VCMPO Model Calibration
and
Home Based Travel Survey

Technical Memorandum
Number One

Survey Management Plan

Prepared for

Volusia County MPO
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Background

One of the major purposes of the Volusia County Metropolitan Planning Organization (VCMPO) Model Calibration and Home Based Travel Survey project is to collect information that will allow for a better understanding of the travel habits and patterns of residents within Volusia County. To understand the travel behavior characteristics of these trips, a data collection program that consists of household travel characteristics surveys is being proposed.

Due to its size and location within the Central Florida area, Volusia County is unique in that it is a tourist destination as well as being attractive to the retiree population as well as permanent and seasonal residents. It is composed of two distinct geographical areas that present very different demographical characteristics. First is the coastal area, a region that attracts large amounts of recreational traffic because of its beaches and special events such as the races at Daytona International Speedway. This coastal area experiences tremendous variations in seasonal traffic and has a high turnover of visitors throughout the year. The second area is the mainland, or West Volusia County. An area that houses the County Government offices, Stetson University and the District office of the Florida Department of Transportation (FDOT), and presents characteristics of your typical urban area. In addition, West Volusia serves as a bedroom community to the adjacent Orlando Urban area with a large number of the residents of Deltona, DeBary and DeLand crossing over the St. Johns River to work in Seminole and Orange Counties. Consideration also has to be given to the characteristics of the northern area of West Volusia, as it serves primarily as a rural agricultural community that is best known for the ferns grown that are exported worldwide for use in floral arrangements and other decorations.

These differences in trip making patterns within the distinct areas of the County present a challenge to the Florida Standard Urban Transportation Model Structure (FSUTMS) transportation model and their users in forecasting travel for Volusia County. The current transportation model does an adequate job of replicating travel within the urban areas of the County, but due to limitations of the standard model it has been artificially adjusted to replicate travel between the communities. The household surveys proposed to be collected under this study would allow transportation professionals to better understand the travel behaviors of trip makers and the travel patterns in Volusia County and help resolve any issues or deficiencies in the transportation model. The household survey will be designed to produce data for use in estimating parameters of the Volusia County model's trip generation, distribution and mode split modules. Based on the findings resulting from the data collection effort, the Volusia County model structure could be completely revamped to accommodate the variables that are responsible for the unique travel patterns. On the other hand, the results of the survey efforts could show that all of the assumptions currently being used in the transportation model are valid, and only minor adjustments would need to be made to improve the travel forecasts generated by the model.

Introduction

The primary purpose of the household travel characteristics survey will be to collect data that will be used to formulate, calibrate, and validate existing and planned travel demand model structures. As such, the survey will use statistical methods to ensure the best use of resources and the development of accurate transportation models. In addition, innovative survey techniques such as state of the art internet based surveys will be used to maximize the household return rate and minimize project costs. The internet survey system is now being used in a wide-range of applications to conduct customer satisfaction and travel demand surveys

Data will be collected to characterize demographics of households and travel patterns of the corresponding household members. The survey will be designed to collect information to be used in calibrating travel forecasting models for:

- Home based trip productions;
- Trip distribution;
- Mode choice and auto occupancy; and,
- Travel path selection.

Additionally travel characteristics data can be used to enhance existing models and formulate new travel forecasting methods.

This technical memorandum provides a comprehensive project management plan to be followed throughout the conduct of the VCMPO Household Travel Survey project.

Management of Travel Surveys

Effective management and strict quality control procedures greatly enhance the accuracy and validity of the survey results. This document briefly describes some of the management procedures that will be followed in the completion of this study and the general steps for maintaining quality standards for the travel surveys will be described. Specific procedures for maintaining quality standards for the travel survey will be presented in more detail in subsequent documents that will provide information on the design and implementation of the survey effort.

A review of other studies and the experience gained from completing similar surveys have shown us that, the essence of good survey design is the ability to make trade-offs between the competing demands of good design practice in several areas (such as sample design, instrument design, conduct of surveys, and data weighting and expansion) and providing a high quality survey that meets the needs of the client within budget constraints. This is depicted in Figure 1-1, the "Architects Triangle". In designing a survey, the quality and quantity of data and the cost of data collection are traded off against each other. The ultimate goal of survey designers is to produce the optimal mix of the three elements.

Recognizing that the critical elements of the success of almost any survey implementation process are the preset resource (time, staff, and budget) limitations and the necessary tradeoffs between quality and quantity concerns, we are proposing the concept of total survey design. Total survey design is defined by the following two principles:

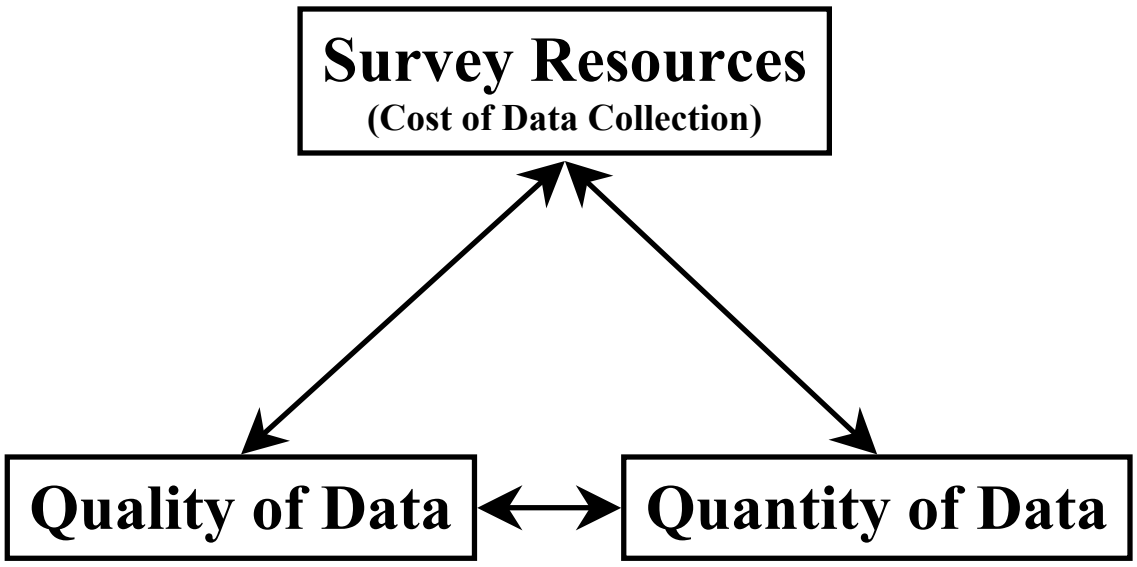
- Each task of the survey design and implementation is interrelated with all the other tasks, and design decisions made in one task need to be consistent with the decisions made in the other tasks.
- The overall usefulness of the survey effort is limited by the weakest element of the design. It is ineffective to invest large resources into one element of the survey if the same quality levels cannot be maintained in the other survey elements.

This concept of total survey design has been developed into a detailed mail and telephone survey methodology. Travel survey researchers have been known to spend several person-months developing, testing, and revising a survey instrument, only to have it fielded by poorly trained, unsupervised fieldworkers. Rather, total survey design means that the entire process including the many areas where errors and biases can creep into the design is considered.

The many aspects of the survey implementation process that survey designers should consider are summarized in Figure 1-2. If each of the quality concern questions can be answered, "yes," the survey effort is likely to be quite successful. More likely, the answer to many of the questions will be "I don't know" or "no." The challenge is to minimize the negative effects of these problems with the available resources. The survey team needs to determine the weak links in the implementation process, and if possible, divert resources to those areas.

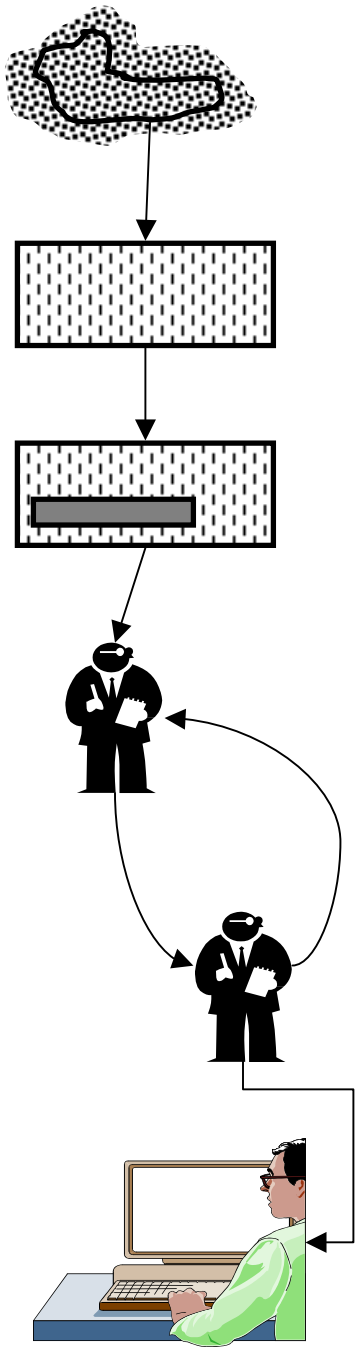
The staffing, oversight, scheduling, and coordination needs for each travel survey effort are key in the successful implementation of travel surveys. The following are a few general issues that need to be addressed in the process.

Figure 1-1
Survey Management Plan
Architects Triangle



Source: A.J. Richardson, E.S. Ampt, and A.H. Meyburg, Survey Methods for Transport Planning, Eucalyptus Press, 1995.

Figure 1-2
Survey Management Plan
Travel Survey Quality Concerns



Survey Implementation Task	Quality Concerns
Identify Sample Population	***Has the population been defined correctly?*** Have all the relevant individuals been included? Are irrelevant individuals excluded?
Identify sampling frame	***Does the sampling frame adequately describe the population?*** Is everybody in the population in the frame? Do members of the population appear on the list only once? Does the sample frame exclude irrelevant individuals?
Select Sampling Procedures, and draw the sample	***Does the sample adequately represent the population?*** Does the selected sampling procedure allow for the cost-effective collection of data? Can the sample be expanded to the population? Is the sampling unbiased?
Select and contact the respondents and enlist their cooperation	***Are respondents available, willing and able to cooperate?*** Are response rates acceptable? Are non-respondents representative of the population? Are all potential respondents able to perform the tasks required of them?
Survey questions and answers	***Do the survey questions accomplish the survey team's goals?*** Are all the questions relevant? Are they unambiguous? Are the questions free of wording problems? Are interviewers or written questionnaires able to ask the questions without biasing answers? Are the answers unambiguous and usable?
Clean, enter and code the survey results, and prepare modeling data sets	***Can the survey data be efficiently processed and transformed into usable information?*** Do survey codes unambiguously assign each answer to one and only one analytically meaningful category? Are datasets adequately documented?

Source: Travel Survey Manual, US Department of Transportation, 1996

Managers and Supervisors of Fieldworkers

To a large extent, the management of a travel survey will depend upon the communication between the sponsor agency and the consultant performing the study. However, regardless of the overall structure of the project, there are a number of key management tasks that need to be accomplished. First and foremost, the project will need a proactive hands-on Project Manager. This person will be Mr. Luis Diaz, P.E. from TEI Engineers and Planners and he will have the day-to-day responsibility for coordinating the activities of task managers and for keeping the survey collection effort on track to achieve the study objectives. Even if consultants will perform most of the survey work and data analysis, the VCMPO project manager should expect to spend a portion of her or his time on the project. Almost invariably, even with careful planning, anticipated survey procedures and methods will need to be modified as the survey effort progresses and communication between VCMPO staff and Mr. Diaz will be key to keep the project focused and on schedule. Resumes for Mr. Diaz and other key individuals working on this project are included in the Appendix to this document.

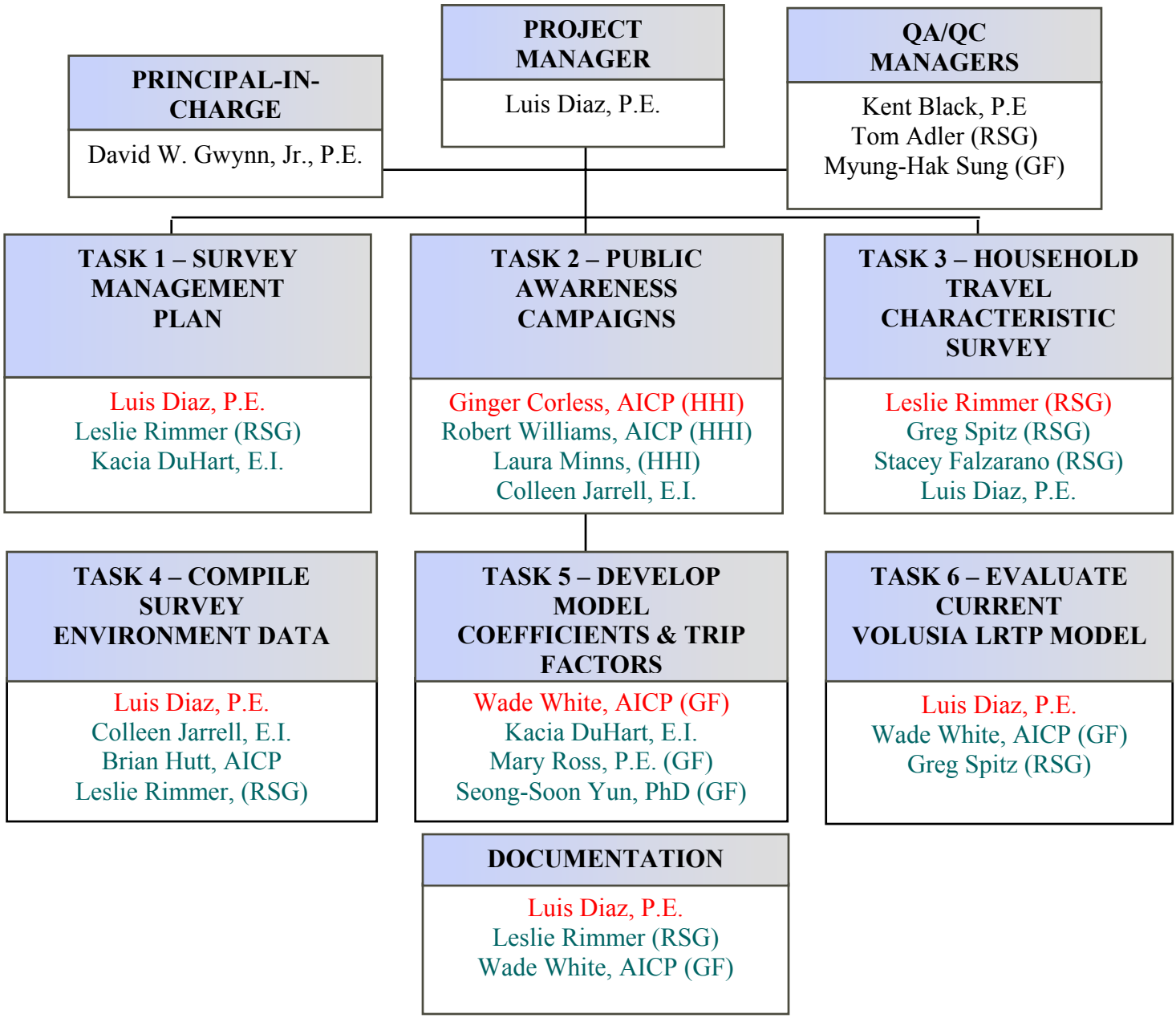
The second key individual in a travel survey effort is the Survey Manager. This role will be filled by Ms. Leslie Rimmer of Research Systems Group (RSG). Ms. Rimmer has served as Survey Manager for RSG and specializes in survey research. She will be responsible for all phases of the survey effort, with a particular emphasis on the specific data collection tasks. As the Survey Manager she will direct field supervisors and fieldworkers, and monitor the progress of the survey work on a continuing basis.

The third manager required in the survey effort is the Travel Demand Manager. Mr. Wade White, AICP of Gannet-Fleming (GF) will fill this role. Since the results of the data collected as part of the travel survey project will be travel modeling data, it is extremely important that Mr. White be included in the survey design and implementation process. He will be a key contributor to the design of the survey, the sampling, and the development of survey instruments, and it will be his responsibility to ensure that the survey effort produces the desired modeling inputs. In addition, he will have input into the data cleaning and coding tasks, and will direct the programming work.

Another key manager in the successful completion of the travel surveys is our Public Awareness Manager. Ginger Corless, AICP, shall serve as the team's primary spokesperson for the Volusia County Home-Based Travel Survey. In this capacity she will speak to the public in a manner that is informative while being persuasive in nature. She will make sure the citizen's of Volusia County understand and accept their responsibility to participate in the travel survey. The goal is to increase public awareness of the survey process as well as transmitting the mission of the VCMPO. Once this is clear, the Public Awareness Team will prepare the desired materials and commence communication programs geared to engage the public with the survey process. All work efforts and materials to be used in the Public Awareness Task are described in Technical Memorandum #2, Public Awareness Campaign Plan.

Each specific survey task will require one or more field supervisor and several staff members to actually perform the work. Some of these workers will work on more than one task if the tasks occur at different points in the project schedule. Figure 1-3 presents a graphical representation of the staffing and organizational functions of the individuals assigned to this project.

Figure 1-3
Survey Management Plan
Staffing and Organizational Chart



KEY
Red Text - Task Leaders
Teal Text - Support
RSG – Resource Systems Group, Inc.
GF – Gannett Fleming, Inc.
HHI - Herbert Halback, Inc.

Oversight Committees, Peer Review Panels and Expert Advice
Successful survey efforts rely upon advice and assistance from knowledgeable planners and individuals not directly involved with the day-to-day survey development tasks. These outside members of the overall team bring to the project:

- A wider breadth of knowledge of the area;
- A Board of Directors oversight function for the survey project;
- A sounding board for ideas and potential innovations; and
- A forum to resolve issues on which survey team managers disagree.

One of the most effective quality control mechanisms used in recent travel survey efforts has been utilization of the peer review panel, a group of survey and modeling experts that are contacted at the key stages of the survey project to provide advice and guidance to survey managers. The peer review panel for this project will consist of the following team members:

- Kent Black, TEI Engineers Planners, overall day to day management experience;
- Tom Adler, Research Systems Group, survey management and design; and
- Myung Hak Sung, Gannet-Fleming, travel model implementation.

The use of this peer review panel is cost-effective, because these individuals will only be used at key decision points in the survey development process and because they will be asked primarily for advice, rather than for deliverable products.

Schedule
The planning and design of travel surveys can be quite time-consuming. Allocating adequate time for designing the overall survey, including time for resolving unexpected difficulties is essential. Managers of many recent travel survey efforts have found their original schedules to be infeasible once the detailed complexities of the design effort became apparent. Slippage in the design and implementation schedule can be especially damaging in travel surveys that are intended to be season-specific, because in these cases the inability to complete the fieldwork as planned causes a delay of a year before actually fielding the survey. Therefore, as early as possible in the planning process, it is very important to prepare a realistic survey schedule, which anticipates the inevitable challenges that will occur. Because even simple travel surveys have many interrelated and parallel tasks, use of computerized CPM or PERT scheduling techniques is recommended. These methods allow the survey team to identify the key milestones in the design and implementation process, as well as crucial deadlines. Figures 1-4 and 1-5 present the schedule for the Project in two different formats.

Coordination
Many national and regional agencies and private companies are involved in travel surveys. For example currently the US Department of Transportation is currently conducting national travel surveys across the country. To obtain the maximum benefits of the information collected, agencies should maintain channels of communication with all relevant organizations from the inception of any survey effort. This is especially true if more than one agency will be sponsoring travel survey work. Travel demand modelers from the separate agencies will be able to use the

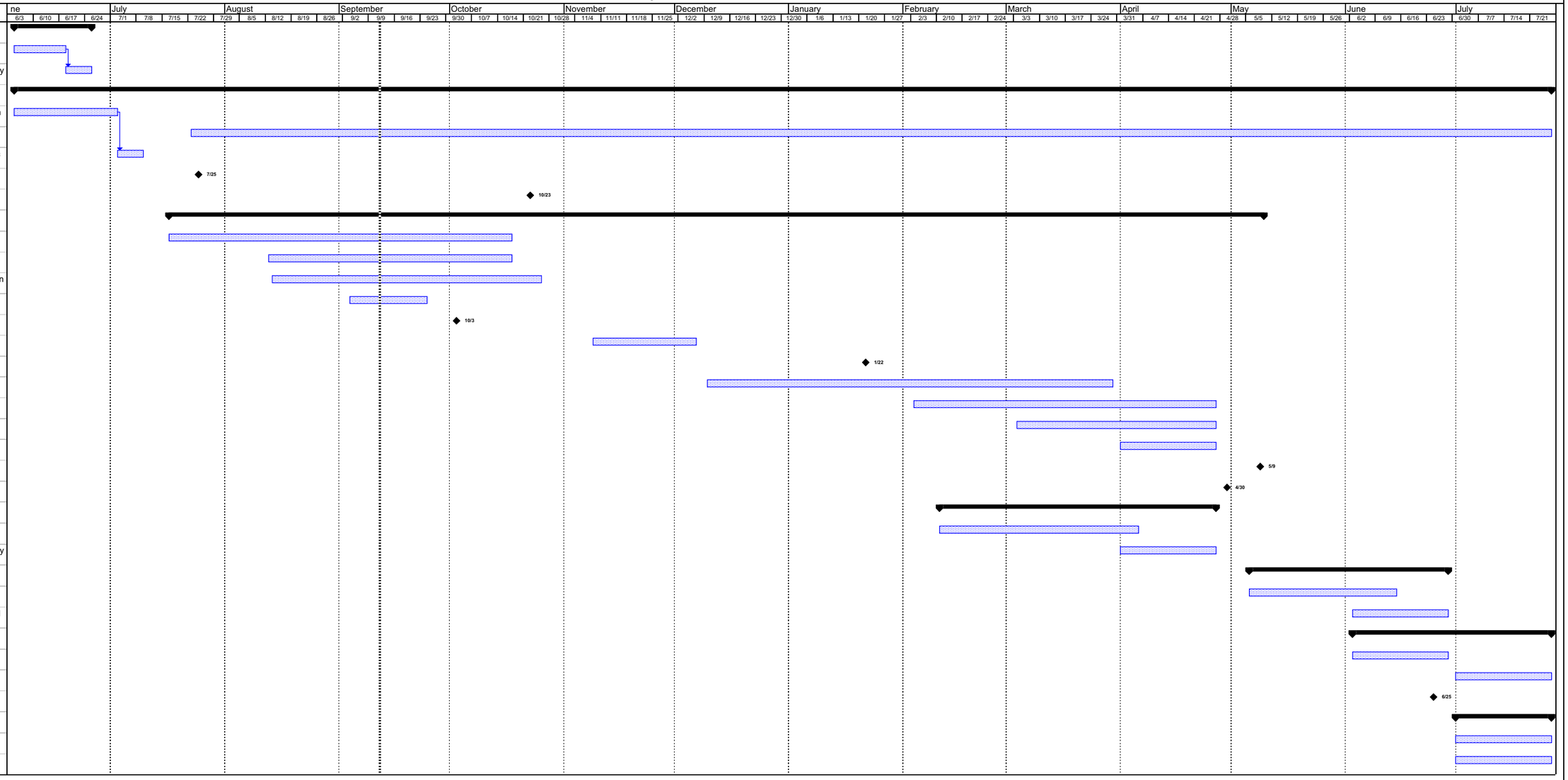
survey data much more effectively if the survey efforts are coordinated. At the beginning of the survey effort, we will contact the following:

- All affected state agencies (FDOT, ECFRPC, DCA);
- Local and regional planning officials (MetroPlan, Volusia MPO);
- Local and regional elected officials (County and City Commissions);
- Local and state police;
- Federal agencies that maybe involved (FHWA);
- Local transit providers (VOTRAN, LYNX);
- Active public interest groups; and
- Chambers of commerce/business groups.

In addition, as part of the Public Awareness program we will be contacting the news media in advance as we feel that publicity will be important in the success of the study. Alerting the media of the survey effort will increase the level of understanding and cooperation, reduce the number of complaints about the survey, and head off any potential negative press once the survey effort is undertaken. Coordination issues for each survey type are discussed further in the following technical memorandums that will be produced as part of this study.

Figure 1-4
Survey Management Plan
Project Schedule

ID	Task Name
1	**SURVEY MANAGEMENT PLAN**
2	Develop Survey Management Plan
3	Technical Memorandum No. 1 "Survey Management Plan"
4	**PUBLIC AWARENESS CAMPAIGNS**
5	Develop Public Awareness Campaign Program
6	Public Awareness Campaign Implementation
7	Technical Memorandum No. 2 "Public Awareness Campaign"
8	Survey Management/Public Awareness Plan Workshop
9	MPO Briefing #1
10	**HOUSEHOLD TRAVEL CHARACTERISTICS SURVEY**
11	Household Survey Plan
12	Household Survey Sampling Process
13	Household Survey Instruments Design
14	Technical Memorandum No. 3 "Household Travel Survey Design"
15	Household Travel Survey Design Workshop
16	Household Survey pilot Tests and Refinements
17	MPO Briefing #2
18	Household Survey Implementation
19	Household Survey Data Process
20	Household Survey Data Analyses
21	Technical Memorandum No. 4 "Household Travel Survey Findings"
22	Household Travel Survey Findings Workshop
23	MPO Briefing #3
24	**COMPILE SURVEY ENVIRONMENT DATA**
25	Compile Survey Environment Data
26	Technical Memorandum No. 5 "Survey Environment Data"
27	**DEVELOP MODEL COEFFICIENTS & TRIP FACTORS**
28	Develop Model Coefficients & Trip Factors
29	Technical Memorandum No. 5 "Model Coefficients & Model Factors"
30	**EVALUATE CURRENT VOLUSIA MPO MODEL**
31	Evaluate Current MPO LRTP Validated Model
32	Technical Memorandum No. 6 "Evaluation of Model Revalidation"
33	MPO Briefing #4
34	**EXECUTIVE SUMMARY REPORT**
35	Executive Summary Report
36	Final Project Compilation Compact Disc (CD)



Project: Study Schedule
Date: Wed 9/12/01

Task · Split · Progress · Milestone · Summary · Rolled Up Task · Rolled Up Split · Rolled Up Milestone · Rolled Up Progress · External Tasks · Project Summary

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

June 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
		Develop Survey Management Plan, 10 days				
		Develop Public Awareness Campaign Program, 20 days				
10	11	12	13	14	15	16
Develop Survey Management Plan, 10 days						
Develop Public Awareness Campaign Program, 20 days						
17	18	19	20	21	22	23
Develop Survey Management Plan, 10 days		Technical Memorandum No. 1 "Survey Management Plan", 5 days				
Develop Public Awareness Campaign Program, 20 days						
24	25	26	27	28	29	30
Technical Memorandum No. 1 "Survey Management Pla						
Develop Public Awareness Campaign Program, 20 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

July 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
		Technical Memorandum No. 2 "Public Awareness Campaign", 5 days				
Develop Public Awareness Campaign Program, 20 days						
8	9	10	11	12	13	14
Technical Memorandum No. 2 "Public Awareness Camp						
15	16	17	18	19	20	21
		Household Survey Plan, 67 days				
22	23	24	25	26	27	28
	Public Awareness Campaign Implementation, 265 days					
			Survey Management/Publ			
Household Survey Plan, 67 days						
29	30	31				
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

August 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
5	6	7	8	9	10	11
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
12	13	14	15	16	17	18
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
	Household Survey Sampling Process, 48 days					
		Household Survey Instruments Design, 53 days				
19	20	21	22	23	24	25
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
Household Survey Instruments Design, 53 days						
26	27	28	29	30	31	
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
Household Survey Instruments Design, 53 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

September 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
2	3	4	5	6	7	8
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
9	10	11	12	13	14	15
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
16	17	18	19	20	21	22
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
23	24	25	26	27	28	29
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
30						
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

October 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
Public Awareness Campaign Implementation, 265 days						
			Household Travel Survey			
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
Household Survey Instruments Design, 53 days						
7	8	9	10	11	12	13
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
Household Survey Instruments Design, 53 days						
14	15	16	17	18	19	20
Public Awareness Campaign Implementation, 265 days						
Household Survey Plan, 67 days						
Household Survey Sampling Process, 48 days						
Household Survey Instruments Design, 53 days						
21	22	23	24	25	26	27
Public Awareness Campaign Implementation, 265 days						
		MPO Briefing #1				
Household Survey Instruments Design, 53 days						
28	29	30	31			
Public Awareness Campaign Implementation, 265 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

November 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
Public Awareness Campaign Implementation, 265 days						
4	5	6	7	8	9	10
Public Awareness Campaign Implementation, 265 days						
					Household Survey pilot Tests and Refinements, 20 days	
11	12	13	14	15	16	17
Public Awareness Campaign Implementation, 265 days						
Household Survey pilot Tests and Refinements, 20 days						
18	19	20	21	22	23	24
Public Awareness Campaign Implementation, 265 days						
Household Survey pilot Tests and Refinements, 20 days						
25	26	27	28	29	30	
Public Awareness Campaign Implementation, 265 days						
Household Survey pilot Tests and Refinements, 20 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

December 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
Public Awareness Campaign Implementation, 265 days						
Household Survey pilot Tests and Refinements, 20 days						
2	3	4	5	6	7	8
Public Awareness Campaign Implementation, 265 days						
Household Survey pilot Tests and Refinements, 20 days						
9	10	11	12	13	14	15
Public Awareness Campaign Implementation, 265 days						
	Household Survey Implementation, 80 days					
16	17	18	19	20	21	22
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
23	24	25	26	27	28	29
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
30	31					
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

January 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
		Public Awareness Campaign Implementation, 265 days				
		Household Survey Implementation, 80 days				
6	7	8	9	10	11	12
		Public Awareness Campaign Implementation, 265 days				
		Household Survey Implementation, 80 days				
13	14	15	16	17	18	19
		Public Awareness Campaign Implementation, 265 days				
		Household Survey Implementation, 80 days				
20	21	22	23	24	25	26
		Public Awareness Campaign Implementation, 265 days				
		Household Survey Implementation, 80 days				
		MPO Briefing #2				
27	28	29	30	31		
		Public Awareness Campaign Implementation, 265 days				
		Household Survey Implementation, 80 days				

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

February 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
3	4	5	6	7	8	9
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
10	11	12	13	14	15	16
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
17	18	19	20	21	22	23
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
24	25	26	27	28		
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

March 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
3	4	5	6	7	8	9
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
Household Survey Data Analyses, 40 days						
10	11	12	13	14	15	16
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
Household Survey Data Analyses, 40 days						
17	18	19	20	21	22	23
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
Household Survey Data Analyses, 40 days						
24	25	26	27	28	29	30
Public Awareness Campaign Implementation, 265 days						
Household Survey Implementation, 80 days						
Household Survey Data Process, 60 days						
Household Survey Data Analyses, 40 days						
31						
Public Awareness Campaign Implementation, 265 days						
Household Survey Data Process, 60 days						
Household Survey Data Analyses, 40 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

April 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	Public Awareness Campaign Implementation, 265 days					
	Household Survey Data Process, 60 days					
	Household Survey Data Analyses, 40 days					
	Technical Memorandum No. 4 "Household Travel Survey Findings", 20 days					
7	8	9	10	11	12	13
	Public Awareness Campaign Implementation, 265 days					
	Household Survey Data Process, 60 days					
	Household Survey Data Analyses, 40 days					
	Technical Memorandum No. 4 "Household Travel Survey Findings", 20 days					
14	15	16	17	18	19	20
	Public Awareness Campaign Implementation, 265 days					
	Household Survey Data Process, 60 days					
	Household Survey Data Analyses, 40 days					
	Technical Memorandum No. 4 "Household Travel Survey Findings", 20 days					
21	22	23	24	25	26	27
	Public Awareness Campaign Implementation, 265 days					
	Household Survey Data Process, 60 days					
	Household Survey Data Analyses, 40 days					
	Technical Memorandum No. 4 "Household Travel Survey Findings", 20 days					
28	29	30				
	Public Awareness Campaign Implementation, 265 days					
		MPO Briefing #3				

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

May 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
Public Awareness Campaign Implementation, 265 days						
5	6	7	8	9	10	11
Public Awareness Campaign Implementation, 265 days						
				Household Travel Survey		
	Develop Model Coefficients & Trip Factors, 30 days					
12	13	14	15	16	17	18
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						
19	20	21	22	23	24	25
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						
26	27	28	29	30	31	
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

June 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						
2	3	4	5	6	7	8
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						
Technical Memorandum No. 5 "Model Coefficients & Model Factors", 20 days						
9	10	11	12	13	14	15
Public Awareness Campaign Implementation, 265 days						
Develop Model Coefficients & Trip Factors, 30 days						
Technical Memorandum No. 5 "Model Coefficients & Model Factors", 20 days						
16	17	18	19	20	21	22
Public Awareness Campaign Implementation, 265 days						
Technical Memorandum No. 5 "Model Coefficients & Model Factors", 20 days						
23	24	25	26	27	28	29
Public Awareness Campaign Implementation, 265 days						
Technical Memorandum No. 5 "Model Coefficients & Model Factors", 20 days						
30						
Public Awareness Campaign Implementation, 265 days						

Figure 1-5
Survey Management Plan
Project Schedule (Calendar Format)

July 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	Public Awareness Campaign Implementation, 265 days					
	Technical Memorandum No. 6 "Evaluation of Model Revalidation", 20 days					
	Executive Summary Report, 20 days					
	Final Project Compilation Compact Disc (CD), 20 days					
7	8	9	10	11	12	13
	Public Awareness Campaign Implementation, 265 days					
	Technical Memorandum No. 6 "Evaluation of Model Revalidation", 20 days					
	Executive Summary Report, 20 days					
	Final Project Compilation Compact Disc (CD), 20 days					
14	15	16	17	18	19	20
	Public Awareness Campaign Implementation, 265 days					
	Technical Memorandum No. 6 "Evaluation of Model Revalidation", 20 days					
	Executive Summary Report, 20 days					
	Final Project Compilation Compact Disc (CD), 20 days					
21	22	23	24	25	26	27
	Public Awareness Campaign Implementation, 265 days					
	Technical Memorandum No. 6 "Evaluation of Model Revalidation", 20 days					
	Executive Summary Report, 20 days					
	Final Project Compilation Compact Disc (CD), 20 days					
28	29	30	31			

Training of Survey Staff

As managers of travel surveys and demand modeling we need to be aware that there is a number of ethical responsibilities to the client, the team, the staff, and most importantly, to respondents and potential respondents.

Responsibilities to Survey Staff
The first obligation is straightforward, and requires little explanation. The need to adequately prepare fieldworkers for the conducting the survey effort is important to the analyst because of the potential for incomplete or incorrect data, but it is also important to surveyors. Fieldworkers should have a clear idea of their and fellow workers and supervisors' responsibilities so that the potential for conflicts is minimized. In addition, surveyors will be put in the position of describing the survey goals and procedures to potential respondents or other interested parties.

Responsibilities to Respondents and Potential Respondents
Travel surveyors must take steps to ensure that respondents are not deceived, that respondents' privacy rights are not abused, and that the standard social research protections for participants are maintained. The most often cited types of deception with surveys are the use of survey techniques to disguise sales efforts and the use of survey techniques in campaigns to collect names and addresses for direct marketing firms. Fortunately, travel surveys are not typically subject to these types of deception because the sponsoring agencies usually are not trying to sell products or services. It is generally acknowledged that these types of sales activities are detrimental to the survey field, and should be condemned, but other questionable survey activities often escape criticism. Well-meaning survey managers can easily violate the rights of respondents in an effort to maximize the amount of useful data from the survey. Common problems encountered in the conduct of travel surveys are:

- Failing to provide the respondent with information about the sponsorship of the study;
- Failing to provide the respondent with information about the contracting firm conducting the survey;
- Misleading respondents about the time needed for the survey;
- Providing respondents with inaccurate information about gift or monetary incentives;
- Failing to tell respondents about potential follow-up surveys;
- Using techniques to observe or identify respondents without their knowledge (such as hidden tape recorders in telephone interviews, one-way mirrors, and ultraviolet ink identification codes on seemingly anonymous mail surveys);
- Failing to take steps to ensure that privacy is maintained throughout the survey analysis; and,
- Careless storage and/or disposal of returned questionnaires/survey forms.

To avoid these problems, surveyors will be trained to provide the following information to all survey respondents before be asking any questions:

1. The name of the organization carrying out the research, and for intercept and telephone surveys, the interviewer's name.
2. The sponsor of the study.

3. An accurate, though brief description of the purposes of the research.
4. An accurate statement of the extent to which answers are protected with respect to confidentiality, bearing in mind that some states may not allow agencies to protect respondents' confidentiality as much as other states do.
5. Assurance that cooperation is voluntary, and that no negative consequences will result to those who decide not to participate.
6. Assurance that respondents can skip any questions they do not wish to answer.

Today's travel surveys generally provide the first four pieces of information, but only a few surveys explicitly provide the fifth and the sixth due to the fear among surveyors that these assurances invite non-response. Also, most respondents are cognizant to the fact that they have the right to refuse to answer all or certain questions. If the suggested guidelines are not explicitly followed, the surveyors, at a minimum, will be instructed to accept refusals (and item-related refusals) without question and not to push respondents into revealing information, which they are uncomfortable providing.

Those who collect and analyze the data will treat travel survey data and returned forms as confidential business information. The following precautions will be used to ensure this confidentiality:

1. Links between answers and identifiers should be minimized. Analyses not requiring names and addresses should be performed on data sets without these pieces of information.
2. Completed interview schedules and returned questionnaires will not be accessible to people outside the project team.
3. Identifying information will be removed from completed questionnaires if they are made available to people outside the survey team.
4. Any possible linking between identification numbers, sample addresses and telephone numbers in data files will be minimized.
5. During analysis, researchers will be very careful about presenting data for very small categories of people who might be identifiable.
6. Upon completion of the modeling work, the project manager is responsible for seeing that the completed instruments are securely stored on a continuing basis.

Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) is the responsibility of the entire survey team. It is a procedure that commits TEI to ensure the VCMPO that all information and conclusions developed during any project are accurate and correct. The main premise behind the procedure is that all work performed will undergo a thorough review by another staff professional during production and prior to final submittal. Our system of independent reviews and cross checks yields accurate and complete products based on sound professional practice. Mssr. Kent Black, P.E., Tom Adler and Myung-Hak Sung our QA/QC Review Officers, will perform Quality Control reviews and will also monitor the progress of the project and provide input as needed to ensure desired completion time targets are met. In order to achieve the high level of quality that the VCMPO can expect from TEI, we propose the use of a three-tiered review system, which starts from data collection and extends through to final product submittal.

Tier One Review
This is the first step of quality control where day-to-day efforts are reviewed by the survey collection staff, mapping (GIS). These individuals are qualified in each of their respective production components and are familiar with project requirements. QA/QC responsibilities for this first tier will include:

- Accuracy of data elements (Field and in-house).
- Accuracy of information being used.
- Quality control of daily work effort.
- Assurance that data provided for analysis is complete and accurate.

Tier Two Review
The second quality assurance/quality control tier involves the Task Managers and their ability to review the information provided. These Team members will be knowledgeable of the study's day-to-day status and have a high degree of expertise within their respective disciplines. The Task Managers will distribute work products to the Project Manager for his review. The Task Managers will work closely with the Project Manager to resolve any comments or issues that may arise before the product is delivered to the Quality Review Officer. QA/QC responsibilities for this second tier will include:

- Review of all information provided to Project Manager.
- Comment resolution from Tier 1 complete.
- Re-check accuracy of databases and information.
- Notify the Project Manager of any additional issues that need resolution.
- Submittal of reports/deliverables to the QA/QC Officer.
- The Task Managers will be responsible for maintaining final work product review copies within the project records as well as responses to comments and problem resolution.

Tier Three Review
This is the final step in quality assurance/quality control. Before any data, maps, databases, inventories, reports, memoranda or related deliverables are distributed to the client, our Quality

Review Officer performs a rigorous evaluation. This individual is not intimately involved in the day-to-day project activities, but will function as a "fresh set of eyes". Combined with his individual expertise, he will provide an independent source of review for overall project work products. This independent review can more easily identify discrepancies often missed by those directly involved in the daily production activities. The Project Manager will include all pertinent memorandums and correspondence related to this third tier review within the project records. The Quality Review Officer will be responsible for:

- Review of all submittals from the project Team:
- A final check of all products that have gone through Tier One and Two reviews;
- Assurance of overall information accuracy and presentation quality;
- Providing any review comments to the Project Manager and Task Managers; and
- Ensuring that all information is ready for submittal.

APPENDIX

LUIS DIAZ, P.E.
PROJECT MANAGER

Profile

Mr. Diaz is a Senior Project Manager for TEI's Planning Department in Lake Mary. He serves as a technical expert on many of the firm's planning projects. With more than 16 years of transportation engineering and planning experience, Mr. Diaz has accumulated vast project experience with Florida Department of Transportation (FDOT) Districtwide design traffic projects, arterial investment and area-wide studies, long-range transportation plans, data collection projects, and numerous corridor studies. In addition to serving as a technical task manager on many of these projects, Mr. Diaz has served as Project Manager on several similar projects for the FDOT and other local agencies.

The following projects are examples of similar work for which Mr. Diaz served as Project Manager or Technical Expert. These projects included transportation modeling, corridor analysis, transit development plans, statistics, and intermodal facility analysis.

- **Regional Study on Tourism/Commuter Trips**, Florida Department of Transportation (FDOT) District 5
- **St. Lucie Transit Development Plan,** St. Lucie County
- **Volusia 2015 Long Range Plan Update**, Volusia County
- **Orlando International Airport Major Investment Study,** Lynx
- **Districtwide Design Traffic for PD&E and Design**, FDOT District 5
- **North International Drive Improvements**, City of Orlando
- **Orlando World Cup Soccer Transportation Plan**, City of Orlando
- **Districtwide Data Collection for Planning,** FDOT District 5
- **SR26 Action Plan,** FDOT District 2
- **Districtwide Median Operations and Public Involvement**, FDOT District 5
- **Central Florida Light Rail Transit Final EIS,** Lynx
- **Interstate 4 and System Access Report**, FDOT District 5
- **Naval Training Center Re-Use Master Plan,** City of Orlando
- **Viera DRI,** Brevard County

Mr. Diaz has provided training to the states of Maine, Michigan, and Delaware in the use of transportation computer models. He is thoroughly familiar with many transportation forecasting software applications, including FSUTMS, TRANPLAN, MINUTP, QRS and TRIPS. He is also proficient in the use of the following traffic engineering programs: Highway Capacity Software based on the 1985 Highway Capacity Manual, SOAP (Signalization Optimization Analysis Package), PASSER II, and CORSIM.

Education

- B.S. Civil Engineering – University of Central Florida
- M.S. Civil Engineering – University of Central Florida

Registrations

- Professional Engineer – Florida P.E. # 43263

Associations

- Institute of Transportation Engineers (ITE) – Associate Member
- Society of Hispanic Professional Engineers (SHPE)

Experience

- Total: 16 years
- With TEI: 6 years

Areas of Expertise

- **Community Awareness Plans**
- **Corridor Studies**
- **CORSIM Applications**
- **Transportation Modeling**
- **Multi-Modal Studies**
- **Transportation Statistics**
- **Project Traffic Studies**
- **Transportation Master Plans**

KENT L. BLACK, P.E.
QA/QC MANAGER

Profile

Mr. Black is the Director of Transportation Planning at TEI's Lake Mary office. He serves as Project Director, QA/QC Officer, and Project Manager on many of the firm's planning projects. He has more than 17 years of transportation engineering and planning experience and more than 7 years of work experience with districtwide planning, public transportation, and corridor studies for the Florida Department of Transportation (FDOT). Mr. Black has served as Project Manager for 10 FDOT districtwide contracts.

Mr. Black served as Project Director or Project Manager on the following projects, which included corridor studies, community awareness, intermodal facility reviews, and access management issues:

- **Citrus Highway Corridor Planning & Design Report, Indian River, St. Lucie, and Martin Counties**, FDOT District 4
- **SR 464 Corridor Study**, Ocala/Marion County MPO, FDOT District 5
- **US 1 Arterial Investment Study**, Volusia County MPO
- **SR10 Corridor Study**, City of Jacksonville
- **General Transportation Planning Services,** City of Oviedo
- **General Transportation Planning Services,** City of Deltona
- **Districtwide Statistics**, FDOT District 7
- **I-95/SR 222 Interchange Modification Report,** City of Gainesville
- **Districtwide Public Transportation Consultant,** FDOT District 5
- **Districtwide ISTEA**, FDOT District 1
- **Districtwide Planning**, FDOT District 1
- **Southwest Orange County Area Study**, Orange County
- **I-95 Interchange Justification Report**, Stafford County
- **Holden Avenue Roadway Conceptual Analysis,** Orange County
- **US98 PD&E**, City of Lakeland
- **SR806 PD&E Traffic, Air, Noise Environmental Assessment**, Palm Beach County
- **SR50 Access Management Study**, City of Orlando
- **US19 Action Plan,** Dixie, Levy and Gilchrist Counties
- **US17 PD&E Study,** City of Winter Haven

In addition to the experience listed above, Mr. Black has extensive experience in transportation statistics and public transportation projects.

Education

- B.S. Transportation Engineering - Pennsylvania State University
- M.E. Civil Engineering – Pennsylvania State University

Registrations

- Professional Engineer – Florida P.E. # 47971
- Professional Engineer – Virginia, P.E. # 22967

Associations

- Institute of Transportation Engineers (ITE) – Member
- Transportation Research Board, Committee on Signs and Markings, A3C12

Experience

- Total: 17 years
- With TEI: 3 years

Areas of Expertise

- **Project Management**
- **Action Plans**
- **Corridor Studies**
- **PD&E Studies**
- **Community Awareness Plans**
- **Access Management Plans**
- **IMR/IJR**

RESOURCE SYSTEMS GROUP INCORPORATED

LESLIE RIMMER

AREA DIRECTOR

Education

B.S., Pennsylvania State University, 1982

Continuing Education: Cartography, Environmental Engineering, and Statistics (University of Minnesota), Graphic Design (University of Vermont)

EXPERIENCE

Ms. Rimmer is the Area Director for Travel Demand and Market Research projects. She joined Resource Systems Group in 1987, shortly after its founding. She is the primary architect of the firm's Interactive Video Interview Station (IVIS) survey technology and works in the areas of conjoint survey design, market share model estimation and focus group administration. Ms. Rimmer serves on the firm's Executive Committee.

RESPONSIBILITIES AND RELEVANT PROJECTS

IVIS-Survey Design and Choice-Modeling

Manage the development and analysis of computer-based (Interactive Video Interview Station-IVIS) surveys designed to collect information about respondents' preferences using stated preference techniques. Estimate consumer choice models using conjoint trade-off data collected with IVIS surveys. Survey and choice-modeling results are used in forecasting demand, and building or updating transportation network models.

Orlando Transportation Study—a general planning study of toll facilities in the Orlando area. The study includes a stated preference survey, focus groups, and an origin-destination study.

Las Vegas Maglev Study—a stated preference study of Las Vegas residents and visitors to evaluate Maglev train service between Las Vegas and Anaheim California with potential stops in Barstow California and Primm Nevada.

Austin, Texas Toll Road Study—a study to evaluate the market potential of several toll roads in the Austin, Texas area using computer-based and online survey techniques.

Las Vegas Monorail Study—a stated preference study of new monorail service that would serve the Las Vegas Strip area with potential extensions to the downtown and the airport.

Norfolk-Portsmouth Infrastructure Improvements Study—a study to determine the market response to several changes to the transportation infrastructure in the Norfolk-Portsmouth, Virginia area that would be financed, in part, with tolls. Changes included new highway interchanges and extensions, and increased tunnel capacity at river crossings.

Minnesota Congestion/Road Pricing Study—a project for the Minnesota Department of Transportation (MNDOT) to determine what factors influence public acceptability of the congestion pricing concept.

Chicago Non-motorized Access to Transit Study—a project for the Chicago Regional Transit Authority designed to ascertain which improvements to bicycle and pedestrian facilities would increase transit usage.

SR-91 Express Lanes Market Research Program—designed and planned the administration of focus groups and a written questionnaire to individuals in Orange and Riverside Counties, California to determine their electronic tolling preferences.

Singapore Travel Demand Management Study—a project for the Government of Singapore to determine the receptiveness of Singapore residents to various travel demand management techniques.

Toronto, Ontario, Highway 407 Toll Road Study—a project to develop the market potential of a proposed toll facility in Toronto, Ontario.

Georgia Intercity Rail Passenger Plan—a study to evaluate several alternative travel corridors and to determine the feasibility of implementing intercity rail service throughout the state of Georgia.

Atlanta , Georgia, Commuter Rail Study— a project to estimate current and forecast future travel activity, and evaluate the feasibility of implementing commuter rail service in several alternative corridors in the Atlanta area.

Milwaukee-Chicago-St. Louis Corridor High Speed Rail Study—a project to develop the market potential of proposed high speed rail service in the Milwaukee-Chicago-St. Louis corridor.

Personalized Rapid Transit (PRT) Ridership Study for Suburban Chicago—a study of individuals engaged in intercity trips to assess the market potential of PRT service for one of four suburbs in Chicago area.

Windsor—Québec City Corridor High Speed Train Market Study: Phase I and Phase II—a study of intercity travelers in the Windsor, Ontario—Québec City, Québec corridor to define ridership and marketability of a potential high speed train service and to estimate induced demand.

Focus Groups

Responsible for managing focus group studies and leading focus group discussions. The focus groups or convened groups are used as a preliminary phase to an IVIS survey or as a stand-alone technique for collecting opinions and identifying issues regarding a product, system, or concept. Projects often include developing and administering a paper-based quantitative survey to the focus group participants.

Vermont Fiber Producers Study—a project to determine the feasibility of a new fiber processing facility in Vermont. The project included telephone- and paper-based surveys of all the fiber producers and a focus group of the industry leaders in the state.

Southern New Jersey Corridor Planning Study—a project to obtain information about sensitivity to transit service characteristics through focus groups and paper-based conjoint surveys from individuals that commute into Philadelphia from southern New Jersey.

Hudson River Waterfront Mode Choice Modeling Survey— a convened-group and paper-survey study to obtain more detailed information about the service characteristics that affect travel behavior in and through Hudson County, New Jersey.

SR-91 Express Lanes Market Research Program—designed and planned the administration of focus groups and a written questionnaire to individuals in Orange and Riverside Counties, California to determine their electronic tolling preferences.

Paper-based surveys

Design, produce, administer, analyze, or manage a variety of projects that include paper-based surveys. The surveys may be administered in focus group settings, handed out to intercepted travelers, or mailed to potential respondents. The types of surveys include origin/destination, household trip diaries, and stated preference trade-off experiments.

Irvine, California Guideway Study—a study to determine willingness to pay for a fixed guideway system providing service in the Irvine Business Complex with links to the John Wayne International Airport.

Atlanta , Georgia, Commuter Rail Study—a project to estimate current travel activity, forecast future travel activity, and evaluate the feasibility of implementing commuter rail service in several alternative corridors in the Atlanta Georgia area using a paper-based mail-out household trip diary survey.

Florida Intercity High Speed Rail Study—a study of intercity auto and air travelers in the State of Florida using a mail-back survey distributed to over 25,000 intercepted travelers to develop ridership estimates of an intercity high speed rail service.

Tampa Bay Regional Transportation Analysis—a study using a mail-out household trip diary survey of Tampa Bay area residents to determine travel needs in the area and provide information for calibrating and validating the Tampa Bay Regional Planning Model.

Southern New Jersey Corridor Planning Study—a project to obtain information about sensitivity to transit service characteristics through focus groups and paper-based conjoint surveys from individuals that commute into Philadelphia from southern New Jersey.

Hudson River Waterfront Mode Choice Modeling Survey— a convened-group and paper-survey study to obtain more detailed information about the service characteristics that affect travel behavior in and through Hudson County, New Jersey.

Conference Papers

Use of Respondent-Interactive Geocoding in the Baltimore Mode Choice Survey, with T. Adler, G. Bandy, and D. Schellinger, presented at the Transportation Research Board's 79th Annual Meeting, January 2000.

Household Survey for the Tampa Bay Regional Transportation Planning Model, with D. Lamb, D. Bredahl, and T. Adler, Proceedings from the Transportation Research Board's 4th National Transportation Planning Applications Conference, Daytona Beach, FL, May 1993.

Ridership Estimation for a Suburban PRT System, with T. Adler, R. North, R. Shimizu, and C. Szeto, Proceedings from the Transportation Research Board's 4th National Transportation Planning Applications Conference, Daytona Beach, FL, May 1993.

RESOURCE SYSTEMS GROUP INCORPORATED

THOMAS J. ADLER

President

Education

B.S. Cornell University (Civil & Environmental Engineering), 1972
S.M. Massachusetts Institute of Technology (Transportation Systems), 1975
PhD. Massachusetts Institute of Technology (Transportation Systems), 1976

EXPERIENCE

1986 - now President, Resource Systems Group; Principal-in-Charge for transportation projects.
1984 - 1986 Research Associate Professor of Engineering, Thayer School of Engineering, Dartmouth College. Coordinator of Master of Science Program at Resource Policy Center.
1982 - 1984 Acting Director, Resource Policy Center, and Associate Professor of Engineering, Dartmouth College; Adjunct Associate Professor of Policy Studies, Dartmouth College.
1976 - 1982 Assistant Professor of Engineering, Thayer School of Engineering, Dartmouth College.
1975 - 1986 Independent transportation consultant for state, regional and local agencies.
1975 - 1976 Research Fellow, Joint Center for Urban Studies of Harvard and M.I.T.
1972 - 1976 Research/teaching, Transportation Systems Division, M.I.T.
1971 - 1972 Civil engineering consultant, Carrol E. Taylor and Assoc., Auburn, ME.

RESPONSIBILITIES AND RELEVANT PROJECTS (partial summary list)

Travel Demand Modeling

Various projects conducted for over 150 clients including: U. S. DOT (FHWA, FTA, FRA), Chicago Regional Transportation Authority, New Jersey Transit, the Tampa Bay region, New York Thruway Authority, California Private Transportation Corporation, Massachusetts Turnpike Authority, Florida Overland Express, Florida DOT, Ohio DOT, Wisconsin DOT; Georgia DOT and Illinois DOT, CP Rail Canada, Ontario Ministry of Transportation, Government of Singapore, Hong Kong Transport Dept, Trenes de Buenos Aires. Directed development of travel demand models for major transportation projects including toll roads, high speed passenger rail systems, urban transit systems, highway projects and ride-sharing programs, using advanced self-administered computer-based survey techniques and nested logit model forms. Developed implementation procedures for use in travel demand forecasting systems.

Market Research

Various projects conducted for Fortune 500 clients including: AT&T, UPS, Siemens, John Deere, Sprint, JP Morgan, Sun Microsystems, Ernst & Young, Aramark, General Motors, Honeywell, Frontier Communications. Conducted quantitative market research consisting of large-scale stated preference/conjoint surveys of markets and development of market simulation models for major products and services. Provided general market strategy consulting services.

Transportation Planning and Traffic Impact Studies

Over 200 projects for diverse private and public sector clients.
Directed studies providing transportation planning services to regions throughout the U.S. and traffic impact analyses for major retail, commercial, industrial, residential, recreational and institutional development projects throughout the Northeast.

Expert Testimony

Qualified as expert witness in areas of consumer behavior, transportation planning, travel forecasting, traffic impacts and traffic safety in over 200 court and regulatory hearings.

Memberships/Affiliations

Executive Committee of Transportation Planners Council, Institute of Transportation Engineers (ITE).

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Member, American Society of Civil Engineers (ASCE).
Transportation Research Board ITS-IDEA Technical Review Panel
Member, American Statistical Association
Incorporator, International Network of Resource Information Centers.

Awards and Honorary Societies

Chi Epsilon, Civil Engineering Honorary Society
Sigma Xi, Scientific Honorary Society
Catherine Wurster Fellow, Joint Center for Urban Studies of Harvard/M.I.T.

Publications (Partial List)

Experiments to Clarify Priorities in Urban Travel Forecasting Research and Development: Summary Report, with M.E. Ben-Akiva and J. Jacobson. Prepared for U.S. DOT contract with M.I.T., DOT-OS-30120, 1976.

Modeling Non Work Travel Patterns. Center for Transportation Studies (CTS) Report, M.I.T., Cambridge, MA, 1976.

"Joint-Choice Model for Frequency, Destination, and Travel Mode for Shopping Trips", with M.E. Ben-Akiva. Transportation Research Record #369, Transportation Research Board, Washington, D.C., 1976.

"Disaggregate Models of Trip Distribution", with S.R. Lerman, in Behavioral Travel-Demand Models. Lexington Books, D.C. Heath and Co., Lexington, MA, 1976.

"A Theoretical and Empirical Model of Trip Chaining Behavior", with M.E. Ben-Akiva, Transportation Research, Series B, Methodology, 13B, pp. 243 - 257, 1979.

The Direct and Indirect Costs of Transporting Wood Chips to Supply a Wood-Fired Power Plant, with M. Blakey and T. Meyer; report submitted to the U.S. Dept of Energy Solar/Biomass Division under Contract EG-77-C-0204487, DSD #103, February 1978.

"Directions for Improvements in Urban Travel Forecasting Procedures", with M. E. Ben-Akiva and S. Lerman; in Conference Summary and White Papers, U.S. Department of Transportation, 1979.

Techniques for Analyzing the Performance of Rural Transit Systems, Vols. I & II, with S.R. Stearns and Y.J. Stephanedes, prepared for U.S. Dept of Transportation, Research and Special Project Administration under Contract DOT/OS/80006, September 1979.

"ENTRANS: A Model of the Interactions Between Energy Supply and Transportation Energy Use," in Proceedings of the Summer Computer Simulation Conference, 1979.

"Disaggregate Models for Decisions Other Than Travel Mode Choice," in New Horizons in Travel-Behavior Research, W. Brog and P. Stopher, eds, 1980.

"Forecasting Experiments for Rural Transit Policymakers," with Y. Stephanedes, Transportation Research Record #718, Transportation Research Board, Washington, D.C., 1979.

Interactions Between Energy Supply and Transportation-Related Energy Use, Vol. I, with J. Ison and J. Geinzer, final report submitted to U.S. DOT under Contract DOT/RC/82003, DSD #182, January 1980.

Interactions Between Energy Supply and Transportation-Related Energy Use, Vol. II Technical Appendices, with J. Ison and J. Geinzer, final report submitted to U.S. DOT under Contract DOT/RC/82003, DSD #183, 1980.

"Analysis of Long-Term Transportation Energy Use," with J.W. Ison, Transportation Research Record #801, 1981.

Analysis of Transportation Energy Conservation Policies Using the ENTRANS Model, with J.W. Ison, Solar Energy Research Institute report, January 1981.

Guide to Forecasting Travel Demand with Direct Utility Assessment, with G.A. Kocur and others, U.S. DOT, Urban Mass Transit Administration, Report UMTA-NH-11-0001-82-1, September 1982.

Transportation of U.S. Coal Through Eastern Ports, with F.W. Lipfert and others, Report prepared for U.S. DOE under contract DE-AC01-81FE-20036, September 1982.

Technical Review of the ORNL Highway Gasoline Demand Model, report DE-AC01-81EI-11976, U.S. Dept of Energy, Energy Information Administration, February 1982.

Paratransit Planning System PARAS Cost Model Description, with H. Hazard, DSD #495, U.S. DOT Report UMTA-NH-06-0002-1, January 1983.

Low Density Transit Planning Package, with S. Tahmosh and M. Burton, turnkey PASCAL software system, distributed by U.S. DOT UMTA, February 1984.

"Review of Recent Advances in Travel Demand Analysis," Transportation Science, V. 18, N. 3, August 1984.

An Analysis of Wood Transport Systems: Costs and External Impacts, USDA Forest Service Report 23-729, March 1985.

"Modeling the Effects of Design and Operating Policies on Toll Road Volumes," with R. C. Schaevitz, in Paying the Toll: National Perspectives on Toll Road Development, University of California, Irvine, 1989.

"Hillsborough County, Florida Rail Transit Study Mode Choice Model Estimation," with Y. Dehghani, in Proceedings of the Second Conference on Applications of Transportation Planning Methods, National Academy of Science, 1989.

"Traffic Effects of Creating a City Center in a Suburban Community," with C. Leiner, in Proceedings of the Institute of Transportation Engineers Annual Meeting, ITE, Washington D. C., 1991.

"Estimation and Testing of Alternative Approaches to Model Intercity Rail Ridership," with F. S. Koppelman, C. Bhatt and B. Williams, ASCE *International Conference on High Speed Ground Transportation Systems*, *Orlando*, 1992.

"Household Survey for the Tampa Bay Regional Transportation Planning Model," with D. Bredahl, D. Lamb and L. Rimmer, TRB *Fourth National Transportation Planning Applications Conference*, Daytona, 1993.

"Ridership Estimation for a Suburban PRT System," with C. Szeto, R. North, L. Rimmer and R. Shimizu, TRB *Fourth National Transportation Planning Applications Conference*, Daytona, 1993.

"A Quick Response Screening Model for Planning Statewide Origin Destination Surveys," with S. Lawe, N. Brand and H. Wilson, TRB *Fifth National Transportation Planning Methods Applications Conference*, Seattle, 1995.

"A Comparison of Alternative Survey Approaches for Mode Choice Model Estimation," with L. Saben and R. Pratt, TRB *Fifth National Transportation Planning Methods Applications Conference*, Seattle, 1995.

"Computer-Based Travel Data Collection for Statewide Transportation Planning," with M. Anderson, in *Proceedings of the Institute of Transportation Engineers Annual Meeting*, ITE, Washington D. C., 1995.

"Sensitivity of the Hudson-Bergen Light Rail Transit System Forecast," with B. Johnson, presented at the 75th *Anual Meeting of the Transportation Research Board*, Washington D. C., 1996.

"Multimodal Statewide Travel Demand Modeling with a GIS," with S. Lawe and N. Marshall, presented at the 75th *Anual Meeting of the Transportation Research Board*, Washington D. C., 1996.

"Traffic-Related Issues in Project Permitting," presented at Vermont Bar Association *Environmental Law Seminar*, May 1996.

"Traveler Reactions to Congestion Pricing Concepts for New York's Tappan Zee Bridge," with W. Ristau and C. Falzarano, *Transportation Research Record 1659*, Transportation Research Board, Washington D. C., 1999.

"Development of a Computer-Based Intelligent Travel Survey System," presented at the *Travel Model Improvement IV* conference, Philadelphia, 1999.

"Analysis of Congestion Pricing Concepts for New York's Tappan Zee Bridge," with C, Szeto, W. Ristau and C. Falzarano, presented at the 79th *Anual Meeting of the Transportation Research Board*, Washington D. C., 2000.

"Use of Respondent Interactive Geocoding in the Baltimore Mode Choice Survey," with L. Rimmer and G. Bandy, presented at the 79th *Anual Meeting of the Transportation Research Board*, Washington D. C., 2000.

Courses Taught

Dartmouth College:

Transportation Systems Analysis
Transportation Engineering
Travel Demand Forecasting
Models in the Policy Process
Probability and Statistics
Modeling Consumer Choices
Resource Models
Introduction to Computer Science
Engineering Economics and Optimization
Optimization Applied to Environmental Engineering
Modeling Complex Systems

Massachusetts Institute of Technology:

Travel Demand Forecasting (Course for practicing professionals)

Thomas Adler **Resource Systems Group, Inc.**
PRESIDENT

International Institute of Resource Information Centers:

Resource Modeling using Microcomputers (Taught in Budapest, Hungary to professionals from 20 countries)

Resource Systems Group:

Network Models for Transportation Planning (Course for practicing professionals)

Traffic Impact Analysis (Seminar for environmental regulators)

Introduction to Conjoint Analysis (U. S. DOT Volpe Center Workshop for ITS Program Managers)

WADE L. WHITE, A.I.C.P.

YEARS EXPERIENCE WITH FIRM: 6 **YEARS EXPERIENCE WITH OTHER FIRMS:** 2

EDUCATION: B.A., Political Science, University of South Florida, 1991
M.S., Urban and Regional Planning, Florida State University, 1993
American Institute of Certified Planners- A.I.C.P.: 013636 (1998)

CURRENT RESPONSIBILITIES:

Transportation Planning Manager responsible for demand estimation, data analysis, and air quality modeling. Experience includes the use of the following transportation-related software packages: TRANPLAN, FSUTMS (Windows, DOS, OS/2, and UNIX), QRS II (DOS and Windows), MicroTrips (DOS), Mobile 5a, SAS (mainframe and DOS), SPSS (mainframe, Windows and DOS), ArcView and ArcInfo.

SUMMARY OF RELEVANT EXPERIENCE:

Tampa Bay Regional Transportation Analysis Phase V, Tampa, FL, *Florida Department of Transportation, District 7.* Deputy Project Manager responsible for all technical aspects of this project. The major elements of this project include travel surveys, model enhancements and model validation for a five-county area in west central Florida. Major surveys to be conducted during the project include household, cordonline, activity, major trip attractors, workplace and bicycle/pedestrian. Responsible for data analysis, model development, computer programming, and multimodal analysis. Model enhancements to be included in this project include a more detailed time-of-day model, subarea analysis tools, bicycle/pedestrian analysis and a major update of trip attraction equations. Deputy Manager for Tampa Bay Regional Transportation Analysis Phases IV and III. Responsible for survey design and statistical analysis of locally collected data, including household and cordonline surveys.

Southeast Travel Characteristics Survey, Ft. Lauderdale, FL, *Florida Department of Transportation, Districts 4 and 6.* [1998-1999] [Job No. 35830] Technical Advisor for the development and implementation of a workplace employee survey for Dade, Broward and Palm Beach Counties.

Ocala/Marion County Model Validation, Ocala, FL, *Ocala/Marion County MPO.* Project Manager responsible for the update, enhancement, and validation of a Travel Demand Forecasting Model for Marion County. Responsibilities included the development and review of input data, survey data review/analysis, model calibration, subconsultant coordination and model validation. Developed employment database using GIS, TAZ coverages and locally collected employer location data.

Jacksonville Urban Area Transportation Study (JUATS) 2020 Long Range Transportation Plan Update, Jacksonville, FL, Jacksonville MPO Task manager responsible for the validation of the JUATS model to a 1995 base year as well as multimodal long range alternatives analysis. Provided technical and presentation support to MPO staff at public meetings including town hall, CAC, TCC and MPO forums. Tasks performed during this update included development of goals, objectives, model validation, FHWA submittal development, GIS/model integration, air quality conformity determination, plan development and model applications. Considerations included TEA-21 and ISTEA factors, TEA 21 projects and project funding scenarios.

Jacksonville Urban Area Transportation Study (JUATS), Year 2015 Long-Range Transportation Plan Update, Jacksonville, FL, *Metropolitan Planning Organization for the Jacksonville Urbanized Area.* As Transportation Planner, assisted in the 1990 model validation and the 2015 Transportation Plan Update. The project involved the validation of the JUATS model chain and its application to the alternatives considered to develop a Year 2015 Long-Range Needs Plan and a Year 2015 Cost-Feasible Plan. Interim plans for the Jacksonville region will be formulated through this project. Used the RISC/6000 version of FSUTMS and TRANPLAN for this project.

Virginia L. “Ginger” Corless, AICP, CPRP
President
Providing professional planning services for over eighteen years, Virginia (Ginger) has directed many of the Firm’s parks, recreation and community planning projects since joining Herbert•Halback, Inc. (HHI) in 1991. Prior to joining HHI, Ginger was the planning and development supervisor for the Orange County Parks and Recreation Department. Her expertise in the public infrastructure implementation process has proven to be of great benefit to the Firm as well as our clients. Ginger balances project management, client relations, planning expertise and quality control with an equal passion. She prides herself in effective communication and going the extra mile on each project assigned.

PROFESSIONAL REGISTRATION/CERTIFICATION
Certified Parks and Recreation Professional, 1988
American Institute of Certified Planners (AICP) #011315
Crime Prevention Through Environmental Design Specialist, 1995

Education
National Recreation & Parks Association
Park Planning and Maintenance School, 1988
Bachelor of Science in Ornamental Horticulture/Landscape Design
Auburn University, 1982

Career History

1999-Present	President Herbert•Halback, Inc.; Orlando, FL
1994-1998	Principal/Project Director Herbert•Halback, Inc.; Orlando, FL
1991-1994	Project Director Herbert•Halback, Inc.; Orlando, FL
1985-1991	Planning & Development Supervisor Orange County Parks & Recreation; Orlando, FL
1984-1985	Research Supervisor Stolzberg Market Research; Atlanta, GA
1982-1984	Interior Landscape Designer GreenTree, Inc.; Atlanta, GA

Herbert•Halback Experience

<u>Urban Design/Community Planning</u>
Bay Hill Safe Neighborhood Plan; Orange County, FL
Bayou Chico Small Area Plan; Escambia County, FL
Chuluota Rural Design Standards; Seminole County, FL
Church Street West Feasibility Study; Orlando, FL
Community Redevelopment Plan; Port Orange, FL
CRA Continuing Consulting Services; Cocoa, FL

Cranes Roost Waterfront Development; Altamonte Springs, FL
Design & Technical Standards; Kissimmee, FL
Design Guidelines; Casselberry, FL
Design Guidelines; Pinellas Park, FL
Downtown Design Guidelines; Ocala, FL
Downtown Design Plan; Kissimmee, FL
Downtown Signage Guidelines; Tallahassee, FL
Downtown & Lakefront Master Plan; Ocoee, FL
Finding & Community Redevelopment Plan; Casselberry, FL
Finding & Redevelopment Plan; Winter Garden, FL
Front Beach Road Redevelopment Plan; Panama City Beach, FL
Lee County Safe Neighborhood Plan; Lee County, FL
Main Street Streetscape; Safety Harbor, FL
Marion Street Streetscape; Lake City, FL
North Main Street Streetscape; Kissimmee, FL
Northwest Palm Bay Transportation Studies; Palm Bay, FL
Orange Blossom Trail Beautification Projects; Orange County, FL
Orange Blossom Trail Safe Neighborhod Plan; Orange County, FL
Orange Blossom Trail Urban Design District; Orange County, FL
Redevelopment Study; Palm Bay, FL
West Orange Village; Winter Garden, FL

Parks/Recreation
Agricultural Museum Proposal; Flagler County, FL
Albany Tennis Complex; Albany, GA
Caloosahatchee Regional Park; Lee County, FL
Cambier Park; Naples, FL
Cecil Field Regional Park; Jacksonville, FL
Comprehensive Parks and Recreation Master Plan; Escambia County, FL
Countywide Greenways and Trails Master Plan;Brevard County, FL
Countywide Recreational Master Plan; Alachua County, FL
DeBary Hall Historic Site; Volusia County, FL
Donnelly & Gilbert Parks; Mount Dora, FL
Embry Riddle Sports Aeronautical University Complex; Daytona Beach, FL
Escambia County Equestrian Park; Escambia County, FL
Flagship Harbor Preserve; Flagler County, FL
Greenway and Wildlife Corridor Master Plan Preliminary Research; Orange County, FL
John H. Jackson Neighborhood Center; Orlando, FL
Kaley Square Park; Orlando, FL
Kelly Park; Orange County, FL
Lake Cane Marsha Park; Orange County, FL
Lake Eola Park Additions; Orlando, FL
Lake Lily Park; Maitland, FL
Lake Tibet-Butler Native Preserve; Orange County, FL
Malacompra Park; Flagler County, FL
Multi-Purpose Sports Facility; Escambia County, FL

North Colonial Linear Park; Ft. Myers, FL
Parks & Recreation Master Plan; Lantana, FL
Pellicer Creek Conceptual Management Plan; Flagler County, FL
Princess Place Preserve; Flagler County, FL
Recreation Element, Comprehensive Plan and Concurrency Management Program; Orange County, FL
Recreation Services Consolidation Plan; Valdosta, GA
South Park; Ocoee, FL
Standard Operating Procedures for County Parks; Orange County, FL
Walt Disney World Recreational Trails Master Plan; Lake Buena Vista, FL

Grant Application/Administration□Community Block Grants
DNR Railroad Acquisition Program
FDOT Beautification Grants
Florida Boating Improvement Program
Florida Coastal Management Program
Florida Recreation Development Assistance Program□Land & Water Conservation Fund
SBA Tree Planting Programs
Water Management Program Assistance

Transportation Planning and Community Awareness
Bridge of Lions Rehabilitation; St. Augustine, FL
LYNX Customer Amenities Program; Orlando, FL
Merritt Island SR520; Merritt Island, FL
Northwest Palm Bay Transportation Study; Palm Bay, FL
Orange Blossom Trail Public Information Program; Orange County, FL
Regional Tourism Study; District V FDOT
Scenic A1A Master Plan; Flagler County, FL
Scenic Highway Application for A1A; St. Johns County, FL
SR 200 Public Information Program; Ocala, FL
SR 464 Corridor Plan; Ocala, FL
SR 500 Public Information Program; Lake County, FL
St. Augustine Transit Greenways; St. Augustine, FL
U.S. 1 Corridor AIS; Volusia County, FL
U.S. 27 Public Information Program; Marion County, FL

Professional Memberships
American Planning Association
Florida Planning & Zoning Association
Florida Recreation & Parks Association
Florida Redevelopment Association
National Recreation & Parks Association
Women's Transportation Seminar

LECTURES
"Evolution of the Senses-CPTED" Florida ASLA State Conference, 2001

Recreation in the 21st Century", University of Florida Landscape Architecture Symposium, 1999
Park Design For Safety", FRPA, 1996, 1997, 1998
Building Public Support", FRPA Conference, 1994
Capital Improvement Program", FRPA Conference, 1993
Recreational Trail Planning", Mount Dora Bicycle Festival, 1990
Park Master Planning", National Institute on Park and Ground Management, National Conference, 1988