

Project Abstract
For the Period Ending June 30, 1999
This project was supported by Minnesota Future Resources Fund.

TITLE: Evaluation of Urban Growth Economic and Environmental Costs and Benefits
PROJECT MANAGER: J. Drake Hamilton
AFFILIATION: Minnesotans for an Energy-Efficient Economy
MAILING ADDRESS: 46 E. 4th Street, Suite 600
St. Paul, MN 55101
WEB SITE ADDRESS: www.me3.org
LEGAL CITATION: ML 1997, Ch. 216, Sec. 15, Subd. 9b
APPROPRIATION AMOUNT: \$275,000

Statement of Objectives: This project evaluates the infrastructure costs, land use impacts, transportation impacts, environmental impacts, and social impacts of two growth scenarios for the 13-county Twin Cities metropolitan area from 1995 to 2020. A final report titled *Two Roads Diverge: Analyzing Growth Scenarios for the Twin Cities Region* and six supporting documents compare the impacts of a *Sprawling Scenario* to those of a *Smart Growth Scenario* that simultaneously accommodates growth and protects the environment.

Overall Project Results: 1,000 final reports were produced and distributed to policy makers, local government officials, builders and developers, environmental groups, Metropolitan Council, state agencies and other interested parties. The final report includes seven full-colored land use maps to illustrate the differences between the *Smart Growth* and *Sprawling Scenarios*. The report also includes a discussion of: types and placement of expected new housing; impacts from development on the environment, farmland and regional character; transportation impacts; social impacts on low-income workers; additional infrastructure costs; and public attitudes relevant to housing and neighborhood choices. Growth impacts in the six outlying counties are presented in a case study of St. Michael, Minnesota. The supporting documents explain underlying assumptions and include (1) Introduction and Background, (2) Methodology, (3) Social Impacts, (4) Infrastructure Costs, (5) Environmental Impacts, and (6) Public Survey Results.

Project Results Use and Dissemination:

An animated Power Point presentation and associated fact sheet with preliminary results were presented at a public forum attended by over 150 people in January 1999. The presentation was repeated in February 1999 for a joint committee meeting of the Minnesota Senate's Environment and Agriculture Budget Division, Government Operations Budget Division, and Transportation Budget Division. In March 1999 Decision Resources, Inc. explained the findings from the public opinion survey at a forum attended by approximately 100 people. In March 1999 CEE also presented study results to the Builders Association of Minnesota annual meeting and to a group of University of Minnesota Extension Agents. ME3 has presented study results to the Air and Waste Management Association, and will present findings at the annual meeting of the Recycling Association of Minnesota. Results from the study were also distributed at the June 1999 "Growing Smart in Minnesota" conference at the Minneapolis Convention Center, which was attended by approximately 450 people. Results were further disseminated through Twin Cities and statewide media outlets. Results from the study were also distributed at the June 1999 "Growing Smart in Minnesota" conference at the Minneapolis Convention Center, which was attended by approximately 450 people. Results were further disseminated through Twin Cities and statewide media outlets.

1000 final reports were printed and will be distributed throughout 1999. The final reports and supporting documents will be sent to interested parties and upon request. All work products will be available on the ME3 and CEE websites and a link will be provided on the 1000 Friends of Minnesota website. The sprawl directory of ME3's website, www.me3.org/sprawl, received approximately 10,000 hits in the last year, prior to posting of this study report.

JUL 02 1999

Date of Report:

July 1, 1999
**LCMR Final Work Program Update
Report**

Date of Next Status Report:

Date of Workprogram Approval:

June 23, 1997

Project Completion Date:

June 30, 1999

LCMR Work Program 1997

I. Project Title: Evaluation of Urban Growth Economic and Environmental Costs and Benefits

Project Manager: J. Drake Hamilton
Affiliation: Minnesotans for an Energy-Efficient Economy
Mailing Address: 46 E. 4th Street, Suite 600
St. Paul, MN 55101
Telephone Number: (651) 225-1177
E-Mail: hamilton@me3.org
Fax: (651) 225-0870
Web site address: www.me3.org

Total Biennial Project Budget:

\$ LCMR: \$275,000

\$ LCMR Amount Spent: \$275,000

\$LCMR Balance: \$0

A. Legal Citation: ML 1997, Chapter 216, Section 15, Subdivision 9b

Appropriation Language: This appropriation is from the future resources fund to the director of the office of strategic and long-range planning for an agreement with Minnesotans for an Energy-Efficient Economy to evaluate the benefits, costs, and environmental impacts of alternative urban and rural growth patterns.

B. Status of Match Requirement: Not Applicable

II. Project Summary and Results: This project evaluated the benefits, costs, and environmental impacts of two alternative metropolitan growth patterns. Cost estimates include the additional capital and operating costs of public infrastructure and related services, projected to the year 2020. The social impacts of the concentration of poverty and mismatch between workers housing and jobs were also described. The *Sprawling Scenario* was based on the recent trend of mostly large-lot single-family detached housing built in an expanding urbanized area. The *Smart Growth Scenario* was based on a more compact urbanized area and subsequent decreased investments in local and regional infrastructure. The *Smart Growth Scenario* was also based on the ten smart growth principles adopted by the Minnesota Smart Growth Network and approved by Governor Ventura's Administration. The *Smart Growth Scenario* focused on protecting the most ecologically sensitive and unique natural areas in the seven-county metropolitan area by using the Minnesota Department of Natural Resources' *Metro Greenprint* to help guide development and determine its residential density. Four land use maps were created to illustrate the differences between the scenarios.

To represent the *Smart Growth* and *Sprawling Scenarios* in the six collar counties, the City of St. Michael, Minnesota was used as a case study. Using the city's Comprehensive Land Use Plan and Parks, Trail and Open Space Plans, the *Smart Growth Scenario* was developed by protecting unique natural areas and their connections, by preserving agricultural areas, and by minimizing the impact of low-density rural housing developments. The *Sprawling Scenario* transformed St. Michael's rural landscape by locating houses without urban services on one- to ten-acre lots. The land use and environmental impacts were compared. Three land use maps were created to show the differences between the two scenarios.

Environmental costs and impacts of sprawl were analyzed by comparing differences between the two development scenarios. The project reported a range of cost estimates for the air, water, and noise pollution impacts of the additional vehicle miles traveled created by the *Sprawling Scenario*. For other environmental impacts, we produced maps to identify areas where projected land use changes could significantly impact the environment. For water pollution impacts, the project produced a map of the watersheds that will be most impacted by increased impervious surface coverage due to sprawling growth, and calculated the potential impact of the principles of smart growth on reducing new imperviousness in each major watershed. To describe the geographic extent of potential water supply impacts, we produced a map depicting the parts of the seven-county region that may experience growth beyond our most prolific aquifer. The two scenarios reveal the greatest difference in environmental impact in terms of the amount of open space and natural areas that could be protected while accommodating growth. In the *Smart Growth Scenario*, the entire *Metro Greenprint* area could be protected. In the case of *Sprawling Growth*, we mapped the *Greenprint* areas in the future urbanized and rural parts of the seven-county region that would potentially be lost to development.

Maps and economic and environmental data were used to gather public reactions to the two development scenarios. Decision Resources, Ltd. was contracted with to draft and implement a telephone survey of 1,000 residents of the thirteen-county Metropolitan Statistical Area. Drafts of the survey were reviewed by two focus groups and at several stakeholder fora. The survey was conducted between December 1998 and January 1999, and results were compiled in early February 1999. Survey results were presented at a public forum at the Landmark Center, St. Paul, on February 25. Survey results were also presented and made available at the June 11 "Growing Smart in Minnesota" conference at the Minneapolis Convention Center. Two additional focus groups were conducted on June 28 and 29, 1999, to help frame the results of the survey for incorporation into a broader Smart Growth initiative. The land use maps also were displayed at the June conference, which was attended by over 450 people.

A final report, *Two Roads Diverge: Analyzing Growth Scenarios for the Twin Cities Region*, was produced. The report describes the study's two scenarios and their impacts on land use, transportation, the environment, infrastructure costs, low-wage workers, and the region's character. Selected survey results were also included in appropriate sections. The final report also includes seven full-colored maps. The final report also refers readers to six sections of supporting documents including (1) Introduction and Background by CEE, (2) Methodology by CEE, (3) Social Impacts by CEE, (4) Infrastructure Costs by CEE, (5) Environmental Impacts by ME3, and (6) Survey Results by 1000 Friends of Minnesota. 1,000 final reports and 100 copies of the supporting documents

were printed. These documents are available on the ME3 web page (www.me3.org/sprawl) as PDF files that can be easily downloaded. A press release publicizing the report results will be distributed in July 1999. The reports are being mailed to interested parties, and notice of the report's availability on the web is being posted in electronic newsletters and printed in newsletters of the collaborators.

III. Outline of Project Results:

Result 1. Quantify the Costs of Urban Sprawl

Budget: \$132,200 Balance: -0-
Completion Date: June 30, 1999

Overview: The Center for Energy and Environment (CEE), with the assistance of its subcontractors--Enviroscience, Inc., McCombs Frank Roos Associates, and Economic Research Associates--completed Result 1. CEE and its subcontractors defined the parameters for two development scenarios for the Twin Cities metro region projected to the year 2020. The *Sprawling Scenario* and *Smart Growth Scenario* were adapted from seven-county region scenarios created by the Metropolitan Council. The public and private infrastructure costs of urban sprawl for the two development scenarios were quantified. The social impacts of the two scenarios and problems related to the concentration of poverty were described. Seven land use maps were created to help highlight the changes between the scenarios.

To represent the impacts of growth on the six collar counties (those within the Twin Cities Metropolitan Statistical Area but outside of Metropolitan Council's jurisdiction), a case study approach was used. The City of St. Michael's projects 6,300 new households between 1995 to 2020. These households were placed according to the parameters of the *Smart Growth* and *Sprawling Scenarios*. Three three land use maps were created to represent the affects of growth on natural areas and agricultural lands for each scenario.

The most important finding of this study is that although infrastructure costs are an important component in the discussion of sprawl, they are only one piece of a much broader range of critical impacts. The problem with focusing only on the costs of sprawling development is that many or most of the costs are incurred by developers and are passed on to homeowners. Our study found that these costs do not deter the sprawling development that occurs in our region. As a result of these findings, our study focused more on the impacts to regional character from sprawling development, an issue we feel has been largely ignored in the policy debate concerning land use.

Specific problems that were encountered in conjunction with Result 1 or important accomplishments are summarized below:

A. ME3 and 1000 Friends of Minnesota assisted CEE in the selection of the Smart Growth development scenario. Input from Metropolitan Council staff and the Costs of Sprawl Studies Group was used to help clarify assumptions for both scenarios. Research methodologies from selected studies was adapted to quantify the costs of sprawl for this project.
(Completion date: October 1998; Budget: \$27,300)

B. CEE and its subcontractors defined which public, private, and social costs of sprawl to quantify by reviewing existing data from the Metropolitan Council, Minnesota Department of Transportation, local communities, and other existing sources. (Completion date: August 1998; Budget: \$6,400)

C. CEE and its subcontractors will estimate additional private and local development costs, including housing costs, site development, utility hook-ups, and other costs which individuals and local governments will pay for development in the two alternatives.
(Completion date: April 1998; Budget: \$15,900)

Problems encountered:

Due to delays in the BATC study (described below), housing cost could not be included in the infrastructure cost analysis. The Builders Association of the Twin Cities (BATC) and CEE are performing a cost study to determine the effect of (1) various development subdivision ordinances and fees and (2) housing construction fees, in four growing suburbs using an actual development in Shakopee as a template. Four scenarios representing different zoning and density requirements are being studied. This study will help to identify barriers to building more dense (and therefore more affordable) housing in these areas.

Utility costs were also excluded since they were harder than expected to calculate, comprised a small percentage of overall infrastructure costs and because—unlike other infrastructure costs—ratepayers, not taxpayers, pay for their operation and maintenance costs.

D. CEE and its subcontractors summarized findings on local infrastructure and operations and maintenance costs on an ongoing basis to serve as inputs to LSP's focus groups and other public participation activities. CEE also summarized in a draft report findings related to private, local and regional infrastructure costs and operations and maintenance costs.
(Completion date: April 1999; Budget: \$15,800)

E. CEE and its subcontractors estimated the operations and maintenance costs of local and regional public infrastructure and services—such as highways, sewers, and utilities—needed to accommodate population growth in the two alternatives. (Completion date: April 1999; Budget: \$15,900)

Problems encountered: For the reasons stated earlier, the operations and maintenance costs of utilities were not calculated.

F. Where possible, CEE and its subcontractors estimated the social costs from congestion, commuting, and other sprawl-related factors for both scenarios. For the social costs that could not be quantified adequately, a brief qualitative description was completed. (Completion date: April 1999; Budget: \$19,500)

Problems encountered: Unfortunately, Ramsey County does not compile statistics broken out in the categories St. Paul, first-ring suburbs, and outlying suburbs. Therefore the social impacts section of the supporting documents focused mostly on Hennepin County and on the entire seven-county metropolitan area (when possible) because these data were available.

G. CEE and its subcontractors will review the findings of the costs of sprawl and will estimate its impact on the regional economy and taxpayers. This analysis

may include generating IMPLAN economic input/output model results for the two development alternatives, or comparing the fiscal impacts of both scenarios. (Completion date: April 1999; Budget: \$6,800)

Status: Based on past research on the cost of sprawl, we initially thought that the infrastructure cost differences between both scenarios would be much larger than our initial research findings indicated. After preliminary work with Economic Research Associates designing an IMPLAN analysis, CEE decided that funding a complete IMPLAN analysis would produce insignificant results and this effort would be better spent strengthening other parts of the study. This task was therefore scaled back and CEE spent more time and effort analyzing the impact of growth on the region's character, especially its natural amenities.

H. CEE and its subcontractors completed a final report that summarizes the public, private, and social costs and economic impacts of the two development scenarios. 1,000 final reports including eight land use maps were produced by CEE. CEE also produced 100 copies of supporting documents to the final report including (1) Introduction and Background, (2) Methodology, (3) Social Impacts, and (4) Infrastructure Costs. These documents helped describe CEE's methodology and analyses in order to explain how our research findings were generated.

(Completion date: June 1999; Budget: \$24,600)

Result 2. Quantify and Map the Environmental Impacts of Sprawl

Budget: \$57,100
Completion Date: June 1999

Balance: -0-

A. ME3 will define which environmental impacts were used in this study, and will produced a range of cost estimates for the critical environmental externalities associated with sprawl. These impacts include air emissions, polluted runoff, and loss of forest acreage. Selection of environmental impacts will be guided by input from the Costs of Sprawl Studies Group. Wherever possible, ME3 will extrapolate from existing analyses of these costs. (Completion date: June 1999; Budget: \$8,900)

Status: Environmental impacts were defined, with the assistance of personnel from DNR, MPCA, and MNDOT, and using the work of the Greenways and Natural Areas Collaborative in the *Metro Greenprint*. Housing placement developed by CEE was used to determine the geographic locations of the impacts, where applicable. The range of environmental costs of additional vehicle travel generated in the *Sprawling Scenario* was calculated using environmental (air, water, and noise pollution) costs from the literature. Impacts of polluted runoff were estimated using additional impervious surface area as a proxy for the generation of polluted runoff. The analysis of greenspace and natural areas threatened by development revealed that, in the *Smart Growth Scenario*, the study found that projected growth could be accommodated while protecting the entire area identified in the *Metro Greenprint*. Under the *Sprawling Scenario*, by contrast, *Greenprint* areas are lost or fragmented in the developing and rural areas. Environmental impacts have been described in more detail in Supporting Document V, available at ME3's web site, www.me3.org/sprawl.

B. CEE created the baseline GIS scenario. This base case was the platform from which ME3 and CEE generated land use maps portraying the environmental impacts of the two development scenarios. The GIS software used was ArcView. (Completion date: August 1998; Budget: \$5,000)

Status: Land use maps generated from this project can be downloaded as part of the reports and documents posted on the website, www.me3.org/sprawl.

C. CEE and ME3 determined the geographic locations of the environmental impacts, for input into the alternative GIS scenarios. (Completion date: June 1999; Budget: \$5,000)

Status: A detailed analysis of the environmental impacts for the 6 outlying counties was shown in the St. Michael case study. The maps depicting the environmental impacts can be found in Supporting Document V: Environmental Impacts, available on ME3's web site, www.me3.org/sprawl.

D. CEE with the assistance of ME3 created GIS scenarios for each alternative development pattern. Products included a series of land use maps, which document the geographic locations bearing the greatest environmental impacts, for each scenario. These GIS maps became part of the visual display used in the public forums hosted by LSP. Project maps have also been made available to the public via magazine and newspaper articles, and at ME3's Sustainable Minnesota web site. (Completion date: April 1999; Budget: \$38,200)

Status: Land use maps from this study have been used in CEE's PowerPoint presentation at the 1000 Friends of Minnesota's public forum on 1/25/99. The PowerPoint presentation will be periodically updated and used in future presentations. The maps were also displayed at the 1000 Friends of Minnesota's Growing Smart Conference on June 11, 1999, to approximately 450 attendees.

Result 3. Foster Active Citizen Involvement

Budget:	\$60,000	Balance:	-0-
Completion Date:	June 30, 1999		

A. LSP used a professional pollster (Decision Resources Ltd.) to design and administer a survey to a 1000 randomly selected people to gather public input on values and goals related to alternative development scenarios; LSP analyzed the survey response and printed the results; Decision Resources and LSP/1000 Friends of Minnesota presented final results to an audience of 100 people at a public forum held on February 25, 1999. (Completion date: February 1999; Budget: \$30,000)

B. LSP conducted four follow-up focus groups to gauge the public values and clarify any ambiguities in those results. (Completion date: June 1999; Budget: \$10,000)

Status: Conducted two focus groups in October 1998, to evaluate survey method and instrument. One focus group was held in White Bear Lake and one was held in Maple Grove. Participants included local elected officials, farmers, citizen activists, transportation experts, natural resources professionals, land use attorneys, professional planners, and local government staff. Results from these

two focus groups were compiled and provided to Decision Resources for incorporation into survey development.

Conducted two additional focus groups in St. Paul in June 1999, to analyze survey results and determine how best to frame the findings for use in broader growth management public education efforts. Participants included citizen activists, land use attorneys, local government staff, professional planners, conservation professionals, transportation policy experts, university extension staff, and social justice advocates. Results from these two focus groups will be incorporated into future public education efforts of 1000 Friends of Minnesota.

C. Using cost and impact data, CEE in cooperation with ME3 and LSP will create visuals and related information sheets comparing the two development options. (Completion date: March 1999; Budget: \$10,000)

Status: An animated PowerPoint presentation and associated fact sheet have been completed. This presentation was given to 1000 Friends of Minnesota's public forum on 1/25/99 and to a joint meeting of the Minnesota Senate's Environment and Agriculture Budget Division, Government Operations Budget Division, and Transportation Budget Division on 2/1/99. The presentation will be adapted to incorporate final results of the project. CEE also presented study results to a Builders Association of Minnesota meeting and to a group of University of Minnesota Extension agents in March 1999. ME3 presented preliminary environmental impacts results at a meeting of approximately 75 members of the Air and Waste Management Association on 3/24/99, on a panel with the MPCA and the Metropolitan Council. On 10/28/99, ME3 will present the project findings to the annual fall conference of the Recycling Association of Minnesota and the Solid Waste Management Association of North America, as part of a panel on Smart Growth and land stewardship.

D. LSP will present the costs and benefits of the two alternatives, through a series of four public forums designed to elicit feedback from the public. A minimum of 500 people will be reached. (Completion date: June 1999; Budget: \$10,000)

Status: Preliminary results of the economic, social and environmental components of the study were presented at a January 25, 1999 meeting at the Landmark Center in downtown St. Paul. Approximately 175 people attended the standing room-only event. A second public forum was held February 25, 1999, focusing on the results from the 1,000 person telephone survey. Approximately 120 people attended this forum. A third public forum, involving approximately 120 people, was conducted on March 25, 1999, and focused on using information derived from the two earlier forums to promote the concept of "Smart Growth." The June 11, 1999 "Growing Smart in Minnesota" conference provided the fourth public venue for presentation of the full study. Approximately 450 people attended this all-day conference, which included prominent displays of project-generated maps, information on obtaining copies of the full project report, and two breakout sessions on the "True Costs of Sprawl."

Result 4. Disseminate Project Results

Budget: \$25,700 Balance: -0-
Completion Date: June 30, 1999

On an ongoing basis, ME3 will coordinate dissemination of all project findings through its web site. (Completion date: June 1999; Budget: \$4,000)

Status: The full project report, *Two Roads Diverge: Analyzing Growth Scenarios for the Twin Cities Region*, together with six supporting documents, is posted at the ME3 web site (www.me3.org/sprawl). Private, nonprofit, and government resources, and urban growth-related articles, reports and web links are posted weekly at the web site.

B. CEE will publicize the findings from Result 1 (costs of sprawl), and will assist LSP in preparation of LSP's final report. (Completion date: June 1999; Budget: \$5,300)

Status: CEE will distribute the final report and supporting documents to a list of interested parties generated by the project collaborators. CEE's land use maps comparing the *Sprawling* and *Smart Growth Scenarios* appeared in a May 1999 edition of the *Star Tribune*. CEE will also post the final report and supporting documents on its website in July 1999.

C. 1000 Friends of Minnesota will produce a report on their analyses and conclusions, and publicize project findings through press releases, and published magazine and newspaper articles. (Completion date: June 1999; Budget: \$16,400)

Status: 1000 Friends of Minnesota has publicized findings of the study broadly through press releases to metropolitan and greater Minnesota media outlets. Meetings have been conducted with members of the editorial boards and news staff of the *Star Tribune* and *Pioneer Press*. An editorial will be published in the July edition of the Focus 10,000 magazine, targeted at lakeshore property owners. Interviews with 1000 Friends of Minnesota staff have been broadcast on a half-hour community affairs program on St. Paul public access television, and on an hour-long midday program on Minnesota Public Radio. Additional publicity of report findings is ongoing.

IV. Context:

A. Significance:

The impacts of urban sprawl are well known. Sprawl costs billions in infrastructure, increases congestion, wastes the time of commuters, increases air emissions, wastes energy, consumes farm land, pollutes land and water, destroys biodiversity, and isolates the central cities. The Twin Cities have been grappling with this issue for decades. While some progress has been made, it is clear that sprawl is a major problem for the Twin Cities, threatening the quality of life for many residents.

A fundamental difficulty in controlling sprawl is the conflict between individual choice reflecting a general preference for low-density communities and the need

for overall planning to insure that infrastructure and other investments benefit the entire metropolitan area and the state.

One component of this debate is the cost of sprawl. These costs are usually addressed either in general terms, or are presented as needs for major infrastructure improvements such as freeways, an airport, or sewer interceptor expansion. For instance, the Metropolitan Council recently funded a study to quantify the costs of sewer hook-up in the metropolitan area. LSP and American Farmland Trust compared the costs and revenues associated with different land uses in three metro-area communities, and concluded that each was spending more to provide services than was recaptured in property taxes.

There have been some initial efforts to examine the costs of sprawl. Recently the Bank of America completed a major study which concluded that sprawl impedes business development. There has also been considerable work on the costs of sprawl associated with different site plans for individual developments. The Ford Foundation and the Minnesota Extension Service have funded a study at the University of Minnesota to compare pairs of communities in different stages of development. This study will also project expected demographic and development patterns of the entire thirteen county Metropolitan Statistical Area.

This project takes a different approach: it will examine the costs of sprawl, including environmental costs, by comparing a growth pattern based on current trends to a more compact development pattern with decreased investments in regional infrastructure. The ultimate goal is to encourage economic development and sustainable land use, which will maximize benefits to Minnesota's economy and environment. Minnesota taxpayers no longer wish to pay uncontrolled costs associated with unsustainable growth. This project will help provide the information needed to insure that we minimize these expenditures as well as costs to Minnesota's environment.

B. Time: 2 years ending June 30, 1999

C. Budget Context: This is the first appropriation to ME3's programmatic work on the costs of urban sprawl. LSP has used private and LCMR support to assess the costs and agriculture impacts of urban development. ME3 and the two nonprofit cooperators (LSP and CEE) anticipate that their organizations will secure additional, private funds to continue their programs on moderating the impacts of urban growth beyond June 1999.

	July 1995- June 1997	July 1997- June 1999	July 1999-June 2001
	<u>Prior expenditures on this project</u>	<u>Proposed expenditures on this project</u>	<u>Anticipated future expenditures on this project</u>
1. LCMR	\$25,000	\$275,000	\$0
2. Other state	\$0	\$0	\$0
3. Non state	\$130,000	\$150,000	\$255,000
Total	\$155,000	\$425,000	\$255,000

BUDGET:

Personnel	\$47,100
Equipment	\$0
Acquisition	\$0
Development	\$0
Other	
Subcontractor personnel - CEE	\$ 60,600
Subcontractor personnel - Other	\$ 68,000
Subcontractor personnel - LSP	\$ 47,000
Printing	\$ 22,500
Publication	\$ 8,400
Supplies	\$ 10,000
Data acquisition	\$ 5,100
Travel	\$ 5,500
Postage	\$ 2,000
Total	<hr/> \$275,000