Once scenarios have been established, future projections of No Action baseline conditions will be compared to the Build Alternatives so that impacts may be described and evaluated for significance. The effect of the Proposed Action on the function and capacity of Community Facilities will also be evaluated in this section.

ECONOMIC CONDITIONS

Major employers or industries that dominate or characterize the community would be identified. Following that analysis of existing conditions, changes to employment predicted to occur as part of the future background conditions are analyzed. Finally the Proposed Action would be analyzed for potential economic impacts including impacts related to regional and or local economic conditions such as development, tax revenues and public expenditures, employment opportunities, accessibility, retail sales, the economic vitality of existing businesses and the effect of the Proposed Action on established business districts.

Existing private sector employment, based on New York State Department of Labor (NYSDOL) data and organized by industry, will be presented for Manhattan Lower Manhattan and the study area. A profile of small businesses, especially street-front retail outlets, would be compiled from consultations with the
Downtown Alliance and other community business resources. A discussion of employment trends in Lower Manhattan resulting from the effects of September 11 will be presented based upon data from NYMTCS’s *Demographic and Socioeconomic Forecasting Post September 11th Impacts* report. The study would present a qualitative discussion of the impacts of construction on street-front retail and commercial businesses in the study area. As part of the discussion of economic conditions in Lower Manhattan, and the effects of September 11, this chapter would present a qualitative analysis of the commercial real estate market based upon a discussion of recent trends in rents and occupancy rates.

Projections of baseline future employment and population would be based upon econometric projections of population and employment, incorporated in NYMTCS’s Regional Transportation Plan, shared down to the local level through an evaluation of Lower Manhattan land use and development potential for use in the MTA’s Regional Transportation Forecast Model (RTFM).

The temporary economic impacts of capital investment in terms of employment, earnings, fiscal and economic activity will be calculated for the years of construction spending. Quantitative economic analysis is based upon Bureau of Economic Analysis (BEA) RIMS II inter-industry data and U.S. Department of Labor wage and earnings data. This analysis includes the impact of increased local spending by temporary workers during the period of construction.

Potential indirect economic impacts will be calculated, including impacts related to regional and/or local economic conditions, such as development, tax revenues and public expenditures, employment opportunities, accessibility, retail sales, the economic vitality of existing businesses and the effect of a proposed project on established business districts during the period of construction and operations.

**SOCIAL CONDITIONS**

As part of this study, the existing demographic profile of Manhattan, Lower Manhattan and the study areas will be prepared using *U.S. Census of Population and Housing* for 1990 and 2000. This profile will describe the age, income distribution and other demographic characteristics of residents. Based upon data from the Census and the *NYC Housing and Vacancy Survey*, a housing profile will be presented that displays the number of housing units, tenure and occupancy, and a summary of housing expenses.

The population base of the study area and Lower Manhattan in future years will be estimated as described above. Since housing, recreation and cultural facilities are a prominent feature of plans for Lower Manhattan and conversion of commercial buildings to residential use has accelerated in recent years, particular consideration will be given to Lower Manhattan as a place of residence and recreation, in addition to employment.

The description of the current and future social character of the community will support an evaluation of the potential adverse effects of the Proposed Action, particularly during the construction period and the potential beneficial effects of the Fulton Street FSTC, particularly in its operational phase.

Three (3) key elements of the community character will be part of this evaluation:

- **Community Cohesion** – How the Proposed Action may influence the pattern of social relationships and community interaction;
- **Mobility** – How the Proposed Action may influence the ability of residents, employees and visitors to access and move about the community; and,
- **Safety** – How the Proposed Action may promote or hinder pedestrian or commuter safety.

**CUMULATIVE IMPACTS**

Cumulative impacts on socio-economic conditions will be analyzed by including the effects of all other relevant past, present and future actions affecting the socio-economic environment in Lower Manhattan,
in the analysis of the construction and operation of the Proposed Action. Actions to be considered in this evaluation will include but not necessarily be limited to the following.

- The land use changes estimated as part of the No Action and Build Alternatives (including the World Trade Center site), and any construction activities associated with those land use changes;
- Surface transportation improvements and construction activities including those associated with Route 9A, and NYCDOT Lower Manhattan street resurfacing and reconstruction projects and streetscape improvements in the Financial District and Fulton Street corridor;
- The transportation related construction activities including the Permanent WTC PATH Terminal, South Ferry Subway Station improvements and alternatives considered in the Lower Manhattan Airport Access study;
- Trends in regional employment and economic activity and localized conditions including street level retail activity and commercial office tenancy; and,
- Trends in social and cultural activities in neighborhoods surrounding the Proposed Action.

Cumulative impacts will be addressed in each of the three (3) analysis elements described above as follows:

- Land uses particularly sensitive to potential adverse effects of the Proposed Action, due to their exposure to the adverse economic effects of other relevant actions, will be identified and the potential for combined effects of the Proposed Action with those of other projects will be analyzed. Direct and indirect effects on community facilities from the Proposed Action will be evaluated, taking into account potential effects of other projects that, combined with the effects of the Proposed Action, may increase impacts;
- Economic impacts, especially on local retail uses, will be analyzed by taking into account the potential for reduced access and pass-by traffic in certain areas affected by the construction of FSTC, combined with other construction activities, producing street and sidewalk closures. The analysis will take into consideration the nature of the economic activity (destination, reliant on pass-by traffic, part of an agglomeration of similar businesses) and its susceptibility to these access effects. Evaluation of construction-related impacts will be accompanied by an evaluation of economic impacts as projects are completed and improvements become operational; and,
- Impacts to community social conditions will also be evaluated in the context of the Proposed Action and other concurrent, past and future actions that would benefit or adversely impact the community. As with the analysis of economic conditions, the potential for temporary impacts to community character and cohesion, mobility and safety during the construction period (due to temporary access changes, noise, visual or other impacts) will be evaluated along with the benefits that may accrue to the community as rehabilitation and improvement projects are completed.

N.3 CULTURAL RESOURCES METHODOLOGY

N.3.1 INTRODUCTION

Cultural resources are an important part of a community’s character. Cultural resources may include buildings, structures, sites, objects and districts. They may also include archaeological resources. Archaeological resources are physical remains, usually buried, of past activities on a site. They can include remains from Native American people who used or occupied a site, including tools, refuse from tool-making activities, habitation sites, etc. These resources are also referred to as “precontact”, since they were deposited before Native Americans’ contact with European settlers. Archaeological resources can also include remains from activities that occurred during the “historic period” (the period beginning with European colonization of the New York area), and include remains such as battle sites, foundations, wells and privies.
The following describes the methodology proposed to assess the potential effects of the FSTC on cultural resources.

N.3.2 AGENCY COORDINATION

Several project start-up activities will be performed at the beginning of the cultural resource analyses to ensure that the involved parties (consultants and agencies) are fully familiar and in agreement with the intended goals, objectives and methodologies for this study. These activities include the following:

- Participate in working sessions with the involved agencies, such as the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), NYC Landmarks Commission, PANYNJ, NYSDOT and LMDC, to coordinate on the methodologies proposed and to share available data, as appropriate.
- Establish a study area and identification of resources (see below).

N.3.3 GUIDELINES AND REGULATIONS

Federal law (the National Historic Preservation Act, the National Transportation Act) and associated regulations (Section 106, implemented via 36 CFR Part 800, (“Protection of Historic Properties”) establish procedures for determination of impacts to cultural resources, and form the basis for the steps outlined below.

STEP 1: DETERMINE THE AREA OF POTENTIAL EFFECT (APE)

The APE is the geographic area in which the Proposed Action may cause effects to significant cultural resources directly through construction; indirectly through construction or operation; or cumulatively through other past, present or future actions undertaken in the community. Section 106 Regulations define the “Area of Potential Effect” as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking”.

The regulations define “effect” as “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places”. An adverse effect occurs “when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling or association.”

An APE is an hypothetical construct, the dimensions of which derive from the intersection of information about a specific project and how it is to be achieved with information about the kinds of historic properties that are known or likely to exist in and in the vicinity of the project. The analysis identifies actions (or kinds of actions) specific to the project at issue that could involve historic properties, such as ground disturbance; demolition of existing buildings or structures; alteration of existing buildings or structures; introduction of new elements into an existing environment and/or changes in land use. Some projects may involve all these types of actions and more, while others may be limited to one (1) or two (2) of these actions. The physical extent of the APE is therefore based on the known or reasonably-predicted physical extent of the various actions that are expected to occur during or as a result of implementation of the project. Once historic properties within the APE are identified, the analysis moves to consideration of how characteristics of specific properties that qualify those properties for inclusion in the National Register will or could be changed by one or more project actions. Properties listed on or determined eligible for the State and National Registers of Historic Places (S/NR) can include archaeological resources.
STEP 2: IDENTIFY HISTORIC PROPERTIES AND THE POSSIBILITY OF ARCHAEOLOGICAL RESOURCES BEING PRESENT WITHIN THE APE

The Advisory Council on Historic Preservation’s regulations implementing Section 106 of the National Historic Preservation Act (36 CFR Part 800) define an historic property as “any prehistoric or historic site, building structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior”. Properties listed on or determined eligible for the State and National Registers of Historic Places (S/NR) can include archaeological resources.

STEP 3: DETERMINE EFFECTS

The standard for determining effects of an action on historic properties is based on the Criteria of Adverse Effect found at 36 CFR 800.5(a)(1). An adverse effect is found when an action may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register, in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance or be cumulative. The analysis will be conducted in a manner consistent with Section 106 of NHPA, Section 4(f) of NHTA, and 36 CFR 800. These laws and regulations are designed to ensure consideration of significant cultural resources in the planning and design processes and to achieve avoidance, minimization or mitigation of adverse effects to such resources. Any cultural resource investigations undertaken for the DEIS will be conducted in accordance with the Secretary of the Interior’s Standards for Archaeology and Historic Preservation (48 CFR 44716) and the New York State Archaeological Council’s Standards for Cultural Resource Investigations and Curation of Archaeological Collections.

N.3.4 ANALYSIS ELEMENTS AND STUDY AREA

The discussion of cultural resources will be presented in two (2) sections: archaeological resources and historic/architectural resources.

ARCHAEOLOGICAL RESOURCES

The study area, or Area of Potential Effect (APE), for archaeological resources encompasses all areas subject to ground disturbance as a result of implementation of the FSTC. A resource sensitivity assessment identified known archaeological resources (i.e. resources recorded in the files of the SHPO and NYCLPC) and resource types that could be present based on an analysis of prehistoric and historic period land use within the APE.

This assessment also considered the extent to which such potential resources, if they exist, may be intact or may have been damaged or destroyed by subsequent land use over time. For each area where research indicated that archaeological resources might be present, further research was undertaken to determine original site topography and any subsequent alterations through filling, grading, development or other activities. The objective of this assessment was to identify locations where any archaeological resources, if originally present, may have survived later disturbances. Areas that may have archaeological resources are considered to be archaeologically “sensitive”. Areas where it can be demonstrated that modern urban development activities have disturbed the potential locations of archaeological resources are characterized as “disturbed” and do not require further assessment for archaeological resource potential.

For archaeologically sensitive areas, professional archaeologists would outline a program of additional documentary research, field testing and/or mitigation measures that would be undertaken prior to any construction. Generally, the steps would include additional research and field testing to identify whether any archaeological resources are actually present on the sites and, if so, whether the resources are eligible for the S/NR. Then, for any such resources, a range of possible mitigation measures would be identified, including avoidance, data recovery and curation.
Delineation of the APE for archaeology for the FSTC began with the areas where ground disturbance could affect archaeological resources if such resources are present (see Figure 11-1: Archaeological Resources APE). These areas of ground disturbance are as follows:

- The Entry Facility, located between Broadway, Fulton and John Streets (Block 79, Lots 15, 16, 18, 19 and 21);
- The Dey Street Passageway, to be constructed below Dey Street, connecting the R-W line Cortlandt Street Station with the Existing Complex;
- Construction of the Dey Street Access Building at the south corner of Dey Street and Broadway. This building would include a stairway, escalator and ADA elevator; and,
- Improvements to the A-E mezzanine that runs west below Fulton Street from William Street, in particular the proposed widening of that portion of the mezzanine lying west of Nassau Street.

HISTORIC/ARCHITECTURAL RESOURCES

The study area, or APE, for historic/architectural resources encompasses all locations where significant resources could be directly or indirectly affected by the FSTC (see Figure 11-2; Historic Resources APE). The analysis identified historic/architectural resources that are listed in or considered eligible for inclusion in the National Register, and are New York City Landmarks or that have been proposed as such.

Assessment of impacts to significant historic/architectural resources considers potential direct physical impacts (destruction, damage or physical alteration from construction or operation of the FSTC) and indirect impacts. For the latter, the cultural resources analysis draws on information from other environmental studies prepared for the DEIS to determine impacts under NEPA and adverse effects under NHPA.

Construction of the Entry Facility would involve the deconstruction of existing buildings, specifically buildings currently located at 194, 198, 200, 204 and 189 Broadway, so the APE includes the locations of these buildings. The APE encompasses the Corbin Building at 192 Broadway, because it is adjacent to buildings to be removed and could be subject to potential adverse impacts.

Removal of buildings and construction activities associated with the FSTC could affect adjacent buildings that share party walls or foundations with the deconstructed buildings, have walls or foundations abutting those buildings, or are close enough that construction-related ground vibration could damage their foundations or structural systems. In accordance with the New York City Department of Buildings Technical Policy and Procedure Notice No. 10/88 regarding potential construction-related damage to historic structures, the APE includes locations of buildings contiguous to or within a lateral distance of 90 feet from the FSTC. The APE therefore encompasses approximately the locations of buildings at a distance of 90 feet from 192 Broadway, 195 Broadway, 15 John Street, buildings flanking Dey Street from Church to Broadway, and buildings flanking Fulton Street from Broadway to William Street. The geographic extent of visual impacts resulting from the introduction of new elements into an existing historic built environment are typically linked to the extent to which the new element is visible from various vantage points from within and outside of that environment.

The proposed Entry Facility would be five (5) stories high and would stand within the perimeter formed by the footprints of the buildings now existing on the site. The APE, therefore, has been further expanded to include locations from which the proposed FSTC and its adjacent built environment would be or could be visible. Such locations would encompass properties on the west side of Broadway from approximately Barclay to Cortlandt Streets, on the north side of Fulton Street east of Nassau Street and on John Street east of Nassau Street. The built environment encompassed in views of the proposed Entry Facility would also be included in the historic APE. This includes Broadway from approximately Barclay Street to Maiden Lane and the south side of Fulton Street west of Nassau Street (see Figure 11-2).
The FSTC would not introduce a new land use to this area; rather, it involves the repair and enhancement of a long-existing major public transportation facility and the building of a street-level focal point for that facility in the form of the Entry Facility. For purposes of this analysis, it is assumed that any land use changes involving historic buildings that could reasonably be attributed to the FSTC would be confined to the area heretofore described.

To place the historic resources APE of the FSTC in the overall context of historic resources in Lower Manhattan and allow for an evaluation of potential cumulative effects associated with the FSTC, a larger secondary study area was defined. This area comprises Lower Manhattan below Chambers Street (see Figure 11-3).

The FTA and NYCT consulted with the SHPO concerning the archaeological and historic APEs via letter in December 2003. The SHPO is currently reviewing the APEs but it is not anticipated that any substantial revisions would be required.

**N.3.5 ENVIRONMENTAL PERFORMANCE COMMITMENTS**

The Proposed Action is proposed to be implemented with Environmental Performance Commitments (EPCs). These are measures that will be proactively implemented to avoid or reduce potential impacts of the proposed action. With regard to cultural resources, they include the following:

- Establish coordination among projects to avoid or minimize interruption in access to cultural and historic sites;
- Initiate public information and involvement outreach with sensitivity to local cultural resources;
- Identify public information outlets that will receive and provide current information about access during construction;
- Consult with the New York State Office of Historic Preservation and the New York City Landmarks Preservation Commission regarding potentially impacted, culturally significant sites; and,
- Monitor noise and vibration during construction at such sites as appropriate.

Environmental performance commitments for other resources, such as noise and vibration, and access and circulation may also contribute to avoidance or reduction of project impacts on cultural resources. A detailed discussion of those commitments is provided in the respective chapters addressing those resources.

**N.3.6 CUMULATIVE EFFECTS**

Cumulative effects for each of the analysis elements described above will be analyzed by including the effects of other relevant past, present and reasonably foreseeable actions affecting the archaeological and historic/architectural environments in Lower Manhattan, in the analysis of the construction and operation of the proposed action. Cumulative effects analysis will be conducted within the cumulative effects APE and the period of construction and operation of the proposed action, in order to include other reasonably foreseeable actions whose effects on cultural resources overlap geographically and temporally with those of the Proposed Action.

**ANALYSIS WITHIN THE PROXIMATE EFFECTS APE**

The analysis will be focused on the APE and construction and operational years of the proposed action, as follows:

- The analysis will identify resources in the APE that, in addition to being affected by the Proposed Action, may also be affected by other reasonably foreseeable actions, including those originating outside the APE; and,
• The analysis will identify the combined effect on the resource of the Proposed Action in combination with the effects of other reasonably foreseeable actions.

Resources within the APE that are not affected by the Proposed Action, but may be affected by other reasonably foreseeable actions, including those located outside the APE, will also be identified. Opportunities for the Proposed Action to contribute to reducing impacts of other actions on such resources within the APE will be identified (including any beneficial effects of EPCs), subject to available information regarding the effects of other actions on the resources within the APE.

Early identification for such opportunities has been provided in the form of MTA NYCT’s Environmental Performance Commitments (EPCs) with regard to cultural resources and related resources, such as noise and vibration. The EPCs will be implemented as a standard component of construction and operation of the Proposed Action, irrespective of whether the Proposed Action will cause significant adverse effects on cultural resources. The EPCs will not only reduce adverse effects of the Proposed Action, if any, but may also contribute to the reduction of adverse effects on cultural resources resulting from other reasonably foreseeable actions in Lower Manhattan.

ANALYSIS OUTSIDE THE PROXIMATE EFFECTS APE

By definition, the APE includes the entire area where potential impacts of the Proposed Action could conceivably occur. While cultural resources outside the APE would not be affected by the Proposed Action, they may be affected by other reasonably foreseeable actions, including federally funded transportation recovery projects in Lower Manhattan.

The cumulative effects analysis will include a discussion of potential opportunities for the Proposed Action to contribute to a reduction of impacts of other reasonably foreseeable actions on those resources. Examples of such opportunities may include alternate access provided by the operation of the FSTC that would compensate for some of the access and circulation impacts of other projects on cultural resources; scheduling of construction activities of the Proposed Action that would create more flexibility for other projects to be constructed with fewer construction impacts on cultural resources and sharing of construction facilities for the Proposed Action with other projects, so that those other projects can reduce their impacts.

The analysis will be based on information provided by sponsors of other reasonably foreseeable projects. The extent of the study area and time period of analysis of cumulative effects outside the APE will depend on the geographic and temporal extent of potential impacts on cultural resources resulting from other reasonably foreseeable actions. For purposes of analysis, it is proposed that the area of analysis outside the Proximate Effects APE would be the area south of Chambers Street with a time period extending through 2025, which is when all federally funded transportation recovery projects are anticipated to have been completed and to have been in operation for an extended period of time.

N.4 AIR QUALITY ANALYSIS METHODOLOGY

N.4.1 AGENCY COORDINATION

The analysis will need agency coordination including project start-up activities, process review, and results confirmation in order to ensure that the involved parties are fully familiar with the goals and analysis of this study. The coordination activities will include working sessions with the involved agencies, such as NYSDOT, PANYNJ, NYCDEP, LMDC, NYMTC, USEPA, NYSDEC and FTA to coordinate on the methodologies proposed and to share available data and analysis results.
N.4.2 GUIDELINES AND REGULATIONS

The proposed project impact analysis methodology includes a general modeling approach that has been accepted by USEPA for evaluating air quality impacts associated with a variety of transportation projects in New York City, New York State and throughout the region and country, as well as an acceptable series of worst-case assumptions relating to meteorology, traffic, background concentration levels, etc. This combination of approach and assumptions results in a conservative estimate of expected pollutant concentrations and resulting air quality impacts caused by the project. To compare estimated pollutant concentrations with the National Ambient Air Quality Standards (NAAQS) and significance criteria, maximum concentrations will be evaluated.

The major regulations and guidelines applicable to the air quality analysis to be conducted include:

- National Environmental Policy Act (NEPA);
- EPA National Ambient Air Quality Standards (NAAQS) (required under Clean Air Act);
- Clean Air Act Amendments (CAAA) 1990 and Federal conformity rules;
- NYSDEC State Implementation Plan (SIP);
- Provisions of Sept 2002 AQ waiver;
- Construction impacts of projects on AQ will be assessed in accordance with 40 CFR Part 93, Section 123: Procedures for determining localized CO and PM\textsubscript{10} or PM\textsubscript{2.5} concentrations (hot-spot analysis);
- NYSDOT Environmental Procedures Manual;
- NYCDEP Interim Guidance Criteria and NYSDEC Threshold to Determine Significant PM\textsubscript{2.5} Impact;
- NYCDEP, Report #34, Mobile Source Emission Inventory for New York City;
- USEPA NONROAD model for construction equipment;
- USEPA AP-42 Emission Inventory and ISC-PRIME;
- Mobile6.2 Model for particulate matter and ISC-PRIME;
- ISCST3 (Industrial Source Complex ) Model for stationary source impact analysis;
- CAL3QHC or CAL3QHCR, as appropriate for mobile sources dispersion; and,
- MOBILE6 for CO analysis.

N.4.3 DATA SOURCES AND COLLECTION

The air quality impacts analysis for project construction and operation under various phases and scenarios will require a series of project-related information, plans and designs of proposed facilities, stationary sources data, parking, traffic information, construction timing and equipment, etc. Traffic data will be provided by the traffic team for the project, and will be obtained from existing documents review.

Specifically, the data to be utilized for this analysis will include:

- Air Quality Data Collection: Existing air quality data from NYSDEC, US EPA, and NYCDEP;
- Project information, as well as the construction schedule and management plan, construction equipment list (heavy equipment and trucking) and operation schedule/location, etc;
- Data regarding other possible on-going and future projects in the area from sponsors of those projects, including such information as project descriptions, design and engineering plans, schedule, their environmental issues and construction management plans;
- Traffic survey data, studies and information from the project traffic team, PANYNJ, NYSDOT, NYCDOT and other relevant project sponsors. Traffic data required for the air quality analysis include worst-case peak (AM, PM, Midday-peak) hour traffic volumes, vehicle classifications, travel speeds, turning movements (movement per lane), capacity, levels of service (LOS), volume-to-capacity (v/c) ratios, delays, signal timing, saturation flow, roadway geometry at analyzed intersections, vehicle trips resulting from net trips generated or decreased by the
proposed FSTC and potential FSTC overbuild projects, current and future parking conditions in the area, including a survey/update of existing public parking facilities. These data will be provided according to Highway Capacity Manual (HCM) or equivalent format. Project and traffic information under Build and No Action will be needed for baseline year (2001), construction year (2005/2006) and future build years (2008 and 2025);

- New York City survey data of Vehicle Miles Traveled (VMT) during various time periods (daytime and nighttime) and vehicle distribution from NYCDEP Report #34 (SRR 81-0723-29), “Mobile Source Emissions Inventory”;
- Time of day factors used to estimate hourly VMT obtained from NYSIP for ozone (NYSDEC); and,
- Stationary sources data, including information regarding the FSTC boiler and HVAC system plans, description of function and exhaust source, location and size of the systems, etc.

N.4.4 EXISTING BASELINE CONDITIONS

The existing baseline air quality conditions for the study area will be evaluated under pre-September 11 conditions as defined by the project sponsor. The air analysis will include:

- Review and evaluate existing ambient air quality data including criteria pollutants and hazardous chemicals which are monitored by NYSDEC, NYSDEP and USEPA for the study area. A milestone record of the study area is that in May 2002, the USEPA re-designated the New York Metropolitan Area as a CO attainment area with maintenance plan after a three (3)-year long period of review. This action implies that the City, State and Federal agencies were all satisfied with the air quality levels under pre-September 11 conditions;
- Select intersection locations and sensitive sites for micro-scale analysis based on a screening analysis of traffic conditions. The selection of intersections will be based on those intersections that are already the most congested. At each analyzed intersection, a series of multiple receptor sites will be analyzed in accordance with CEQR guidelines;
- Select emission calculation methodology and “worst-case” meteorological conditions. Vehicular cruise and idle emissions for the dispersion modeling will be computed using EPA’s MOBILE6 (available model for New York State). For the “worst-case” analysis, conservative meteorological conditions will be assumed in the dispersion modeling according to Federal and State manuals; and,
- Emissions will be calculated by using US EPA’s CAL3QHC dispersion model. At locations where this model yields pollutant levels that exceed standards, or significant air quality impacts are predicted, the EPA’s refined intersection CO model, CAL3QHCR, will be used. The refined intersection model uses five (5) years of meteorological data from LaGuardia Airport to perform a simulation analysis. At each microscale receptor site, calculate maximum one (1)- and eight (8)-hour carbon monoxide concentrations for existing conditions, and compare carbon monoxide pollutant levels with NAAQS standards and applicable **de minimis** criteria.

N.4.5 FUTURE NO ACTION CONDITIONS

The air quality analysis under future No Action will be conducted to determine the background levels within the study area in year 2005/2006 (peak construction year for the proposed project), initial operation year 2008 and full operation year 2025. These years are consistent with the years for which the traffic impacts analysis will be conducted. The use of 2025 is considered to be appropriate for the operational impact analysis, since it can be assumed that development in Lower Manhattan and, hence, utilization of the transit facilities would have returned to pre-September 11 levels or greater. The 2008 initial operational year, while not reflecting maximum utilization of the Proposed Action, as not all economic activity is expected to have returned to pre-September 11 conditions by 2008, is included to provide a benchmark for analysis purposes and to provide information to other projects for purposes of their cumulative effects analysis during this year.
For the 2008 and 2025 conditions, two (2) potential No Action scenarios will be established to account for potential (re)development at the FSTC site by that year. The first scenario assumes the project site would not be redeveloped and would essentially remain as it is today. The second scenario assumes that the project site would have been further developed by others, either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site.

Under the future No Action scenario, the analysis will focus on the air quality resulting from background traffic growth by utilizing data predicted by the traffic team for the years 2005/2006, 2008 and 2025. These traffic forecasts will include traffic associated with other major development projects that have been approved, are in the process of being approved for construction, or are expected to be implemented by 2025 in the study area.

Based on the defined study area, a series of worst-case intersections for micro-scale air quality analysis will be selected according to a preliminary screening of traffic level of service (LOS) conditions for all potentially affected intersections where project generated or diverted trips are likely to be concentrated. Project and traffic information under future No Action (2005/2006, 2008 and 2025) conditions during AM, PM and Midday peak-hour periods will be provided by the traffic team, including traffic flows, travel speeds and vehicle classifications along key corridors in the study, as well as signal timings/delay data at analyzed intersections.

The same procedures as described in the existing conditions will be applied to the roadway emissions micro-scale analysis. Impact calculation by using EPA’s MOBILE5b or MOBILE6 emission models and CAL3QHC dispersion model will be conducted. At locations where this model yields pollutant levels that exceed standards, or significant air quality impacts are predicted, the EPA’s refined intersection CO model, CAL3QHCR, will be used.

N.4.6 FUTURE BUILD CONDITIONS

The air quality impacts analysis in this EIS will be conducted for three (3) years – the future peak construction (2005/2006) year and future operational years (2008 and 2025). These scenarios are presented below in greater detail. The Proposed Project is expected to be constructed with certain Environmental Performance Commitments (EPCs) in place. As impacts on air quality are most likely to occur during construction, EPCs for air quality focus on the construction phase and are described below.

ENVIRONMENTAL PERFORMANCE COMMITMENTS

The analysis will be conducted taking into account the following Environmental Performance Commitments:

- Use ultra low sulfur diesel fuel in off-road construction equipment with engine horsepower (HP) rating of 60 HP and above;
- Where practicable, use diesel engine retrofit technology in off-road equipment to further reduce emissions based on NYS Best Available Retrofit Technology (BART). Such technology may include Diesel Oxidation Catalyst / Diesel Particulate Filters, engine upgrades, engine replacements, or combinations of these strategies;
- Limit unnecessary idling times on diesel powered engines to three (3) minutes, and operating speed under five (5) mph;
- Locate diesel powered exhausts away from fresh air intakes; and,
- Control dust related to construction through a Soil Erosion Sediment Control Plan that includes, among other things:
  - Spraying of a suppressing agent on dust pile (non-hazardous, biodegradable);
  - Containment of fugitive dust; and,
o Adjustment for meteorological conditions as appropriate.

A general description will be provided regarding the benefits that these commitments are expected to have with regard to proactively avoiding or reducing potential impacts to air quality.

YEAR 2005/2006 CONSTRUCTION

The air quality analysis in this scenario will evaluate impacts resulting from traffic diversion, construction procedures, equipment utilization, and contractor’s commitment to the construction activities and environmental compliance. The possible impacts include PM (particulate matter) and fugitive dust emissions from demolition, structures construction and land clearing, as well as the mobile source emissions from construction equipment at construction sites and possible local traffic diverting. To the extent that information is available, this analysis is intended to be as quantitative in nature as possible.

The air quality analysis will evaluate the effects of project-generated traffic on CO (carbon monoxide) and other pollutant levels at intersection locations within the study area, and the sites where significant project impacts are predicted to occur. Based on Federal and State manuals, the analysis procedure and methodology consist of selection of analysis receptor sites, calculation of vehicular emissions, calculation and determination of impact concentration levels using dispersion models that have been approved by the applicable air quality review agencies. At locations where impacts would exceed standards or thresholds, EPA’s refined simulation model will be used. The analysis methodologies for various emission sources are outlined below.

*Mobile Sources CO Emission Analysis*

The prediction of motor-vehicle-generated carbon monoxide (CO) concentrations in an urban environment characterized by meteorological phenomena, traffic conditions and physical configurations is a challenging problem. Air pollutant dispersion models simulate mathematically how traffic, meteorology and geometry combine to affect pollutant concentrations. In summary, the analysis will:

- Select intersection locations and sensitive sites for micro-scale analysis based on a screening analysis of traffic conditions. These intersections will coincide with the intersections analyzed under the No Action condition. At each analyzed intersection, a series of multiple receptor sites will be analyzed in accordance with State or Federal guidelines;
- Select emission calculation methodology and “worst-case” meteorological conditions. Vehicular cruise and idle emissions for the dispersion modeling shall be computed using EPA’s MOBILE5b (or latest MOBILE6 available model for New York State);
- Impact calculation by using EPA’s CAL3QHC dispersion model. At locations where this model yields pollutant levels that exceed standards, or significant air quality impacts are predicted, the EPA’s refined intersection CO model, CAL3QHCR, will be used;
- At each microscale receptor site, calculate maximum one (1)- and eight (8)-hour carbon monoxide concentrations for existing conditions, the future year without the project, and the future year with the project; and,
- Compare carbon monoxide pollutant levels with NAAQS standards and applicable *de minimis* criteria.

*Particulate Matter (PM) Impacts Analysis*

To assess potential impacts, relevant particulate matter (PM) pollutants will be assessed on a site-specific basis when a significant number of diesel vehicles and heavy equipment are utilized during construction or operational periods. The PM impact analysis will include:

- A review of existing data and parameters monitored by NYSDEC, NYSDEP and USEPA;
- An evaluation of PM emissions using EPA’s MOBILE6.2 model based on regional and site-specific assumptions; and,
- Conducting dispersion modeling using conservative meteorological conditions. Emission modeling will consider both construction vehicles and the diversions to existing traffic conditions along the roadways that would occur during the proposed project construction. To determine the construction activities and locations, the analysis will take into account the intensity and duration of construction activities, proximity to sensitive sites and amount of existing traffic.

Details of PM analysis procedures are described below.

The procedures and modeling protocol in regard to particulate matter includes a description of current particulate matter modeling practices, based on the latest policies and procedures defined by the New York City Department of Environmental Protection (NYCDEP) and the New York State Department of Environmental Conservation (NYSDEC).

A coordinate system will be established to allow combining model results of components from multiple projects. It is proposed that such a coordinate system be shared among the pertinent agencies to facilitate data exchange. For analyses within the FSTC study area, a set of PM analysis sites will be established for the analysis of both mobile sources and construction related emission sources. Impacts of both mobile and stationary sources will be analyzed. The total PM$_{10}$ concentrations will be calculated by adding the 24-hour and annual PM$_{10}$ background concentration obtained from State or City available monitoring data or published background values to the highest modeled concentrations and comparing the total results with the NAAQS.

- The predicted PM$_{2.5}$ impacts will be compared to the applicable interim guidance criteria established by NYCDEP and NYSDEC for PM$_{2.5}$. These criteria are set to determine the potential for significant adverse impacts. The NYCDEP criteria are:
  - Predicted incremental impacts of PM$_{2.5}$ greater than five (5) µg/m$^3$ averaged over a 24-hour period at ground or elevated locations; and,
  - Predicted incremental ground-level impacts PM$_{2.5}$ greater than 0.1 µg/m$^3$ on an annual average neighborhood-scale basis averaged over receptors placed over a one (1)-kilometer by one (1)-kilometer grid, centered around the location where the maximum impact is predicted.

In addition, NYSDEC is considering incremental annual impacts of PM$_{2.5}$ greater than 0.3 µg/m$^3$ at any discrete ground-level or elevated location as having a potential for significant impact.

Particulate matter analysis sites for 24-hour concentrations will be placed in open public spaces (parks) and at building lines at ground level, and elevated residential receptors to capture the highest impacts. For annual average neighborhood-scale PM$_{2.5}$ modeling, a one (1)-kilometer by one (1)-kilometer grid of ground-level receptors, centered on the location where the maximum impact is predicted will be placed with 25-meter grid spacing. The maximum locational and neighborhood average annual impacts analysis results will be compared to NYSDEC and NYCDEP criteria, respectively.

On-road construction vehicle emission factors, such as idle or cruise emissions from trucks, will be predicted using MOBILE6.2 which is applicable for New York State. With regard to particulate matter, the modeling of road emission factors for the 24-hour and annual average will follow the NYCDEP’s protocol and practices, such as precipitation days, moisture content, water control program, silt content estimate, diesel engine emission, reduction technologies, unpaved roads disturbance policy, etc.

The emission removal efficiencies applied to diesel engines due to reduction technologies can be as high as 90 percent or more for various emissions depending on engine retrofit technology. For sites where construction will take place throughout the entire day and night, load and drop emissions will be scaled according to wind speed. Based on NYCDEP practice, mobile source PM$_{10}$ emissions factors will include road dust and engine emissions, while PM$_{2.5}$ factors will include engine emissions only. The MOBILE6.2
model will be utilized to calculate emission factors for total PM (including sulfates) and idling, with a cutoff size of 2.5 or 10 micrometers. The New York State MOBILE6.2 will be used for particulate matter since this model is applicable in New York State, in order to include diesel fuel and diesel vehicle regulations and to replace PART5. Particulate matter dispersion effects will be modeled using CAL3QHCR, ISCST3 and ISC-PRIME, respectively, for mobile (on-road) and stationary (off-road) sources using 1998-2002 meteorological data with surface data from LaGuardia airport and upper-air data from Brookhaven. CAL3QHCR will be run using 24-hour traffic profiles by utilizing the NYCDEP 24-hour VMT distribution survey established in Report #34 (revised, NYCDEP SRR 81-0723-29).

**Stationary Source Analysis**

The effects of stationary sources, boilers and HVAC systems will be assessed based on:

- Screening analysis to determine the air quality impacts of the proposed project development. The screening analysis can evaluate the significance of impacts from stationary sources as functions of fuel oil type, exhaust height, minimum distance from the source to the nearest receptor (building), and square footage of development resulting from the proposed project; and,
- For a potentially significant source, the US EPA’s Industrial Source Complex (ISC) model will be utilized to conduct a detailed analysis.

**Impact Analysis of On-Site Construction Activities**

An analysis of the effects of on-site construction activities will be conducted, based on the project construction schedule, amount and type of construction activity and equipment, security measures imposed during the course of construction, and construction plans and phases. Air quality impact analysis will consider potential closure of lanes, sidewalks and other transportation services during the various phases of construction, and identify the increase in vehicle trips from construction workers, construction and demolition materials and equipment. The on-site construction impact assessment will contain a discussion of both mobile source emissions from construction equipment and worker and delivery vehicles, PM fugitive dust emissions and the measures to reduce impacts. Evaluation of the impacts of traffic diversions during the peak construction year (2005/2006) will also be analyzed, as discussed in the section regarding the microscale analysis.

Construction equipment engine and off-road vehicle emission factors will be determined using the latest NONROAD model and latest information available in AP42, as established by USEPA. Dispersion will be modeled using ISCST3 and ISC-PRIME and 1998 – 2002 meteorological data, and will be extracting both maximum daily and maximum annual results from five (5) full years of meteorological data. The combined annual impacts from both mobile and construction stationary sources, as predicted by CAL3QHCR and ISC, respectively, will be determined by adding the results from models at each receptor location. A conservative estimate will be conducted first by adding the highest results from both models. If necessary, additional post-processing may be applied by using an advanced ISC modeling procedure.

If barges for transportation of construction equipment materials and debris will be considered as an alternative construction approach, the air quality impacts of using such an approach will be analyzed. This will include emissions from marine diesel engines, changes in routing of construction traffic, changes in construction truck types and changes in transfer operations. Depending on the location of the barge operation, additional sensitive receptors may be identified at the transfer location. The analysis of barge impact will be presented in the report.

**CUMULATIVE EFFECTS**

The analysis of cumulative effects will follow the FTA Draft Approach to Cumulative Effects Analysis for the Lower Manhattan Recovery Projects (July 2003).
Localized cumulative effects on air quality during construction will be included as part of the standard project analysis methodologies. It will include emissions from project related construction traffic, background traffic, including that from other projects under construction, project related construction equipment and activities, and emissions from construction at nearby construction sites of other projects under construction at the same time as the project.

The proposed coordinated cumulative effects analysis will be based on FTA conceptual approach for the Lower Manhattan recovery projects. This approach will have no delay in each project start-up, will ensure common methodologies and assumptions, as well as will have early identification of opportunities to reduce adverse impacts. Cumulative air impacts will be evaluated based on the FTA Approach to Cumulative Effects Analysis for the Lower Manhattan Recovery Projects (July 2003), and NY State and City air quality requirements.

As a demonstration project, the cumulative effects analysis for proposed FSTC will accumulate the concurrent analyses planned for other relevant projects in the study area. Air quality cumulative impacts would be anticipated in vehicular traffic and heavy construction equipment as the results of construction and operation of those projects. Cumulative analysis will include distinct sources of emissions and sum their potential impacts on selected analysis sites within the FSTC study area. Cumulative air quality impacts will be evaluated based on available data for peak construction year 2005/2006 and for the operational years 2008 and 2025. It is envisioned that this analysis will be focused primarily on the proposed FSTC project itself, with the anticipated effort in obtaining the necessary information to incorporate nearby relevant projects into a quantifiable analysis to the maximum extent possible. Otherwise, these other projects will be addressed in a more qualitative manner.

For the peak construction year 2005/2006, cumulative air quality impacts analysis methodologies will be in accordance with technical guidelines from Federal conformity rules and emission thresholds; State criteria; and Federal procedures for determining localized CO and PM\textsubscript{10} concentrations – hot spot analysis (40CFR, Part 93, Section 123). The detailed procedures include several steps: 1) identifying construction activities within an affected distance of the FSTC based on a screening process by air dispersion principles; 2) selecting analysis sites or impacted areas based on possible construction activities of the proposed FSTC and expanded areas according to available data from other significant projects; and 3) evaluating and identifying any potential cumulative impacts at these selected sites and areas. The air quality analysis will evaluate impacts resulting from traffic diverting, construction works, equipment utilization, and contractor’s commitment to the construction activities and environmental compliance. The possible impacts include CO, PM (particulate matter) and fugitive dust emissions from demolition, structures construction and land clearing, as well as the mobile source emissions from construction equipment at construction sites and possible local truck routes. To the extent that information is available, this analysis is intended to be as quantitative in nature as possible.

First, the cumulative air quality impacts analysis will utilize a screening approach for identifying any construction activities within a distance of 1,500 feet of the FSTC site, as recommended in the NYC CEQR Technical Manual (October 2001). The construction sections would include, but not be limited to, tunneling for underpasses, concourse under Dey Street, building stabilization, FSTC construction, widening existing mezzanines and staging, trucking etc. The possible construction activities and emission sources would involve in grout injection, pile driving or removal, beam installation, spoils removal, concrete pours, breaking roadway surface, concrete construction, steel erection, ventilation, dewatering, demolition, etc.

Second, the analysis sites or areas will be selected based on sensitive uses and major intersections for trucking routes within 1,000 feet of the emission sources (CEQR Manual, Page 3Q-12), particularly near schools, hospitals, parks and residences. Coordination of truck routes will be conducted with sponsors of other relevant projects, as practicable, to avoid or minimize impacts near such locations by a review of local land uses in Lower Manhattan.
Third, evaluating emissions released from on-site construction and off-site trucking for CO, PM$_{10}$ and PM$_{2.5}$ by using EPA Non-Road model or AP-42 (for on-site sources); and MOBILE6.2 and the latest version MOBILE models (for off-site trucking PM and CO emissions, respectively). Upon completion of the emissions determination, ambient air quality impacts will be calculated by using ISCST3, ISC-PRIME and CAL3QHC (or CAL3QHCR where potentially significant impacts are indicated) for on-site sources and off-site trucking, respectively.

The potential impacts from all sources of emissions for the FSTC project will then be summed at each of the analysis sites. Finally, the cumulative impacts of all relevant projects will be determined by adding up total impacts in the area according to the available other projects’ specific data or project-size-based estimation. This final step in the cumulative air quality impacts analysis involves the addition of other construction air emission sources and their impacts at the receptors in closest proximity to the FSTC project site.

All construction activities related to projects other than the FSTC that are within 1,500 feet of the FSTC site will be identified. Air quality impact concentrations generated from these activities at each receptor will be obtained from other project sponsors or will be estimated by comparing their project sizes and construction type with the FSTC, based on information available for these other projects. Air quality impacts from the FSTC and non-FSTC construction projects will then be combined to identify cumulative impacts and compared to the threshold criteria.

YEAR 2008 AND 2025 OPERATION IMPACTS

In the initial operational year (2008) and the full operation year (2025), the analysis will be conducted under two (2) separate scenarios. The first scenario assumes construction of the FSTC only, and no further utilization of air rights for development (i.e., no overbuild). The second scenario assumes construction of the FSTC and the further utilization of air rights associated with the site by others, thereby resulting in an overbuild above the FSTC or a transfer of some or all of the remaining air rights to adjacent parcels to support redevelopment of those parcels. The year 2025 Build analysis will include a microscale analysis under 2025 operational conditions using the same analysis methodology as for year 2005/2006.

Cumulative Effects

The analysis of cumulative effects will follow the FTA Approach to Cumulative Effects Analysis for the Lower Manhattan Recovery Projects (July 2003).

Background conditions in the 2008 and 2025 operation years will have been characterized in the No Action condition and included in the Build condition. As such, cumulative effects on local air quality during operation will have been addressed as part of the standard, project-specific air quality impact analysis for operational conditions, described above.

Air quality impacts would be assessed as the cumulative effects on vehicular traffic, transit operations and stationary equipment, as the result of developments directly or indirectly related to the proposed FSTC and overbuild alternatives. For all No Action and FSTC Build alternative project scenarios, cumulative analysis will also take into consideration potential air quality impacts from other projects as part of the Lower Manhattan recovery and revitalization process. These other projects may include, but are not limited to, the following:

- Permanent WTC PATH Terminal (PANYNJ);
- South Ferry Subway Terminal (MTA);
- Improvements to Route 9A/West Street (NYSDOT);
- WTC Memorial and Redevelopment (LMDC); and,
- Lower Manhattan Street Resurfacing Plan (NYCDOT).
Traffic survey data, studies and transit operation information will be obtained from the FSTC project traffic team, PANYNJ, NYSdot, NYCDOT, LMDC and other relevant project sponsors. Traffic data required for the air quality analysis include worst-case peak (AM, PM, Midday-peak) hour traffic volumes, vehicle classifications, travel speeds, turning movements (movement per lane), capacity, levels of service (LOS), volume-to-capacity (v/c) ratios, delays, signal timing, saturation flow and roadway geometry at analyzed intersections.

First, under future 2008 and 2025 No Action conditions, the analysis will focus on the air quality resulting from background traffic growth and traffic generated by all other nearby significant projects as estimated by the traffic team and other project sponsors. These traffic forecasts will include traffic associated with all other major development projects that have been approved, are in the process of being approved for construction, or are expected to be implemented in the future 2008 and 2025 in the study area, assuming the data from other projects are available. Therefore, the 2008 or 2025 No Action condition already constitutes an analysis scenario that includes all cumulative effects except for the proposed FSTC project. The emission and dispersion models used to quantify cumulative impacts are MOBILE6.2, PART5, CAL3QHC or CAL3QHCR and utilize the same procedures as those applied to the FSTC impact analysis.

Under the FSTC Build conditions in both the 2008 and 2025 operation years, the cumulative air quality impact analysis will follow the same procedures as those under the No Action condition. The traffic data forecast, requirements, and sources are similar to the above No Action condition, except to include the predicted FSTC and overbuild generated trips and traffic condition changes on the local roadways. The cumulative impact concentrations resulting from total traffic conditions and changes will be calculated and compared to threshold criteria. The potential cumulative impacts at these selected areas and analysis sites can then be evaluated and identified.

### N.4.7 MITIGATION

Traffic mitigation measures may be required, as appropriate, to eliminate or reduce significant impacts. While mitigation will primarily come from traffic measures, other potential mitigation measures may include street widening, street direction changes, new signals, signal timing and phasing modifications and/or the revision of on-street parking and standing regulations. Both construction and operational impacts mitigation may be required under year 2005/2006 and 2025, when necessary. The impact analysis will use the following methodologies:

- Examine, quantify (as possible) and recommend (as appropriate) ameliorative measures to minimize any significant adverse impacts of the proposed project; and,
- Determine the consistency of the proposed project with the regulations, rules and strategies contained in the Federal, State and local requirements and policies for the study area.

Most of the control measures are included in the Environmental Performance Commitments. When necessary, other mitigation measures including construction schedules, equipment operating loads and alternate supply may be proposed to further reduce air emissions.

### N.5 NOISE AND VIBRATION ANALYSES METHODOLOGY

#### N.5.1 AGENCY COORDINATION

Several project start-up activities will be performed at the beginning of the noise and vibration analyses to ensure that the involved parties (consultants and agencies) are fully familiar and in agreement with the intended goals, objectives and methodologies for this study. These activities include the following:
• Participate in working sessions with the involved agencies, such as NYCT, NYSDOT, PANYNJ, NYCDOT, LMDC, NYCDCP and NYCDEP, to coordinate on the methodologies proposed and to share available data, as appropriate; and,
• Establish a primary and secondary study area and selection of noise receptors and measurement locations.

N.5.2 GUIDELINES AND REGULATIONS

As a federally funded project, the analysis for FSTC will follow FTA noise and vibration guidelines, specifically, FTA’s *Transit Noise and Vibration Impact Assessment*, 1995 (which specifically relates to transit projects). FTA provides separate noise and vibration criteria for operational and construction impact evaluations, respectively.

FTA operational noise criteria are based on a comparison of the existing and future outdoor noise levels from the proposed project. There are two (2) noise criteria curves in the FTA guideline. The curves are defined in terms of the project noise exposure and the existing noise exposure, respectively. It is the increase in the *overall* noise level, including existing and project related noise, which forms the basis for the criteria.

In the case of construction noise criteria, FTA guidelines identify a set of threshold $L_{eq}$ and $L_{dn}$ levels for various construction activities. In urban areas with very high ambient noise levels ($L_{dn} > 65$ dB), $L_{dn}$ from construction operations should not exceed existing ambient by 10 dB or more.

The noise criteria and the descriptors used to evaluate project noise, including both operation and construction noise, are dependent on the type of land use in the vicinity of the proposed project.

FTA also identifies in its *Transit Noise and Vibration Impact Assessment* manual a set of threshold criteria for ground-borne vibration and noise during transit operations. The threshold criteria are based on past experiences with human sensitivity and community responses to ground-borne vibration and noise. In terms of vibration during construction, which is more relevant for this particular project given that operational vibration is not likely to change from the existing condition, FTA defines a set of damage threshold criteria in Peak Particle Velocity (PPV) for fragile and extremely fragile buildings. PPV relates to the maximum instantaneous peak of the vibration signal, and is often used in measuring the magnitude of vibration.

N.5.3 DATA SOURCES AND COLLECTION

Available transportation and land use data pertaining to the proposed study area will be utilized to the greatest extent practicable. In addition, traffic projections, engineering design plans, construction schedules, etc. will be reviewed and used as the basis for noise and vibration analyses. A list of the data and/or information expected to be utilized to conduct the analyses includes the following:

• Existing noise measurement, traffic and speeds data collection;
• Existing and projected land uses south of Canal Street;
• Project descriptions, design and engineering plans, construction schedule/sequencing;
• Construction Environmental Protection Plan (CEPP);
• Construction equipment list (esp. heavy equipment such as pile driver, slurry plant, etc.);
• Construction equipment operation schedule (days in total, weekdays/weekend days; hours in each day);
• Schedule of duration and time for high noise level activities (e.g., building demolition);
• Data of sensitive noise and vibration receptor locations, significant structures conditions and existing soil conditions;
• Locations (including air intakes, open spaces) and intersections within proximity of the construction area involved in street closings;
• Transit network, transit facility, existing and future projected train schedules and traveling speeds;
• Vehicular traffic volumes, traffic projections, traffic count data, LOS, traffic patterns, speed, roadway geometrics and parking data;
• Street closings; and,
• Secondary data from documents including Second Avenue Subway SDEIS, New York Stock Exchange FEIS, Battery Park City SGEIS and PANYNJ AirTrain Environmental Management and Construction Plan.

N.5.4 EXISTING BASELINE CONDITIONS

As part of the analyses, a noise level measurement program will be conducted to establish existing background noise levels at various locations in the study area. A set of representative receptors will be identified for noise level measurement based on a review of land use maps, proposed FSTC plans and traffic projections. Noise levels for the baseline condition (pre-September 11) will be estimated based on 2003 noise measurements and traffic data changes experienced since the baseline condition.

2003 NOISE MEASUREMENT

Continuous 24-hour noise measurements of hourly $L_{eq}$ levels was conducted at a total of nine (9) monitoring sites to provide a comprehensive baseline of noise levels of the areas adjacent to the project site that could be potentially impacted. The measurements was conducted during typical weekdays in the summer of 2003, weather permitting.

Precision Sound Level Meters (SLM) will be used in field measurements. The SLMs will meet or exceed the requirements set forth in the ANSI S1.4-1983 Standards for Type I quality and accuracy. Acoustical calibrators will be used to calibrate the SLMs before and after each measurement period. The SLMs will be operated on the A-weighting network and slow-meter response as recommended by the manufacturer. Measurements will not be collected if roadway pavement is wet, or if wind speed exceeds 12 miles per hour. A porous windscreen will be used on each SLM during all measurement periods.

All noise measurements will be taken by mounting the SLMs approximately five (5) feet above the sidewalk or ground surface at each receptor. This height is generally considered representative of ear level of an average person. Where possible, measurement sites will be located in open areas away from buildings or other potentially reflective surfaces, but which are representative of the outdoor use area of a given receptor.

If possible, the SLMs will be placed on public sidewalks in front of the private properties. During measurement periods, important events and site conditions will be noted and a sketch will be drawn for each receptor location showing important and permanent features of the area to aid in locating microphone positions at a later date. If an unusual noise source interrupts the monitoring session, the measurement will be temporarily paused until the noise source is out of range. Typical noise sources of this type include: occasional airplanes flying overhead, local idling of motorcycles, barking dogs, etc.

Measurement Locations

Noise levels at nine (9) sites are recommended to be measured for this project. A map of the currently proposed measurement sites is attached. The nine (9) sites are primarily located at mid-block, rather than intersections, in order to better represent residential and institutional areas. The sites are selected based on a preliminary field-verified land use map of the project area and anticipated future land use conditions. Generally, the sites were chosen on the basis of proximity to the proposed FSTC site (i.e. Fulton Street, Broadway, Dey and John Streets and Nassau Street) proximity to sensitive land uses (i.e. residential
and/or institutional), and potential increase in future noise levels. For example, a location at Fulton Street between Nassau and William Streets was selected due to its close proximity to an existing residential building and the proposed construction area. In addition, this location may experience a potential increase in future noise levels, since the existing noise levels are relatively low compared to those at intersection sites. In some cases, such as at the Millenium Hotel and St. Paul’s Chapel, the monitoring is proposed to be conducted closer to the intersections in order to more closely represent the actual receptor location and provide proximity to the FSTC project construction activities.

**N.5.5 EXISTING CONDITION NOISE AND VIBRATION**

The existing baseline year for the study area will be defined as pre-September 11 (i.e., Year 2000). Since the traffic pattern in Lower Manhattan has changed substantially since September 11, 2001, noise levels measured in 2003 will be adjusted to reflect the pre-September 11 condition on a proportional basis, relating the 2003 and pre-September 11 traffic volume information that is available. It is this pre-September 11 baseline condition that will be used to compare the Initial Operational Year 2008 and Full Operational Year 2025 (full operational conditions). These years are consistent with the years for which the traffic analysis will be conducted.

For purposes of comparison with the year 2005/2006 construction conditions, the existing baseline will consist of both the pre-September 11 condition as well as the existing 2003 condition relating to the noise monitoring period.

In terms of vibration analysis, there is no need to assess existing baseline conditions at this stage of analysis given that vibration impacts related to construction and operation of the project are compared to threshold criteria defined by FTA rather than against an existing or No Action situation.

**N.5.6 FUTURE NO ACTION CONDITION**

The noise and vibration analysis under future No Action conditions will be conducted to determine the background levels within the study area in year 2005/2006 (peak construction year for the proposed project) and operation years 2008 (Initial Operational Year) and 2025 (Full Operational Year). These years are consistent with the years for which the traffic impacts analysis will be conducted. The use of 2008 and 2025 are considered to be appropriate years for the operational impact analysis, since 2008 is expected to be the first complete year of operation, and by 2025 it can be assumed that development in Lower Manhattan and, hence, utilization of the transit facilities would have returned to pre-September 11 levels or greater. Operations in 2025 would therefore reflect the greatest level of demand in the foreseeable future.

For the 2008 and 2025 conditions, two (2) potential No Action scenarios will be established to account for potential (re)development at the FSTC site by that year. The first scenario assumes the project site would not be redeveloped and would essentially remain as it is today. The second scenario assumes that the project site would have been further developed by others, either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site.

Under future No Action conditions, the analysis will focus on the noise and vibration resulting from background traffic growth by utilizing data predicted by the traffic team for the years 2005/2006, 2008 and 2025. These traffic forecasts will include traffic associated with other major development projects that have been approved, are in the process of being approved for construction, or are expected to be implemented by 2005/2006 in the study area.
N.5.7 FUTURE BUILD CONDITION

INTRODUCTION

The noise and vibration analysis in this EIS will be conducted for three (3) years – the future peak construction (2005/2006) year and future operational years (2008 and 2025). As with the No Action condition, two (2) potential scenarios will be established to account for potential (re)development at the FSTC site by that year (by entities other than MTA NYCT). The first scenario assumes the project site would not be redeveloped and would essentially remain as it is today. The second scenario assumes that the project site would have been further developed by others, either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site.

YEAR 2005/2006 CONSTRUCTION NOISE AND VIBRATION

Construction noise analysis will be conducted for the peak construction year 2005/2006 as follows:

Mobile Sources

Noise levels during the peak construction year 2005/2006 will take into account increased noise from any traffic (i.e. truck hauling, driving to work site, detouring and diversion related) increases associated with other major development projects that have been approved, are in the process of being approved for construction, or are expected to be implemented by 2005/2006 in the study area.

Noise impacts during the peak construction year 2005/2006 for the Build condition will be evaluated by comparing the noise levels to the following conditions:

- 2005/2006 Build vs. the 2003 existing condition; and,

The changes in noise levels in each case will be directly linked to the changes in traffic levels during the peak construction year 2005/2006. To identify the potential for noise impacts at sensitive receptors, a screening analysis will be conducted first to identify intersections where future PCEs (passenger car equivalents) would be double that of the existing PCEs, pursuant to the ratios provided in the CEQR Technical Manual (City of New York, 2001). This local technical guidance is proposed given the absence of any other available methodologies for screening of traffic related noise impacts in FTA guidelines. Noise level increases will be calculated at the receptors identified in the screening analysis to achieve the threshold rate of traffic volume (PCE) increases. In those cases where the PCEs are at least double the existing PCEs, and where the noise contribution from operation of the proposed project would be considered significant, mitigation measures will be assessed. Significant impacts will be determined when the predicted traffic noise levels exceed the existing (pre-September 11) noise levels by more than three (3) decibels.

In the case of vibration, the construction year 2005/2006 analysis will be conducted for the Build condition only. The vibration levels in 2005/2006 will be compared with the FTA threshold criteria that have been established for stationary construction equipment.

Stationary Sources

Noise and vibration impacts due to construction activities will be evaluated based on information related to the proposed construction activities, such as time and duration of construction activities, equipment types and equipment usage cycle. Typical noise and vibration emission levels from equipment such as bulldozers, vibratory compactors, generators and pile driving operations will be documented and utilized
as a base to evaluate potential noise impacts at receptor locations in the study area. Noise and vibration impacts from construction activities (excluding vehicular traffic and truck routing) will be assessed based on available construction information, such as construction scheduling and type and number of equipment.

Construction noise and vibration analyses will evaluate potential impacts from various construction-related activities including, as applicable, the following:

- Tunneling (using cut and cover construction, mechanized boring machines);
- Use of heavy equipment such as pavement breakers, jackhammers and saws for breaking street surface (cut-and-cover);
- Underground blasting of rocks;
- Use of backhoes, dump trucks and cable-pulling trucks and other off-road and on-road heavy duty diesel vehicles;
- Pounding and friction activities such as jackhammers, rock drills, pile drivers and for compaction of sub-grade and other activities;
- Reverberation effect of pile driving for support decks;
- Vehicles traveling over temporary decking (plated trenches);
- Truck trips for mobilization of equipment, delivery of materials, spoils removal and other needs;
- Increase in traffic and congestion from material delivery and use of private trucks and vehicles by construction workers;
- Clearing, demolition/excavation and backfilling activities;
- Construction of retaining walls for excavations;
- Underpinning and other subsurface modifications to structures and foundations resulting in increased subsurface conductivity of vibrations;
- Construction and location of batch plant for cement, slurry walls and other uses;
- Use of backhoes and cranes for excavation related to underpinning of structures;
- Engine noise from on-road and off-road equipment, and idling on site;
- Use of backup horns on equipment;
- Use of enunciators or public address systems;
- Creation of vertical shafts;
- Use of ventilation equipment such as air conditioners, pumps, cooling towers, compressors and other circulation devices, during construction and post-construction phases;
- General installation of finished materials in the FSTC (structural beams, electrical components, fixtures, tiles, pipes, vents, etc.); and,
- Increased traffic volume and congestion during construction period due to lane closures or interference with traffic lanes.

The proposed Environmental Performance Commitments (EPCs) related to noise and vibration issues will also be evaluated for the peak construction year 2005/2006. The manner that these commitments would proactively minimize or reduce potential impacts will also be identified, along with the associated benefits. These EPCs include the following:

- Scheduling of individual project construction activities to avoid or minimize adverse impacts, where practicable;
- Coordination of construction activities with other projects under construction in adjacent and nearby locations in order to avoid or minimize impacts;
- Consideration of surrounding buildings, structures, infrastructure and utilities during construction, where appropriate; and,
- Preparation of contingency measures in the event established thresholds and criteria are exceeded.
YEARS 2008 AND 2025 OPERATIONAL NOISE AND VIBRATION

Operational noise and vibration analyses will be conducted for the years 2008 and 2025 (i.e., opening year and future build-out year for the entire area).

Operational noise and vibration impacts could potentially occur as the result of the proposed project, including any of the following:

- noise impacts as a result of vehicular traffic increase at and near the project site;
- noise/vibration from stationary equipment; and,
- noise/vibration impacts from subway trains.

**Operational Year 2008**

Using FTA criteria, noise impacts during the year 2008 for the Build condition will be evaluated by comparing the noise levels to the following conditions:

- 2008 Build with no development vs. the 2008 No Action with no development;
- 2008 Build with redevelopment vs. the 2008 No Action with redevelopment;
- 2008 Build with no development vs. the 2003 existing; and,
- 2008 Build with redevelopment vs. the pre-September 11 (2000) baseline.

As in the case of the 2003 condition, vibration impacts will be identified by comparing vibration levels to FTA threshold criteria. In the case of vibration, the year 2008 analysis will be conducted for the Build condition only.

**Operational Year 2025**

Using FTA criteria, noise impacts during the year 2025 for the Build condition will be evaluated by comparing the noise levels to the following conditions:

- 2025 Build with no development vs. the 2025 No Action with no development;
- 2025 Build with redevelopment vs. the 2025 No Action with redevelopment;
- 2025 Build with no development vs. the 2003 existing; and,
- 2025 Build with redevelopment vs. the pre-September 11 (2000) baseline.

As in the case of the 2003 condition, vibration impacts will be identified by comparing vibration levels to FTA threshold criteria. In the case of vibration, the year 2025 analysis will be conducted for the Build condition only.

The specific analyses to be conducted for the various types of operation noise and vibration sources are presented below.

**Mobile Source Noise**

Motor vehicle related noise impacts would occur only to the extent that the project, when in operation, would result in a substantial increase in traffic. As a transit project without an increase in ridership capacity, the project is not expected to generate a noticeable amount of new traffic under 2025 operational conditions. Therefore, it is assumed that the traffic-related noise levels under the two (2) Build scenarios will be equivalent to those under the associated No Action scenarios.
**Subway Operations Noise**

The proposed project will not alter any existing subway alignments. Therefore, future 2025 rail transit operations would be similar to those of the pre-September 11 condition. In general, noise impacts from subway operations would not be expected. Station design plans of the proposed project will be reviewed to identify potential noise “short-cuts”. In particular, areas with substantial structure changes and excavations will be evaluated in a qualitative manner.

**Stationary Noise Sources**

Any stationary noise sources located within the project site for the year 2025 will be investigated and inventoried by review of topographic maps and project plans. Any unenclosed mechanical equipment for building heating, ventilation and air conditioning (HVAC) systems resulting from the proposed project will also be included in the inventory by reviewing the proposed site plans, etc. Ancillary facilities, including ventilation systems, may be located in a new mechanical room, either in the new FSTC or in the new head house on the southwest corner of Broadway and Dey Street.

**Vibration**

Vibration and ground borne noise from transit operations and stationary sources will be assessed based on FTA guidelines and criteria by reviewing project design plans and topographic and land use maps. All stationary sources will be investigated to identify any potential vibration impacts through screening and detailed quantitative analyses, as necessary. It should be noted, however, that given the nature of the FSTC project, operational vibration impacts are not anticipated to be significant at this time. Should the potential for operational vibration be identified, a comparison of that vibration to the threshold criteria will be conducted to identify impacts, as further design detail becomes available.

**N.5.8 CUMULATIVE IMPACTS**

Noise and vibration cumulative impacts would be anticipated in vehicular traffic and stationary equipment as the result of construction and operation of the FSTC. Cumulative noise and vibration impacts will be evaluated based on the FTA’s *Approach to Cumulative Effects Analysis for the Lower Manhattan Recovery Projects* (March 2003) and noise/vibration guidelines. Cumulative noise impacts would include the noise generated by projects operating or under construction during the same time as the FSTC and affecting the same receptors. Cumulative noise and vibration impacts will be evaluated based on available construction data for both peak construction year 2005/2006 and for the operational years 2008 and 2025.

**2005/2006 CUMULATIVE CONSTRUCTION IMPACTS**

In the case of the peak construction year 2005/2006 analysis, cumulative impacts analysis will be conducted as a three (3)-step process. First, construction activities within a certain distance of the FSTC will be identified based on a set of screening distances developed by utilizing basic acoustical principles. Secondly, areas/receptors within a certain range of the noise and/or vibration impact threshold (per FTA guidelines) as a result of construction of the proposed FSTC will be identified and documented into a list. The extent of that range is described in detail in the paragraphs below. Finally, noise and vibration results from other projects will be reviewed to identify any potential cumulative impacts at these areas/receptors, based on information available for those other projects.

**Noise**

The first step in the cumulative noise impacts analysis involves a screening approach for identifying any construction activities within a maximum distance of 1,500 feet from the FSTC site, assuming no obstructions exist between the source and receptor. The 1,500-foot maximum distance is referenced in the
CEQR Technical Manual (City of New York, 2001) for projects in New York City and proposed on the basis of general acoustical principles, specifically that noise level decreases when the distance between the source and receptor increases. Following this principle, any noise-generating activities occurring at greater distances from a noise receptor would contribute less to the overall noise level at that receptor than those activities occurring at closer distances. A substantial reduction in noise level contribution can be expected over large distances.

Typically, an increase of distance from 50 feet to 1,500 feet would result in a reduction of approximately 30 dBA or more in noise contribution at a given receptor, assuming there is no obstruction between the noise source and the receptor. For example, the noise level generated by a pile driver is perceived as 101 dBA at a receptor located 50 feet away, although the perceived noise level would be reduced to approximately 71 dBA or less at a distance of 1,500 feet away. In the case of the 50-foot distance, the perceived noise level would exceed FTA’s 90 dBA threshold for residential uses, while at a distance of 1,500 feet or more, the perceived noise level would be substantially below the threshold. Since it is unlikely that construction-related noise levels generated by equipment operating more than 1,500 feet away from any receptors in closest proximity to the FSTC project would approach or exceed the threshold values, only those activities occurring within 1,500 feet will be considered in the cumulative noise impact analysis. Given the logarithmic scaling of noise, even the addition of multiple noise sources beyond 1,500 feet, in combination, would not likely approach or exceed the threshold.

The second step in the cumulative noise impacts analysis includes identification of all receptors exhibiting FSTC construction period noise levels at or above a threshold level of three (3) dBA below FTA’s criteria. Specifically, these noise levels relate directly to noise generated by FSTC construction activities only, and do not take other construction projects into account. If these noise levels are found to be within three (3) dBA of FTA’s threshold criteria, then noise contributions from other construction projects would also need to be considered. Alternatively, noise levels that are found to be more than three (3) dBA below FTA’s threshold criteria would not require further consideration of other construction projects. This approach, which ensures that only those receptors where the FSTC project is the primary construction noise source are considered, is based on the principle of logarithmic addition. This principle indicates that two (2) sounds of equal decibel level, when added together, will result in a three (3) decibel increase. For example, receptors experiencing future noise levels at or above 87 dBA (one (1)-hour L_{eq}) during daytime FSTC construction hours would be perceived to be at or above FTA’s residential criterion of 90 dBA (one (1)-hour L_{eq}) only if other construction activities generating the same or greater levels of noise occur at the same time.

The final step in the cumulative noise impacts analysis involves the addition of other construction noise sources to the construction noise levels at the receptors in closest proximity to the FSTC project site. After all construction activities related to projects other than the FSTC that are within 1,500 feet of the FSTC site are identified, noise levels generated from these construction activities at each receptor will be estimated, based on construction information available for these other projects. Noise from the FSTC and non-FSTC construction projects will be combined to identify cumulative impacts. As noted previously, the addition of these noise levels will follow the principles of logarithmic addition. A cumulative impact will be identified if the overall noise levels exceed FTA threshold criteria.

**Vibration**

In terms of cumulative vibration impacts, a preliminary level equivalent to the threshold criteria defined by FTA and/or US Bureau of Mines (USBM) will be considered as appropriate for cumulative vibration impact assessment. In the case of fragile or extremely fragile buildings, threshold criteria defined by FTA will be utilized. For example, fragile buildings experiencing future peak particle velocity (PPV) at or above 0.12 inch per second (ips) as a result of FSTC construction activities will be identified, since that level is the impact threshold for extremely fragile historic buildings as defined by FTA. In case of plaster damage to normal buildings, criteria defined by the U.S. Bureau of Mines (USBM) will be utilized. For example, normal buildings experiencing future PPV at or above 0.5 ips as a result of FSTC construction
activities will be identified, since that level is the plaster damage threshold for normal buildings as defined by USBM.

First, a screening analysis will be conducted to identify any construction activities within a distance of 300 feet from the FSTC site to be included for cumulative impact analysis. Similar to noise, vibration levels also decrease when the distances between the source and receptor increase. Therefore, the activities occurring at larger distances from a given receptor would contribute less to the overall vibration level at that receptor than those activities occurring at smaller distances. A substantial amount of vibration level reduction can be expected over large distances. For example, the maximum vibration PPV generated by a pile driver is 1.518 ips at 25 feet. In contrast, the vibration PPV at a distance of 300 feet from a pile driver would be approximately 0.04 ips, which is approximately one third of the FTA 0.12 ips threshold for extremely fragile historic buildings. Therefore, vibration effects related to construction activities at a distance of 300 feet or more from the FSTC site do not warrant inclusion in the cumulative vibration analysis.

After a list of construction activities for other projects within 300 feet of the FSTC site is identified, vibration levels generated from these construction activities at each receptor site will be estimated, based on available construction information. Potential cumulative vibration impacts will be identified if the vibration levels generated from all projects, including the FSTC, exceed the FTA criteria.

2008 AND 2025 CUMULATIVE OPERATION IMPACTS

In the case of the Initial Operational Year 2008, and Full Operational Year 2025 alternatives, the following will be analyzed:

- No Action assuming no utilization of the remaining air rights associated with the FSTC site (i.e., the project site would essentially remain as it is today);
- No Action assuming full utilization of the remaining air rights associated with the FSTC site, either by utilization of on-site air rights or by transfer of air rights from the project site to adjacent parcels and subsequent redevelopment of those parcels using the remaining air rights of the FSTC site;
- Build assuming no utilization of the remaining air rights associated with the FSTC site (i.e., construction of the FSTC only); and,
- Build assuming full utilization of the remaining air rights associated with the FSTC site with the full air rights development at the site (i.e., construction of the FSTC with an overbuild above the FSTC or a transfer of some or all of the remaining air rights to adjacent parcels to support redevelopment of those parcels).

The cumulative impact analysis for the No Action and Build alternatives will take into consideration potential construction and/or operational noise impacts from other projects as part of the Lower Manhattan revitalization process.

N.5.9 MITIGATION

Noise/vibration mitigation analyses will be conducted for vehicular traffic, stationary sources and construction activities based on FTA and NYSDEC guidelines. Various mitigation strategies will be considered to the extent possible to limit the potential impact of noise and vibration. These strategies may include source control, path control and noise/vibration control at the receptor. Noise reductions for each of these strategies will be evaluated. Depending on the extent of design and construction information that is available for the project during preparation of the EIS, mitigation of noise and vibration impacts from construction activities (excluding vehicular traffic and truck routing) will be assessed either in a quantitative or qualitative manner.
As applicable, the following mitigation measures may be evaluated in an effort to reduce noise and vibration impacts:

- Design and Construction Measures;
- Sequence of Operations;
- Alternative Construction Methods;
- Special Provisions for Historic Structures; and,
- Development of enhanced construction specifications.
PART II

CONSTRUCTION ASSUMPTIONS FOR CUMULATIVE ENVIRONMENTAL IMPACT ANALYSIS OF LOWER MANHATTAN RECOVERY PROJECTS
### Preliminary Draft

#### 1. Work Hours

<table>
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<tr>
<th>Location</th>
<th>Hours</th>
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<tr>
<td>Full West Street Transit Center</td>
<td>Monday to Saturday - two shifts over a 16-hour period from 0700 to 2300</td>
</tr>
<tr>
<td>Penn Station Terminals Construction</td>
<td>Monday to Saturday - two shifts over a 16-hour period from 0700 to 2300</td>
</tr>
<tr>
<td>Battery and South Ferry Stations</td>
<td>Monday to Saturday - one 10-hour shift from 0700 to 1800</td>
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</table>

#### 2. Work Location

- **Full West Street Transit Center**
  - Ground level and below
  - Street level

- **Penn Station Terminals Construction**
  - Underground level
  - Street level

- **Battery and South Ferry Stations**
  - Ground level and below
  - Street level

#### 3. Site Access

- **Dey Street Concourse**
  - At either end of street from Broadway and Church Street
  - Full width and length of Dey Street throughout concourse construction

- **Truck Generation**
  - Full width and length of Dey Street throughout concourse construction
  - Truck haulage routes
  - Staging areas for construction activities.

- **Removal of Demo Debris**
  - Removal of Demo Debris
  - Laydown Area

#### 4. Equipment and Material Storage Areas

- **Battery Center**
  - Battery Center

- **Construction Activities**
  - Construction activities.
  - Truck generation

- **Fulton Street Transit Center**
  - Permanent PATH Terminal Construction

- **WTC Memorial and Redevelopment**
  - Route 9A - Short Bypass

- **APPENDIX**
  - Staging areas for construction activities east of the 1/9 line

#### 5. Construction Methods

- **Building Front Footprint**
  - Building Front Footprint

- **Underground Excavation**
  - Underground Excavation

- **Conductive Interfaces**
  - Conductive Interfaces

- **Haulage Routes**
  - Haulage Routes

- **Traffic Management - Vehicular and Pedestrian**
  - Traffic Management - Vehicular and Pedestrian

Source: The Louis Berger Group, Inc.
### MTA/NYCT Fulton Street Transit Center Construction Schedule

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**Source:** The Louis Berger Group, Inc., 2003
## World Trade Center Construction Phasing

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Platform/Mezzanine Conversion Stage I Demolition
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Platform/Mezzanine Conversion Stage II Construction
Platform/Mezzanine Conversion Stage III Demolition
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Platform/Mezzanine Conversion Stage IV Construction
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Platform/Mezzanine Conversion Stage V Construction
Platform/Mezzanine Conversion Stage VI Demolition
Platform/Mezzanine Conversion Stage VI Construction
PATH Pedestrian Access Tunnel West St.
PATH Pedestrian Access Tunnel Church St.
Demolition Temporary PATH Concourse
Excavation Zone 6
Permanent Terminal Structural & Framing
Permanent Terminal Glazing & Fitout

Source: The Louis Berger Group, Inc., 2003
## MTA/NYCT Fulton Street Transit Center Construction Schedule

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### DEY STREET CONCOURSE
- Concourse - Demolish 189 Broadway
- Concourse - Utility Relocation & Basement Demo
- Concourse - Install Slurry Walls/Retaining Walls
- Concourse Construction
- Concourse - Excavate
- Dey Street Surface Restoration

### TRANSIT CENTER
- Transit Center - Demolish 194-204 Broadway
- Transit Center - Deep Excavation & Temp. Retaining Walls
- Transit Center Construction

### A/C MEZZANINE
- Utility Relocation
- Slurry Wall Construction
- Mezzanine Widening/Street Surface Restoration

### UNDERPASSES
- N/R Underpass
- 4/5 Underpasses

### ADDITIONAL ELEMENTS
- New Access for SB 4/5 at 195 Broadway
- E/N/R - Construct Access Stairs/Elev/Esc at Mill
- A/C & 2/3 Connector Stairs & Liberty Plaza Stairs
- Stations Rehab - 4/5 Fulton
- Stations Rehab - 2/3 Fulton Street

**Source:** The Louis Berger Group, Inc., 2003
World Trade Center Construction Phasing

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- **East Slurry Wall Zone 4**
- **East Slurry Wall Zone 5**
- **Demolition Zone 4**
- **Demolition Zone 5**
- **Excavation Zone 4**
- **Excavation Zone 5**
- **Tunnelling Zones 4 and 5**
- **Northwest Quadrant Sub-Grade Retail**
- **Freedom Tower Structural Framing**
- **Freedom Tower Fitout & Curtain Wall**
- **Memorial, Open Space, Cultural Space**
- **Southeast Quadrant Zone 4 Foundation & Below-Grade Retail**
- **Northeast Quadrant Zone 5 Foundation & Below-Grade Retail**
- **East Bathtub Retail Above-Grade Fitout**
- **Towers 2.3 & 4 Office Floor Construction Structural Framing**
- **130 Liberty Street Cleaning & Demolition**
- **Southern Site Sub-Grade Construction**

**Source:** The Louis Berger Group, Inc., 2003
## PATH Construction Phasing

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- Platform/Mezzanine Conversion Stage I Demolition
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- Platform/Mezzanine Conversion Stage II Construction
- Platform/Mezzanine Conversion Stage III Demolition
- Platform/Mezzanine Conversion Stage III Construction
- Platform/Mezzanine Conversion Stage IV Demolition
- Platform/Mezzanine Conversion Stage IV Construction
- Platform/Mezzanine Conversion Stage V Demolition
- Platform/Mezzanine Conversion Stage V Construction
- Platform/Mezzanine Conversion Stage VI Demolition
- Platform/Mezzanine Conversion Stage VI Construction
- Tunnelling & Underpinning of 1/9
- PATH Pedestrian Access Tunnel West St.
- PATH Pedestrian Access Tunnel Church St.
- Demolition Temporary PATH Concourse
- Excavation Zone 6
- Permanent Terminal Structural & Framing
- Permanent Terminal Glazing & Fitout

**Source:** The Louis Berger Group, Inc., 2003
### South Ferry Construction Schedule

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- **Peter Minuit Plaza (Station)**: Street/Preparation Work, Excavate/Build Station, Underpin 1/9 Loop Station
- **Battery Park (Approach Tunnel)**: Excavate/Build Approach Tunnel, Underpin 1/9 Loop Tunnel, Underpin 4/5 River Tunnel
- **Battery Place (Bellmouth/Fan Plan)**: Utility Relocation, Excavate/Build Bellmouth, Excavate/Build Fan Plant, Street Restoration

**Source**: The Louis Berger Group, Inc., 2003
ROUTE 9A - SHORT BYPASS
PRELIMINARY CONSTRUCTION SCHEDULE
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

Source: Earth Tech, 2003
PART III

FEDERAL TRANSIT ADMINISTRATION APPROACH TO CUMULATIVE EFFECTS ANALYSIS FOR THE LOWER MANHATTAN RECOVERY EFFORT
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Executive Summary

The goal of the cumulative effects analysis for the Lower Manhattan Transportation Recovery Projects is to provide decision makers and the public considering the implementation of individual projects with comprehensive information on the combined effects of many actions over time. According to the U.S. EPA:

*While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time. Thus the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (federal, non-federal, or private) is taking the actions.*

In general terms, cumulative effects may arise from single or multiple actions, and may result in additive or interactive effects. Figure A illustrates the potential sources of impacts associated with both project specific activities and the effects of other projects that must be addressed as part of the cumulative effects analysis.

Cumulative Effects Analysis Approach

The Federal Transit Administration’s (FTA) approach to a cumulative effects analysis associated with the restoration and rebuilding of transportation infrastructure in Lower Manhattan can be described as a “coordinated cumulative effects analysis.” This approach to the cumulative effects analysis would
maintain the individual flexibility needed to advance each project as swiftly as possible while providing decision-makers and the public with an understanding of cumulative effects associated with each project. The foundation of this approach is based on two important principles:

- A commitment to the application of a single, consistent framework, methodology and set of assumptions for the evaluation of cumulative effects across projects; and
- Adherence to environmental performance commitments to reduce the potential for adverse impacts across projects, and to lower the potential severity or magnitude of the adverse impacts.

The approach is consistent with the placement of the Lower Manhattan Transportation Recovery Projects on the national project priority list created as a result of the President’s September 18, 2002 Executive Order Environmental Stewardship and Transportation Infrastructure Project Reviews. On February 27, 2003 U.S. Transportation Secretary Mineta announced the selection of the Lower Manhattan Recovery Projects as part of a group of nationally recognized transportation projects designated to receive high-level attention from a Cabinet-level Task Force to avoid potential associated with environmental issues. This designation as priority projects will help to expedite the rebuilding of the transportation system in the aftermath of the events on September 11, 2001 to restore lost infrastructure and replace functionality. The proposed approach for the coordinated cumulative effects analysis assumes that each transportation project will have the ability to advance at its own pace, and supports the advancement of the first three projects identified in the February 6, 2003 letter from New York Governor George Pataki: the World Trade Center Transportation Hub (PANYNJ); the Fulton Street Transit Center (MTA); and the South Ferry Subway Terminal (MTA).

The approach will be coordinated under the Memorandum of Understanding – Environmental Coordination and Review Among the Federal Partners, which was signed by the participating federal agencies in August of 2002. The key features and benefits of the coordinated cumulative effects analysis are:

- **Promoting Efficient Project Delivery and Environmental Stewardship** - The coordinated cumulative effects analysis approach creates an opportunity for environmental stewardship through the comprehensive and proactive consideration of environmental factors, while incorporating measures to streamline both the environmental process and overall project delivery. This approach enhances environmental management principles in the traditional “identify-impact-mitigate” framework for the NEPA process, by proactively managing the avoidance and reduction of impacts through the adoption of environmental performance commitments. These environmental performance commitments, known as EPCs, would involve environmentally-friendly design features or construction practices that would preserve the capacity of the environment to accommodate implementation of all of the transportation recovery projects. The EPCs would sustain or enhance the long-term capacity of the resources of concern in Lower Manhattan (e.g. access and circulation, air quality, noise, cultural resources, and economic factors) to absorb changes and impacts associated with transportation project delivery, and would maintain or improve their condition.

- **Advancing Each Project Independently, but in a Coordinated Manner** - The proposed coordinated cumulative effects analysis is a “building-block” approach, managed to reduce redundancy and foster consistency across projects, and to ensure that opportunities for reductions in potential adverse cumulative effects are made on each and every project. This is achieved through the progressive completion of the cumulative effects analysis on a project-by-project basis using a consistent set of analysis assumptions and methodologies in a common evaluation framework. Project sponsors would commit to the framework, assumptions, and methodologies in advance of initiating the NEPA process. As each of the projects matures through the NEPA process, the knowledge gained will be incorporated as part of the cumulative
effects analysis for each of the subsequent projects. As each of the Lower Manhattan Transportation Recovery Projects is completed or as each analysis addresses the environmental resource areas for cumulative effects, the identified associated impacts will be incorporated into the analysis for future projects as “background impacts.” This will allow for progressive, up to date, real-time cumulative effects analysis.

- **Focusing Attention on Critical Environmental Factors** - The cumulative effects analysis will be focused only on those environmental areas identified as subject to potentially significant adverse cumulative effects. In a coordinated effort, the Federal partners and project sponsors identified five key environmental assessment areas as having the highest potential: air quality, access and circulation, noise and vibration, cultural and historic resources, and economic factors. The local project sponsors are advancing the development of the specific technical methodologies to support the *coordinated cumulative effects analysis* during the NEPA review of each project, in cooperation with FTA and EPA. The technical methodologies will address data sources, assumptions, analytical parameters, analysis characteristics, and approach.

**Next Steps and Recommendations**

The following actions are required to advance the *coordinated cumulative effects analysis* for the Lower Manhattan Transportation Recovery Projects:

- Finalize implementation of the approach with project sponsors, including the application of technical methodologies and the adoption of environmental performance commitments (EPCs) for each of the five environmental areas of concern (air quality, noise and vibration, access and circulation, cultural and historic resources, and economic factors).

- Continue coordination with EPA and the Federal partners to assess progress on implementation of the approach.

- Provide technical support to project sponsors during advancement of the environmental process for Fulton Street Transit Center “demonstration” project, and other projects as they advance.

- Conduct a Peer Review of the *coordinated cumulative effects approach* during implementation.

- Document the demonstration project methodologies and process for use by future projects.
1.0 Introduction

1.1 Overview and Purpose

The Federal Transit Administration (FTA) Lower Manhattan Recovery Office (LMRO) is charged with oversight of the restoration and reconstruction of transportation infrastructure damaged or otherwise adversely impacted by the September 11, 2001 terrorist attacks. The Lower Manhattan recovery effort includes a number of identified transportation improvement projects in the affected area. The LMRO is responsible for ensuring that project planning and development activities for these projects are completed in accordance with the intent and requirements of the National Environmental Policy Act (NEPA) and related environmental laws and regulations.

The FTA and representatives of other Federal agencies have formalized their commitment to prevent project delays by partnering to develop environmentally responsible projects using a streamlined yet environmentally responsible process that completes the review of projects under NEPA and associated laws. The basis for this coordinated and streamlined project delivery process is provided by the Memorandum of Understanding – Environmental Coordination and Review Among the Committee (ECR MOU), dated August, 2002 (Appendix A). The agencies that are party to the MOU are as follows: Federal Emergency Management Agency, Federal Transit Administration, Federal Highway Administration, US Department of Housing and Urban Development, US Environmental Protection Agency, US Army Corps of Engineers, US Coast Guard, US Fish and Wildlife Service, National Marine Fisheries Service, New York State Urban Development Corporation d/b/a the Empire State Development Corporation, and the Lower Manhattan Development Corporation. These Federal partners have committed to expediting environmental reviews for projects associated with the recovery effort by adhering to specific review periods during the environmental process.

In accordance with the agreement between FTA and the Federal Emergency Management Agency (FEMA) regarding administration and oversight of the federal funds in the Supplemental Appropriations Act, FTA is the lead federal agency responsible for coordinating the environmental review of $4.55 billion of transportation restoration and improvement projects and programs under NEPA and related laws and regulations. In a letter dated November 18, 2002, FEMA transitioned the Federal leadership for environmental management to FTA as part of the transition from the initial disaster recovery phase to the long-term project recovery phase (Appendix B). The NEPA review and related environmental laws and regulations apply to projects to replace, rebuild and enhance transportation infrastructure in Lower Manhattan under the $4.55 billion Supplemental Appropriations Act for Further Recovery From and Response To Terrorist Attacks on the United States that was signed into law (P.L. 107-206) by President Bush in August 2, 2002.

Through a coordinated process, the Transportation Working Group, a group of local decision–makers including the State of New York, the City of New York, the Metropolitan Transportation Authority, the Port of New York and New Jersey and the Lower Manhattan Development Corporation, set forth a list of three priority projects and other additional projects that were formally identified by New York Governor George Pataki. (see Appendix C - February 6, 2003 letter from Governor Pataki to FEMA and FTA). These three projects (and sponsoring agencies) are as follows:

- The Fulton Street Transit Center (MTA)
- The South Ferry Subway Terminal (MTA)
- The World Trade Center Transportation Hub (PANYNJ)
On February 27, 2003, U.S. Transportation Secretary Norman Y. Mineta announced the selection of the Lower Manhattan Transportation Recovery Projects as part of a group of nationally recognized transportation projects designated to receive high-level attention under President Bush’s September 18, 2002 Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review. (Appendix D). This designation as priority projects will help expedite the rebuilding of the transit system damaged in the terrorist attacks as these projects advance through the environmental review process under NEPA. The Executive Order calls for a Cabinet-level task force that is chaired by Secretary Mineta and includes representation such as the Administrator of the Environmental Protection Agency, Chair of the Advisory Council on Historic Preservation, Secretary of Agriculture, Secretary of Commerce, Secretary of Interior, and Chair of the Council on Environmental Quality. The task force will work to avoid project delays associated with environmental issues at the regional/local level for priority projects.

To expedite the recovery effort and accommodate the mix of federal funding sources, FTA is committed to streamlining the project delivery process while promoting environmental stewardship. This streamlined project delivery process, illustrated in Figure 1, is to be applied separately to each of the Lower Manhattan Recovery Transportation Projects. The process is predicated on the issuance of a single project grant from FTA to cover the project delivery from inception to construction. This single grant would identify a maximum level of federal funding and specific funding levels to be “drawn-down” by grantee as eligible costs are incurred for approved budget grant items. This process for the release of funding differs from the conventional FTA project delivery process for major capital investments by replacing multiple grants with a single grant instrument.

Due to the confluence of projects that are likely to be underway during the rebuilding of Lower Manhattan, a key issue in the consideration of environmental consequences during the NEPA review process for each project will be the evaluation of cumulative effects. This document has been prepared by the FTA to outline how the analysis of cumulative effects will be addressed during environmental review under NEPA for the restoration, reconstruction, and improvement of transportation projects in Lower Manhattan.

This document represents the first step in formalizing the proposed approach to address cumulative effects for the Lower Manhattan Recovery Projects. It is a working document that will form the basis for further coordination and discussion among the Federal Partners, local agencies, and sponsors of transportation projects funded by FTA as they develop and finalize an approach that consistently will be applied by the project sponsoring agencies. It outlines several fundamental findings based on coordination to date that serve as a foundation upon which to proceed with a coordinated cumulative effects analysis:

- For environmental review purposes, the “baseline” to be used for the “No Build” comparison required under NEPA and for the cumulative effects analysis will be defined as the existing conditions as of September 10, 2001. This baseline may be modified for analysis of construction impacts for five specific areas of concern (air quality, access and circulation, noise and vibration, cultural and historic resources, and economic factors) on an as needed basis.

- The transportation projects advanced as part of the Lower Manhattan recovery effort will apply a consistent approach for the evaluation of cumulative effects, based upon an adopted common approach, framework, and methodologies pre-approved by FTA in consultation with Federal partners and project sponsors.

- When applicable, each transportation project will address cumulative effects as part of its own independent NEPA review process, based upon the baseline and any other reasonably foreseeable projects that either have advanced, or are substantively advancing, through the project development process.
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Figure 1 - Lower Manhattan Recovery Effort Project Delivery Process

Project Selection
Project Scope, Schedule and Budget Within Federal Funding Cap Amount

State and Local Agreements

Concurrence with Project Scope, Schedule and Budget (at NEPA completion)

Project Selection Final Design

FEMA Eligibility Determination NEPA Environmental Review Preliminary Engineering NEPA Action Final Design Construction Agreement

Project Grant and Project Development Agreement

Federal and Local Agency Agreements

Construction Agreement

Key Milestones for Each Project

Eligibility Determination by FTA and FEMA: As part of review and acceptance of each project, must determine if project meets eligibility for FEMA assistance.

Project Development Agreement between FTA and Project Sponsor: Agreement addressing environmental action necessary, project scope, schedule for project development and implementation, initial project budget, maximum amount of federal funding, and project management plan.

Single Project Grant from FTA: Single grant identifying a maximum level of federal funding and specific funding levels are available to be “drawn-down” by grantee as eligible costs are incurred for approved budget grant items.

Completion of NEPA and Preliminary Engineering and Concurrence of Governor and Transportation Working Group: Before FTA issues its environmental determination, need confirmation of project scope and budget from State and Local officials, with particular concern if project budget and federal funding request change from Project Development Agreement.

Independent Cost Estimate: FTA may decide to engage a second project management oversight review and an independent cost estimate during final design and prior to Construction Agreement.

Construction Agreement between FTA and Project Sponsor: Agreement identifying final project scope, baseline schedule, baseline cost estimate, maximum amount of federal funding, additional funding sources if necessary, protocols for project management and oversight, and environmental mitigation provisions.
• The cumulative effects analysis will be focused on those environmental factors of concern that have been identified as having significant potential for adverse cumulative effects. These are: air quality, access and circulation, noise and vibration, cultural and historic resources, and economic factors.

• A foundation of the cumulative effects analysis for these environmental factors of concern will be the adherence of the project sponsors to a set of adopted environmental performance commitments (EPCs) to lower the potential for adverse environmental impacts, thereby lessening the potential for each project to contribute to the overall adverse cumulative effects.

These findings are presented and discussed in more detail in the subsequent sections of this document.

It should be noted that the approach, framework and methodologies for the coordinated cumulative effects analysis are one component of the FTA’s Environmental Management Oversight Plan for the Lower Manhattan Transportation Recovery Projects. The FTA-LMRO environmental oversight responsibilities are illustrated in Figure 2. As illustrated in Figure 2, FTA is performing three strategic environmental oversight functions: Customized Program Management and Coordination, Efficient Project Delivery, and Risk-Based Oversight. Under its goal of promoting efficient project delivery as part of its responsibilities in providing technical guidance, FTA is leading the development of a coordinated cumulative effects analysis framework to guide each of the Lower Manhattan Recovery Transportation Projects that restore, replace, and enhance the rebuilding of transportation infrastructure. A primary goal is to ensure that the coordinated cumulative effects analysis is an integrated part of FTA’s overall monitoring and evaluation framework conducted by LMRO, so that outcomes of both the environmental review and the accompanying cumulative effects analysis will be factored into project decision-making.

1.2 Document Organization

This document consists of the following sections:

• Section 1.0 – Introduction
• Section 2.0 – Background and Context
• Section 3.0 – Coordinated Cumulative Effects Analysis for Lower Manhattan Recovery Transportation Projects
• Section 4.0 – Implementation Roles and Responsibilities
• Section 5.0 – Next Steps and Recommendations
• Appendix A – August 2002 Memorandum of Understanding – Environmental Coordination and Review Among the Federal Partners (ECR MOU)
• Appendix B – November 18, 2003 Federal Emergency Management Agency (FEMA) Letter Regarding Transition of EPRC to FTA
• Appendix C – February 6, 2003 Governor George E. Pataki Letter to Mr. Allbaugh and Ms. Dorn on Recommended Projects for the Lower Manhattan Recovery Effort.
• Appendix D – February 27, 2003 U.S. Transportation Secretary Norman Y. Mineta Press Release Placing Lower Manhattan Recovery Projects on Priority List to Receive Accelerated Environmental Reviews
• Appendix E – Stakeholder Environmental Review Commitments and Responsibilities

Section 1.0, Introduction, describes the project background and the purpose of this document. Section 2.0 frames the challenges and issues faced by FTA in addressing cumulative effects during the environmental review of proposed transportation project restoration or improvements in Lower Manhattan. Section 3.0 presents the proposed approach to the cumulative effects analysis for the Lower Manhattan
Recovery Transportation Projects in terms of the relationship to the overall NEPA process, the specific analysis of the key areas in which cumulative effects are a concern, and the development of a “demonstration” project for the Fulton Street Transit Center. The roles of the major stakeholders in advancing the reconstruction and restoration of lost transportation functions and infrastructure in terms of their NEPA responsibilities and cumulative effects analysis are outlined in Section 4.0. Section 5.0 summarizes the next steps required to advance implementation of the proposed approach, with particular attention to issues requiring further coordination among stakeholders.

The Appendices contain supporting background materials leading to the development of the approach for coordinated cumulative effects analysis. The ECR MOU is included in Appendix A, and the FEMA letter transitioning the Federal environmental leadership to FTA is in Appendix B. Appendix C includes a letter from Governor George Pataki identifying a list of projects recommended for the Lower Manhattan recovery effort. Appendix D includes a Press Release by U.S. Transportation Secretary Norman Y. Mineta placing Lower Manhattan Recovery Transportation Projects on the Priority List. Appendix E describes in more detail stakeholder environmental review commitments and responsibilities.
2.0 Background and Context

This section:

- describes requirements for cumulative effects analysis under NEPA and the implications of these requirements for the Lower Manhattan recovery effort;
- documents the range of cumulative effects analysis approaches that were considered; and
- recommends an approach for the Lower Manhattan recovery effort.

2.1 Cumulative Effects Analysis Requirements

The analysis of potential cumulative effects is a crucial element in completing the NEPA environmental review process for the projects associated with the restoration, rebuilding and enhancement of transportation infrastructure in Lower Manhattan. The basic concept of a cumulative effects analysis is to identify and consider the total effects of many actions over time that would be missed by evaluating each action individually. The goal of cumulative effects analysis is to provide decision makers and the public considering the implementation of individual projects with comprehensive information on the potential changes in the affected environment conditions resulting from the combined, incremental impacts of the project action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). According to the U.S. EPA:

While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time. Thus the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (federal, non-federal, or private) is taking the actions.

In general terms, cumulative effects may arise from single or multiple actions, and may result in additive or interactive effects. According to a recent U.S. Department of Transportation, Federal Highway Administration document, “Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process” (January 31, 2003):

Cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence including the direct and reasonably foreseeable indirect impacts of a Federal activity. Accordingly, there may be different cumulative impacts on different environmental resources.

Figure 3 (from the 2003 FHWA document noted above) illustrates the potential sources of impacts associated with both project specific activities and the effects of other projects that must be addressed as part of the cumulative effects analysis.
2.2 Cumulative Effects Analysis - Approaches Considered

The development of a cumulative effects analysis approach for the Lower Manhattan recovery effort presents a number of unique challenges caused by the urgency of the rebuilding effort and the large number of projects and agencies. These challenges are defined by the following needs and conditions:

- **Maintain the autonomy of individual projects, as well as the flexibility to advance projects independently, but in a coordinated manner.** The initial transportation projects advancing under the Lower Manhattan recovery effort include the World Trade Center Transportation Hub (PANYNJ); Fulton Street Transit Center (MTA); and South Ferry Subway Terminal (MTA). These three projects are located in the same physical area, and are estimated to be complete between 2007 and 2009. In addition, there are other potential projects identified in Governor Pataki’s letter (Appendix C) that would also be implemented within the same timeframe. Thus, the cumulative effects analysis framework must provide the flexibility to advance individual projects as each comes “on line”. Yet, the analysis also must provide a mechanism for the systematic evaluation of the potential environmental effects in a comprehensive manner for subsequent projects.

- **Focus the environmental evaluation resources on those human and natural factors identified as potentially subject to significant adverse impacts as a result of cumulative effects.** A large volume of environmental analyses will be conducted as the transportation projects advance through the NEPA process. Consequently, the management and focusing of analysis of cumulative effects on the areas most likely to affect decision-making will be an important component of promoting understanding of the trade-offs and choices by decision-
makers and the public. Five areas of concern for cumulative effects analysis were identified during the initial FEMA scoping process as part of early NEPA activities for the initial disaster recovery phase. Following a meeting with the U.S. EPA on December 17, 2002, FTA subsequently refined and confirmed five areas of concern as: air quality, noise and vibration, access and circulation, cultural and historic resources, and economic considerations.

- **Meet the intent of NEPA with respect to cumulative effects analysis.** Although each project will advance independently, to meet the spirit and requirements under NEPA, each project must individually and collectively address cumulative effects.

FTA is committed to the following actions to manage the cumulative effects analysis to meet the needs and conditions stated above:

- **Early, proactive and continuous coordination with project sponsors and cooperating agencies.** Efficiencies in the environmental review process can be gained through early, focused coordination with project sponsors, cooperating agencies, and stakeholders to ensure that they understand roles and responsibilities with respect to the NEPA review process and the cumulative effects analysis. This shared understanding is essential to ensuring that the selected approach to cumulative effects analysis is coordinated and implemented across all transportation projects, irrespective of sponsoring agency.

- **Stewardship and streamlining through a common analysis framework.** A common analysis framework for the evaluation of cumulative effects across projects has the potential to be a valuable stewardship and streamlining tool. Stewardship and streamlining can be promoted by reducing the duplication of the analysis framework at the outset of each project, and by limiting the learning curve for both project sponsors and reviewers through standardization of the technical methodologies. An added benefit would be the familiarity provided for decision-makers and the general public. To be effective, there must be clear direction, widespread consensus and rigorous adherence to a standardized analysis framework among all the stakeholders.

- **Integrate cumulative effects analysis with NEPA process.** To be most effective, the cumulative effects analysis needs to be fully integrated into the NEPA decision-making process, and the timing of the cumulative effects analysis must be consistent with the overall timing of the NEPA project review.

- **Incorporate and enforce Environmental Performance Commitments.** The incorporation of environmental performance commitments within the cumulative effects analysis approach would potentially avoid and reduce adverse impacts, and provide flexibility for project sponsors to advance their projects in a streamlined environmental review process and fulfill environmental stewardship objectives. Examples of environmental performance commitments include the use of ultra low sulfur fuel in off-road construction vehicles, recycling of construction material and waste, “green” design of buildings, and implementation of other environmentally-friendly techniques.

Three conceptual approaches to address the cumulative effects analysis were considered:

A. **Option 1** - Comprehensive cumulative effects analysis of priority transportation projects as a precursor to the advancement of any individual project;

B. **Option 2** - Independent cumulative effects analysis on a project-by-project basis; and

C. **Option 3** - Coordinated cumulative effects analysis across individual projects.
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The relative advantages and shortcomings of each of these concepts are discussed below. **FTA has elected to proceed with Option 3 - coordinated cumulative effects analysis.** This approach provides the flexibility to advance each project expeditiously in accordance with its own unique schedule, while still maintaining analytical consistency across projects. The reasons for this recommendation are detailed below. Table 1 compares the advantages and disadvantages of the three approaches.

### Table 1 - Summary of Advantages and Disadvantages By Option

<table>
<thead>
<tr>
<th>Options Considered for Cumulative Effects Analysis Approach</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</table>
| **Option 1 – Comprehensive Cumulative Effects Analysis**     | - Analysis completed all at once.  
- Single methodology and set of assumptions ensure compatibility and comparability of findings.  
- A single analysis review for decision-makers and the public.  
- Early identification of opportunities to reduce adverse impacts. | - Delay in initial project start-up.  
- Timing is premature.  
- Lack of data availability and accuracy with respect to both project descriptions and potential impacts.  
- Limited shelf life could cause delays in projects as updates are completed. |
| **Option 2 – Independent Cumulative Effects Analysis**       | - Projects can start immediately.  
- Uses most current data and assumptions.  
- Maintains total project autonomy. | - Variation in analysis and lack of comparability.  
- Difficulty for public and decision-makers to assess cumulative effects.  
- Greatest potential to delay decision-making.  
- Increased potential to miss opportunities to reduce environmental impacts. |
| **Option 3 – Coordinated Cumulative Effects Analysis**      | - No delay in project start-up – each can proceed at own pace.  
- Common methodologies and assumptions ensure compatibility.  
- Decision-makers and the public provided with real time, accurate information.  
- Early identification of opportunities to reduce adverse impacts.  
- Can more easily accommodate the addition and/or revision of a project | - Requires highest degree of interagency coordination.  
- Some loss of independent project evaluation.  
- Requires higher degree of oversight.  
- Slightly limits the flexibility of decision makers as a project moves forward at its own pace. |

#### A. Option 1 - Comprehensive Cumulative Effects Analysis

This concept involved the completion of a single, comprehensive cumulative effects analysis as a baseline document that would be incorporated by reference into subsequent NEPA documents for each of the individual projects whether it is the Fulton Street Transit Center, South Ferry Subway Terminal, World Trade Center Transportation Hub, or other subsequent transportation projects. The cumulative impact analysis would be completed “up-front” prior to the advancement of the NEPA process for each individual project. Projects would only complete the NEPA process after the comprehensive cumulative effects analysis was completed. No project would commence construction until after the comprehensive cumulative effects analysis for all projects was completed.
The advantage of this approach is that a single, cumulative effects analysis would be completed using a common set of methodologies and assumptions, thus ensuring full comparability and consistency in data. Another advantage is that decision-makers and the public would have access to a comprehensive analysis, all in one document that could be used as a reference as each project subsequently entered the NEPA process. Lastly, the approach provides flexibility by looking at analyses comprehensively and in minimizing any overall adverse impacts. Disadvantages to this approach relate to the accuracy of the data and the level of project definition available at this time. This disadvantage could result in delays in project delivery of any of the three projects or other projects caused first by the delays inherent in collecting and awaiting the receipt of data, and second by the constant need to update, adjust and revise the analysis to reflect changes in project definition and assumptions.

In coordination with EPA and project sponsors, FTA elected not to pursue this approach for the following reasons:

- The difficulty inherent in deciding which projects are foreseeable and should be included and which projects should not be included in the analysis due to the changeable nature of local priorities and decision-making;
- The lack of data available regarding the nature, extent, and timing of each project, and the propensity of the project definitions to change over the course of the project development process;
- The limited “shelf-life” of the analysis, due to the volatility of the assumptions that would need to be made at this time, would be inconsistent with both streamlining and stewardship objectives; and
- The limitations of a “one-time-look” both to meet the flexibility required to implement the projects in a timely manner, as well as the potential for the completed analysis to inaccurately reflect the actual cumulative effects due to changes in project definition and sequencing as projects continue to move towards implementation.

B. Option 2 - Independent Cumulative Effects Analysis

Under this option, each project whether it is the Fulton Street Transit Center, South Ferry Subway Terminal, World Trade Center Transportation Hub, or other subsequent transportation projects, would be responsible for developing and completing its own cumulative effects analysis, independent of the analyses underway for other projects. Using this approach, each cumulative effects analysis could be tailored to the specific conditions of each project, and the background assumptions formulated on a case-by-case basis, at the time the analysis is necessary.

The advantage of this approach is that the cumulative effects analysis would be conducted using the most current information available, tailored to the specific conditions at the time of the analysis. This approach would allow the use of the most “current” data and assumptions, although they would likely vary from project to project. It is this variation in data and the cumulative effects analysis among the projects that is the greatest disadvantage of this approach. As a result of the variable assumptions and methodologies employed, it would be difficult for decision-makers, reviewing agencies, and the public to make comparisons among the projects, to understand the trade-offs to be made, and to assimilate the implications of progressive impacts to the environment.

FTA elected not to pursue this option any further at this time, as a result of preliminary coordination with EPA and project sponsors. The reasons for this determination are as follow:
• Of the options considered, Option 2 has the greatest risk of project delay due to the increased potential for confusion among agency reviewers, decision-makers and the public;

• Under this option, because of the lack of a standardized methodology and assumptions, there is a greater potential that supplemental analyses would be required to make the project data comparable to the information provided on previous projects, potentially lengthening the environmental review process; and

• Because there is no provision for a common methodology that promotes a comprehensive understanding of the cumulative effects, the potential to miss opportunities to reduce adverse cumulative effects is greater, as opportunities to reduce impacts could be precluded before the effects are clearly known.

C. Option 3 - Coordinated Cumulative Effects Analysis

Option 3 would entail management of the cumulative effects analysis to foster consistency across projects, and to ensure that opportunities for reductions in potential adverse cumulative effects are made on each and every project. Under this approach, FTA, working in concert with EPA and in coordination with Federal Partners and project sponsors, would develop a standardized approach and guidance for the cumulative effects analysis. The cumulative effects analysis for each project would be completed sequentially on a project-by-project basis as part of the overall NEPA review for each individual project, but in accordance with a single evaluation framework composed of a consistent set of analysis assumptions and common methodologies. Project sponsors of each of the three transportation projects (World Trade Center Transportation Hub; Fulton Street Transit Center; and South Ferry Subway Terminal) and other subsequent projects would commit to the methodology in advance of initiating the NEPA process. This approach would be supplemented by the agreement of the project sponsors to incorporate into their project development process “environmental performance commitments.” These environmental performance commitments would reduce the potential for adverse impacts across projects, and lower the potential severity or magnitude of the impacts. Environmental performance commitments would include environmentally friendly construction or design features or specifications, and would serve to preserve environmental capacity to absorb impacts associated with all projects by avoiding impacts before they occur.

The advantage of this approach is that projects would be able to proceed at their individual pace, but in a manner that would allow for comparability across projects. This comparability would both facilitate wider consideration of cumulative effects analysis during decision-making, as well as the monitoring of the cumulative effects as each project comes on line. In addition, the single, consistent framework, methodology and set of assumptions, combined with the environmental performance commitments, will function to reduce the possibility that opportunities to reduce cumulative effects will be overlooked or precluded. The potential disadvantages of this approach relate to oversight and monitoring, as sizeable deviations by any individual project from either the standardized methodology or the environmental performance commitments would undermine the effectiveness of the approach.

FTA has elected to pursue Option 3, Coordinated Cumulative Effects Analysis, for the restoration and rebuilding of transportation infrastructure in Lower Manhattan. This option has the greatest potential to meet the project delivery streamlining objectives for the Lower Manhattan recovery effort without compromising environmental stewardship objectives.

The cornerstone of the FTA approach is the development of and agreement to a common framework and methodology for the evaluation of cumulative effects that will be used consistently for all FTA sponsored projects completed as part of the Lower Manhattan recovery effort. The adherence to a single, common
framework would achieve the following objectives important to the timely restoration and delivery of reconstructed and enhanced transportation improvements in Lower Manhattan:

- Each project would have the flexibility to advance independently at its own pace, unencumbered by “attachment” to other projects that could cause delays.

- The evaluation of cumulative effects would be based on the most current information available at the time each project was ready to advance, and each project would build on the findings of the previous cumulative effects analysis so that emphasis could be placed on the issues that are truly of concern, thereby streamlining the analysis, ensuring that resources are appropriately focused, and environmental performance commitments are implemented.

- The use of a single, coordinated approach to cumulative effects analysis on all FTA projects would facilitate the understanding and comparison of the cumulative effects across projects, eliminating the uncertainties that could be caused as a result of unique, one of a kind, analysis specific to individual projects.

- Because the approach would be consistent from project to project, the learning curve required for agency review would be reduced, thereby streamlining the environmental review process.

Equally important to the common methodology is the incorporation of and adherence to environmental performance commitments during the NEPA process and throughout the project development and delivery process. Through the incorporation of these principles, it is possible to systematically reduce the adverse environmental effects by avoiding, reducing or eliminating impacts at every possible instance. An added advantage would be to preserve the capacity of the environment to absorb the adverse effects of project implementation, ensuring that opportunities for environmental benefits are not overlooked or precluded through systematically lowering the potential for impact, project by project.
3.0 Coordinated Cumulative Effects Analysis for the Lower Manhattan Recovery Transportation Projects

This section discusses the coordinated cumulative effects analysis for the Lower Manhattan Recovery Transportation Projects in terms of the following:

- Key Principles and Features of the Coordinated Cumulative Effects Analysis
- NEPA Review and Cumulative Effects Analysis Process Overview
- Demonstration Project - Fulton Street Transit Center
- Coordinated Cumulative Effects Analysis - Technical Approach and Methodologies

3.1 Key Principles and Features of the Coordinated Cumulative Effects Analysis

The FTA’s approach of a coordinated cumulative effects analysis for the restoration and rebuilding of transportation infrastructure in Lower Manhattan would maintain the individual flexibility needed to advance each project as quickly as possible while providing decision-makers and the public with an understanding of cumulative effects associated with each project. The foundation of this proposed approach is based on two important principles:

- A commitment to the application of a single, consistent framework, methodology and set of assumptions for the evaluation of cumulative effects across projects; and
- Adherence to environmental performance commitments to reduce the potential for adverse impacts across projects, and to lower the potential severity or magnitude of the adverse impacts.

The key features of the coordinated cumulative effects analysis are:

- Promoting Efficient Project Delivery and Environmental Stewardship - The coordinated cumulative effects analysis approach creates an opportunity for environmental stewardship through the comprehensive and proactive consideration of environmental factors, while incorporating measures to streamline both the environmental process and overall project delivery. This approach enhances environmental management principles in the traditional “identify-impact-mitigate” framework for the NEPA process, by proactively managing the avoidance and reduction of impacts through the adoption of environmental performance commitments. These environmental performance commitments, known as EPCs, would involve environmentally-friendly design features or construction practices that would preserve the capacity of the environment to accommodate implementation of all of the transportation recovery projects. The EPCs would sustain or enhance the long-term capacity of the resources of concern in Lower Manhattan (e.g. access and circulation, air quality, noise, cultural resources, and economic factors) to absorb changes and impacts associated with transportation project delivery, and would maintain or improve their condition.

- Advancing Each Project Independently, but in a Coordinated Manner - The proposed coordinated cumulative effects analysis is a “building-block” approach, managed to reduce redundancy and foster consistency across projects, and to ensure that opportunities for reductions in potential adverse cumulative effects are made on each and every project. This is achieved through the progressive completion of the cumulative effects analysis on a project-by-project basis using a consistent set of analysis assumptions and methodologies in a common evaluation framework. Project sponsors would commit to the framework, assumptions, and methodologies in advance of initiating the NEPA process. As each of the projects matures through the NEPA process, the knowledge gained will be incorporated as part of the cumulative effects analysis.
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effects analysis for each of the subsequent projects. As each of the Lower Manhattan Transportation Recovery Projects is completed or as each analysis addresses the environmental resource areas for cumulative effects, the identified associated impacts will be incorporated into the analysis for future projects as “background impacts.” This will allow for progressive, up to date, current cumulative effects analysis.

- **Focusing Attention on Critical Environmental Factors** - The cumulative effects analysis will be focused only on those environmental areas identified as subject to potentially significant adverse cumulative effects. In a coordinated effort, the Federal partners and project sponsors identified five key environmental assessment areas as having the highest potential: air quality, access and circulation, noise and vibration, cultural and historic resources, and economic factors. The local project sponsors are advancing the development of the specific technical methodologies to support the **coordinated cumulative effects analysis** during the NEPA review of each project, in cooperation with FTA and EPA. The technical methodologies will address data sources, assumptions, analytical parameters, analysis characteristics, and approach.

The potential benefits of the proposed approach include:

- A lasting framework for collaborative problem solving among the participating agencies to meld the traditional NEPA process roles of “proponent” and “reviewer” into a productive partnership with a common goal.

- Transparency among the technical methodology, assumptions, and data requirements to be used throughout the NEPA process for the affected environment, environmental consequences, and cumulative effects analysis.

- Greater certainty in the implementation of future transportation projects to avoid adverse cumulative effects through the early identification and resolution of environmental issues to avoid the loss of resources, as well as reduce the potential for schedule delays and increases in costs.

- Creation of a common data base to be used by project sponsors during the project delivery process so that information, materials and technical knowledge of best practices can be shared across projects, thereby streamlining the analysis process, optimizing economies of scale, and avoiding redundancy of effort. This will also allow for progressive, up-to-date transfer of current information pertaining to the cumulative effects analysis.

- Streamlining the environmental review process through a reduction in the learning curve required for both project sponsors and agency reviewers by adhering to a suite of coordinated technical assessment methodologies familiar to both.

- Environmental stewardship through reduction or avoidance of environmental impacts and preservation of the capacity of the resource to absorb impacts or renew itself through the use of environmental performance commitments into project design and construction practices.

### 3.2 NEPA Review and Coordinated Cumulative Effects Analysis Process

Figure 4 illustrates the inter-relationship and sequence of the primary components of the **coordinated cumulative effects analysis**. The steps needed to advance the **coordinated cumulative effects analysis** are as follow:

- Finalize and document cumulative effects review framework.
- Draft and coordinate technical assessment methodologies.
- Secure and document environmental performance commitments.
• Convene working groups on each of the technical assessment areas.
• Document technical methodologies for cumulative effects environmental resources of concern (e.g., air quality, noise and vibration, access and circulation, cultural resources, and economic factors).
• Standardize approaches through the NEPA review process.
• Conduct technical evaluations for identified cumulative effects environmental resources of areas of concern.
• Coordinate findings through the NEPA review process.
• Address need for additional mitigation measures.

Figure 4 – Coordinated Cumulative Effects Analysis Process

A critical first step to implement the coordinated cumulative effects analysis framework, and a primary foundation for its success, is the adoption of a standardized suite of technical assessment methodologies.
for each environmental area of concern identified as having a high potential for cumulative effects.
Additional discussion of the technical assessment methodologies for each of these areas is included in Section 3.4. As part of the development of these technical assessment methodologies, the baseline conditions for assessment of long-term impacts will be established using conditions as of September 10, 2001, so that the projects can all begin with a common, consistent baseline. If needed, this baseline can be adjusted as necessary on a case by case basis for specific resources, dependent on project timing and sequencing. This is most likely to be required with respect to construction impacts as opposed to long-term impacts.

Following the development of methodologies for these five environmental resource areas, environmental performance commitments (EPCs) will be identified for each area of concern. EPCs are items such as design elements and specifications, construction techniques, or operating procedures that will be documented and committed to by project sponsors at the project outset to lower the potential for adverse cumulative effects. The use of EPCs within each project analysis will facilitate FTA’s fulfillment of both environmental stewardship and environmental streamlining objectives by:

- Streamlining the environmental process through avoidance of impacts before they occur; and
- Preserving the environmental capacity, one project at a time, for subsequent projects by ensuring that opportunities to reduce impacts are not missed, thereby reducing the potential for cumulative impacts.

An important element guiding the overall effectiveness of the coordinated cumulative effects analysis review framework is the interrelationship with the NEPA review process. The greatest efficiencies in the process can be obtained by coordinating the cumulative effects analysis as an integrated part of the following NEPA process elements:

- Purpose and Need
- Baseline Conditions
- Environmental Consequences
- Agency Coordination
- Public Review

As part of the overall Environmental Management Oversight Plan for the Lower Manhattan Recovery Projects, FTA will provide technical guidance for the development of each of these sections of the NEPA documents, to facilitate consistency across projects. This guidance will be provided through early and continuous coordination with project sponsors as activities progress through the NEPA process. Findings and lessons learned will be recorded and monitored to inform subsequent projects.

3.3 Demonstration Project – Fulton Street Transit Center

Coordination with Federal partners and project sponsors to develop an approach to complete the coordinated cumulative effects analysis for the Lower Manhattan recovery effort, concluded that a “demonstration” project would assist in quickly initiating, developing, refining the approach, methodology and assumptions. Factors considered in the identification of an appropriate demonstration project include the following:

- Clarity of project definition;
- Local commitment and community support;
- Project readiness to proceed;
- Range of potential cumulative effects relating to the five critical environmental resource areas;
- Readiness of the sponsoring agency to implement environmental performance commitments; and
• Readiness of the demonstration project to effectively advance the three priority projects identified in the February 6, 2003 Governor Pataki letter (Appendix C).

Through coordination with EPA and project sponsors, FTA selected the Fulton Street Transit Center as the demonstration project to advance the coordinated cumulative effects analysis for Lower Manhattan transportation projects. Figure 5 shows the location of the Fulton Street Transit Center project and other priority transportation projects.

**Figure 5 – Location of Priority Transportation Projects**

The Fulton Street Transit Center project entails a rehabilitated, reconfigured, and enhanced multi-level, underground complex of subway stations serving nine different lines, with improved platforms, mezzanines and connection corridors and a new central concourse with a new above-ground presence.
Over 225,000 movements (passengers entering, exiting, or transferring) are served by these subway stations daily. In addition, the proposed design for this complex will extend westward one block underneath Dey Street to Church Street via a new underground pedestrian passageway providing a new link to two additional subway lines. The estimated cost is $750 million in year of construction dollars and completion is expected by year 2007.

The project, sponsored by MTA/NYCT, was selected for the following reasons:

- The design scope and project description for the Fulton Street Transit Center are defined with clear project limits and the project is ready to enter the NEPA process.
- MTA/NYCT is proposing to initiate preparation of an Environmental Impact Statement, which would provide a good platform for the comprehensive evaluation of cumulative effects associated with all three priority transportation projects.
- The Fulton Street Transit Center project involves potential effects on the five critical environmental resource areas.
- MTA/NYCT has already initiated public coordination on the Fulton Street Transit Center project.
- MTA/NYCT is International Standards Organization (ISO) 14001 certified, and has in place an adopted, audited Environmental Management System that permeates agency activities. As a result of this certification, MTA/NYCT is ready to implement environmental performance commitments.
- The scale of the Fulton Street Transit Center is such that a full range of environmental issues need to be addressed, but the project is not so complex that it will be difficult to illustrate lessons learned.

The benefits of using the Fulton Street Transit Center as the demonstration project for the Lower Manhattan Recovery Projects are as follows:

- Establish efficient communication and coordination networks among agencies required to effectively conduct the coordinated cumulative effects analysis in a streamlined manner that is responsive to environmental stewardship mandates.
- Use actual project experiences as a catalyst to proactively identify and resolve “repetitive” issues and actions early in the NEPA process and establish precedents to guide future projects, and avoid revisiting the same issues one project at a time.
- Build a sense of collaborative problem solving among the participating agencies so that the traditional NEPA process roles of “proponent” and “reviewer” are melded into a productive partnership with a common goal.
- Identify and resolve technical issues and provide clarity to the guidance for future projects through real, documented project examples.

The basic activities required to advance the Fulton Street Transit Center as the demonstration project for the coordinated cumulative effects analysis are as follows:

- Continue coordination with project sponsors, EPA, and other Federal partners to affirm the use of Fulton Street Transit Center as a demonstration project.
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For the Lower Manhattan Recovery Effort  
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- Coordinate procedures for future review of the Fulton Street Transit Center with Federal partners, project sponsors, and local agencies.
- Refine the project definition and alternatives to be considered.
- Conduct a preliminary scan of likely cumulative effects issues and potential environmental performance commitments.
- Finalize NEPA Class of Action for all project components.
- Refine public involvement approach and plan.
- Convene reviewing and resource agencies, including agency scoping.
- Continue public outreach.
- Establish scope of work and technical methodologies.
- Conduct supporting environmental analyses.
- Document technical findings.
- Review findings with reviewing and resource agencies.
- Complete public review of findings.
- Address comments received and refine project as necessary, including environmental performance commitments and any additional mitigation.
- Document environmental determinations and finding.

The proactive involvement of FTA at each stage of the environmental review process will expedite project delivery of the Fulton Street Transit Center by reducing FTA review times and by assisting to focus work activities on those issues salient to FTA’s findings. In addition, documentation of findings at each stage will be used to help streamline future projects as they are ready to proceed.

3.4 Coordinated Cumulative Effects Analysis Technical Methodologies

The coordinated cumulative effects analysis for the Lower Manhattan recovery effort will be managed to foster consistency across projects as they advance independently, while providing a comprehensive view of project outcomes in relation to each other. One of the key elements essential to implementing the proposed coordinated cumulative effects analysis is adherence to a common suite of technical methodologies across projects. This use of common technical methodologies forms the basis for a ‘building-block’ approach to address cumulative effects, and supports the advancement of each project as it is ready. The use of common technical methodologies has the dual benefit both of enabling a comprehensive consideration of cumulative effects, while potentially streamlining the environmental process by reducing the learning curve required by project sponsors to complete the analysis, and the time it takes for agencies to become familiar with the analysis for each project.

Each of the technical assessment methodologies will be formulated and refined through technical working groups established for each environmental area of concern: air quality, access and circulation, noise and vibration, cultural resources, and economic factors. Although each of these environmental areas of
Concern are distinct resources, they also share a cause-effect inter-relationship, highlighting the need for coordination not only across projects, but also across technical working groups. The technical working groups will consist of representatives from the Transportation Working Group, working along with FTA, the Federal partners, and local project sponsors. The ultimate outcome of the technical working group will be a single, consistent framework, and standardized technical assessment methodologies for use in the cumulative effects analysis.

The recent FHWA guidance document (January 31, 2003) on cumulative effects analysis distils a list of nine items that cumulative effects analysis should include in undertaking assessments and developing Technical Methodologies. The content of the following list is also illustrated in a series of steps outlined in Section 3.2, Figure 4 – Coordinated Cumulative Effects Analysis Process.

- Identification and agreement on the roles and responsibilities of participants and cooperating agencies in the project development process;
- Identification of appropriate project study area (study area may vary by environmental resource);
- Complete inventory of resources of concern within the project study or influence area;
- Clarification of major and important versus minor issues associated with the proposed action and alternatives;
- Identification of other actions impacting or potentially affecting the major resources;
- Definition of assessment goals, techniques, and methodology for analysis of identified potential effects;
- Establishment of appropriate resource geographic and temporal boundaries related to the identified scope of analysis;
- Identification of planning considerations in the local area, including direction and goals, land uses, and transportation plans for incorporation into the study; and
- Identification of initial alternatives to the proposal and to avoid and minimize harm to the environment.

The focus of the technical methodologies applied to support the coordinated cumulative effects analysis is to enable each agency to deliver its best effort to support the capacity of affected areas and resources to accommodate the implementation of the transportation projects associated with the Lower Manhattan recovery effort. Ideally, the technical methodologies will highlight opportunities to reduce the potential for cumulative impacts to those environmental factors of concern, and to mitigate identified adverse cumulative effects that are potentially significant both for each project, as well as across projects. In order to achieve these purposes, the technical methodologies for consideration of cumulative effects associated with a Proposed Action must be based on a common platform regarding other projects, and consequently will consider as a point of departure other actions that:

- Are reasonably foreseeable;
- Represent a substantive change relative to pre-9/11 conditions;
- Share a substantial temporal and geographic proximity with the Proposed Action; and
- Have the potential to substantially affect the same resource as that potentially affected by the Proposed Action.

Each technical methodology developed by the technical working groups will address the following:
• Description of the potential source or nature of impact;
• Potential data sources;
• Analysis parameters;
• Potential range or level of analysis;
• Analysis characteristics;
• Impact analysis methodologies; and
• Issues/next steps.

Because of the variation in the projects, the technical assessment methodologies will require flexibility to allow for use across different types of projects, at a level appropriate to their scale and character. Within the standard technical assessment methodology for each environmental area of concern, various levels of analysis will be employed to correspond to the class of action, combined with the potential for adverse and significant impacts, whether direct, indirect or cumulative. In so doing, each project would undergo analysis proportional to the expected magnitude of effect. Flexibility within the standardized approach is also required to effectively balance the need for compatible data and methodologies with the potentially differing regulations and guidance required by federal, state, and local regulations and guidance. For example, the technical assessment methodology for noise and vibration must be flexible enough to address the FTA guidance focused on transit facility and vehicle noise and vibration construction and operation, the FHWA regulations applicable to noise generated by vehicles operating on roadway facilities and roadway construction, as well standards under the New York State Environmental Quality Review Act (SEQRA), the New York City CEQR Technical Manual, and local noise ordinances regarding operations and construction. Consequently, the technical methodologies must address the need to “bridge” the results of different analyses, or to include the results of multiple analytical approaches.

Based upon the above considerations, the following sections frame the issues and approach for each environmental area of concern identified as having potentially significant potential for adverse cumulative effects impacts. The discussion forms a point of departure for future detailed technical assessment methodologies that will be generated through the technical working groups for each of the resource areas of concern. The development of the specific technical methodologies by the technical working groups will be informed by project scoping and the recommendations received from agencies and the public. As the technical analysis methodologies for a particular project is refined through scoping, the information will be used to update the coordinated cumulative effects analysis for subsequent projects as appropriate. Ongoing coordination through the technical working groups will support the refinement of the specific technical assessment methodologies in support of a single consistent approach.

A. Air Quality Technical Methodology Issues and Approach

The approach to air quality will take advantage of the concurrent analyses planned for the first group of three priority transportation projects in the Lower Manhattan recovery effort as part of the Fulton Street Transit Center demonstration project. The approach also relies on coordination among project proponents and the Interagency Consultation Group (ICG).

The NY-NJ-CT Air Quality Control Region (AQCR) is classified as a severe non-attainment area for ozone. The precursors of ozone are nitrogen oxides (NOx) and volatile organic compounds (VOCs). Manhattan is classified as maintenance for carbon monoxide (CO) and in nonconformity for exceeding NAAQS for PM$_{10}$. The EPA and other regulators are concerned with the effects of PM$_{2.5}$.

At this time, as a result of the World Trade Center disaster on September 11, 2001, and the loss of NYMTC's (the Metropolitan Planning Organization) files containing regional transportation and air quality data, combined with the damage incurred to the downtown mass transit system, the conformity requirements for the New York Metropolitan area have been temporarily waived until September 30, 2005, pursuant to Public Law 107-230; Stat. 1469, enacted October 1, 2002. The implication is that
NYMTC has until September 30, 2005, to produce a conforming TIP and Plan. Interim interagency consultation procedures were developed, to be in effect during the waiver. These procedures were developed to assist the New York State Department of Transportation (NYSDOT) in the interim reporting to congressional committees, the EPA, and the U.S. Department of Transportation. Thus the air quality analysis as part of the Lower Manhattan recovery effort focuses on the legislative waiver of conformity requirements for the plan and TIP. As such, a way that project sponsors comply with the analysis requirements of NYSDOT's interim interagency consultation procedures is by providing a mesoscale or corridor-level analysis in the environmental analysis. This analysis substitutes for the plan/TIP conformity analysis that has not been undertaken.

The rebuilding, restoration and enhancement of Lower Manhattan’s transportation system is expected to create long-term benefits to air quality as a result of the increased potential for use of transit modes that will contribute to an overall reduction in vehicular emissions. However, realizing these long-term benefits to air quality is only possible following the construction activities associated with implementing several large-scale projects. These construction activities have the potential to temporarily adversely affect air quality through the emissions of pollutants from multiple stationary and mobile sources involved in the construction process. The utilization of heavy construction equipment and on-site generators produce hydrocarbon emissions, exhaust fumes, toxics, and contribute to PM concentrations. These potential impacts could be worsened by the coincidence of project construction activities either temporally, or in the same geographic area, or both.

The potential for adverse impacts could be reduced through the use of EPCs. EPCs that could be considered may include, but are not limited to, the following:

- Use environmentally friendly materials, including low VOC paint, specifications of sealants that meet or exceed the VOC limits of California's South Coast Air Quality Management District Rule No. 1168, or adhesives that meet the San Francisco Bay Area Resource Board Regulations.

- Manage and contain of particulate matter by employing alternative construction measures such as deconstruction instead of demolition.

- Minimize PM, NOx and SOx from stationary diesel powered equipment and mobile off-road diesel equipment by: using pre-certified equipment; retrofitting equipment with emission controls from an EPA verified list; using red dye ultra low sulfur diesel fuel (15 ppm); or scheduling construction phasing and/or sequencing to reduce concurrent on- and off-road construction and related equipment usage.

- Manage the material and delivery process involving on-road diesel and petrol equipment on-site through the following: pre-certify equipment at and through DOT inspection stations with prominently displayed sticker; ensure all fueling trucks are red dye diesel fueling trucks (to distinguish from regular diesel); permit only recycling trucks; and trucks with EPA Tier 2 compliance.

Next steps and issues to resolve in the development and finalization of the technical analysis methodology for air quality to be undertaken by the project sponsors are:

- Identify and convene technical working group to address air quality issues, and outline the coordination process and expected participation, roles, and responsibilities.

- Finalize a list and description of activities with the potential to cause short-term and long-term impacts to air quality, such as use of construction equipment, idling, materials delivery and removal, demolition activities, airborne dust associated with ground disturbance, increases in vehicle exhausts, and increases in traffic volumes.
• Confirm data sources and establish database for existing and future environmental conditions, current projects, and future projects.

• Establish analysis parameters relative to baseline years for construction and operation, as well as assumptions regarding NAAQS and other standards (CO, PM_{10}, PM_{2.5}, etc.), emissions and dispersion modeling protocols (Mobile, CAL3QHC, etc.) and modeling inputs (such as persistence factors and meteorological data), and assess implications of general conformity exemption of September 2002.

• Refine geographical boundaries of analysis to address micro-scale/project site location, area-wide limits, and sensitive receptors.

• Refine temporal parameters.

• Develop analysis characteristics and impact assessment approach including detailed procedural and quantitative assessment protocols based on regulations, guidelines, current professional practice standards, and coordination with appropriate resource agencies including NYMTC and the ICG.

• Refine and commit to EPCs.

• Outline process for identifying and coordination mitigation requirements.

• Document completed technical assessment methodology.

FTA will assist the project sponsors in the advancement and development of the technical methodology by:

• Providing technical assistance and guidance at the request of the project sponsors, including participation in the technical working group on an as needed basis;

• Leading the coordination with the Federal partners under the ECR MOU; and

• Assisting with coordination with resource, regulatory, and review agencies, including the ICG.

B. Access and Circulation Technical Methodology Issues and Approach

The effects of September 11, 2001 resulted in temporary impacts on access to and circulation within Lower Manhattan, some of which still affect regional and local travel. As a result, Lower Manhattan is now faced with balancing the progression of previously planned transportation improvements with the actions required to reconstruct and replace damaged and destroyed transportation infrastructure. This circumstance has the potential to result in temporary, short-term construction impacts, including cumulative effects, on businesses and residents both in terms of accessibility and mobility, as well as the associated implications for air quality and economic vitality. The potential is greatest in locations where multiple projects will be coincident in the same geographic area, or occur at the same or overlapping time periods.

Identification of problem areas as part of the cumulative effects analysis would require coordination among all potentially concurrent projects. This coordination would build upon the weekly construction coordination meetings hosted by New York City DOT. Technical work sessions among project sponsors and NYCDOT will identify key intersections and recommend refined analysis for potential mitigation strategies, as well as environmental performance commitments. These performance commitments could
potentially include construction staging to maintain adequate access and circulation around specific project areas and the region, and/or definition of a process by which staging would be coordinated to reduce impacts.

Next steps and issues to resolve in the development and finalization of the technical analysis methodology for access and circulation to be undertaken by the project sponsors are:

- Identify and convene technical working group to address traffic and circulation issues, and outline the coordination process and expected participation, roles, and responsibilities.
- Finalize a list and description of activities with the potential to cause short-term and long-term impacts to access and circulation, such as lane closures, vehicle rerouting, added congestion from delivery trucks, staging areas, and disruption to pedestrian activities.
- Confirm data sources and establish database for existing and future environmental conditions, current projects, and future projects, and undertake new data collection as appropriate to assess trip generation, multi-modal vehicular traffic volumes, traffic counts and projections, speed, modal split, and transit ridership.
- Establish analysis parameters relative to baseline years for construction and operation, as well as assumptions regarding AM, Midday, and PM Peak hours.
- Refine geographical boundaries of analysis to address micro-scale/project site location, traffic network, area-wide limits, and regional limits.
- Develop analysis characteristics and impact assessment approach including detailed procedural and quantitative assessment protocols to address the effects on travel patterns, connectivity, emergency access, and determine the impact criteria appropriate to assess internal and external circulation and mobility conditions within and to/from Lower Manhattan.
- Refine and commit to EPCs.
- Outline process for identifying and coordination mitigation requirements.
- Document completed technical assessment methodology.

FTA will assist the project sponsors in the advancement and development of the technical methodology by:

- Providing technical assistance and guidance at the request of the project sponsors, including participation in the technical working group on an as needed basis;
- Leading the coordination with the Federal partners under the ECR MOU; and
- Assisting with coordination with resource, regulatory, and review agencies.

C. Noise and Vibration Technical Methodology Issues and Approach

Reconstruction and recovery projects associated with transportation infrastructure could potentially cause changes to existing noise and vibration levels and could result in both short-term and long-term, cumulative effects. Construction activities in the same geographic vicinity or at the same time, or both, could result in short-term cumulative effects to residential areas or other sensitive receptors. Long-term
cumulative effects could result either directly from new or enhanced service (whether buses, or subway) or indirectly from increased services from feeder-bus or changes in traffic patterns in the area.

The range of noise impacts to be addressed within the cumulative effects analysis result from construction methods, traffic diversions, traffic volumes, mode, and surface noise or noise emanating through openings to the street through ventilation shafts and station entrances. Vibration impacts during construction could depend on such factors as volume, speed, construction methods, and soil conditions, and could be conducted through building foundations. Such impacts could also be perceived as noise. Long-term noise and vibration impacts could result from transit system operations.

Important considerations include the establishment of a noise and vibration monitoring program during construction, and a construction noise and vibration management system that provides flexibility in responding to identified exceedances and concerns. Technical working sessions will be necessary among active project sponsors to reconcile the multiple regulations and guidance covering noise and vibration impacts, each developed to address different types of facilities. These sessions should clearly identify methodologies for obtaining baseline data, clear criteria limits, construction noise and vibration mitigation features and monitoring, and potential EPCs, including enclosing construction areas during night time construction or limiting truck idling.

Next steps and issues to resolve in the development and finalization of the technical analysis methodology for noise and vibration to be undertaken by the project sponsors are:

- Identify and convene technical working group to address noise and vibration issues, and outline the coordination process and expected participation, roles, and responsibilities.
- Finalize a list and description of activities with the potential to cause short-term and long-term noise or vibration impacts, such as use of different construction methods, use of heavy equipment, excavation activities, demolition or deconstruction activities, construction vehicles, increased vehicular congestion, and operational changes, such as location, speed and frequency of vehicles.
- Confirm data sources and establish database for existing and future environmental conditions, current projects, and future projects, and undertake new data collection as appropriate to establish existing noise and vibration levels in the vicinity of sensitive receptors.
- Establish analysis parameters relative to baseline years for construction and operation.
- Refine geographical and temporal boundaries of analysis, including the project site as well as primary and secondary impact limits for the study area for peak, midday and night time hourly levels.
- Develop analysis characteristics and impact assessment approach including detailed procedural and quantitative assessment protocols to address potential noise and vibration impacts in accordance with FTA and FHWA guidance and regulations for the range of facilities to be developed and the range of construction activities to be undertaken. Guidance and regulations to be addressed include FTA Transit Noise and Vibration Guidance (DOT-T-95-16; 1995) and FHWA Procedures for the Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772).
- Refine and commit to EPCs.
- Outline process for identifying and coordination mitigation requirements.
• Document completed technical assessment methodology.

FTA will assist the project sponsors in the advancement and development of the technical methodology by:

• Providing technical assistance and guidance at the request of the project sponsors, including participation in the technical working group on an as needed basis;

• Leading the coordination with the Federal partners under the ECR MOU; and

• Assisting with coordination with resource, regulatory, and review agencies.

D. Cultural and Historic Resources Technical Methodology Issues and Approach

Lower Manhattan is rich in history and tradition that reflect the area’s central role in finance, commerce, and culture. In general, the range of potential impacts and disturbances to historic or architectural resources can include both direct physical impacts—demolition, alteration, or damage from construction on nearby sites—and indirect, contextual impacts, such as the isolation of a property from its surrounding environment, or the introduction of visual or atmospheric elements that are out of character with a property or that alter its setting or affect the structural integrity of the resource.

As part of the cumulative effects analysis, a detailed scope of work for cultural and historic resources would be developed in consultation with SHPO and the Landmarks Preservation Commission (LPC). The technical analysis methodology will address regulatory requirements under Section 4(f) of the U.S. Department of Transportation Act, Section 106 of the National Historic Preservation Act, and in accordance with the Secretary of the Interior’s Standards for Archaeology and Historic Preservation and the New York State Archaeological Council’s Standards for Cultural Resource Investigations and Curation of Archaeological Collections. A plan for implementation, including staging of specific construction efforts, should be developed in coordination with project sponsors and agencies. Part of this coordination will be to identify potential EPCs to be used to offset potential impacts to cultural resources before they occur, such as restrictions on the storage of construction equipment that might otherwise result in short-term visual impacts to historic structures, on compaction and damage to archaeological resources. Likewise, once potential impacts are identified, mitigation measures to reduce impacts should be coordinated with agencies and project sponsors.

Next steps and issues to resolve in the development and finalization of the technical analysis methodology for cultural and historic resources to be undertaken by the project sponsors are:

• Identify and convene technical working group to address cultural resource (historic and archaeological), and outline the coordination process and expected participation, roles, and responsibilities.

• Finalize a list and description of activities with the potential to cause short-term and long-term impacts to cultural resources, such as use of different construction methods, use of heavy equipment, excavation activities, demolition or deconstruction activities, underpinning, new structures and changes in pavement of other contextual items.

• Confirm data sources and establish database for existing and future environmental conditions, current projects, and future projects, and undertake new data collection (research or field surveys) as appropriate to establish existing cultural resources eligible for or potentially eligible for the National of Historic Places in the vicinity of proposed projects.

• Establish the Area of Potential Effect (APE) in consultation with the SHPO.
• Develop analysis characteristics and impact assessment approach including detailed procedural and quantitative assessment protocols to address potential effects on identified cultural resources, and the extent to which those effects may be adverse. The development of the approach should be done in consultation with the SHPO, NYC Landmarks Preservation Committee, and the Landmarks Conservancy, in addition to the Federal partners and the Advisory Council on Historic Preservation, as necessary.

• Refine and commit to EPCs.

• Outline process for identifying and coordination mitigation requirements to address adverse effects.

• Document completed technical assessment methodology.

FTA will assist the project sponsors in the advancement and development of the technical methodology by:

• Providing technical assistance and guidance at the request of the project sponsors, including participation in the technical working group on an as needed basis;

• Leading the coordination with the Federal partners under the ECR MOU; and

• Assisting with coordination with resource, regulatory, and review agencies, including consultation with the Advisory Council on Historic Preservation and the U.S. Department of the Interior, as needed.

E. Economic Considerations Technical Methodology Issues and Approach

According to FEMA estimates, New York City’s economy will sustain a gross loss of approximately $83 billion due to the World Trade Center disaster (August 2002). Even after the effect of insurance payments and the Federal emergency funds, the New York City economy faces a net impact of at least $16 billion in lost economic output (NYC Partnership and Chamber of Commerce, 2001). The rebuilding efforts undertaken by FTA and its Federal partners, state and local agencies are designed to restore Lower Manhattan to its original role as an important economic engine for the region, while also improving its accessibility, livability and economic vitality. As part of the rebuilding efforts, the remaining business interests could be subject to additional impacts associated with reconstruction activities. In addition, changes in the transportation network and urban structure of the area created through rebuilding efforts, may generate additional impacts to local and regional economic conditions.

Issues to be addressed as part of the cumulative effects analysis relative to economic effects pertain to both regional and local economic conditions, such as development, tax revenues and public expenditures, employment opportunities, accessibility, retail sales, the economic vitality of existing businesses, and the effect of a restored, enhanced and new transportation infrastructure investment on established business districts. The cumulative effects analysis must take into account both short-term construction impacts and long-term operational (post construction) impacts.

Technical work sessions among project sponsors will identify areas where potentially significant adverse economic effects from concurrent construction activities may result for local businesses, the City of New York, and the region. To the extent practical, EPCs and mitigation measures should be identified as early as possible for implementation prior to, or during the construction process. Areas of anticipated economic improvement associated with completed projects should also be identified and quantified to the extent possible.
Next steps and issues to resolve in the development and finalization of the technical analysis methodology for economic impacts to be undertaken by the project sponsors are:

- Identify and convene technical working group to address economic impacts, and outline the coordination process and expected participation, roles, and responsibilities.

- Finalize a list and description of activities with the potential to cause short-term and long-term economic impacts, such as the effects on utility disruptions on business activities, limitations on pedestrian, vehicular, and transit access to businesses, losses or increases in jobs, potential increases or losses in retail sales, effects on the tax base, effects on property valuations and potential for business and residential relocations, among others.

- Confirm data sources and establish database for existing and future environmental conditions, current projects, and future projects, and undertake new data collection (market assessment or property surveys) as appropriate to establish existing and future economic conditions in the vicinity of proposed projects.

- Coordinate with NYMTC on economic data inputs and NYMTC regional econometric model, particularly employment and population projections through 2025.

- Review MTA financial model.

- Establish the geographic and temporal boundaries for analysis to address both micro-scale (site specific) and macro-scale (regional) economic consequences.

- Develop analysis characteristics and impact assessment approach including detailed procedural and quantitative assessment protocols to address potential effects on regional and local economic factors, illustrating the extent to which those effects may be beneficial or adverse. The approach should focus on the trends and outcomes of direct, indirect and cumulative effects of economic and fiscal impacts including changes in business activity, employment, income, population and tax revenues.

- Refine and commit to EPCs.

- Outline process for identifying and coordination mitigation requirements to address adverse effects.

- Document completed technical assessment methodology.

FTA will assist the project sponsors in the advancement and development of the technical methodology by:

- Providing technical assistance and guidance at the request of the project sponsors, including participation in the technical working group on an as needed basis;

- Leading the coordination with the Federal partners under the ECR MOU; and

- Assisting with coordination with resource, regulatory, and review agencies.
4.0 Implementation Roles and Responsibilities

Numerous stakeholders are involved with the Lower Manhattan Recovery Effort and are responsible for funding, project development, project review, concurrence, and permitting. The August 2002 ECR MOU (Appendix A) specified commitments regarding federal agency roles and coordination, as well as a streamlined environmental process (“Environmental Coordination and Review Among Federal Partners”). In addition to the Federal partners, other stakeholders include project sponsoring agencies and state and local agencies. The clear articulation and understanding of roles and responsibilities of various stakeholders with respect to the coordinated cumulative effects analysis is an important part of defining and implementing a successful framework for the evaluation of cumulative effects.

Successful completion of the coordinated cumulative effects analysis will require participation of the federal entities identified in the original MOU, as well as a broader array of stakeholders. Appendix E provides a list of participants in the coordinated cumulative effects analysis and outlines their respective roles in the Lower Manhattan Recovery Effort NEPA process, and the cumulative effects analysis. In general, there are five basic levels of participation identified for the coordinated cumulative effects analysis:

- **Federal lead agencies**, or their designated representatives, are responsible for developing the cumulative effects analysis approach, providing technical guidance, and ensuring compatibility of approach across projects.

- **Cooperating agencies** are responsible for providing technical assistance, including input into the cumulative effects analysis approach, in addition to fulfilling responsibilities under NEPA by responding to the requests of the lead federal agencies and participating in key milestone activities that affect the treatment of cumulative effects such as scoping, field reviews, public involvement activities, and environmental document review.

- **Resource and regulatory** agencies are responsible for contributing to development of the cumulative effects analysis framework and providing technical assistance regarding proposed methodologies, as well as reviewing and commenting on cumulative effects analysis findings.

- **Review agencies** are responsible for providing comments on cumulative effects analysis methodology and evaluation findings.

- **Project sponsoring agencies** are responsible for preparing cumulative effects analyses for inclusion in NEPA documentation in accordance with the adopted methodology and guidance, as well as consultation and coordination with appropriate federal, state, and local agencies. As part of this responsibility, it is likely that the sponsoring agencies will convene multi-agency technical working groups to address each of the areas of environmental concern.
5.0 Next Steps and Recommendations

The following actions are required to advance the *coordinated cumulative effects analysis* for the Lower Manhattan recovery effort:

- Finalize implementation of the approach with project sponsors, including the application of technical methodologies and the adoption of environmental performance commitments (EPCs) for each of the five environmental areas of concern (air quality, noise and vibration, access and circulation, cultural and historic resources, and economic factors).

- Continue coordination with EPA and the Federal partners to assess progress on implementation of the approach.

- Provide technical support to project sponsors during advancement of the environmental process for Fulton Street Transit Center “demonstration” project, and other projects as they advance.

- Conduct a Peer Review of the *coordinated cumulative effects approach* during implementation.

- Document the demonstration project methodologies and process for use by future projects.
APPENDIX A

Memorandum of Understanding
Environmental Coordination and Review Among the Federal Partners
(August 2002)
MEMORANDUM OF UNDERSTANDING
ENVIRONMENTAL COORDINATION AND REVIEW
AMONG THE FEDERAL PARTNERS
OF THE
FEDERAL TASK FORCE TO REBUILD NEW YORK CITY
ENVIRONMENTAL PLANNING AND REVIEW COMMITTEE

This Memorandum of Understanding (MOU) is entered into jointly by the following parties: the Federal Emergency Management Agency (FEMA); the Federal Transit Administration (FTA); the Federal Highway Administration (FHWA); the U.S. Department of Housing and Urban Development (HUD); the New York State Urban Development Corporation d/b/a the Empire State Development Corporation (ESDC) and the Lower Manhattan Development Corporation (LMDC); the U.S. Coast Guard (USCG); the U.S. Environmental Protection Agency (EPA); the U.S. Army Corps of Engineers (USACE); the U.S. Fish and Wildlife Service (USFWS); and the National Marine Fisheries Service (NMFS).

I. Purpose

The purpose of this Memorandum of Understanding (MOU) is to formalize the commitment among the listed Federal agencies to work in a partnering process to coordinate and accelerate the review of projects under the National Environmental Policy Act (NEPA) and associated laws in order to develop environmentally responsible projects while preventing project delays. The partnership would also ensure that the Federal agencies work efficiently with the State and Local agencies toward this goal. This partnership will facilitate a coordinated approach that ensures environmentally sound decisions based on concurrent and expedited agency reviews. This MOU shall be applicable to projects developed and/or funded as a result of the September 11, 2001, terrorist attack on New York City (NYC).

II: Background

The need for environmental coordination to streamline project development and construction is seen as necessary by the parties to fulfill the mandates of NEPA and applicable Federal, State, and local environmental laws.

The MOU identifies the Federal lead and cooperating agencies for the preparation and documentation of analysis required under NEPA and associated laws, and establishes a response period among the listed agencies for consultation, coordination, and concurrence of project requirements. Additional MOUs or other agreements may be developed to address particular issues, projects, or other needs to further the intent of this MOU.

The federal funding agencies, which include FEMA, FTA, FHWA, and HUD, developed a preliminary list of potential recovery projects. These projects are identified in the Emergency/Interim Transportation Disaster Recovery Plan and referenced herein. Similar or additional projects may be identified at a later date within the same scope or magnitude, and this MOU shall be applicable to those projects.
III. Commitments of the Agencies

Since the projects may involve funding, concurrence, or permitting from several Federal agencies, each agency will be responsible for identifying the issues that must be addressed to satisfy its respective statutory requirements and for coordinating with other agencies as necessary. Each of the signatories to this MOU will be responsible for the following:

- FEMA - will serve as a lead agency and coordinate all project reviews for projects funded under FEMA programs related to the disaster designated FEMA-1391-DR-NY, serve as a cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for National Flood Insurance Program related issues.

- FTA - will serve as a lead agency and coordinate all project reviews for projects funded under FTA programs, serve as a cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for transit-related projects.

- FHWA - will serve as a lead agency and coordinate all project reviews for projects funded under FHWA programs, serve as a cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for road-related projects.

- HUD - will serve as a cooperating agency for projects funded under non-HUD authorities, as appropriate.

- New York State through the ESOC and/or the LMDC, pursuant to 42 U.S.C. 5304(8), will assume the Federal agency responsibility for environmental reviews, will act as a lead agency, and will coordinate all project reviews for projects funded under HUD community development programs; and upon the request of a federal lead agency, will serve as a cooperating agency for projects funded under other authorities, as appropriate.

- USACE - will serve as a cooperating agency and provide technical assistance, as necessary, in evaluating projects to ensure any U.S. water or wetland impacts are identified, avoided or minimized, and mitigation resolved.

- USCG - will serve as a cooperating agency and provide technical assistance, as necessary, in evaluating projects to ensure the U.S. navigable waterway needs are met and any bridge impacts are identified and resolved.

- EPA - will serve as a cooperating agency and provide technical assistance, as necessary, to ensure air quality, water quality, and hazardous waste standards are evaluated in NEPA documents and other environmental studies in support of NEPA documents, as appropriate.

- USFWS - will serve as a cooperating agency and provide technical assistance, as necessary, in evaluating projects to ensure threatened and endangered species are identified, any impacts avoided or minimized, and mitigation resolved.

- NMFS - will serve as a cooperating agency and provide technical assistance in, evaluating projects, as necessary, to ensure threatened and endangered species and essential fish habitat are identified, any impacts avoided or minimized, and mitigation resolved.

In the spirit of cooperation and collaboration, and with the mutual understanding that this is a flexible working agreement among the signatory agencies, we hereby commit to undertake the following actions:
• Support concerted, cooperative, effective, and collaborative work to provide for the
disaster recovery effort resulting from the September 11, 2001, New York City
terrorist attack.

• Accelerate all project reviews under our respective jurisdictions.
• Notify parties at the earliest project proposal stage when it becomes apparent that a party
will not have an action and therefore will not need to participate further in that project's
development.
• Address anticipated needs for funding, licensing, permitting, or other action that may
result from a proposed project by ensuring that consultation, documentation, and design
meet the needs for agency approval(s).
• Coordinate agencies' public involvement processes to the extent possible.
• Participate in the development of technical information, identification of impacts on
resources, and mitigation recommendations.
• Review and comment on draft documentation regarding project impacts, mitigation,
and design.
• Participate in meetings as necessary to discuss such documentation, mitigation, and design.
• Provide timely review and constructive comments on projects, focusing additional
information requests on information that is needed to reach an informed decision.
• Identify solutions to reduce unnecessary project delays by using concurrent review of plans
and projects and other means.
• Share information on project reviews with Federal, State, and City agencies in order to
avoid duplication of effort.
• Identify potential barriers to achieving project goals through meetings, conference calls,
and participation in developing timely resolutions.

To aid in meeting these commitments the parties agree to do the following:

• Provide response and/or comment within a 10-day period from the date of receipt
• Provide comments and propose mitigation at the earliest stage possible in project
development.
• Share information related to project development, review, and approval to assist other
parties in carrying out their responsibilities and decision-making.
• Provide representation and information to meet these commitments via meetings of the
Federal Task Force to Rebuild NYC and the Environmental Planning and Review
Committee, and additional communication, as needed.
• To the greatest extent possible, speak with one voice through the lead Federal agency in
order to ensure working efficiently.
• This MOU may be modified upon the mutual (written) consent of participating parties.
• An agency, upon 10 days written notice to the other participants, may terminate its
participation in this agreement without rendering the document invalid for all other
participating agencies; supplemental documentation of termination of participation will
be adopted by the remaining agencies upon receipt of the written notice.
• Nothing in this MOU shall be construed as limiting or constraining a lead or cooperating
agency's obligation to make an independent assessment and decision regarding the
appropriate level of environmental documentation and processing with respect to
specific projects under NEPA and related statutes.

This MOU may be implemented in counterparts, with a separate page for each signatory, and
FEMA will ensure that each party is provided a complete copy. This MOU is effective on the signatory date for each party. Nothing in this agreement is intended to conflict with current law or regulation or directives of the signatory parties. If a term of this agreement is inconsistent with such authority, then the term shall be invalid, but the remaining terms and conditions of this agreement shall remain in full force and effect. Potentially, other agencies may become parties to this agreement as project development progresses. This MOU shall remain in effect until the last project funded as a result of the September 11, 2001, terrorist attack on New York City is fully constructed.

IV. Conclusion

In signing this MOU, the undersigned recognize and accept the roles and responsibilities assigned to each party. Each of the parties agrees to pursue cooperation, communication, and efficiency to effectively ensure that projects comply with all applicable Federal requirements.
LOWER MANHATTAN DEVELOPMENT CORPORATION

By: [Signature]

Kevin N. Russo, Executive Vice President and General Counsel

Date: [Signature]

MEMORANDUM OF UNDERSTANDING
ENVIRONMENTAL COORDINATION AND REVIEW
AMONG THE FEDERAL PARTNERS OF THE
FEDERAL TASK FORCE TO REBUILD NEW YORK CITY
ENVIRONMENTAL PLANNING AND REVIEW COMMITTEE

9 of 15
U.S. ARMY CORPS OF ENGINEERS

By: [Signature]
Colonel John M. O'Dowd, Commander, New York District

Date: 2 July 2001

MEMORANDUM OF UNDERSTANDING
ENVIRONMENTAL COORDINATION AND REVIEW
AMONG THE FEDERAL PARTNERS OF THE
FEDERAL TASK FORCE TO REBUILD NEW YORK CITY
ENVIRONMENTAL PLANNING AND REVIEW COMMITTEE
U.S. COAST GUARD

By: [Signature]
Rear Admiral Vivas S. Cline
Commander, First Coast Guard District

Date: [Date]

MEMORANDUM OF UNDERSTANDING
ENVIRONMENTAL COORDINATION AND REVIEW
AMONG THE FEDERAL PARTNERS OF THE
FEDERAL TASK FORCE TO REBUILD NEW YORK CITY
ENVIRONMENTAL PLANNING AND REVIEW COMMITTEE

13 of 15
NATIONAL MARINE FISHERIES SERVICE

By: [Signature]

Patrick A. Kerkol, Regional Administrator,
Northeast Regional Office

Date: 8/9/02
APPENDIX B

Federal Emergency Management Agency (FEMA) Letter Regarding Transition of EPRC to FTA

(November 18, 2002)
November 18, 2002

Susan E. Schruth,
Director
Lower Manhattan Recovery Office
Federal Transit Administration
One Bowling Green, Room 429
New York, NY 10004-1415

Dear Ms. Schruth:

The Federal Emergency Management Agency (FEMA) has gathered background data related to our projects in response to the September 11, 2001, disaster in New York City in the draft Programmatic Assessment for Reconstruction and Recovery Activities, World Trade Center Disaster, New York, New York, dated August 2002. Although initially we had anticipated that this analysis would encompass all projects carried out as a result of the disaster, as well as other on-going projects in the area, time and resources did not enable us to realize this objective. Thus, some of the preliminary conclusions drawn in the document, such as significance thresholds, do not have the full technical analysis and evaluation necessary to support them and cannot be fully evaluated without project-specific information that was not available for this preliminary assessment.

With the Environmental Planning and Review Committee (EPRC) Federal leadership now being transitioned to the Federal Transit Administration (FTA) for the long-term recovery effort, FEMA will not be completing the document as initially envisioned and will provide our Federal partners with the analyses completed in support of this document and the EPRC. We believe this preliminary analysis of potential projects will be useful in evaluating comprehensively the impacts of the long-term disaster recovery projects.

I understand you will be contacting the EPRC members shortly regarding how the EPRC can best evolve to meet the needs for transitioning from the initial disaster recovery phase to the long-term project recovery phase. I am happy to share some thoughts and ideas on how best to address interagency coordination among Federal, State, and local partners in this effort with you. It has been a pleasure serving as co-chair of the EPRC and I know that the long-term New York City recovery efforts will be successful.

Sincerely,

[Signature]

Brad Gair
Federal Recovery Officer

cc: Committee Members, EPRC
APPENDIX C

Governor George E. Pataki Letter Identifying Priority Projects Recommend for the Lower Manhattan Recovery Effort

(February 6, 2003)
Dear Mr. Allbaugh and Ms. Dorn:

Thank you for your letter of January 10th and your continuing commitment to assisting the state of New York as it recovers from the devastating terrorist attacks of September 11, 2001. The $4.55 billion in transportation assistance is crucial to the successful recovery of lower Manhattan. Rebuilding, restoring and enhancing lower Manhattan’s transportation system is the top priority of my long-term plans for its revitalization. The efforts undertaken by the Federal Emergency Management Agency (FEMA) and the Federal Transit Administration (FTA) to deliver these needed resources through an efficient and responsive process are critical to achieving this goal. We are gratified that the FTA has created the Lower Manhattan Recovery Office and we appreciate the on-site commitment that FEMA has made since the day of the attack. Both offices have done an exceptional job in moving projects forward.

In my October 17 letter I set forth a list of projects recommended by the agencies most familiar with lower Manhattan’s transportation infrastructure and needs. These projects were the result of extensive discussions by the Transportation Working Group composed of representatives of the State of New York, the City of New York, the Metropolitan Transportation Authority (MTA), the Port Authority of New York and New Jersey (PANYNJ), the New York State Department of Transportation (NYSDOT), and the Lower Manhattan Development Corporation (LMDC). That list of projects has not changed. The projects (and responsible agencies) are as follows:

- A lower Manhattan Transit Complex that will repair, replace and restore transportation functionality, unify lower Manhattan transportation facilities and provide needed intermodal access:
  - World Trade Center Transportation Hub (including World Trade Center PATH Terminal, pedestrian connections and related infrastructure) (PANYNJ); and
  - The Fulton Street Transit Center (MTA).
- The South Ferry Subway Terminal (MTA)
- Access to regional airports (MTA/PANYNJ)
- Bus Facilities and Street Restoration (PANYNJ)
- Improvements to Route 9A/West Street consistent with site redevelopment (NYSDOT)
On December 12, 2002 New York City Mayor Bloomberg unveiled the City’s vision for lower Manhattan. This bold vision identifies the projects set forth in this letter as critical to the revitalization of lower Manhattan in the wake of the September 11th attacks. The release of the vision has also prompted us to consider several additional projects which are listed below:

- Ferry infrastructure: A series of new terminals around lower Manhattan and elsewhere in the region (as required to serve lower Manhattan);
- East River waterfront improvements (FDR Drive viaduct, Brooklyn Bridge access ramps, and Battery Tunnel Plaza): As part of a plan to revitalize the waterfront along the East River, changes to the transportation infrastructure along the waterfront will be examined; and
- Brooklyn Battery Tunnel decking: To eliminate a current barrier to development formed by the entrance to the Brooklyn Battery Tunnel, a deck that would allow for creation of a new park and residential community.

The Lower Manhattan Transit Complex and the South Ferry Subway Terminal are moving forward immediately. Other projects are less defined. More detail from my office will follow within the next three months.

In the immediate aftermath of September 11th the responsible agencies for all of these projects worked closely with FEMA and the FTA to immediately restore, where possible, the lower Manhattan transportation infrastructure. In addition, these agencies held numerous briefings to inform the FTA, FEMA and other federal officials about the projects needed and the steps necessary to restore full functionality. Briefings were held in Washington, D.C. and New York where they included field visits to the impacted transit facilities and electronic presentations of the proposed projects. With the establishment of the special FTA Lower Manhattan Recovery Office in 2002, the responsible agencies initiated a series of regular meetings to review the proposed projects in greater detail.

Since my letter of October 17th, these meetings have become the core of an ongoing, regular consultation process with FTA staff and its contractors and coordination with appropriate FEMA personnel. Regular review meetings will continue throughout the life of the projects. Because many projects are currently in the preliminary stages of development, the costs and scopes set forth below are likely to change as projects move forward. The costs, in particular, are current estimates and will be further refined as projects develop. In recognition of the fact that the scope of each of these projects, as well as cost estimates, may change as we move forward, the Transportation Working Group will meet at least monthly to review project status and proposed changes to scope and costs. As necessary, the Transportation Working Group will recommend to my office changes in the costs set forth below and any proposed reallocation of FTA/FEMA funds. Such a request will be forwarded by me, in writing, to FTA.
I set forth below the information requested in your letter. Project descriptions are brief, additional project scope, schedule, and cost estimate information will be forwarded separately to appropriate FTA and FEMA staff as they work with each sponsoring agency to implement the projects.

a.  **Lower Manhattan Transit Complex**

1.  World Trade Center Transportation Hub (including World Trade Center PATH Terminal, pedestrian connections and related infrastructure)  (PANYNJ)

Definition/Cost/Schedule

Prior to September 11th, over 130,000 PATH riders passed through the World Trade Center (WTC) PATH Terminal each day, along with thousands of subway riders using the NYCT stations accessible via the WTC Concourse. This project will restore and enhance the WTC PATH Terminal and pedestrian connections including intermodal transfers on the east to the Fulton Street Transit Center through the latter’s underground pedestrian passageway across Church Street. To the west, the WTC PATH Terminal will connect, via an underground pedestrian passageway, across West Street (Route 9A) with the World Financial Center and the World Financial Center Ferry Terminal.

At the lowest level of the World Trade Center site, PATH facilities would be expanded including additional platform capacity to increase efficiency and accommodate future growth. The terminal will include a main entry and many other multi-level indoor connections to surrounding streets, designed to help orient users to the transit connections available within the intermodal terminal. The new transportation hub will facilitate circulation for hundreds of thousands of daily users.

The requested federal funding amount of $1.4 to $1.7 billion reflects refinements of project costs and an allocation of potential insurance recoveries by PANYNJ. The total project cost is $1.7 to $2 billion in year of construction costs. Environmental review and final design for the WTC Transportation Hub will begin by late 2003 with initial construction starting by late 2004 or early 2005. Phased completion of project components for Downtown PATH Terminal facilities is estimated by late 2007, with other pedestrian connections completed during 2008 and early 2009.
Status

Numerous working meetings have taken place with the FTA Lower Manhattan Office to review the project scope and environmental process. PANYNJ is currently performing conceptual design work for the WTC Transportation Hub, and will advance into preliminary engineering in mid-2003.

2. The Fulton Street Transit Center (MTA)

Definition/Cost/Schedule

The Fulton Street Transit Center is a rehabilitated, reconfigured, enhanced multi-level, underground complex of subway stations serving nine different lines, with improved platforms, mezzanines and connection corridors and a new central concourse with a new above-ground presence. Over two hundred seventy-five thousand commuter trips are served by these subway stations daily. In addition, this complex will extend westward one block underneath Dey Street to Church Street via a new underground pedestrian passageway providing a new link to two additional subway lines, the WTC PATH Terminal and a future connection to the World Trade Center development site. The estimated cost is $750 million in year of construction dollars and completion is expected by 2007.

Status

Numerous working meetings have taken place with the FTA Lower Manhattan Office to review the project scope, cost estimates and the environmental process. The FTA project management oversight (PMO) consultant is currently reviewing the Transit Center cost estimate with MTA cost estimators and engineers; areas of focus include: core costs, costs related to maintaining subway operations during construction; and provisions in the project budget for costs revisions - in the form of contingencies - as the project advances from conceptual design today, through preliminary engineering later in 2003 and into final design in 2004/5; (estimated completion in 2007 as originally planned.)

At the same time, the MTA has initiated the environmental impact statement required by federal law; and targeted for completion in 2004. As part of the EIS, MTA is working with FTA and FTA's environmental consultant to develop a template and protocol for assessing cumulative impacts in lower Manhattan as the Transit Center is developed along with other lower Manhattan projects. LMDC is coordinating the development of the MTA approach with the other project sponsors of the Transportation Working Group so that the approach will be common to all lower Manhattan transportation projects.
Finally, MTA is preparing a grant application to FTA for the Transit Center project for submission.

a. South Ferry Subway Terminal (MTA)

Definition /Cost/Schedule

The South Ferry Terminal Station is the replacement of the functionally obsolete single track, 5-car station on the 1/9 subway lines with a full length (ten car), three track, two-platform terminal, with additional entrances and pedestrian connections to the Whitehall N/R station and the new Staten Island Ferry Terminal. The new station will eliminate physical and operational deficiencies of the existing station, which will in turn improve travel time, reduce entrance congestion, upgrade station access to be fully compliant with ADA and improve overall access to lower Manhattan.

The design of the South Ferry Terminal Station includes surface access elements, some of which could be located in Battery Park, under which the subway line passes today. The feasibility of a number of alternatives is being investigated in the environmental and design process to reduce or remove those elements; or to mitigate the impact of those elements consistent with the existing and planned Park features.

The estimated cost is $400 million in year of construction dollars and completion is targeted for 2007.

Status

MTA is currently defining the environmental approach, including a consultant scope of work, to be used for the project in consultation with FTA. A field visit has taken place with FTA staff, and once the grant process has been completed for Transit Center in February, detailed project discussions will commence with FTA including PMO review.

The following projects are estimated to cost $1.7 to $2 billion. These projects are in their preliminary stages and individual cost estimates for each project are still under discussion. After consultation with the Transportation Working Group, I will forward estimates and an expected timeline for decision for each project as the WTC site plan development is finalized and these projects are more clearly defined.

b. Access to regional airports (MTA/PANYNJ)

Definition/Cost/Schedule

Fast, convenient airport links to the region’s airports are essential to lower Manhattan’s economic recovery as the nation’s third largest central business district. This project is to enable future rail service between the airports and lower Manhattan.
Status

A number of airport access service alternatives are currently under study. This project will be coordinated with that effort.

d. Bus Facilities and Street Restoration (PANYNJ)

Definition/Cost/Schedule

Bus Facilities will include essential World Trade Center (WTC) site infrastructure work necessary to support surface transportation elements for the initial phase of WTC site redevelopment, and will be guided by the ongoing WTC site master plan development and WTC memorial development. The WTC site master plan will integrate the lower Manhattan street system. In addition, the September 11th memorial will require substantial bus facilities to accommodate millions of annual visitors.

The WTC complex had accommodated vehicular circulation around the site, as well as into the sub-grade of the complex. The future WTC-site redevelopment program will require reconfiguration of roadways and public rights-of-way to support efficient traffic flow while meeting changed site access and security requirements. A sub-grade bus parking facility will be necessary to accommodate the September 11 memorial. Significant infrastructure will be restored to handle on-site bus parking, including ramps, roadways, parking decks, and security infrastructure for pick-up, drop-off, and site access. In addition, this project will include restoration of surface streets on the WTC site, as well as underlying structural support elements.

As a pre-requisite to any permanent construction, WTC site preparation work would include permanent structural reinforcement of slurry walls, demolition of remaining structures, and any required excavation. Appropriate allocations for the cost of WTC site preparation work have been included in this project, as well as the WTC Transportation Hub project. Current cost estimate is $500 million.

Status

The Port Authority, in coordination with the LMDC, is currently performing planning studies on WTC site infrastructure components and expects to advance into preliminary engineering in mid-2003. Final design and construction for the WTC site infrastructure and bus facilities will be performed in conjunction with implementation of the overall WTC site redevelopment and memorial construction. Initial WTC site preparation work, however, will begin in 2004, with street construction and bus facilities to follow.
e. **Improvements to Route 9A/West Street consistent with site redevelopment (NYSDOT)**

**Definition/Cost/Schedule**

NYSDOT is, in cooperation with LMDC and PANYNJ, seeking to permanently restore Rte 9A / West Street. A critical component is the establishment of a safe above-ground pedestrian passage from the WTC site to Battery Park City, the World Financial Center, the waterfront and Battery Park City. FHWA ER funds are only applied to the restoration of the roadway.

The final design of Rte 9A and a functioning pedestrian system is dependent on the final disposition of the WTC. Given peak period pedestrian volumes crossing Route 9A between the WTC Transportation Hub and the World Financial Center, the overall reconstruction plan would integrate at-grade and grade-separated east-west crossings with the PA transit concourse and the Route 9A promenade design, also including proposed commuter bus stops on Route 9A serving WTC and WFC. In combination with the pedestrian concourse described in a.1. above, safe pedestrian access across West Street will be restored. Such restoration will likely occur through the tunneling of some portion of Route 9A. While FHWA funding is available for the roadway no federal recovery program is available to fund the pedestrian needs. Improving pedestrian access both across and along Route 9A, enhances urban design and aesthetics, re-connecting lower Manhattan with Battery Park City through the development of a "promenade" from Liberty Street (the southern end of the WTC site) to Battery Place. This promenade would provide for increased and improved pedestrian activity and streetscaping on the East and West side of Rte 9A. Overall project schedule will be between 2 and 5 years and will be dependent on the pace of WTC site planning efforts.

**Status**

NYSDOT is currently evaluating alternatives in coordination with the WTC site plan development and undertaking preliminary engineering.

f. **Additional transportation infrastructure projects specifically identified in New York City's vision for lower Manhattan**

**Definition/Cost/Schedule**

The following additional projects are specifically identified in New York City’s vision for lower Manhattan:

1. Ferry infrastructure: A series of new terminals around lower Manhattan and elsewhere in the region (as required to serve lower Manhattan);
2. East River waterfront improvements (FDR Drive viaduct, Brooklyn Bridge access
ramps, and Battery Tunnel Plaza): As part of a plan to revitalize the waterfront along the East River, changes to the transportation infrastructure along the waterfront will be examined; and

3. Brooklyn Battery Tunnel decking: To eliminate a current barrier to development formed by the entrance to the Brooklyn Battery Tunnel, a deck that would allow for creation of a new park and residential community.

Status

Cost and schedule for completion are the subject of ongoing discussions within the Transportation Working Group.

Adequate contingencies are provided in each of the requests for federal funding outlined above. We recognize the importance of closely monitoring and, where possible, reducing costs so as to keep the above projects within the federal allocation. The responsible agencies stand ready to work with FTA staff to address any concerns regarding cost contingencies.

Critical to the success of the above projects will be a team with a proven record of managing complex transportation projects through to completion. New York is fortunate to have such a team in each of the responsible agencies. These individuals have already been working with FEMA and the FTA Lower Manhattan Recovery Office over the preceding months and they will continue to serve as the primary staff contacts as these projects move forward.

MTA-

William Wheeler, the MTA Director of Special Project Development and Planning will continue to be the official point of contact for the Transit Center and South Ferry projects. Mr. Wheeler reports directly to Katherine Lapp, the MTA Executive Director and Chief Operating Officer. Mr. Wheeler's team includes Mr. Mysore Nagaraja, MTA NYCT Senior Vice President and Chief Engineer who will oversee the design and construction of the Projects and Mr. Gregory Kullberg, the MTA Director of Capital Program Budgets and Grant Management who will oversee the grant management process. This team has worked together on many large MTA capital projects with FTA and PMO staff, and the team is already working with the FTA Lower Manhattan Recovery staff. Mr. Wheeler can be contacted at (212) 878-7258; wwheeler@mtahq.org.

NYSDOT-

Tim Gilchrist, Director of Planning and Strategy will be the senior contact on the Improvements to Route 9A/West Street project. The project contacts will be Douglas A. Curry, who serves as the Regional Director, R-11 (NYC) and Richard J. Schmalz, Rte 9A Project Director. All of these individuals have extensive experience with large projects and federal funding. Mr. Currey served as the project manager for the original reconstruction of Route 9A.
Mr. Joseph M. Allbaugh  
Ms. Jennifer Dorn  
February 6, 2003  
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Tim Gilchrist  
NYSDOT – Planning & Strategy Group  
State Office Campus, Bldg. 5, Rm. 309  
1220 Washington Avenue  
Albany, N.Y. 12232  
(518) 457-6700  
tgilchrist@dot.state.ny.us

Douglas Currey  
NYSDOT – Region 11  
47-40 21st Street  
Long Island City, NY 11101  
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Richard Schmalz  
Route 9A Project Office  
21 South End Avenue  
New York, NY 10280  
(212) 267-4113  
rschmalz@dot.state.ny.us

PANYNJ-

Anthony Cracchiolo, Director of Priority Capital Programs will be the senior project contact for the WTC PATH Terminal, and Bus Facilities and Street Restoration projects. Tony has extensive experience in successfully implementing multi-billion regional transportation projects involving federally authorized funding and public review processes – most notably the Port Authority’s airport access projects (AirTrain JFK and AirTrain Newark). Tony also directs the Port Authority’s other Downtown Restoration Projects including the current PATH Restoration construction, WTC site planning work, and WTC site management. A. Paul Blanco, Chief of Regional and Economic Development, will be the Port Authority’s representative on federal funding amounts. Paul is coordinating all of the Port Authority’s federal reimbursement claims related to the terrorist attacks. Tony and Paul will also be working closely with Frank Lombardi, Chief Engineer, and his architectural and engineering staff on all design and construction matters for the projects.

Tony Cracchiolo, Director of Priority Capital Programs  
115 Broadway, 5th Floor  
New York, NY 10006  
(212) 435-5529  
aacrachi@panynj.gov
Mr. Joseph M. Allbaugh  
Ms. Jennifer Dorn  
February 6, 2003  
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A. Paul Blanco, Chief of Regional and Economic Development  
1 Riverfront Plaza – 9th Floor  
Newark, NJ 07102  
(973) 565-5502  
pblanco@panynj.gov

The responsible agencies appreciate the need to identify, for budgeting and tracking purposes, the sub-allocation of the FEMA and FTA funds to the individual projects outlined above. They stand ready to discuss this matter in greater detail with FEMA and FTA staff to better understand the eligibility requirements attached to each source of funds.

Coordination of the State’s ongoing effort will be spearheaded by my office. The Transportation Working Group will continue to meet on a regular basis to maintain coordination of projects and to identify methods to maximize federal resources. The above represents the State’s best estimate of current project scopes and costs. Any required adjustments will be made by my office in coordination with the Transportation Working Group. The point of contact in my office will be Diana Taylor, Deputy Secretary to the Governor, who can be reached at (212)681-2913. The LMDC will also continue to serve in a coordinating role with respect to the transportation improvements undertaken in lower Manhattan.

Thank you, once again, for your ongoing support and assistance in the important task of restoring, rebuilding and revitalizing lower Manhattan in the wake of the September 11 attacks.

Very truly yours,

[Signature]

Mr. Joseph M. Allbaugh  
Director  
Federal Emergency Management Agency  
500 C Street, S.W.  
Washington, D.C. 20572

Ms. Jennifer Dorn  
Administrator  
Federal Transit Administration  
U.S. Department of Transportation  
400 7th Street, S.W.  
Washington, D.C. 20590
cc: Mayor Bloomberg
    Charles Gargano
    Peter Kalikow
    Katherine Lapp
    Joseph Seymour
    Joseph Boardman
    Louis Tomson
    Robert D. Jamison
    Brad Gair
    Susan Schruth
    Deputy Mayor Doctoroff
APPENDIX D

U.S. Department of Transportation Press Release Placing Lower Manhattan Recover Effort on Priority List

(February 27, 2003)
Thursday, February 27, 2003
DOT 15e-03
Contact: Leonardo Alcivar
Telephone: 202-366-5580

U.S. Transportation Secretary Mineta Places Lower Manhattan Recovery Effort on Priority List

U.S. Transportation Secretary Norman Y. Mineta today announced the selection of the Lower Manhattan Recovery Effort as one of six transportation projects to receive accelerated environmental reviews by a federal task force under President Bush’s executive order on environmental stewardship. The decision will help expedite the rebuilding of the transit system in the aftermath of the terrorist attacks on Sept. 11, 2001.

“The Bush Administration is committed to helping New Yorkers recover from the terrorists attacks, and making the process more efficient will reduce the time it takes to rebuild,” Secretary Mineta said. “Our initiative on environmental stewardship is a pioneering effort in transportation that will benefit taxpayers and help build a better future for all New Yorkers.”

Secretary Mineta underscored the Administration’s commitment to environmental stewardship and said the selected projects will be required to comply with the National Environmental Policy Act (NEPA) and all other environmental statutes.

The Department’s Federal Transit Administration is administering $4.75 billion for a wide range of proposed projects to replace, rebuild or enhance the transportation system in lower Manhattan. Projects identified thus far that will benefit from this funding include the Port Authority Trans Hudson (Path) Station at the World Trade Center, the South Ferry Terminal, and the Fulton Street Transit Center.

“As a result of Sept. 11, transit service was severely impacted, disrupting the daily commute of thousands of people who lived, worked and visited one of the largest employment and financial centers in the world. The economic impact was enormous,” stated FTA Administrator Jennifer L. Dorn. “By placing the Lower Manhattan recovery projects on the priority list, it not only speeds up the economic recovery, but it also
ensures that the City will reap the benefits of a more environmentally friendly transportation system.”

The Lower Manhattan recovery effort is one of 13 projects on the project priority list created as a result of the President’s Sept. 18 executive order, “Environmental Stewardship and Transportation Infrastructure Project Reviews.” The executive order called for a Cabinet-level task force to ensure that projects are not unnecessarily held up by inefficient review procedures.

The Lower Manhattan recovery effort was one of 70 transportation construction projects nominated for expedited environmental review by governors from around the country, with input from metropolitan planning organizations.

The Cabinet-level task force, which is chaired by Secretary Mineta, will review projects on the priority project list and work to expedite environmental reviews. In addition to Secretary Mineta, the task force members include the U.S. Secretaries of Agriculture, Commerce, the Interior and Defense, as well as the Administrator of the Environmental Protection Agency, Chair of the Advisory Council on Historic Preservation and the Chair of the Council on Environmental Quality.

Administrator Dorn said that the priority project review process reflects the Administration’s commitment to environmental stewardship. All projects on the priority list will be required to comply with the National Environmental Policy Act and all other environmental statutes.

Additional information about the President’s executive order and the project priority list is on the Internet at http://www.fhwa.dot.gov/stewardshipeo.

####
APPENDIX E

Stakeholder Environmental Review Commitments and Responsibilities
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Lower Manhattan Recovery Effort NEPA Responsibilities</th>
<th>Cumulative Effects Analysis Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTA</td>
<td>Lead agency and coordinate project reviews for projects funded under FTA programs, serve as cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for transit-related projects</td>
<td>Develop cumulative effects analysis approach, provide technical guidance and ensure consistency in approach across project sponsors using FTA funding</td>
</tr>
<tr>
<td>FEMA</td>
<td>Lead agency for all projects funded under FEMA programs related to the disaster designated FEMA –1391-DR-NY, serve as a cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for National Flood Insurance Program related issues</td>
<td>Develop cumulative effects analysis approach, provide technical guidance and ensure consistency in approach across project sponsors using FEMA funding</td>
</tr>
<tr>
<td>FHWA</td>
<td>Lead agency and coordinate project reviews for projects funded under FHWA programs, serve as cooperating agency for projects funded under other authorities, as appropriate, and provide technical assistance for road-related projects</td>
<td>Develop cumulative effects analysis approach, provide technical guidance and ensure consistency in approach across project sponsors using FHWA funding</td>
</tr>
<tr>
<td>EPA</td>
<td>Cooperating agency and provide technical assistance, as necessary, to ensure air quality, water quality, and hazardous waste standards are evaluated in NEPA documents and other environmental studies in support of NEPA documents, as appropriate</td>
<td>Contribute to the development of a cumulative effects analysis framework and provide technical assistance regarding proposed methodologies; review and comment on cumulative effects analysis evaluation findings</td>
</tr>
<tr>
<td>HUD</td>
<td>Cooperating agency for projects funded under non-HUD authorities, as appropriate</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings</td>
</tr>
<tr>
<td>USACE</td>
<td>Cooperating agency and provide technical assistance, as necessary, in evaluating projects to ensure any U.S. water or wetland impacts are identified, avoided or minimized, and mitigation resolved</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings</td>
</tr>
<tr>
<td>USCG</td>
<td>Cooperating agency and provide technical assistance, as necessary, in evaluating projects to ensure U.S. navigable waterway needs are met and any bridge impacts are identified and resolved</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings</td>
</tr>
<tr>
<td>USFWS</td>
<td>Cooperating Agency and provide technical assistance, as necessary, in evaluating projects to ensure threatened and endangered species are identified, any impacts avoided or minimized, and mitigation resolved</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings</td>
</tr>
</tbody>
</table>
## Table 7 - Stakeholder Environmental Review Commitments and Responsibilities

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Lower Manhattan Recovery Effort NEPA Responsibilities</th>
<th>Cumulative Effects Analysis Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMFS</td>
<td>Cooperating Agency and provide technical assistance in evaluating projects, as necessary, to ensure threatened and endangered species and essential fish habitat are identified, any impacts avoided or minimized, and mitigation resolved.</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings.</td>
</tr>
<tr>
<td>New York State</td>
<td>Through the Empire State Development Corporation and/or Lower Manhattan Development Corporation pursuant to 42 USC 5304(8) assume federal lead agency responsibilities for environmental reviews for projects funded under HUD community development programs; and upon request of a federal lead agency, will serve as a cooperating agency for projects funded under other authorities, as appropriate.</td>
<td>Review and comment on cumulative effects analysis methodology and evaluation findings.</td>
</tr>
<tr>
<td>NYSDOT</td>
<td>Project sponsor responsible for project development process including evaluation of alternatives, design and technical analysis as well as preparation and coordination of environmental review documentation with appropriate federal, state, and local agencies and the public.</td>
<td>Prepare cumulative effects analysis for inclusion in NEPA documentation in accordance with approved methodology common to Lower Manhattan Recovery Effort transportation projects in consultation and coordination with appropriate federal, state, and local agencies.</td>
</tr>
<tr>
<td>NYSDEC</td>
<td>Coordinate environmental reviews under NY State environmental regulations.</td>
<td>Provide technical assistance; review and comment on cumulative effects analysis methodology and evaluation findings.</td>
</tr>
<tr>
<td>SHPO</td>
<td>Coordinate compliance with Section 106 of the National Historic Preservation Act and review of cultural resources impacts.</td>
<td>Provide technical assistance; review and comment on cumulative effects analysis methodology and evaluation findings.</td>
</tr>
<tr>
<td>NYMTC</td>
<td>Provide data and technical assistance during NEPA document preparation; review and comment on NEPA documents.</td>
<td>Review and comment on cumulative effect analysis and evaluation findings.</td>
</tr>
<tr>
<td>MTA</td>
<td>Project sponsor responsible for project development process including evaluation of alternatives, design and technical analysis as well as preparation and coordination of environmental review documentation with appropriate federal, state, and local agencies and the public.</td>
<td>Prepare cumulative effects analysis for inclusion in NEPA documentation in accordance with approved methodology common to Lower Manhattan recovery effort transportation projects in consultation and coordination with appropriate federal, state, and local agencies.</td>
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<tr>
<td>NYC DEP</td>
<td>Coordinate environmental reviews under CEQR requirements and NYC environmental requirements.</td>
<td>Provide technical assistance; review and comment on cumulative effects analysis methodology and evaluation findings.</td>
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<tr>
<td>NYCT</td>
<td>Project sponsor responsible for project</td>
<td>Prepare cumulative effects analysis for.</td>
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<td>development process including evaluation of alternatives, design and technical analysis as well as preparation and</td>
<td>inclusion in NEPA documentation in accordance with approved methodology common to Lower Manhattan recovery</td>
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<td>coordination of environmental review documentation with appropriate federal, state, and local agencies and the public</td>
<td>effort transportation projects in consultation and coordination with appropriate federal, state, and local agencies</td>
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<td>Port Authority of NY&amp;NJ</td>
<td>Project sponsor responsible for project development process including evaluation of alternatives, design and technical</td>
<td>Prepare cumulative effects analysis for inclusion in NEPA documentation in accordance with approved methodology</td>
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<td>analysis as well as preparation and coordination of environmental review documentation with appropriate federal, state, and local agencies and the public</td>
<td>common to Lower Manhattan recovery effort transportation projects in consultation and coordination with appropriate federal, state, and local agencies</td>
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<td>NYC DOT</td>
<td>Project sponsor responsible for project development process including evaluation of alternatives, design and technical</td>
<td>Prepare cumulative effects analysis for inclusion in NEPA documentation in accordance with approved methodology</td>
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