NOTICE TO PROCEED

TO: JUMPSTART GIS,LLC   Date: July 1, 2002
      11301 EDGEWOOD FARM COURT
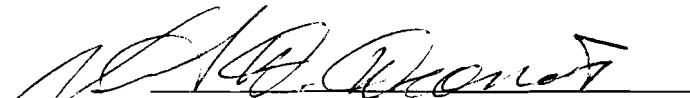   RICHMOND, VA 23233   PROJECT: Parcel   Map
                                           Conversion Services
                                           NASSAU COUNTY, FLORIDA

          Pursuant to the Agreement entered into the 17th day of June 2002
between Nassau County, Florida and JumpStart GIS, LLC, you are hereby
authorized to proceed with the scope of work to perform the necessary
services for parcel map conversion services to convert existing manual
parcel maps into a consistent, unified, digital parcel map file, as
approved by the Board of County Commissioners on June 17, 2002. The
work shall be completed within eighteen (18) months of the date of the
Notice to Proceed and the costs for said work shall not exceed those as
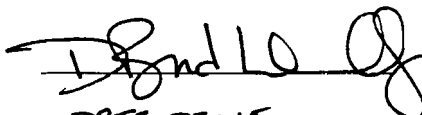outlined in the Agreement for the services rendered.

                              BOARD OF COUNTY COMMISSIONERS
                              NASSAU COUNTY, FLORIDA

                              _____
                              NICK D. DEONAS
                              Its: Chairman

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged:

By: _D. BRAD LLEWELLYN_____   this the ___2nd___   day of
_July_____, 2002.

By: _____

Title: ___PRESIDENT_____

Nassau County

Parcel Map Conversion Services

THIS AGREEMENT, made as of the _17th_ day of _June_, 2002, by and between Nassau County, a political subdivision of the State of Florida, with its offices at Post Office Box 1010, Fernandina Beach, Florida 32035, hereinafter called the County, and JumpStart GIS, LLC, with its offices at 11301 Edgewood Farm Ct., Richmond, VA 23233, hereinafter referred to as "JumpStart."

WITNESSETH

THAT WHEREAS, the County desires parcel map conversion services to convert existing manual parcel maps into a consistent, unified, digital parcel map file, hereinafter collectively referred to as the "Project", and JumpStart desires, intends and has agreed to provide and perform the same for the County; now, therefore,

FOR AND IN CONSIDERATION of the mutual and respective covenants and agreements herein contained and made with respect to the performance and accomplishment of said Project by JumpStart and the payment therefore by the County, the County and JumpStart do hereby covenant and agree as follows:

SECTION 1 - SCOPE OF SERVICES

1.1   Kick-Off Meeting

JumpStart and Nassau County will convene a project kick-off meeting to define the pilot areas, provide JumpStart with the necessary source materials to begin conversion, and finalize contract and schedule items. Throughout the pilot project, the County and JumpStart will hold regular weekly conference calls to resolve any issues that arise.

1.2   Procedures Manual and Parcel Data Design

The County and JumpStart will jointly develop a procedures manual, which will serve as a general guide for the conduct of day-to-day operations and a database design document defining the layering scheme to be used and all other technical specifications for the individual features to be depicted within the County's unified digital parcel map. Jumpstart will be responsible for the delivery of this document. The initial procedures document will be available for the Pilot Project Review Meeting (Item 1.4). The final delivery of this document will coincide with the final delivery of the digital products.

1.3   Pilot Project

The County and JumpStart will jointly develop a pilot project, designed to identify specific County needs and requirements, and to test and evaluate the procedures to be followed by the County and by JumpStart in the Project's full production phase, for converting the County's manual, hard-copy parcel maps into a digitized ESRI format. The main goals of the pilot phase are to: produce a representative sample of the data; refine the process to satisfy the County's requirements and specifications; resolve any issues encountered during the pilot project and identify corrective measures; and document the procedures used to create the data, in the form of a procedures manual. In addition to telephonic, e-mail, and hard-copy communication throughout this phase, the County and JumpStart will hold a final, face-to-face pilot review meeting, in Nassau

County, to finalize procedures and processes to be utilized in the full-production phase of the Project.

1.4   Pilot Project Review Meeting and Educational Session

The Pilot Project review meeting will review the results of the pilot project and will include a half-day, educational seminar for County personnel on the digital parcel mapping process and proposed procedures for future, in-house maintenance of the County's digitized parcel maps. At the end of the Pilot Project Review Meeting, the production data standards will be agreed upon as well as the conversion schedule and sequence.
In addition, options will be discussed and recommendations made regarding the County's ongoing parcel maintenance.

1.5   Conversion of Manual County Parcel Maps

JumpStart will utilize a variety of County-provided sources, including existing manual, hard-copy parcel maps, plats, deeds and orthophotography, to develop a consistent, unified, digital parcel map of the entire County. County personnel will assist JumpStart in clarifying parcel-related questions as they arise.

As outlined in its proposal (Exhibit #2), JumpStart will scan existing manual, hard-copy parcel maps; construct parcel boundaries using a COGO mapping methodology where possible and appropriate. It will place property map annotation and conduct a 100 percent content review to ensure that all linework and annotation from the original maps has been duplicated on the digital product.

It will then build topology, assign the County's full parcel identifiers to each parcel polygon, and verify a one-to-one correspondence between the final, digitized graphic data and the County's non-graphic CAMA database.

The County will review JumpStart's initial product, on an incremental basis as depicted in 3.1 below, utilizing ArcView-based toolsets provided by JumpStart to the County. JumpStart will provide errata notes indicating all problem areas as a part of the initial review files.

1.6   Ongoing Parcel Maintenance During Conversion

JumpStart will perform all parcel maintenance during the course of the conversion project and deliver a final dataset that is current to within sixty (60) days of the final delivery date. The County will keep records of all changes that occur subsequent to the initial delivery to JumpStart of manual, hard-copy parcel maps, and provide copies of these records to JumpStart, so that the final dataset can be updated accordingly.

1.7   Training

In addition to the half-day training session outlined in 1.4 above, JumpStart will train County personnel on each of the processes referred to in this contract, ensuring the County's future in-house ability to maintain its county-wide, digital parcel coverage, linked to its CAMA data.

1.8   Project Deliverables

a. Procedures Manual and Database Design Document. This document will be delivered in a MS Word 2000 format.

b. Copies of all scanned, hard-copy manual parcel maps in TIF or comparable format.

d. A complete, county-wide, digitized parcel map file, in ArcInfo format (linked to the County's CAMA database).

e. Errata reports generated as part of the conversion process.

SECTION 2 - RESPONSIBILITIES OF THE COUNTY

2.1 The County designates Elliott Wentworth, Nassau County GIS Chairman, or his designee, as its contract administrator with respect to the services to be rendered under this project. Such person shall have complete authority to transmit instructions and receive information with respect to JumpStart's services for the Project.

2.2 The County will identify County members to participate in the Project.

2.3 The County will provide facilities for all meetings and assistance in scheduling the participants. The contractor will generate meeting notes for all onsite meetings. The County will also generate meeting notes which shall become the official public record of Nassau County.

2.4 The County staff will be available as needed for review and consultation on data content.

SECTION 3 - CONTRACT TERM

3.1 The following table outlines an advisory schedule for initial delivery, review, modification, and acceptance of converted parcels.   JumpStart will make a good-faith effort to complete all project services within an eighteen (18) month time frame from issuance of written Notice to Proceed by the County. The County recognizes that its participation in source document collection and data review is essential to a timely completion of the project.

	Parcels	Initial Delivery	County Review	Final Delivery
Pilot	1000	7/1/02	8/1/02	9/1/02
Area01	2400	8/1/02	9/1/02	10/1/02
Area02	2400	9/1/02	10/1/02	11/1/02
Area03	2400	10/1/02	11/1/02	12/1/02
Area04	2400	11/1/02	12/1/02	1/1/03
Area05	2400	12/1/02	1/1/03	2/1/03
Area06	2400	1/1/03	2/1/03	3/1/03
Area07	2400	2/1/03	3/1/03	4/1/03
Area08	2400	3/1/03	4/1/03	5/1/03
Area09	2400	4/1/03	5/1/03	6/1/03
Area10	2400	5/1/03	6/1/03	7/1/03
Area11	2400	6/1/03	7/1/03	8/1/03
Area12	2400	7/1/03	8/1/03	9/1/03

Area13	2400	8/1/03	9/1/03	10/1/03
Area14	2400	9/1/03	10/1/03	11/1/03
Area15	2400	10/1/03	11/1/03	12/1/03

SECTION 4 - PAYMENTS TO JUMPSTART

4.1 The County as a political subdivision of the State of Florida is obligated and bound by the terms of this Agreement only to the extent that funds are lawfully appropriated therefore and are allocated and available to pay its obligations hereunder. In the event that and at such time as funds have not been appropriated or are not allocated or available to pay the County's obligations under this Agreement, then the County shall not be liable for any obligation to pay for the services referred to in this Agreement. The County, therefore, may at its option, terminate this Agreement in any fiscal year if funds have not been appropriated or authorized or are not available to meet its obligation to pay for the services rendered to in this Agreement.

4.2 For all services rendered or provided by or through JumpStart under this agreement, including any and all expenses and costs incurred by JumpStart with respect thereto, the County shall pay JumpStart as follows: a sum not to exceed $259,000.00 (based on $7.00 per parcel for 37,000 parcels). JumpStart will be paid a 15% start up fee of $38,850.00, which will be credited to the County's per parcel billing. JumpStart will invoice the County on a per parcel basis ($5.95 per parcel) for conversion completed according to the schedule in Table at 3.1. Invoices shall include an accurate parcel count. Each payment shall become due thirty (30) days after each final delivery and acceptance by the County.

SECTION 5 - JUMPSTART'S RELATIONSHIP TO THE COUNTY

5.1 It is expressly agreed and understood that JumpStart is in all respects an independent Contractor as to work and is in no respect any agent or employee of the County. The contract specifies the work to be done by JumpStart, but the method to be employed to accomplish the work shall be the responsibility of JumpStart.

5.2 JumpStart will disclose, to the County, prior to signing of this Agreement, the identity of any and all subcontractors to be utilized in the performance of this contract. Should the need arise, during the performance of this Agreement, for JumpStart to subcontract any services not previously identified, it may do so, but only with the prior approval of the County. No such approval will be construed as making the County a part of, or to, such subcontract, or subjecting the County to liability of any kind to any subcontractor. No subcontract shall, under any circumstances, relieve JumpStart of its liability and obligation under this contract; and despite any such subcontracting the County shall deal through JumpStart, and subcontractors will be dealt with as representatives of JumpStart.

5.3 JumpStart shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the County; provided, however, that assignments to banks, trust companies, or other financial institutions for the purpose of securing bond may be made without the consent of the County. Assignment or Novation of this Contract shall not be valid unless the Assignment or Novation expressly provides that the assignment of any of JumpStart's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, and equipment.

SECTION 6 - EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, JumpStart agrees as follows:

6.1 JumpStart will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin, except where religion, sex, or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of JumpStart. JumpStart agrees to post in conspicuous places, available to employees or applicants for employment, notices setting for the provisions of this nondiscrimination clause.

6.2 JumpStart also shall not discriminate against any handicapped person in violation of any state or federal law or regulation and shall also post in conspicuous places, available to employees and applicants for employment, notices setting the provisions of this additional nondiscrimination clause.

6.3 JumpStart, in all solicitations or advertisements for employees placed by or on behalf of JumpStart, will state that such contractor is an equal opportunity employer.

6.4 Notices, advertisements and solicitations placed in accordance with Florida law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this selection.

6.5 JumpStart will otherwise comply with all other applicable provisions of local, State and Federal law.

SECTION 7 – CONFIDENTIALITY

7.1 To the extent permitted by law, all data and information gathered by JumpStart and any of its Subcontractors, and all reports, recommendations, drawings, specifications, photographs, and data shall be treated by JumpStart and its Subcontractors as confidential. Jumpstart and its Subcontractors shall not communicate or disclose the aforesaid matters to any third party or use them in advertising or publicity, nor in any other job or jobs, unless written consent is obtained from the County. Once all final deliverables are received and accepted by the County, all information contained therein will be treated as public information.

7.2 The County and JumpStart mutually agree not to use each other's name, either expressly or by implication, in any of their advertising or sales materials without prior written agreement.

7.3 The County retains all title and interest to the data and any reports associated with the Agreement including work in progress.

SECTION 8 - TERMINATION

8.1 Either party may terminate this Agreement, in whole or in part, upon thirty days prior written notice to the other party, but such termination shall not relieve the County of its obligation to pay JumpStart for expenses incurred and services performed up to the date of termination.

SECTION 9 – LIMITATION OF LIABILITY

9.1 If JumpStart, its employees or agents, fail for any reason, whether or not negligent, to fulfill the conditions as contained in this contract, the County's remedy shall be to receive a refund of all monies paid for the Project.

SECTION 10 - COMPLIANCE WITH LAWS, RULES, AND REGULATIONS

10.1 JumpStart, its officers, agents, employees, and subcontractors, in the performance of this Agreement shall comply with all applicable statutes and laws of the United States and the State of Florida, and the applicable rules and regulations of the agencies of the United States, the State of Florida, and Nassau County. Effective October 1, 2002, all social security numbers held by an agency or its agent, employees, or contractors are confidential and exempt from S.119.07(1) and S. 24(a), Art. 1 of the State Constitution. This exemption applies to all social security numbers held by an agency and its agent, employees, or contractors before, on or after the effective date of this exemption.

SECTION 11 - CONFORMANCE OF AGREEMENT WITH THE LAW

11.1 It is the intent and understanding of the parties to this Agreement that each and every provision of law required to be inserted in this Agreement shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is deemed to be inserted herein, and if through mistakes or otherwise, any such provision is not inserted in correct form, then this Agreement shall upon application of either party, be amended by such insertion so as to comply strictly with the law and without prejudice to the rights of either party.

11.2 If this Agreement contains any unlawful provisions, not an essential part of the Agreement and which appears not to have been a controlling or material inducement to the making hereof, the same shall be deemed of no effect, and shall upon the application of either party be stricken from the Agreement without affecting the binding force of the Agreement as it shall remain after omitting such provision. The parties agree that this Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision which comes as close as possible to expressing the intention of the stricken provision.

SECTION 12 - ENFORCEMENT

12.1 This Agreement and the performance hereof shall be governed by and enforced under the laws of the State of Florida, and if legal action by either party is necessary for or with respect to the enforcement of any or all of the terms and conditions hereof, then exclusive venue therefor shall lie in the Nassau County, Florida.

12.2 DISPUTE RESOLUTION - Any dispute arising under this contract, which is not disposed of by agreement, shall be decided by a mediator, who shall reduce his/her decision to writing and furnish a copy to both parties. Claims, disputes or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof shall be submitted to mediation in accordance with mediation rules as established by the Florida Supreme Court. Mediators shall be chosen from the Supreme Court approved list of mediators in the Fourth Judicial Circuit and the cost of mediation shall be borne by Jumpstart. The decision of the mediator shall be final and conclusive unless determined by a court of competent jurisdiction to be fraudulent, capricious, arbitrary, or so grossly erroneous as to necessarily imply bad faith or not supported by substantial evidence. Contractor shall not stop work during the pendency of mediation.

SECTION 13 - NOTICES

13.1 All written notices required to be given by JumpStart to the County shall be addressed and mailed or delivered by any recognized guaranteed overnight delivery service signature required to Elliott Wentworth, Nassau County GIS Chairman, 213 Nassau Place, Yulee, Florida 32097.

13.2 All such notices required to be given by the County to JumpStart shall be addressed and mailed or delivered to Brad Llewellyn, JumpStart GIS, Inc., 11301 Edgewood Farm Ct., Richmond, VA 23233.

13.3 Invoices shall be submitted to the following: J. M. "Chip" Oxley, Jr., Clerk of Courts, Post Office Box 4000, Fernandina Beach, Florida 32035.

SECTION 14 - SUCCESSORS; ASSIGNMENT

14.1   The County and JumpStart respectively bind themselves, their partners, successors, assigns, and legal representatives, to the other with respect to all covenants and agreements herein contained and made. Neither the County nor JumpStart shall, however, assign or transfer any of its interest in or rights or obligations under this Agreement without the prior written consent of the other.

SECTION 15 - EXHIBITS; ENTIRE AGREEMENT; AMENDMENTS

15.1 The County and the Contractor hereby agree that the Contract specifications, which are attached hereto, and are incorporated herein and made a part hereof by reference as if fully set forth and include the following:
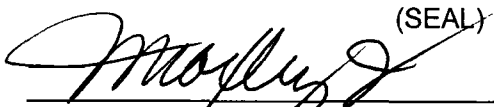
> Exhibit #1:   Request for Qualifications – Tax Parcel Conversion Project
> Exhibit #2:   JUMPSTART's Proposal data February, 2002

15.2 This Agreement, together with the said exhibits attached hereto, represents the entire Agreement between the County and JUMPSTART and supersedes all prior negotiations, representations, agreements, and understandings, written, or oral, made by either or both with respect to this Agreement and Project.
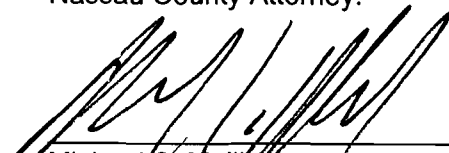
15.3 The terms, conditions, and provisions of this Agreement may be modified, amended, supplemented, deleted, or canceled only with the consent of and by prior written instrument duly signed by both the County and JumpStart.

IN WITNESS WHEREOF, the County and JumpStart have each caused this Agreement to be signed and sealed in its behalf, by its duly authorized officers or principals, in two (2) original counterparts, each of which counterparts shall be deemed the original Agreement without the need to account for the other and all of which counterparts together shall constitute but one and the same Agreement.
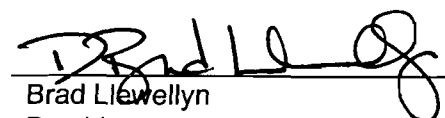
BOARD OF COUNTY COMMISSIONERS
NASSAU COUNTY, FLORIDA

(SEAL)

By: _____   Attest: _____
Nick D. Deonas   J. M. "Chip" Oxley, Jr.
Chairman   Ex-Officio Clerk

Approved as to form by the
Nassau County Attorney:

_____
Michael S. Mullin

****

JUMPSTART GIS, Inc.

By: _____   Attest: _____
Brad Llewellyn
President

(SEAL)

NASSAU COUNTY
BOARD OF COUNTY COMMISSIONERS
P. O. Box 1010
Fernandina Beach, Florida 32035-1010

Nick Deonas   Dist. No. 1 Fernandina Beach
David C. Howard   Dist. No. 2 Fernandina Beach
Vickie Samus   Dist. No. 3 Yulee
Floyd L. Vanzant   Dist. No. 4 Hilliard
Marianne Marshall   Dist. No. 5 Callahan

JOSEPH M. "Chip" OXLEY, JR.
Ex-Officio Clerk

MICHAEL S. MULLIN
County Attorney

WALTER D. GOSSETT
County Coordinator

July 1, 2002

Mr. Brad Llewellyn
JumpStart GIS, LLC
11301 Edgewood Farm Court
Richmond, VA 23233

Dear Brad:

Enclosed please find your file copy of the agreement between your firm and Nassau County for the parcel map conversion services.

Also enclosed is an original Notice to Proceed. Please execute the original and return same in the self-addressed envelope, enclosed for your convenience.

Nassau County looks forward to working with your firm on this project.

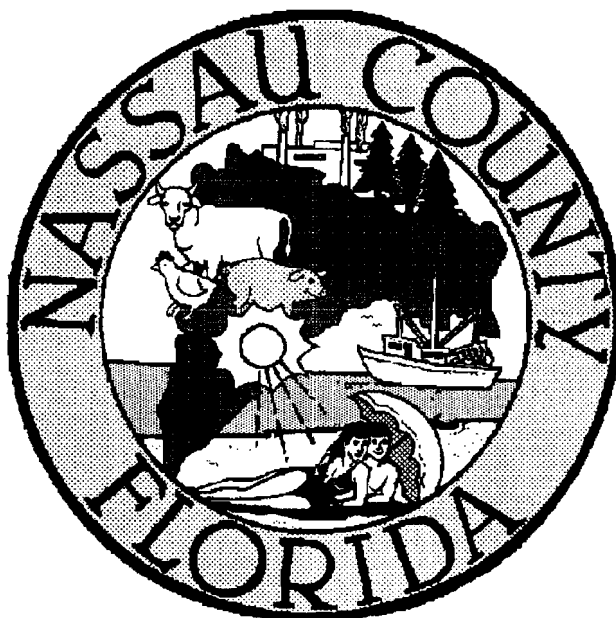Sincerely yours,

J. M. "Chip" Oxley, Jr.
Ex-Officio Clerk

JMO:jb

Enclosure

CC: Walter D. Gossett
      Jack J. D'Amato
      Elliott Wentworth
      Michael S. Mullin

(904) 225-2610 Board Room; 321-5703, 879-1029, (800) 958-3496

An Affirmative Action / Equal Opportunity Employer

EXHIBIT 1

REQUEST FOR QUALIFICATIONS

TAX PARCEL CONVERSION PROJECT

**Nassau County
Board of County Commissioners**

Invitation for Request for Qualifications

- Sealed Qualification Packages will be received by Nassau County Clerk of Courts on behalf of the Nassau County Board of County Commissioners, by mail, or hand delivery, (facsimiles will not be accepted) at 191 Nassau Place, Yulee, Florida 32097, until Tuesday February 26, 2002 at 2:00 p.m. for the conversion of existing tax maps into a digital format which will be compatible with a GIS database hereinafter referred to as TAX PARCEL CONVERSION PROJECT.

- Specifications, project scope, and other pertinent documents are on file and may be obtained at, Nassau County Public Works Department 213 Nassau Place, Yulee, Florida 32097.

- Each Qualification Package shall contain the full name and address of each person or company submitting the Qualification Package. The submitted Qualification Packages shall include the signature of an officer of the company authorized to bind the company for the said submission.

- The Qualification Package is to be binding for a period of ninety days.

- (5) Five Qualification Packages including one (1) Original must be submitted to the Nassau County Clerk of Courts. Qualification Packages are to be clearly marked on the outside of the envelope as follows: "TAX PARCEL CONVERSION PROJECT". The name and address of the company submitting the Qualification Package shall also appear on the outside of the envelope. All Qualification Packages received by the deadline will be opened immediately following the time set for receipt or as soon thereafter as practicable on February 26, 2001.

- Qualification Packages received after the stated date and time will not be accepted. These Packages shall be returned unopened to the vendor.

- The County reserves the right to reject any and all proposals and to waive any defect in the proposals, which do not materially alter the contract document.

- Vendors are expected to carefully examine the scope of services, delivery schedule, and the evaluation criteria as well as all general and special conditions of this RFQ prior to the submission of their Qualification Package.

- If any firm has any questions they must be submitted no later than 5 days prior to the deadline of qualification submittals opening date. Inquiries regarding the RFQ or questions for interpretation or corrections of any ambiguity or error that may be discovered shall be submitted to: Elliott Wentworth, Nassau County Public Works Department, 213 Nassau Place, Yulee, Florida 32097 phone (904) 491-3606; fax (904) 491-3611; Email: ewentworth@nassaucountyfl.com.

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- The response of all interpretations or corrections will be faxed or emailed to all firms who receive this qualification request 4 days prior to the RFQ opening date. It is therefore required that each firm furnish the County with a valid fax number or email address.

- Neither the Nassau County Public Works Department, nor the Nassau County Property Appraisers Office personnel will be responsible for any oral clarifications and will not issue the same.

- There shall be no negotiation, decision, or action initiated prior to the opening of the RFQ. Only those communications that are in writing from the Public Works Department or the Property Appraiser's Office may be considered as duly authorized expressions on behalf of the County.

- The County will only accept written Qualifications, no faxed or e-mailed proposals will be accepted by the County. You are to provide 5, copies of your RFQ submittal.

- The County reserves the right to accept or reject any or all Qualification packages, to waive irregularities and informalities in this RFQ, and to make the award in any manner deemed in the best interest of the County.

- Nassau County is exempt from all Federal, State, and Local Sales and/or Excise Taxes.

- Nassau County, Florida, is not liable for any costs incurred by the respondents in preparing or submitting Qualification Packages. All Qualification Packages submitted become the property of Nassau County and will not be returned.

BOARD OF COUNTY
COMMISSIONERS
Nassau County, Florida

Nick Deonas, Chairman
Its: Chairman
Date: January 28, 2002

ATTEST:

J.M. "Chip Oxley, Jr.
Its: Ex-Officio Clerk

" An Affirmative Action/Equal Opportunity Employer"

QUALIFICATIONS PURPOSE AND PROJECT OBJECTIVES:

The Nassau County Board of County Commissioners, referred to as the "County", are interested in obtaining the professional services of a mapping conversion company, referred to as the "Vendor", to convert existing hard copy tax maps into a seamless digital GIS topology (ESRI Compatible file format), compatible AutoCAD Map DWG named parcel layers, COGO and Best-fit, referenced to digital rectified orthophotos and other existing digital parcel data. The end products will be properly linked to the Computer Aided Mass Appraisal (CAMA) database. The County is only interested in acquiring the services of a single firm to complete this project.

BACKGROUND:

The Nassau County Property Appraiser's Office presently maintains on a daily basis about 329 +/- mylar parcel maps containing approximately 37,000 parcels.

SOURCE MATERIALS INSPECTION:

- An opportunity to review source materials shall be afforded to anyone interested in submitting a Qualification Packages. Reviews shall be scheduled with Elliott Wentworth, Nassau County Public Works Department, 213 Nassau Place, Yulee, Florida 32097 phone (904) 491-3606; fax (904) 491-3611; Email:ewentworth@nassaucountyfl.com.

The County Offices will be open for this purpose from 9:00 A.M. to 5:00 P.M. During those hours Monday through Friday source Tax Maps and Plat Maps are available for inspection. Sources for property map conversion include existing maps and automated data from the County's property records.

Property Records Database

All property records contained within the CAMA will be reviewed to resolve any discrepancies encountered between existing tax maps and the CAMA database. The County does provide a standard of accuracy on current land information. Property records and land information contained within, are the result of new surveys, older surveys, and historical records.

TENTATIVE PROJECT TIME TABLE:

Nassau County has established a tentative schedule for RFQ Release, Submittal Deadline, Shortlist Firms, and Firm Selection, and completion.

Event:	TARGET Date:
RFQ Release	January 28,2002
Deadline for submittal of RFQ	February 26,2002
Short listing of Firms	March 4,2002
Firm Selection	March 18, 2002
Notice to Proceed	April 22, 2002
Project Completion (no later than:)	December 1,2003

The successful vendor will have thirty (30) days upon selection to execute a contract with the County.

QUALIFICATION PACKAGES FORMAT AND CONTENT:

All Qualification Packages are to follow the same format. No exceptions to this format will be accepted, and all sections of the format must be addressed in order for a Qualification Package to be accepted for evaluation.

The aid of the required format is to simplify the Qualification Packages evaluation processes and to ensure that all Qualification Packages receive the same orderly review.

All Qualification Packages shall include the following:

1. Cover Letter
2. Table of Contents
3. Introduction and Executive Summary
4. Company Profile
5. Project Team with Resumes of Key Personnel
6. References (minimum of 3 desired)
7. Project Description / Technical Specifications
8. Project Schedule

QUALIFICATION PACKAGES COMPONENTS - COMMENTARY

Sections 1 through 3: Cover Letter, Table of Contents and Introduction and Executive Summary: These are self explanatory.

Section 4: Company Profile.
Please provide the following information about your firm in this section:

- Firm name and business address, including phone number and fax number.
- Year firm was established (include former names and year established, if applicable).
- An indication of the firm's licensing to do business in the State of Florida.
- Project Manager's name for this project.
- Summarize your firm's GIS experience; with particular emphasis on parcel tax map conversion projects.

Section 5: Project Team with Key Personnel Resumes. The vendor shall appoint a project manager to be the direct liaison with the County. The project manager will be responsible for the entire project and will serve as the primary contact point for the County. It is expected that the project manager will remain in this capacity throughout the duration of the project. List the relevant experience of key personnel who will be assigned to this project. Describe the personnel and their experience, training and other pertinent information regarding the project team.

Section 6: Reference. Provide a list of references of similar type projects, a minimum of three (3) is desired. Also, include a list of clients who may be contacted regarding the firms work on various digital mapping or other types of relevant projects.

Section 7: Project Description. The firm needs to supply a comprehensive description of the project as they envision it. This is probably the single most important part of this Qualification Package. Qualification Packages should contain complete discussions regarding technical processes, qualifications and equipment available for the project. The hardware and software to be used in all stages of the work should be described with adequate information. A complete description of the technical approach and methodology to be utilized in completing this project should be included. We would require that the firm fully describe its intended quality control program, and the steps that you will take to assure the quality of the project.

Section 8: Schedule. Include a schedule for completion of the project as detailed in the project description with deliverables identified. Include in the Qualification Packages the start and end dates for each work task proposed and intermediate delivery dates for each deliverable. This project schedule may be sooner than the tentative project timetable shown above but shall not be longer.

POTENTIAL FOR REQUIRED ORAL PRESENTATION:

In order to more accurately evaluate Qualification Packages received, Nassau County may request that the respondent give an oral presentation of their Qualification Packages. As a part of responding to this RFQ, the respondent should be aware of this potential request. No compensation is considered to be associated with this potential requirement for oral presentation and anyone unwilling to provide this upon request should not respond to the RFQ.

SELECTION CRITERIA:

The following criteria will be used to evaluate Qualification Packages. This is not intended to be a comprehensive list, nor is the arrangement of the criteria meant to imply order of importance in the selection process. The County may make any investigations deemed necessary to assess the ability of the potential Firm to perform the work. The potential Firm shall furnish all information requested by the County for such investigation.

Knowledge and Technical Competence: The prospective Firms will be evaluated on technical suitability for the tasks required. It is the County's intent to fully understand how the vendor is going to accomplish each approach in reaching the County's goals. It is essential, therefore, that the County personnel evaluating each Qualification Packages be able to understand clearly the methodology, concepts, and philosophy to be used by the vendor's organization.

Personnel Qualifications: The County is desirous of selecting a vendor that is willing and able to assign experienced personnel to the project. Included with the proposal, should be a list of proposed personnel and their qualifications.

Previous Projects Completed: While not a mandatory condition, it is recognized that there are advantages for the County to select a Firm that has completed similar projects. Included with the proposal should be a list of projects similar in nature, completed or in progress, within the past five (5) years.

Similar experience within the State of Florida: While not a mandatory condition, the County is aware of the benefits of working with a firm that has had experience with this type of project and has worked with the varied survey systems within the State of Florida. If any certifications with the Florida Department of Revenue please show proper documentation.

Timely Completion: The County is interested in your ability in terms of workload and the availability of qualified personnel, equipment, and facilities to complete the project in a competent expeditious manner.

Compliance With Instructions: The Qualification Packages will be evaluated for general compliance with the instructions and requests issued in this proposal request. Non-compliance with significant instructions may be grounds for disqualification of Qualification Packages.

New polyline feature layers shall include:

1. Parcel Lot line boundaries (polygon)
2. Parcel Centroids (polygon)
3. Public Road R-o-W Lines (lines).
4. Digital FDOT State Highway Right of way if available (polygon)
5. Government Lot boundaries (polygon)
6. Fractional Lot boundaries (polygon)
7. ½ Section, ¼ Section, ¼-1/4 Section lines
8. Soils-Types –import (polygon)
9. Neighborhood Delineations. (polygon)
10. Road centerlines
11. County and Township political subdivision boundaries
12. Section lines
13. Municipal Boundaries
14. Township and Range Lines

Text Annotations

Text annotation requirements for property data should be consistent with computer display and hard copy plotting. The following items must be included as graphic annotation or feature attributes:

New Text Annotations to be included:

1. Parcel Identification Numbers
2. Government Lot numbers, Fractional Lot numbers
3. Parcel and subdivision boundary dimensions
4. Subdivision names
5. Lot Dimensions.
6. Water Body Names
7. Road Names where known
8. Acreage

FIELDS TO BE INCLUDED IN THE DATABASE TABLES:

- All of the above listed text annotated items
- CAMA parcel database
- Fractional lot numbers
- Sub – Lot Numbers
- Deed Volume and Page
- Subdivision Names and lot numbers
- Parcel Acreages of record
- DQNT, Label to show, 'Description Questionable Not Transferable,' without a survey

TECHNICAL SPECIFICATIONS

Introduction

Firms should propose methods for preparing the digital property parcel and database consistent with the requirements and specifications listed below and the source materials provided for the conversion work.

To facilitate the conversion work, the County will provide as source documents, access to existing property maps as maintained by the County's Property Appraiser's Office, and the orthophotos and planimetric data.

Vendors are to convert the hardcopy property lines using accepted industry standards. Methods used could be COGO and Best-Fit of the parcels to the orthophotos, rotation and transposition, data linking of the CAMA database or other methodologies to obtain a topologically correct GIS land parcel layer. No gaps or overlaps of parcel boundaries are permitted.

General Requirements

Nassau County's objective in creating a digital property base is to facilitate a multitude of GIS functions. This involves fitting the existing property data and plot maps to a base consisting of digital orthophotos and other existing GIS data. The approach to mapping the digital property base will generally consist of the following steps:

All specifications for property data conversion must be designed to provide a suitable overlay to the digital orthophotography.

- Fit Nassau County data to Florida State Plane Coordinates, NAD 1983, East Zone and planimetry.
- Develop a street right-of-way for the County.
- Fit plat maps with subdivisions of record to the base map.
- Fit remaining property from tax maps for remaining parcels.

The firm shall furnish all materials, labor, management, and transportation necessary to complete the required property conversion work. The firm should use procedures and commonly accepted professional techniques that will assure complete compliance with the specifications and should specify such procedures in the Qualification Packages. The firm should devise a training methodology and program and should itemize those specific procedures and steps designed to ensure County staff's comfort level and knowledge of all end products derived from this project. The firm must adhere to the following conversion requirements:

County Project Staff Training

It shall be a requirement of the County to have its staff completely and comprehensively trained and fully instructed in the maintenance of the parcel layer during and following project completion. It is anticipated that as many as six (6) County staff members will require total or partial instruction and informational transfer throughout the course of the project. The firm should define, in very clear terms, the methods they will undertake during the course of the project to ensure that this requirement is fulfilled.

Equipment Requirements

All proposed equipment to be used by the firm must be specified in the firm's Qualification Packages. The firm's hardware and/or software must have the capability to overlay raster and vector data, digitize, perform graphic editing, change coordinate systems, perform map subletting by area (windowing), merge data files within areas, have data reduction (weeding) capabilities, hard copy map plotting from both raster and vector data, and report generation. Only precision digitizing and plotting instruments of recognized proven accuracy are acceptable.

Accuracy and Precision

For purposes of this conversion, well-defined indications shall include any feature typically indicative of property ownership that can be sharply defined as discrete lines. Examples may include, but not be limited to, pavement edges, fence lines, buildings, or hedges. The County will select well-defined indicators in consultation with the firm during the pilot.

All coordinate data shall be created and stored using double precision coordinates. State highway rights-of-way shall be constructed according to original surveyed geometry when such is available from the Florida Department of Transportation.

Coordinate System to be Used

The digital database shall be referenced horizontally to the Florida State Plane Coordinate System. The Florida State Plane Coordinate System is based on triangulation or traverse stations established in conformity with National Geodetic Survey Standards and rigidly adjusted to the North American Datum of 1983 (NAD 83 East Zone). The orthophoto products to be provided to the firm are referenced to this datum.

NASSAU COUNTY
BOARD OF COUNTY COMMISSIONERS
P.O. Box 1010
Fernandina Beach, Florida 32035-1010

Nick Deonas	Dist. No. 1 Fernandina Beach
David C. Howard	Dist. No. 2 Fernandina Beach
Vickie Samus	Dist. No. 3 Yulee
Floyd L. Vanzant	Dist. No. 4 Hilliard
Marianne Marshall	Dist. No. 5 Callahan

JOSEPH M. "Chip" OXLEY, JR.
Ex-Officio Clerk

MICHAEL S. MULLIN
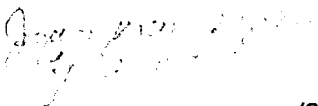County Attorney

WALTER D. GOSSETT
County Coordinator

MEMORANDUM

TO: Board of County Commissioners

FROM: Walt Gossett, County Coordinator

SUBJECT: Jumpstart GIS, LLC Contract

DATE: June 13, 2002

****

Attached is a copy of the above referenced contract for the county-wide parcel map conversion service. The contract has been reviewed and negotiated by Mr. Mullin, Mr. Oxley, Mr. D'Amato, Mr. Wentworth, and myself. I have been notified by Elliott Wentworth that the Property Appraiser has been approved for a $70,000.00 matching grant, which can be applied to this project. The Board would need to enter into an Interlocal Agreement with the Property Appraiser's Office so that the grant conditions can be tracked.

Additionally, the City of Fernandina Beach has indicated they would like to participate in the mapping. Their cost share, based on per parcel contract amount, would be $49,805.00. The total parcel count, as of November 19, 2001, is 36,807, which would equate to a total contract amount of $257,649.00.

APPROVED

DATE 6/17/02 cy

(904) 225-2610 Board Room; 321-5782, (800) 789-6673

An Affirmative Action / Equal Opportunity Employer

NASSAU COUNTY
BOARD OF COUNTY COMMISSIONERS
P.O. Box 1010
Fernandina Beach, Florida 32035-1010

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JOSEPH M. "Chip" OXLEY, JR.
Ex-Officio Clerk

MICHAEL S. MULLIN
County Attorney

WALTER D. GOSSETT
County Coordinator

June 13, 2002

Scott Moye, Assistant City Manager
City of Fernandina Beach
Post Office Box 668
Fernandina Beach, FL 32035

> Re: Parcel Map Conversion Services

Dear Scott,

This letter will confirm our phone conversation of June 12, 2002, regarding the above referenced subject. It is my understanding that, in your meetings with the County staff, you indicated that the City of Fernandina Beach would like to participate in the Jumpstart Contract to provide the parcel mapping for the City. As we talked about yesterday, the City's share, based on the November 19, 2001 count furnished by the Property Appraiser's Office, would be $49,805.00. Additionally, the contract calls for an upfront payment of 15% of the contract amount, which equates to $7,470.75 as the City's share. The per parcel payment would be $5.95 (85% of $7.00), which would be due upon final review and acceptance by the City of the parcel mapping.

This contract goes to the Board of County Commissioners on Monday, June 17, 2002, for their approval. I look forward to working with you and the City on this very important project. If you need any further information, please do not hesitate to contact me.

Yours truly,

Walt Gossett
County Coordinator
Nassau County

cc: Mike Mullin
       J. M. Oxley, Jr.
       Jack D'Amato
       Elliott Wentworth

An Affirmative Action / Equal Opportunity Employer

ADDENDUM TO

PARCEL MAP CONVERSION SERVICES AGREEMENT

THIS ADDENDUM entered into this <u>13th</u> day of October, 2003, by and between the, **BOARD OF COUNTY COMMISSIONERS OF NASSAU COUNTY, FLORIDA, a political subdivision of the State of Florida**, with its offices at Post Office Box 1010, Fernandina Beach, Florida 32035, hereinafter called the "County", and **JUMPSTART GIS, LLC**, with its offices at 11301 Edgewood Farm Ct., Richmond, VA 23233, hereinafter referred to as "JumpStart."

WHEREAS, the parties entered into an agreement dated June 17, 2002; and

WHEREAS, the parties desire to extend the completion date.

NOW, THEREFORE, FOR and IN CONSIDERATION of ten and no/100 dollars ($10.00), and other mutually agreed upon consideration, the parties agree as follows:
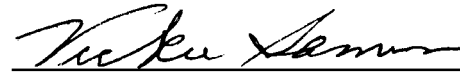
1.   The provisions of Section 3 shall be extended from December 1, 2003, to March 1, 2004.

2.   The parties agree that no additional compensation shall be by the County to JumpStart.

3.   All other provisions of the agreement dated June 17, 2002, not in conflict with this Addendum shall remain in full force and effect.

4.   Time is of the essence.

                                        BOARD OF COUNTY COMMISSIONERS
                                        NASSAU COUNTY, FLORIDA

                                        _____
                                        VICKIE SAMUS
                                        Its: Chairman
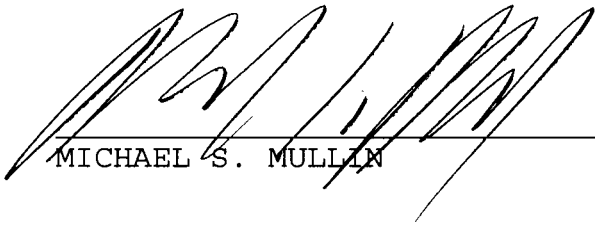
ATTEST:

_____
J. M. "CHIP" OXLEY, JR.
Its: Ex-Officio Clerk
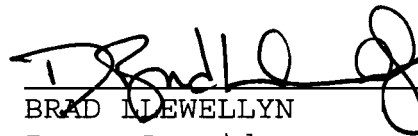
Approved as to form by the
Nassau County Attorney

_____
MICHAEL S. MULLIN

                                        JUMPSTART GIS, INC.

                                        _____
                                        BRAD LLEWELLYN
                                        Its: President

h/anne/agreements/jumpstart-addendum

                                        2

Resolution of Source Discrepancies and Anomalies

In most cases, the ground features visible on the digital orthophotos and vector data, combined with the various map sources, will provide sufficient guidance for the proper digitization of the tax parcels and related features. But, because of the complexity of the project, it is anticipated that inconsistencies and anomalies between source materials and specifications will be encountered during data conversion. In these cases the firm will be responsible for notifying the County Project Manager so that the County's staff can make a determination. The firm's and the County's project managers shall both work together to resolve issues and problems that arise.

Deed Research

The County recognizes that there may be some areas where the source materials conflict or do not provide a clear definition of parcel boundaries. The firm will be required to inform the Property Appraiser's Office of inconsistencies where parcel boundaries cannot be ascertained from the existing hard copy maps and, when and where, additional research is needed to establish the parcel. No field surveys or field verification are needed. If additional field surveys are needed the County may choose to perform them if this will aide in the accuracy of the map. The Public Works Department and Property Appraisers Office will aide in any deed research needed to achieve a full accounting of parcels from the Appraiser's tax rolls.

Compilation/Digitizing Methodology

A comprehensive description of the major steps in the property conversion work must be provided. The proposed methods for converting data should be discussed in detail, from initial set-up through final processing, including quality control. The comprehensive plan also should discuss the projected use of tools such as orthophotos, hard copy plots, photographic enlargements, and/or reductions of pilot area maps and subdivision plats, attribute entry forms, menus, macros, specialized programs, and other items involved in the data conversion process which will assure that data conversion is performed in the most effective manner possible.

The firm should discuss what their approach will be in order to incorporate County personnel within the various project phases. The firm should discuss those steps that they will undertake to ensure full County understanding of such procedures and methodologies.

Conversion of Source Data

Hard copy source data will be translated such that 100 percent of both graphic and non-graphic data, specified to be included in the property database, is converted. The conversion process should introduce no errors in completeness or correctness of content or spatial accuracy. The Qualification Packages shall specifically address how the proposed methodology accomplishes this requirement.

Project Quality Assurance Criteria

A critical goal of this project is for the County to receive high quality incremental deliverables from the selected firm. Incremental deliverables will help to ensure that the final GIS database meets the County's quality standards and that project risks are minimized.

The firm is expected to perform internal QA/QC checks prior to providing checkplots to the County. The firm's QA/QC validation approach, which shall at a minimum address coverages, topology, geometrics, database, and annotation, will be described in the Qualification Packages. The County will utilize manual or visual QA/QC checks to review the firm's products and will work with the firm to finalize QA/QC processes during contract negotiations.

Plotting Requirement

Check plots, either digital or hard copy, shall be produced and forwarded to the County Tax Appraiser for review. Check plots shall be returned to the vendor with the required corrections indicated, or marked 'accepted as shown'. The vendor shall hold all returned check plots for a period of time equaling at least six months beyond the successful completion of the project. The County will work with the vendor to establish a limited review period that is acceptable to both parties. The County is very interested in fully understanding the firm's recommendation on how this procedure will be undertaken.

Map plotting border and annotation information to be included as part of the project development, and used for hard copy check plots, shall include:

- Nassau County
- Sheet Number
- Coordinate datum
- Bar scale
- North arrow
- Date of map production
- Map sheet location diagram
- Map disclaimer

The information shall also include a legend identifying the primary symbol and line types being used on the map and a Project index diagram showing the relationship of the map sheet to its adjacent sheets. The firm will be responsible for working with the County in the design of the final title/legend sheet. The County will give final approval of the format. A digital version of the legend/frame shall be provided to the County.

The firm shall provide automated plotting routines to the County to produce standardized cartographic outputs.

Cadastral Deliverables

Check plots and digital cadastral features as outlined in these specifications: The firm may produce such items as hard copy plots of the existing plat maps to aid in the conversion work. All intermediate products generated and used by the firm will become the property of the County.

Digital File Format

The digital files that are associated with the delivery of hard copy products shall be delivered on CD ROM in both AutoCAD Map DWG, and a specified ESRI compatible file format. The firm will work with County to define a labeling structure for the CDs that are provided. It shall be the firm's responsibility to keep a backup of all delivered files for a period not less than 5 years upon final acceptance by the County of the entire project.

Graphic Standards

Symbols, text, and line types assigned to parcel map features as well as the symbol and text alignment shall follow good cartographic practices to assure the aesthetic presentation of displays and plots. In general, symbology shall conform as much as possible to the standards used for the existing manual maps.

Graphic Element Placement and Adjustment Guidelines:

Adjustment of graphic boundaries as currently shown on the existing source maps should be made when the following situations occur:

- Parcel/Lot lines cross, or are not consistent with, the orthophotos.
- Parcel/Lot lines cross building outlines, pavement edges, fence lines or hedge rows, curbs, or any other feature typically indicative of property boundaries visible on the ortho image.
- Edges of source documents do not match.
- Other adjustments determined to be necessary during the pilot.

Perimeters of subdivisions for subdivided areas have priority of placement when parcel adjustments are necessary (in the event there are gaps or overlaps in fitting parcels with adjacent parcels). Care should be taken in placing the remaining large acreage parcels in the residual space so that overall shape and angles remain essentially in agreement with the tax map.

Registration Each shape file must be converted as a complete unit within a map. Corresponding shape files must register to each other. The registration of control point and tic information must be exact.

Connectivity Where graphic elements meet visually, they must also meet digitally. All confluences of line and polygon data must be exact mathematically, and no "overshoots," "undershoots," "offsets," "slivers," or "pseudo nodes" are permitted. Lines that connect polygons must intersect those polygons precisely, and every end point must be an intersection point of the respective polygon.

Spatial Continuity All GIS data created in this conversion effort will be spatially continuous. This requirement for spatial continuity means that the structure of the database will not inhibit the execution of GIS functions across boundaries or artificial discontinuities in the database (sheet edges, model edges, tiling, or other delimitations).

Common Boundaries All graphic features that share a common boundary, regardless of digital map coverage, must have the exact same digital representation of that feature in all common shape files.

Construction of the Polygons and lines The primary method for improving the spatial accuracy of the parcel and lot boundaries will be accomplished by using the COGO method. Wide distortions of the current physical layout of each parcel are unacceptable. The physical nature and layout of each parcel should be developed in order to represent as accurately as possible its placement and actual geographic reference within Nassau County. The successful firm is expected to use all available vector and raster data.

Parcel Placement on Orthophotos In adjusting converted parcel blocks to "best fit" onto the orthophotos the Firm shall use well-defined indicators visible on the ortho-images. For the purpose of this conversion, well-defined indicators shall include any feature indicative of property ownership that can be sharply defined as discrete lines. Examples may include, but are not limited to, pavement edges, fence lines, buildings, or hedges.

Polygon Coverages and Exclusiveness Polygons of a single data layer must cover the area of interest completely and be exclusive within that area. No holes in the polygon and no overlaps in a layer may exist.

For area features being digitized, the last coordinate pair must be exactly (mathematically) equal to the first coordinate pair. No line or polygon shall cross itself, or any other digitized feature, except to join at an actual confluence. All digitized features that are continuous across map boundaries shall be edited to effect smooth, continuous lines. Each polygon must also have a single, unique centroid to which attributes can be associated.

Parcel Centroids The visual centroid for each parcel shall be created as an ArcView label point and used for placing parcel number suffixes as shown on the source maps.

Point Criteria All point features shall be digitized as a single x,y coordinate pair at the visual center of that graphic feature. No duplication of points that occur within a data string is permitted.

Line Criteria The digital representation of linear elements must reflect the visual network structure of the data type. An element should not be broken or segmented unless that segmentation reflects a visual or attribute code characteristic or unless the break is forced by database limitations.

All lines (linear features and area boundaries) to be digitized from existing source maps shall be topologically structured. End points (nodes) must be specifically defined at each end. Intersections of lines must be represented as distinct end points (nodes) of the arcs.

Line Quality A high quality cartographic appearance shall be achieved. Transitions from straight line to curvilinear line segments shall be smooth and without angular inflections at the point of intersection. The digital representation must not contain extraneous data at a non-visible level. There should be no jags, hooks, or zero length segments. When appropriate, line-smoothing programs should be used to minimize the angular inflection in curvilinear lines. Any lines that are straight, or should be straight, should be digitized using only two points that represent the beginning and ending points of the line.

Annotation Criteria All annotation shall be consistent in defined sizes, fonts, levels, angles, and offsets.

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INSURANCE REQUIREMENTS

The successful FIRM shall furnish to the OWNER one certified copy, (CERTIFICATE OF INSURANCE), of all required insurance policies. The successful FIRM shall furnish certified evidence that with respect to the operations it performs, the firm carries regular Liability Insurance with minimum coverage limits of $1,000,000.00 per person per accident bodily injury and $100,000.00 per accident property damage.

MISCELLANEOUS PROVISIONS

Submittals shall include all applicable taxes and fees.

All applicable Federal, State, and Local laws, ordinances, rules and regulations shall apply to this project.

Evaluation Form for Statements of Qualifications

Name of Project: _____

Name of Firm: _____

Name of Evaluator: _____

Criteria	Rating*		Weight		Score
1. Firm & Individual Qualifications					
Firm's background & experience on similar projects		X	(0-5)	=	
Experience of firms' current personnel on similar projects		X	(0-5)	=	
Firm's experience with various survey systems		X	(0-5)	=	
2. Capacity to Perform Work					
Availability to meet schedule		X	(0-5)	=	
Firm's equipment & facilities		X	(0-5)	=	
3. References					
Quality of design		X	(0-5)	=	
Technical innovation		X	(0-5)	=	
Meeting schedules & deadlines		X	(0-5)	=	
Controlling costs/meeting budgets		X	(0-5)	=	
Communication/cooperation		X	(0-5)	=	
4. Technical Response					
Quality of design		X	(0-5)	=	
Technical innovation		X	(0-5)	=	
5. Compliance with RFQ		X	(0-5)	=	
			TOTAL SCORE	=	

*1 = Poor, 2 = Fair, 3 = Good, 4 = Excellent, 5 = Superior
These weighting factors should be adjusted for each project, according to the needs and priorities of the authority.

20 February, 2002

Elliott Wentworth
Nassau County Public Works Department
213 Nassau Place
Yulee, FL 32097

Dear Mr. Wentworth:

Thank you for the opportunity to submit the enclosed proposal to Nassau County. We have thoroughly reviewed your Request for Qualifications and feel comfortable that JumpStart GIS can provide you with quality data products and services that will meet your requirements.

Beyond delivering a quality dataset, JumpStart GIS is dedicated to helping local government agencies in every aspect of their GIS implementation. We realize that the process does not end once the data has been delivered and have a strong commitment to developing long-term relationships with our clients.

Since the County's tax maps and CAMA database will serve as the foundation for the GIS, the proposal focuses on tax parcel conversion and covers all aspects of the "COGO" mapping methodology that JumpStart GIS employs. We do realize, however, that there are other key components to your project including the ongoing maintenance of the parcel data and have included sections to address these topics as well.

Again, we look forward to working with you to help build a successful GIS for the Nassau County. Please feel free to contact me if you have any questions or need further information.

Sincerely,

D. Brad Llewellyn
JumpStart GIS, Inc.

Introduction and Executive Summary

JumpStart GIS offers data conversion services and software applications for property-related data that address the needs of small and mid-sized counties. We provide a program that allows local governments the ability to implement GIS technology quickly and effectively. In addition, JumpStart GIS provides services to help users build and maintain their GIS.

Section Overview

This proposal contains five major sections that emphasize the key components to a successful GIS implementation for Nassau County.

The *Project Team* section provides the resumes and references for our team members. JumpStart GIS has a team of cadastral mappers that have worked together on numerous projects over the past five years and average ten years of cadastral mapping experience.

COGO Mapping details the specific stages of the COGO mapping methodology that JumpStart GIS employs. It is intended to inform the County of the unique aspects of our approach in addition to demonstrating our expertise and thorough understanding of COGO mapping.

Quality Assurance and Quality Control (QA/QC) highlights the built-in processes and interactive procedures that ensure quality data is delivered. Our automation and use of technology is based on years of experience with numerous cadastral data conversion projects.

Project Methodology provides an overview of the different phases of the conversion process. Beyond simply outlining the process, we want to convey our understanding of the impact of a conversion effort on the County personnel. JumpStart GIS realizes that a data conversion project can add to the County staff's workload and is committed to guiding and supporting counties through the process. Specifically, we provide data maintenance, automated project tracking and quality review tools to assist the County.

Finally, the *Post-Conversion Support* section underscores our philosophy as it extends beyond the initial conversion phase. We truly believe in establishing long-term relationships with our clients and offer unique services, such as data maintenance, to help ensure that counties are successful with their GIS.

Project Team

Company Profile

Jump Start GIS was established as a Limited Liability Corporation on February 4, 2000 and transitioned to an S-Corporation effective September 14, 2001. JumpStart GIS has no parent corporation or other corporate affiliations.

Our business address is:

11301 Edgewood Farm Ct.
Richmond, VA 23233
Phone: 804-673-9700
Toll free: 888-673-9733
eFax: 208-474-1067

While JumpStart GIS is a relatively new name in the industry, our team members have worked together on numerous projects over the past five years. In addition, we pride ourselves on having an average of ten years of cadastral mapping experience.

> *The JumpStart Team averages over 10 years of cadastral mapping experience.*

JumpStart GIS is on the Florida Department of Revenue Approved Bidder List.

The following are our current and completed projects. It should be noted that all involve parcel data conversion services similar to those requested by Nassau County.

Current Projects

Hall County, Georgia

- ❏ COGO construction of approximately 58,000 parcels.
- ❏ Integration with the County's CAMA database
- ❏ Project to be completed 2003

Contact: Mark Lane
Development Services Coordinator
Hall County
440 Prior Street
Gainesville, GA 30503
770-531-6809
mlane.planning@hallcounty.org

Clark County, Ohio

- ❏ Conversion of approximately 29,000 parcels using a Best-fit mapping methodology.
- ❏ Integration and reconciliation with the County's CAMA database.
- ❏ Project on schedule to be completed November, 2001

Contact: Bruce Smith, P.E., P.S.
Clark County Engineer
Clark County Engineer's Department
4075 Laybourne Road
Springfield, OH 45505
937-328-2484
engineer@co.clark.oh.us

Seneca County, Ohio

- ❏ Adjustment of approximately 34,000 parcels to a new ortho base using a Best-fit mapping methodology.
- ❏ Rectification of other data layers (land use, soils, contours, flood, etc.)
- ❏ 9-month project to be completed May, 2002

Contact: Mark Zimmerman
Deputy Engineer
Seneca County Engineer's Department
111 Madison Street
Tiffin, OH 44883
419-447-1011
zimmerman@woh.rr.com

Completed Projects

<u>*Bradford County, Florida*</u>

- ❏ Adjustment of approximately 12,000 parcels to a new ortho base using a Best-fit mapping methodology.
- ❏ Translation of data from InFoCAD to ArcView shape files.
- ❏ Integration and reconciliation with the County's CAMA database.

Contact: Mr. Jimmy Alvarez
Property Appraiser
Bradford County, Florida
P.O. Box 250
Starke, FL 32091-0250
904-966-6216
bcpafl@atlantic.net

<u>*City of Danville, Virginia*</u>

- ❏ COGO construction for approximately 6,000 parcel updates to the City's approximately 26,000 parcel base.
- ❏ Assignment of account numbers from the City's database to integrate the CAMA database with the GIS.
- ❏ Project ahead of schedule and nearly complete. To be completed September, 2001.

Contact: Inez Pollock
GIS Coordinator
City of Danville, Virginia
P.O. Box 3300
Danville, VA 24543
804-799-5205
polloir@ci.danville.va.us

Other JumpStart GIS References

Mrs. Katherine Perry
Chief Appraiser
McDuffie County Tax Assessors
406 Main Street
Thomson, GA 30824
706-595-2128
kperry@co.mcduffie.ga.us

Mr. Brian Braithwaite
Real Property Lister / GIS Manager
Washington County, Wisconsin
423 East Washington Street
West Bend, Wisconsin 53095
262-335-4370
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Mr. Rob Hofmann
South Florida Account Manager
ESRI - West Palm Beach Office
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West Palm Beach, Florida
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Key Personnel Resumes

Mr. Brad Llewellyn would be the project manager for this project. Following his resume are the resumes of the key personnel that would be directly involved with this project.

D. Brad Llewellyn

President
JumpStart GIS, Inc.

Education

Bachelor of Science in Computer Science, Business Minor
University of Virginia, School of Engineering and Applied Science

Employment History

1995 – 2000, Southern Digital Services, Inc. (SDS)
V.P. Operations (1999 – 2000)
Director of Operations (1998 – 99)
Data Services Director (1997 – 98)
Technical Services Director (1995 – 97)

1991 – 1995, Analytical Surveys, Inc. (ASI)
Technical Consultant

1987 – 1991, Greenhorne and O'Mara, Inc.
Systems Analyst

As Vice President of Operations, Mr. Llewellyn managed both the data conversion and software development efforts at SDS. His responsibilities included overall resource allocation and scheduling, project tracking and monitoring production status. In addition, Mr. Llewellyn was responsible for the design and development of processes to automate SDS's data conversion workflow and quality assurance programs. As project manager for SDS's larger projects, Mr. Llewellyn was involved in individual project specifications, database design and job setup.

Highlight Project Experience

  □ Florida Power and Light

Mr. Llewellyn was the project manager in this project where more than 2,000,000 parcels were converted from 13 counties in the FP&L service area. The hardcopy and digital data sources were collected from the individual counties along with the tax roll information. SDS converted the graphic and non-graphic information to a standard format in an 18-month timeframe. Many of the counties in Florida had existing digital data that needed to be converted to a standard format. In addition, many of the datasets required adjustment to a more accurate landbase. Mr. Llewellyn designed and developed the translation processes to efficiently convert this data.

Highlight Project Experience – (cont.)

- ❑ TVA, State of Tennessee

Mr. Llewellyn was the overall project manager involved in the pilot programs for the State of Tennessee. Five counties were converted in two separate phases to identify workflow issues and refine the database design specifications to meet the end-users' needs. While coordinating with the State on the database structure, he designed the custom software applications and quality control processes specifically for the Tennessee dataset. In addition, he implemented project status and automated tacking mechanisms to coordinate the data conversion for the multiple counties.

Additional Representative Clients

- ❑ Hamilton County, TN
- ❑ Washington County, WI
- ❑ City of Hampton, VA
- ❑ Metropolitan Sewer District, St. Louis, MO
- ❑ Shawano County, WI
- ❑ City of Jackson, MS
- ❑ Maricopa County, AZ
- ❑ Caddo Parish, LA
- ❑ Forsyth County, GA
- ❑ City of Edmond, OK
- ❑ Saginaw County, MI
- ❑ Lincoln Parish, LA

B. Fred Daniel

Cadastral Mapping Specialist
JumpStart GIS, Inc.

Relevant Experience

1996-2000, Cadastral Mapper, SDS, Inc.

❑ Maintained productive status as a mapper in addition to acting as project lead for several projects:

- Maury County, TN
- Lewis County, TN
- Hamilton County, TN   * Project lead
- Lexington County, SC
- Shawano County, WI   * Project lead
- Washington County, WI   * Project lead
- McDuffie County, GA   * Project lead
- Caddo Parish, LA   * Project lead
- Cook County, IL

❑ Coordinated production schedules with available staff resources. Also established work procedure for each project

❑ Addressed general production questions in key projects.

❑ Produced high-quality maps with low edit ratios, exhibiting proficiency in COGO, Best-fit, and heads-up digitizing methods.

1988-1996, Maintenance Department Supervisor, Middle Georgia Mapping, Inc.

❑ Developed system of maintaining property splits and transfers for 15 Georgia counties. Coordinated work schedules and established regular communication with county contacts. Instituted monthly billing plan to regulate cash flow and stabilize work fluctuation.

❑ Trained new agency employees in CAD operation. Addressed project specification questions to insure quality control maintained in each project. Also trained personnel to interpret and map metes and bounds descriptions.

❑ Facilitated completion of property tax mapping for 47 counties with various specifications.

❑ Produced maps, which detailed zoning, land-use, fire and voting districts, to be used in conjunction with property tax maps.

❑ Inspected aerial photography for approval according to factors of contrast, resolution, scale distortion, and overall quality.

Vanessa Smotherman

Cadastral Mapping Specialist – IAAO Certified
JumpStart GIS, Inc.

Professional Experience

1994-2001, Cadastral Mapper, SDS, Inc.

- ❑ Compiled various deeds, plats and county information into an actual land map capturing parcel data and rights-of-way for tax purposes or property location.

- ❑ Maintained productive status as a mapper in addition to acting as project lead for several projects:

• Maury County, TN	• Rapid City, SC
• Lewis County, TN	• Lexington County, SC
• Hamilton County, TN	• Montgomery County, AL
• City of Hampton, VA	• Shelby County, AL
• Ottawa, MI	• Lee County, AL
• Shawano County, WI	• Limestone County, AL
• Washington County, WI	• Marshall County, AL
• St Croix, WI	• Cullman County, AL
• Cook County, IL	• Etowah County, AL
• Richland County, OH	• Escambia County, AL
• Metropolitan Sewer District, St. Louis, MO	• Multiple counties in Florida for Florida Power and Light

- ❑ Produced high-quality maps with low edit ratios, exhibiting proficiency in COGO, Best-fit, and heads-up digitizing methods.

- ❑ Maintained a running production count and interacted with additional mappers to coordinate projects.

- ❑ Addressed general production questions.

- ❑ Performed edit and Quality Control in key projects.

Education

Drafter/Detailer diploma from Tennessee Technology Center
Basic Mapping Class offered by the State of Tennessee
Introduction to Arc View

IAAO Certified Cadastral Mapping Specialist
- • Passed 8 hour IAAO case study and 4 hour IAAO comprehension test to qualify for CMS designation
- • IAAO class 600 Principles and Techniques of Cadastral Mapping
- • IAAO class 101 Fundamentals of Real Property Appraisal
- • IAAO Standards of Practice and Professional Ethics

Laura Simmons

Cadastral Mapping Specialist
JumpStart GIS, Inc.

Relevant Experience

1996-2000, Cadastral Mapper, SDS, Inc.

❏ Responsibilities included completion of digitally produced parcel mapping and right-of-way road construction in connection with various projects.

- Maury County, TN
- Lewis County, TN
- Hamilton County, TN
- Lexington County, SC
- Shawano County, WI
- Washington County, WI
- McDuffie County, GA
- Wilkinson County, GA
- Caddo Parish, LA
- Cook County, IL
- Maricopa County, AZ
- Jackson County, MS

1991-1996, Cadastral Mapper with the Supervisor of Assessments Office, McDonough County, IL

❏ Responsibilities included maintaining soil, property boundary maps, land use, and the 911 address system. Accomplishments included completion of the Farm Bill and McDonough County's first in-house plat book.

Education

Carl Sandburg Junior College, 1987   Galesburg, IL
Associates in Applied Science/Marketing/Mid-Management

IAAO class in Real Estate Appraisal toward Certified Mapping Specialist designation

Certified Illinois Assessing Officer designation

COGO Mapping

Introduction - Parcel Conversion Methodologies

The following gives a brief overview of the three most common conversion methodologies for parcel data.

Digitizing

Property maps are trace-digitized into a vector form. After all of the linework has been captured, software is used to clean and build the proper topologic relationships. Features in adjacent maps are edge-matched together to provide a seamless property map. Text elements are placed in the digital file to represent the annotation on the original property map. These features include items such as street names, parcel numbers and dimensions.

Best-Fit Mapping

During this conversion process, ground evidence is used to register the features on the cadastral maps to a more accurate land base. Using features visible on digital orthophotographs, property lines are adjusted or "best-fit" to be consistent with fences, hedgerows and hydrological features that typically represent property boundaries. Buildings and roadways are also considered during the adjustment so that property lines do not overstrike buildings and roadways fall within the designated rights-of-way.

COGO Mapping

To achieve an even more accurate product, coordinate geometry (COGO) commands are used to digitally construct parcels from their boundary descriptions. During this process, survey information on the original property source documents (deeds and plats) is used to create the parcel boundaries. Once a parcel has been constructed, mapping technicians locate the parcel relative to other parcels and land base features.

The cadastral maps for Nassau County will be constructed using a COGO mapping methodology wherever possible and appropriate.

COGO Mapping Overview

In "COGO mapping", coordinate geometry (COGO) commands are used to digitally construct parcels from their boundary descriptions. During this process, survey information on the original property source documents (deeds and plats) is used to create the parcel boundaries. Once a parcel has been constructed, mapping technicians locate the parcel relative to other parcels and land base features.

The COGO mapping is the most challenging parcel conversion methodology, requiring a high level of both automation and experience. First, automation is necessary to efficiently produce an accurate product. Technology is used throughout the process from source document scanning and text recognition to the construction of property boundaries from the recognized text. Second, experienced mapping specialists must be able to evaluate source documents to correctly locate parcels when those sources conflict. The quality of source documents can differ widely, and inconsistencies within and between documents must be resolved. Often, in metes and bounds mapping, source documents (deed descriptions) from adjoining parcels contain discrepancies or omissions that prevent tracts from joining precisely.

> *The COGO mapping is the most challenging parcel conversion methodology, requiring a high level of both automation and experience.*

Source Document Collection

To begin the data conversion, Nassau County will need to provide the necessary source materials. JumpStart GIS will attempt to independently obtain as many of these sources as possible, to minimize the impact on County resources. However, the County should anticipate copying the tax maps, subdivision plats and deeds necessary for the conversion effort.

JumpStart GIS will assist the County in determining the current deed of record for each parcel by querying the property database and providing a listing of the parcel numbers with their associated book and page numbers.

The JumpStart COGO Construction Environment

Subdivisions are constructed using COGO utilities based in the MicroStation GeoParcel environment.
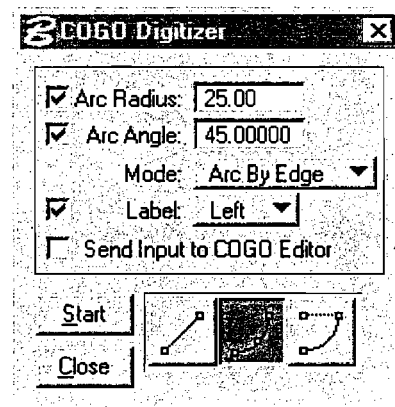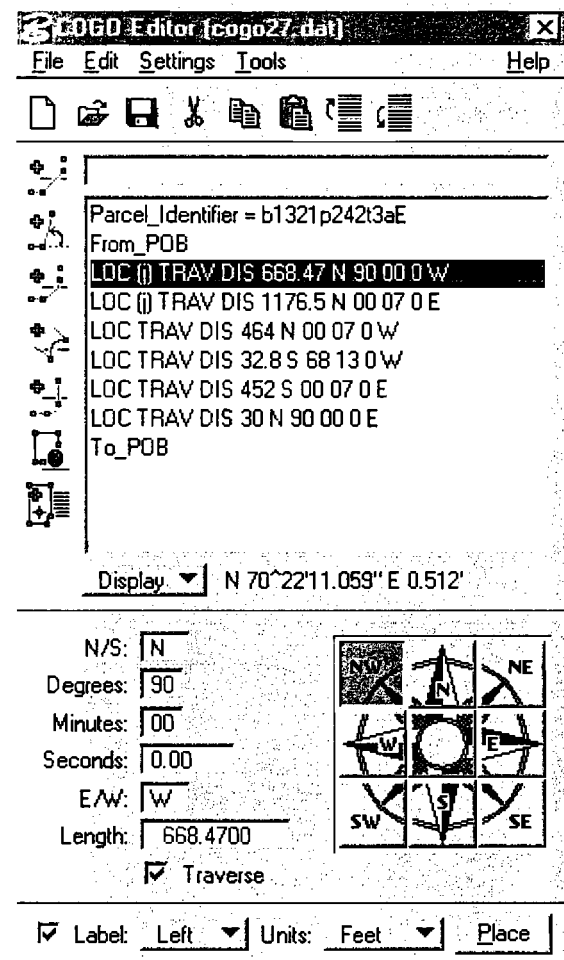
JumpStart GIS has developed enhancements to the COGO Editor and Digitizer delivered with this system.

The following outlines the different stages of the COGO mapping workflow.

Subdivision Construction

The first task in the COGO mapping process is to construct the subdivision boundary and ensure closure. If the plat does not close, closure is forced based on information provided and flagged for the County's review. See COGO Errata Markers below.

Next, rights-of-way are constructed using the platted right-of-way widths. Bearings, distances and curve data, if available, are used as input to the various COGO construction commands.

Finally, the interior subdivision parcels are mapped using the bearing and distance annotation on the plat.

Individual COGO Files

Initially, parcels are constructed from their respective sources (subdivision plats and deeds) into separate digital files. There will be a separate COGO file for every parcel or subdivision with enough information available for COGO construction. The linework for these files is created in an assumed coordinate system, ready to be placed in its proper geographic position. These "raw" COGO files are a useful byproduct of the process and will be delivered along with the final data.

At the end of this stage of the process, the individual COGO files contain the features that can be collected from the subdivision plats. These features include:
- Parcel lines
- Lot numbers and dimensions
- Right-of-way lines
- Right-of-way names and dimensions
- Subdivision names, block numbers and symbols

COGO Mapping

COGO Errata Markers

Typically, during the COGO construction process, omissions and errors in the survey information are encountered. When discrepancies are found, markers are placed in the COGO files to flag areas of concern. These flags include:

- Plat bearing wrong
- Plat dimension wrong
- Plat does not close
- Curve data wrong or missing
- Plat partially digitized
- No interior bearings

Subdivision Placement

Using the orthophoto, the digitally constructed subdivision is moved into place and graphically adjusted to match ground evidence. The boundary is placed by associating key points with known coordinates for registration and by noting physical features on the base map.

Often, neighboring subdivision surveys will not precisely fit together. Mapping specialists determine the most accurate survey and assemble the adjoining plats accordingly. The orthophotography assists the mappers in determining the proper alignment when boundary conflicts and gaps occur.

Subdivision Placement Metadata

As plats are merged together and discrepancies are found, the following digital markers are placed as needed.

- Bearing conflict with adjoining plat
- Dimension conflict with adjoining plat
- Held to ground detail for placement
- Entire plat rotated to fit
- Block rotated to fit

Construction of Rights-of-Way Outside of Subdivisions

With the subdivisions in their correct geographic locations, the road rights-of-way are constructed for the areas outside of the subdivisions.

The right-of-way width is derived from the existing tax maps and the orthophoto. The exact distance is entered and the right-of-way is offset from the centerline as it appears on the orthophoto. This ensures that the right-of-way lines will be parallel where intended. Additional construction tools are used to create smooth curves with tangents at the line-arc transitions.

These right-of-way boundaries will be used in conjunction with the COGO subdivision boundaries to establish a control network for placing the individual deeded parcels.

Construction and Placement of Deeded Parcels

Using the subdivision and road right-of-way information as control, the acreage plats and individual deeds are constructed and graphically inserted into their correct geographic location. The digital orthophotography and tax maps are also used as guides in this process.

When bearing and distance is not available and the parcel cannot be digitally constructed from the deeds or surveys, the orthophoto is used as a base upon which to digitize the parcel boundaries.

Order of Precedence

In general, parcels from subdivision plats are placed before parcels from deeds or individual surveys. More specifically, the parcels that can be created exclusively with COGO commands are mapped first. They are moved into their correct coordinate position and aligned to the orthophoto. They are placed without modifying the parcel geometry whenever possible.

In some cases, subdivision plats and deeds do not have enough survey information to be completed entirely with coordinate geometry commands. When this occurs, parcels are digitally constructed with the property map and orthophotography used as reference. Dimensions are held whenever possible, even when bearing information has been omitted. COGO data is always placed first and used to construct and control parcels with inadequate information.

Finally, if no source is available or the source is outdated, parcels are "best-fit" to the parcel base that has already been constructed.

Parcel Confidence Codes

Since parcels are mapped using a variety of techniques based on the information available in the source documents, each parcel is attributed with a code indicating the conversion methodology used. This "confidence code" helps future users understand the level of accuracy to expect for each parcel. The following is a guide to the parcel confidence coding.

COGO
- Sufficient bearing and distance information available for COGO
- Placed and rotated COGO file with adjustments if needed
- Dimensions within tolerance
- COGO file created

Adjusted COGO
- Enough bearing and distance information available in plat to COGO
- Placed and rotated COGO file with adjustments
- Dimensions out of tolerance
- COGO file created

Constructed Best-Fit - Dimensions from plat, angle from orthophoto
- Only distance information available
- Angles of property lines constructed using orthophoto and/or platted distances
- Dimensions within tolerance
- No COGO file created

Best-Fit - Constructed from Orthophoto

- ❑ No plat available
- ❑ No bearing or distance information available
- ❑ Property mapped based on ground detail in orthophoto
- ❑ No COGO file created
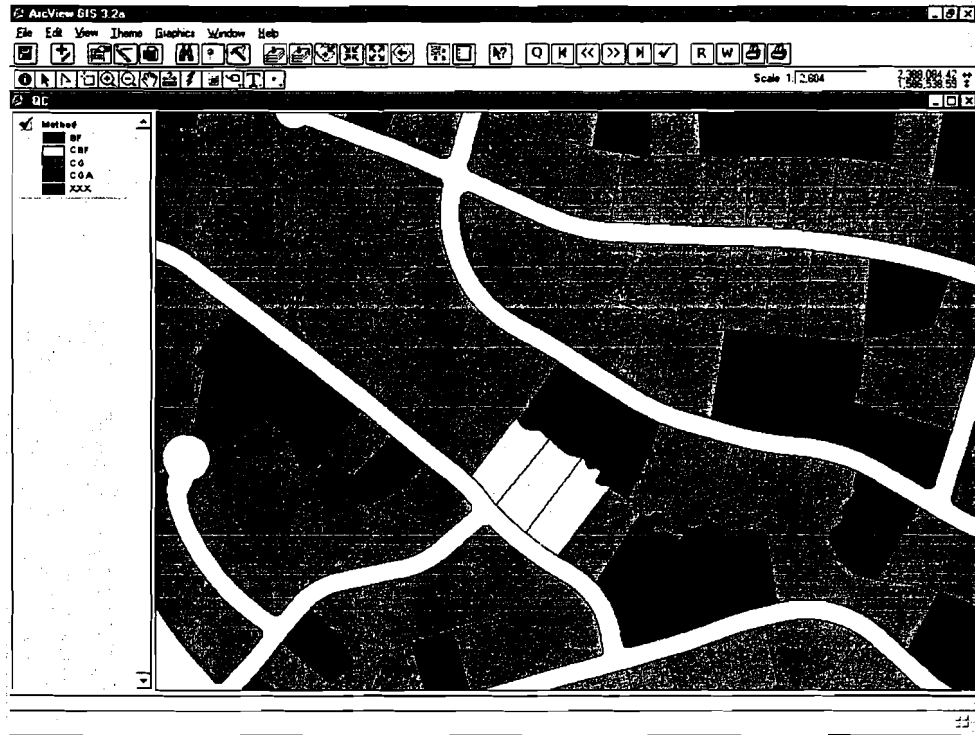
Parcels are coded according to the mapping methodology used.
Green – COGO, Blue – Adjusted COGO, Orange – Constructed Best-Fit, Red – Best-Fit
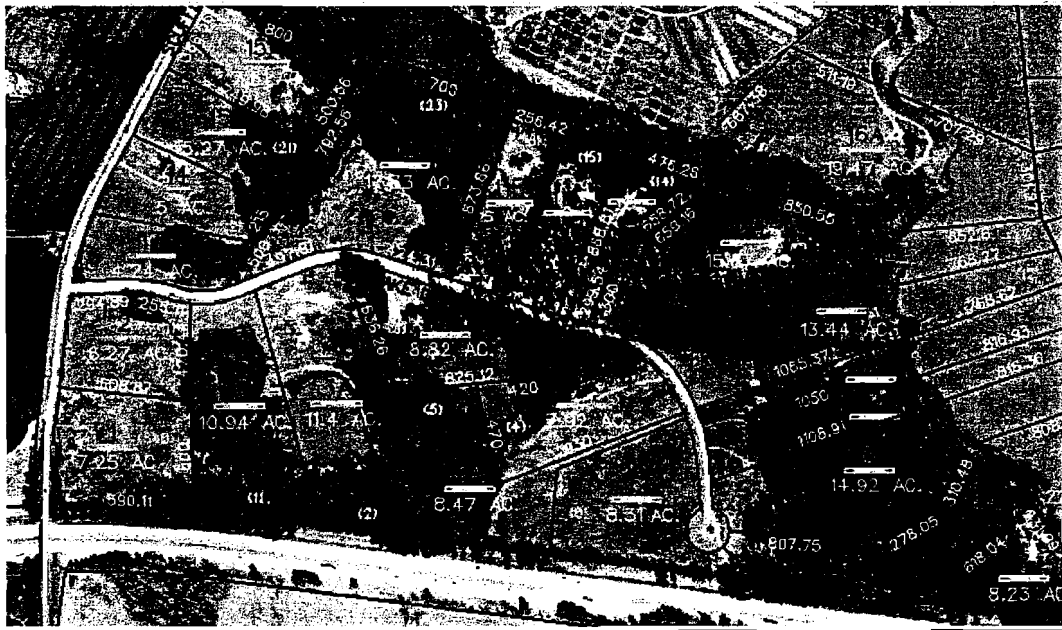
Annotation Placement

After all of the linework has been placed, text is added to the maps. Software utilities are used to create and place annotation such as street names, parcel numbers, acreage annotation and property dimensions. These tools allow the mapping technicians to place the text elements in a consistent manner, for example, at a specified offset along a feature to which they correspond. All text placement parameters are predefined in a project setup database in accordance with the data specifications provided by the County. In addition, all annotation is placed to limit overstriking other information.

Topology

At this stage, lines are cleaned to eliminate overshoots and gaps (dangles). Initially, dangles within a small tolerance are corrected with automated software routines. Any remaining dangles are flagged for review and correction by mapping technicians. Once a clean map has been produced, parcel polygons with topology are built from the bounding linework.

Parcel Identifiers

Next, the full parcel numbers are assigned to the parcel polygons. It is this number which serves as the link to the property database. Several customized software utilities are used in assigning the parcel numbers. For example, tools are used to automatically increment parcel numbers as they are placed for each parcel. Operators key-in the component parts of the parcel numbers, such as the map, block and lot numbers. Software is used to put the individual components together to create the full parcel number. This process minimizes the amount of data entry operators must perform and consequently reduces errors.

Parcels constructed using coordinate geometry and overlaid on an orthophoto

Begin conversion

Collect source documents → COGO subdivision plats → Place subdivisions → Construct remaining ROW's

Correct line placement → Review line placement ← Construct and place deeded parcels

Yes

Adjustments?

No

Queue errors and clean linework → Process linework and build topology → Perform digital QC

Yes

Errors?

No

Add missing features → Review map content ← Add tax map features

Yes

Omissions?

No

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│ and clean│     │ and build│     │ QC       │
│ linework │     │ topology │     │          │
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Yes

Errors?

No

Validate parcel identifiers ◀── Assign parcel identifiers

Mismatches? — Yes → Report parcel mismatches

No

County review ◀── Initial delivery

Corrections? — Yes → Correct County edits → Final delivery

No

End conversion

Quality Assurance and Quality Control (QA/QC)

JumpStart GIS's conversion environment incorporates digital and manual processes that incorporate a high level of quality assurance from the start of the project. The process is designed to provide systematic, standardized procedures that minimize operator error.

While a proactive approach to quality assurance is embedded in the system, automatic quality control checks have been positioned in the production workflow. These audit points identify errors or omissions early in the conversion process in order to expedite corrections.

> *While a proactive approach to quality assurance is embedded in the system, automatic quality control checks have been positioned in the production workflow.*

All digital files must pass each phase of the QA/QC process with complete accuracy before delivery to the County. This thorough set of QA/QC measures ensures the County of a total quality product.

Project Setup

Quality assurance begins with the project setup phase. MicroStation GeoGraphics' feature database and related utilities are used as the base in which to manage project parameters. JumpStart GIS has extended this database and added parameters for automated processing and quality control. With these enhancements, map features can be defined and constrained to the project specifications throughout all phases of the conversion process.

Map features are assigned characteristics for both the JumpStart GIS conversion environment and the County's target environment, as defined in the project specifications. *The database works as a central storage area to ensure accurate and consistent attribution of the features as they move through the map editing, processing, and quality control phases of the project.*

Additionally, JumpStart GIS has made enhancements to the standard GeoGraphics database to make certain that snapping and line-cleaning tolerances are applied consistently during the project as files are processed.

Finally, the project setup database is used to assign the quality control processes for each feature. These automated routines will be used to verify the integrity of the final dataset and that the data strictly adheres to the project specifications and database design.

Mapping Environment

The GIS technicians interact with map data via the Feature Digitizer interface to make certain that specific feature attributes are assigned according to the database design. Feature characteristics such as line style, line weight, color, text height and width are automatically assigned as the map features are digitized.
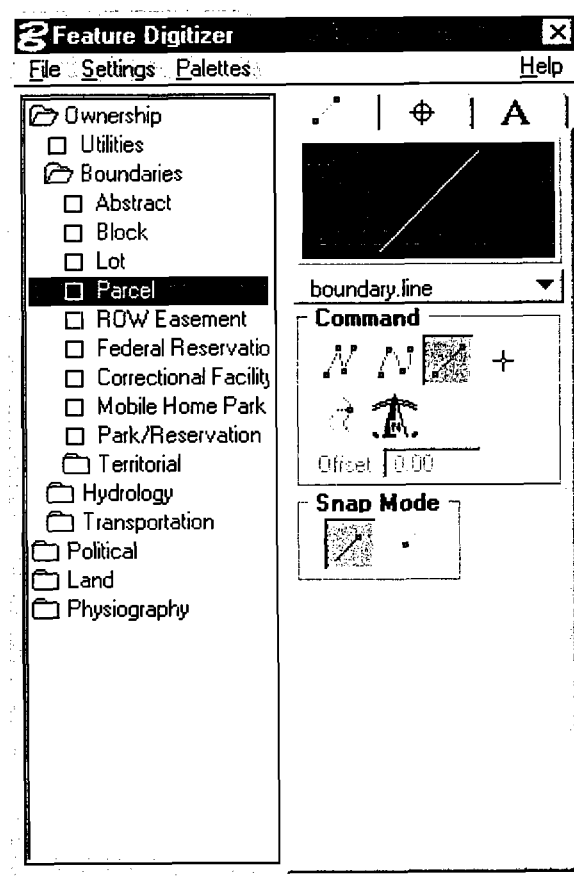
In addition, the GIS technicians automatically snap linework as the parcels are mapped. As the linework is placed, any overshoots or undershoots (dangles) are flagged. With this system, errors that will cause problems during the topology building process can be identified and corrected during the initial mapping phase.
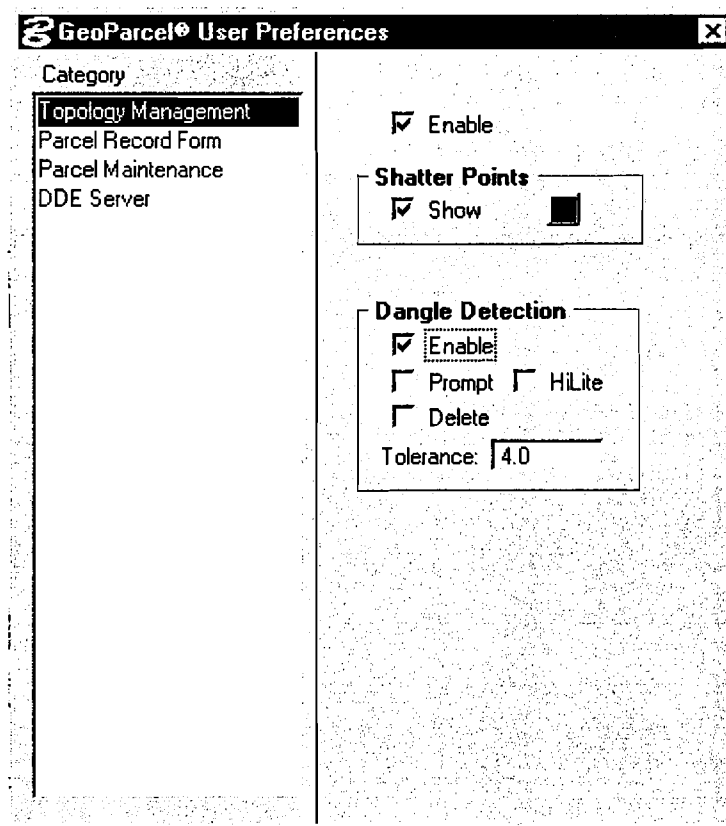
Topology Cleanup

While the JumpStart GIS mapping environment allows the GIS technicians to identify and correct errors as the maps are created, all datasets are subsequently processed through a series of automated routines to prepare them for the target GIS. This topology cleanup phase ensures data consistency, which is essential for creating topology and performing spatial analysis.

Software utilities eliminate duplicate and similar linework and segment crossing elements. Other routines close gaps between element end points and eliminate dangling elements and line fragments.
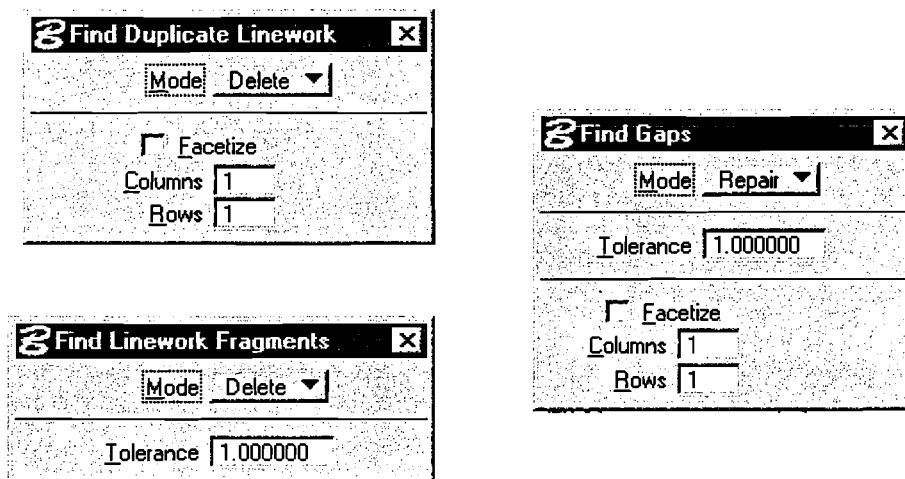
Guidelines for modifying the data will be defined by the County and JumpStart GIS. These guidelines will define specific processes and tolerances for correcting the data. Any errors in the data that fall outside of these tolerances will be flagged for review by QC technicians.

Quality Control Measures

There are typically two aspects of the quality control of GIS databases – automated digital checks and interactive procedures. These processes include quality audits that take place at several points during the data conversion and map editing workflow.

Automated digital checks are accomplished using computer software. These software routines verify that the data conforms to the project specifications and that the data is spatially consistent. GIS datasets must adhere to a rigid data structure in order for the analysis applications to run successfully.

An interactive cartographic and content review is just as important as the automated digital checks that are performed.

While less sophisticated, the interactive cartographic and content review of the data is equally important to make sure that all data has been accurately captured and converted to produce a cartographically pleasing product.

Automated Digital Checks

Automated digital checks are used to verify the integrity of the final dataset and ensure that the data strictly adheres to the project specifications and database design. As previously mentioned, the project setup database defines the template for checking all of the datasets as they pass through the system. Each data layer is validated to ensure that it contains the appropriate features and that attribute definitions match the database design. Global project parameters such as map projection and units are verified as well. Features are rechecked for compliance with the predefined cartographic standards. Each graphics element's line style, weight, color and annotation characteristics, if applicable, are checked against the data template.

Many of the automated checks are extensions of the topology cleanup tools previously described. When errors exist which cannot be systematically corrected within the predefined tolerances, they are flagged by the digital checking routines and reviewed by QC technicians. The following sections summarize these errors and the QC routines used to identify them.

Dangles – A dangle occurs when the endpoint of an element is not connected to another element. When creating area topology, linear elements with dangling endpoints can cause problems and should therefore be removed. Dangles can be created, for example, by overshoots or undershoots during the digitizing process. Software utilities

make certain that no line overshoots or undershoots remain after the topology cleanup phase is complete.
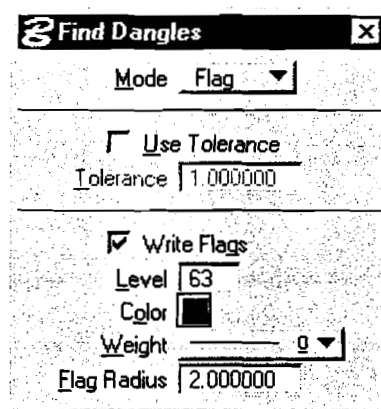

Label Errors – Another validation tool tests the assumption that proper topology is represented by boundaries which surround centroids, with one centroid for every area. If an error is found, error markers are created indicating the nature of the problem.

Sliver Polygons - A sliver polygon is a very thin or small area that is created by a slight offset in the boundaries of neighboring polygons. Sliver polygons are identified based on multiple criteria and reviewed for correction.
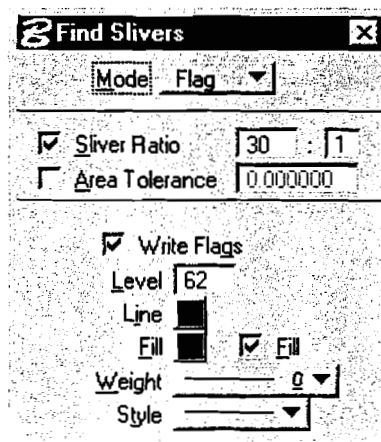
Duplicate Line, Text or Point Features – Duplicate line, text and point features are flagged for review and correction if they are not systematically deleted during the topology cleanup phase.
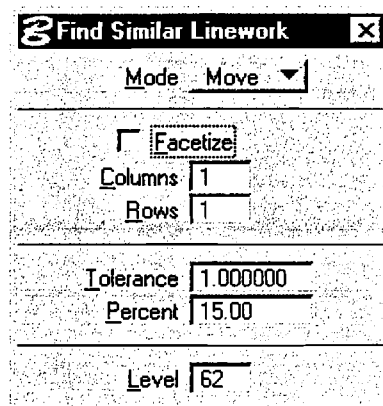
A key component to a parcel-based GIS is the ability to link the parcel polygons to the property database. Since the parcel number is typically used as this link, QC routines generate reconciliation reports that identify:

- Parcel numbers in the graphic database with no match in the non-graphic property database
- Parcel numbers in the property database with no match in the graphic database
- Parcel numbers in the property database with multiple matches in the graphic database

Error Flagging and Reporting

During the automated QC process, error reports and graphic files are generated. The error reports show the QC processes and related statistics for a particular dataset. These reports are reviewed and ultimately delivered to the County with the final data.

To accompany the error reports, graphic files are created containing markers identifying the locations of errors. In addition to the error location, each marker indicates the error type and severity. This system allows QC technicians to quickly "drive" to each instance, review the situation and correct any problems.

GIS technicians evaluate, correct and sign-off on each individual error. The technicians also indicate the method by which the error was resolved.

Interactive Cartographic and Content Review

Once the files have passed all digital checks and undergone the appropriate corrections, the editors make a thorough, interactive review. Editors perform this review using tools specific to queuing and editing data in a digital environment.

QC Technicians:

- *Review error flags*
- *Compare text content with sources*
- *Inspect parcel placement*

The interactive review of the data can be broken down into two subcategories. First, map features must be verified that they match the original source maps. Editors queue through every piece of annotation and compare the text content with the original source. Computer software will not find errors such as a "5" on a paper source captured incorrectly as a "6" in the digital database. This must be verified by visual inspection.

Second, in some situations, property mapping requires operators to interpret ground evidence of occupation to determine the location of the property lines. Editors must visually inspect where the mapping technicians placed ownership lines with respect to the orthophotography or planimetric features.

Errata Message

In the event that sources conflict or lack information and the map technicians must make a judgment regarding the intent of the property map, errata text will be placed to explain the decision made. In addition to using errata text to identify data issues, it is also used internally to alert the editors to unusual situations.

Ultimately, the errata messages are provided to the County, so the County will be aware of the data anomalies and can issue instructions if a resolution is needed.

When discrepancies are found, errata text is placed in the files to flag areas of concern and inform the County of decisions made.

Errata text: "Tax map shows a road here."

Section

4

Project Methodology

The different stages of a cadastral data conversion project can be summarized below into the following functional efforts:

- Project initiation
- Source data collection
- Pilot conversion
- Full production

Project Initiation

The data conversion project will begin with a kick-off meeting to ensure participants have a common understanding of the project workflow and their responsibilities.

First, the conversion process will be outlined. Methodologies for data capture, conversion, and transfer of digital mapping data will be developed and discussed. Next, schedules will be discussed and procedures will be established to meet the project milestones. Finally, the roles and expectations of each of the parties involved will be clearly defined and participants will be assigned project management and production tasks.

Source Data Collection

During this phase, JumpStart GIS will coordinate with the County to collect all of the data sources necessary for the conversion effort. A complete inventory will be taken to ensure that all sources are received and included in the JumpStart GIS tracking system. In addition, all sources will be initially evaluated for their quality and legibility.

Pilot Conversion

The pilot phase of the project will begin immediately after the kick-off meeting and the County has provided the necessary source documents (e.g. tax maps, plats, deeds, property database) and reference materials (e.g. digital planimetrics and orthophotos).

The production steps used in the pilot will be the same as those employed during the full production phase of the project. The pilot will be used to test and evaluate the procedures unique to the County's data conversion effort.

The pilot area will contain two or more tiles with multiple tax map scales. The tiles will be in one contiguous area so that edge-matching across map sheet boundaries can be verified.

The pilot will also be an opportunity for the County to evaluate its editing procedures. During the pilot phase, it is important that the County and JumpStart GIS clearly define, document and agree to the acceptance criteria for all cartographic and database deliverables.

The main goals of the pilot phase are to:

- Produce a representative sample of the data
- Refine the process for the County's specifications
- Resolve any issues encountered during the process and identify corrective measures
- Document the procedures used to create the data

Procedures Manual and Database Design

During the pilot phase, a procedures manual will be developed. The purpose of this document is to provide all of the project participants with information about the data conversion process. Specifically, it focuses on the step-by-step technical procedures for data conversion and quality control.

The procedures manual is intended to serve as a general guide for conducting of day-to-day operations and will be used over the course of the project. As specific issues are encountered and resolved during the course of the project, the procedures manual will be updated to reflect any changes or enhancements to the process.

The procedures manual will also serve as a guide for County personnel as they transition into the ongoing maintenance of the parcel layer following the project completion.

To supplement the procedures manual, JumpStart GIS will provide a database design document that will define the technical specifications for the individual features being captured.

Full Production

Upon the completion of a successful pilot, it is expected that the County will issue a notice to proceed. Full production will begin only after all issues that may have been raised during the pilot project have been resolved.

Production Areas

In the project initiation phase, production areas will be defined and prioritized. A schedule will be developed based on these production areas and will contain completion dates for the different stages and tasks of the project, such as:

- Source documents collected
- Initial data delivery
- County review complete
- Final data delivery

County Review, Corrections and Acceptance

The County will review each delivery for compliance with the project specifications, data accuracy and content. Upon completion of the quality control review by the County, JumpStart GIS will correct all County edits and resubmit the delivery for final acceptance.

Map Maintenance During Conversion

During the conversion effort, data will exist in both digital and hardcopy formats. Normally, County mappers are expected to maintain their maps in the digital format for the data that has been delivered in addition to updating the hardcopy sources that have yet to be converted. Learning to update maps in this new digital environment can be difficult, and can place an undue burden on County resources when combined with the other data conversion tasks and their day-to-day responsibilities.

To circumvent this potential problem, *JumpStart GIS will perform all parcel maintenance during the course of the conversion project and deliver a final dataset that is current to within sixty (60) days of the final delivery date.*

While the data is being converted, the County will need to keep records of the changes that occur subsequent to the initial source delivery. These documents will need to be provided to JumpStart GIS so that the final dataset can be updated accordingly.

This scenario eliminates the possibility of edge-matching problems due to linework that is modified during County maintenance. More importantly, at the end of the data conversion, *the County will have a complete, up-to-date dataset* rather than a backlog of property transfers, splits and combinations.

Communication

It has been our experience that communication between the County and the contractor is the key to any conversion project's success. Primarily, JumpStart GIS and the County will need to communicate on specific mapping issues to ensure that the County receives the most accurate product possible.

JumpStart GIS has developed communication procedures to inform the County of decisions made and request feedback in questionable situations. These tools are designed to facilitate communication while minimizing the impact on County personnel.
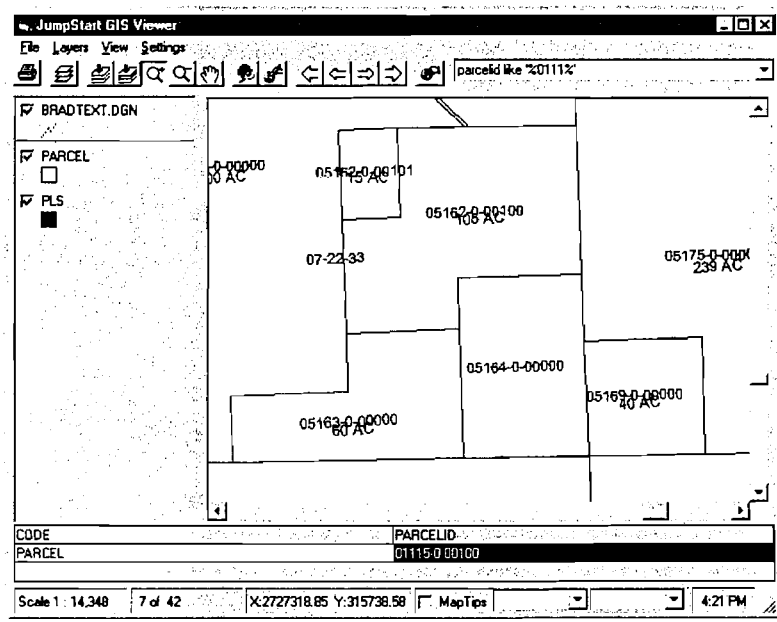
JumpStart GIS Viewer application

In addition, JumpStart GIS will provide an ArcView-based toolset to assist the County in reviewing the digital data. This will not only help the County with their quality review, but will also get them familiar with working with their data in a digital environment.

As another example, JumpStart GIS has developed a project tracking application that will allow the County to view the current project status.

Project Status Tracking

A major element in the timely completion of any data conversion project involves the ability to routinely and accurately determine the projects' exact status. To assist in this, JumpStart GIS employs a project management database with a map-based interface for monitoring project status.

At the beginning of each project, index maps are digitized and polygons are created for the boundaries of the input maps and output delivery tiles. Database tables are created allowing the map and tile polygons to be attributed with items such as the map name, number of parcels and map status.

As technicians work on files and the data moves from one phase of the project to another, the system tracks where each digital file is in the process. Status indicators are specific to every phase of the conversion effort and include the following:

- Map not started
- Initial mapping
- Internal QC review
- Internal corrections
- Delivered to County for edit
- County corrections
- Final delivery
- Accepted data

Combined with number of hours to complete a task, this information can be used to measure operator performance and can quickly point to the need for resource adjustments to ensure an on-schedule delivery. In addition, other data layers specific to the County's data conversion effort, such as orthophotography delivery, can be added to the tracking system.

In summary, this automated tracking system allows project participants quick and easy access to status maps and reports that can even be viewed over the Internet.

Post-Conversion Support

Delivering a quality data product is only one aspect of a successful data conversion project. The implementation of a GIS does not simply end once the data is delivered. In fact, it is at this point that the County faces many of its biggest challenges.
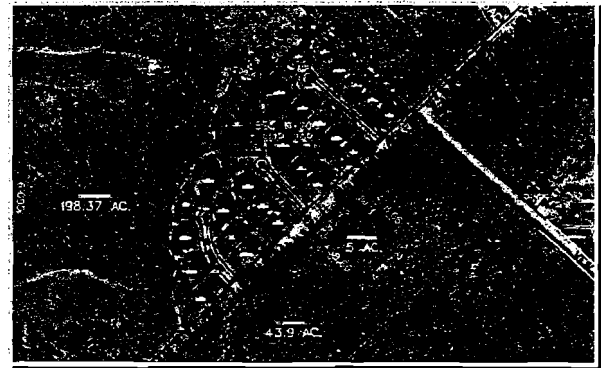
Data Maintenance

The first challenge is to perform day-to-day maintenance in a new digital environment. This is the most tedious, if not the most technical, part of using a GIS. In addition, it is often difficult for County personnel who are used to making changes directly on the hardcopy cadastral maps.

> *JumpStart GIS offers a unique data maintenance service.*

To solve this problem, JumpStart GIS offers a unique data maintenance service. Counties can provide the property transfer documents (deeds and plats) after they are recorded and JumpStart GIS will make the graphical changes to the database on a regular basis. All of the data maintenance would be performed using the same coordinate geometry (COGO) procedures that were used during the initial conversion.
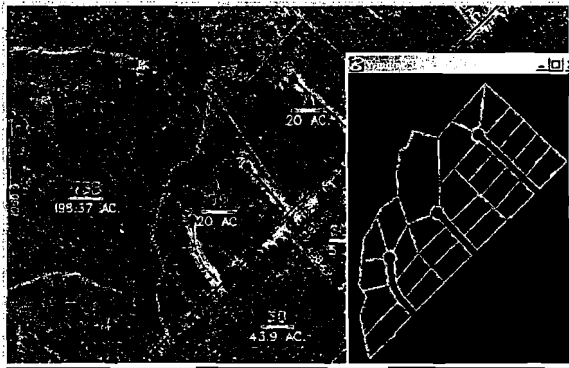
Property data before...   *... and after maintenance*

While outsourcing parcel maintenance provides a good short-term solution, we also realize that the County will, at some point, want to begin maintaining their maps with internal resources. JumpStart GIS will convey our experience with parcel maintenance software, specifically those based in the ESRI ArcInfo environment (As an example, see *Appendix A – NovaLIS Parcel Editor*). We will then work with County personnel in the new environment to ensure that the staff is self-sufficient in the maintenance and management of the new datasets.

Software Environments:
   ❏ *ESRI's ArcInfo and ArcView*
   ❏ *Autodesks' AutoCAD 2000*

One point that is probably not stressed enough in these sections is JumpStart GIS' ArcInfo and ArcView expertise. While MicroStation's computer-aided design (CAD) utilities are used as the primary tools for map construction because of their speed, accuracy, and efficiency, we are very proficient in the ESRI GIS software environment and routinely translate data to an ArcInfo format. In fact, the vast majority of projects on which the JumpStart GIS team has worked have had an ArcInfo deliverable.

To that end, JumpStart GIS maintains a full suite of ESRI products in their latest release, Version 8.1, including:
   ❏ ArcInfo
   ❏ ArcView GIS
   ❏ ArcIMS
   ❏ MapObjects
   ❏ ArcSDE

In addition, JumpStart GIS is part of the Autodesk Developer Network and has current versions of the full suite of Autodesk products, including AutoCAD 2000.

Schedule

We would suggest the following schedule for this project, with an average of 3,000 parcels per month in full production. Based our current project workload and resource commitments, we see no problem in meeting this timeline and could even accelerate this schedule if the County desired.

Project Initiation			5/1/02		
	Parcels		Initial Delivery	County Review	Final Delivery
Pilot	1000		7/1/02	8/1/02	9/1/02
Area 1	3000		8/1/02	9/1/02	10/1/02
Area 2	3000		9/1/02	10/1/02	11/1/02
Area 3	3000		10/1/02	11/1/02	12/1/02
Area 4	3000		11/1/02	12/1/02	1/1/03
Area 5	3000		12/1/02	1/1/03	2/1/03
Area 6	3000		1/1/03	2/1/03	3/1/03
Area 7	3000		2/1/03	3/1/03	4/1/03
Area 8	3000		3/1/03	4/1/03	5/1/03
Area 9	3000		4/1/03	5/1/03	6/1/03
Area 10	3000		5/1/03	6/1/03	7/1/03
Area 11	3000		6/1/03	7/1/03	8/1/03
Area 12	3000		7/1/03	8/1/03	9/1/03
	37000				
Parcel Maintenance			9/1/03		
S/W Training					
Project Completion			10/1/03		

Appendix A – NovaLIS Parcel Editor

Appendix

A

The Right Parcel Management Solution

Parcel Editor (PE) is a comprehensive, out-of-the-box parcel management software, which operates in conjunction with ArcInfo 8 Workstation. It takes advantage of ESRI's Open Development Environment (ODE) to create a visually appealing and fully functional user interface. It offers GIS professionals around the world a new way to manage parcel information. Parcel Editor supports a variety of data entry methods, including coordinate geometry (COGO) entry, importing features into a cover-age, DXF file import, tablet digitizing and "heads up" digitizing. It's designed to work with ARC/INFO coverage's and your ARC/INFO data model.

Parcel Editor features an easy-to-use point-and-click Graphical User Interface (GUI). All commands are available on the desktop via dropdown menus, toolbars, and buttons. PE offers a complete parcel mapping solution with tools for bringing data into the Parcel Editor environment, performing a variety of maintenance operations, and integrating new or revised data into existing digital map data, as well as tools that enable the user to customize the interface to maximize productivity.

Also, Parcel Editor provides a spreadsheet interface to COGO functionality for the creation, editing, and manipulation of accurate traverse data. Users can enjoy a completely restorable edit environment for jobs that require "picking up where you left off." Full feature-based toolbars include line, polygon, region, label point, tic, and annotation editing.

Parcel Editor's set of wizards makes your difficult tasks simple. Through an easy-to-use interface, wizards guide you step-by-step through typical, complicated, or repetitive parcel maintenance tasks. PE wizards are:

- **The Parcel Split Wizard**:
  Enables you to split a parcel by line or curve, and apply attributes.

- **The Parcel Merge Wizard**:
  Allows for parcel merges/combines with the capability to transfer attributes.

- **The Topology Clean-up Wizard (TCW)**:
  Used to identify and correct a full range of topological errors.

- **The Spatial Adjustment Wizard (SAW):**
  Used to adjust and merge new or existing parcel data.

- **The COGO Construction Wizards:**
  Help you perform COGO Line editing operations such as offset, layout, proportion, fillet, and intersection.

Parcel Editor contains a variety of manual and mass annotation tools. Mass annotation allows users to create, edit, and save a variety of styles that can be used again and

again. Styles can also be configured to automatically generate annotation from existing feature attributes.

Users can add their own tools to the interface. The Parcel Editor macro functionality supports both VBA and AML and provides easy-to-use tools that allow you to write or edit macros, and integrate them into the interface. Our software enables you to assign attributes to node, line, polygon, and region features individually, by group, or in a sequence.

Legend Editor

The Legend Editor is a key component of the user interface. It displays data sets and controls the display environments. It provides easy access to data sets such as Orthophotos, SDE Layers, ArcStorm Layers, Image Libraries, and Shape Files. It enables users to drag and drop to modify feature draw order, as well as right-click shortcuts to control feature display. The Legend Editor also provides a graphic display throughout the entire session for the control of symbology of coverage features including annotation.

Parcel Editor provides a variety of methods for data entry including: Coordinate Geometry (COGO) key-in, DXF file import, "heads up" digitizing, coverage feature import, Librarian Utilities, and tablet digitizing.
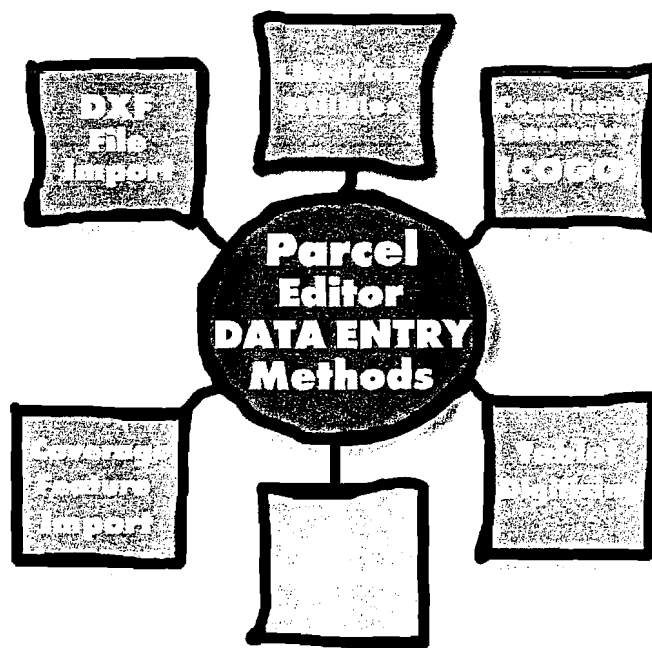
COGO Spreadsheet

Parcel Editor provides a COGO Spreadsheet for rapid entry and editing of COGO data. COGO is a set of tools designed primarily for capturing survey data. COGO operations are useful in applications requiring accurate data entry and manipulation. COGO data is recorded as traverses in a spreadsheet interface using a combination of coordinate, distance, and direction functions. The spreadsheet enables creation, editing, and manipulation of traverse data. A set of coordinate geometry commands is also provided, allowing you to enter plat/plan information in the form of traverses, and the entry of line and curve information using a number of different operators.

Once a coverage has been updated from the spreadsheet, the same deed distances and bearings are automatically stored as attributes against the constructed lines and curves. Map features are generated and displayed concurrent with COGO entry, aiding in the identification of errors. COGO entry sessions can be saved and rerun independently from the edited data set. Traverse closures can also be displayed dynamically as courses are entered. Editing or inserting a course automatically recalculates the traverse from that point onward. User input is copied intelligently from previous fields, allowing for rapid entry of repetitive courses. Below is an example of the COGO Spreadsheet in Parcel Editor.

COGO Spreadsheet

The Power of Wizards

Parcel Editor has easy-to-use, leading edge wizard technology to guide the user step-by-step through typical parcel maintenance operations. The wizards take you through typical, complicated or repetitive parcel maintenance procedures with an easy to use interface.

The **Parcel Split Wizard** allows you to select a parcel of interest, enter distance values, and split the parcel by line or curve. Full attribute capabilities enable you to add user-specific data such as lot numbers, owner name, and tax lot ID.

The **Parcel Merge Wizard** performs merges/combines with full attribute transfer capabilities.

The **Topology Clean-up Wizard** (TCW) identifies topology errors and guides you through various topology correction processes.

The **Spatial Adjustment Wizard** (SAW) provides sophisticated processes for adjusting new parcel data into existing data sets, as well as merging and correction routines.

The **COGO Construction Wizards** perform operations such as offset, layout, proportion, fillet, and intersection with ease.

The **Export Features Wizard** enables the user to export selected features from one coverage to another, and the option of editing the attributes of the exported features.

Parcel Split Wizard (PSW) – Performing Parcel Splits

The *Parcel Split Wizard* is an automated wizard that guides you through seven stages involved in dividing one or more selected polygons or regions and updating the resultant parcels' attributes. The *Parcel Split Wizard* is based on COGO principles, meaning that a split line or curve can be accurately defined by one or a combination of the six methods available to traverse the split. This makes the wizard an excellent tool for processing metes and bounds descriptions.

As lines and curves are split and each point along the split line is defined, the COGO attributes are automatically updated and associated with the lines and curves so that annotation can be easily generated from these values. Furthermore, topology is maintained, so you can assign attributes to the newly created polygons. The wizard is therefore a total solution for completing parcel splits.
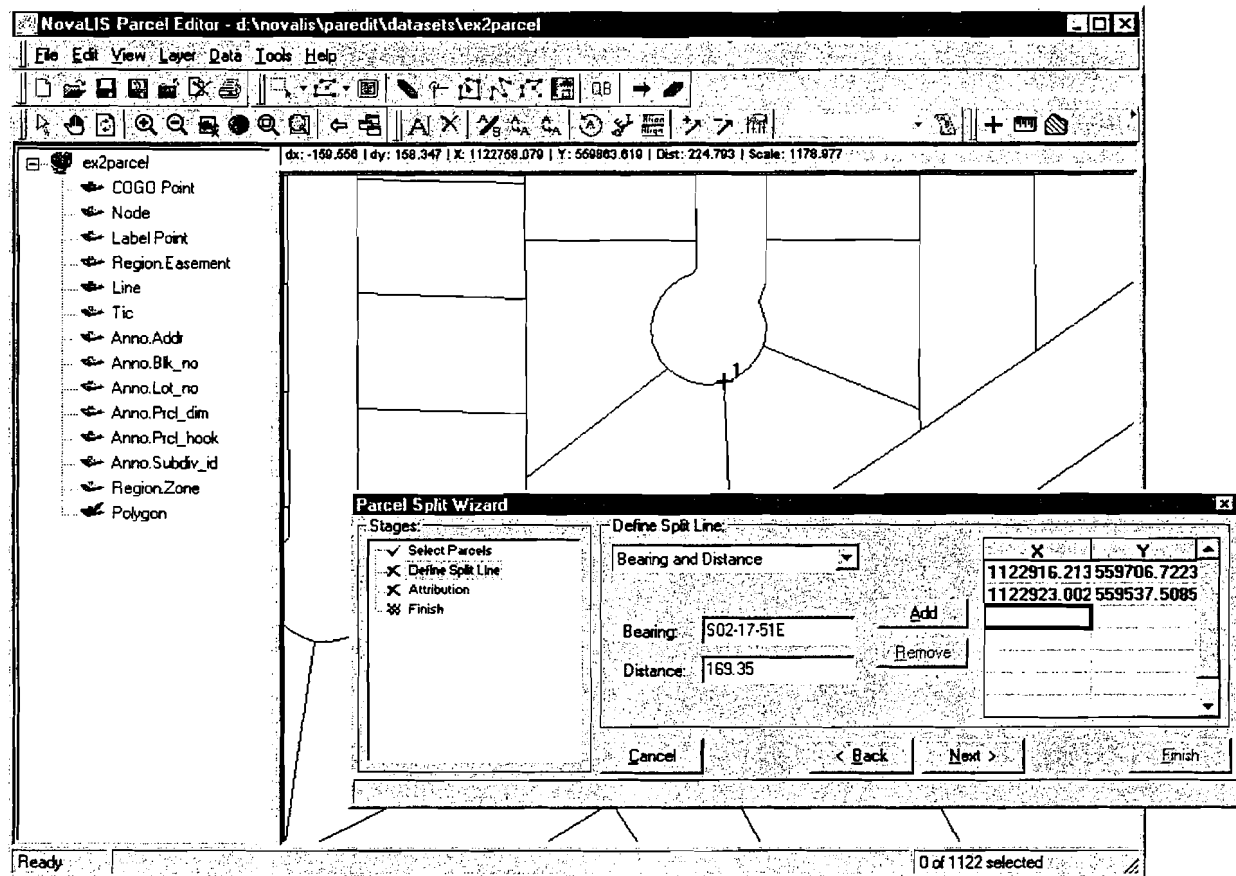
Spatial Adjustment Wizard (SAW) – Integrating Parcel Data

The **Spatial Adjustment Wizard** (SAW) leads you through a series of logical steps to reconcile data sets and perform a variety of user-selected adjustments to fit the data together. The SAW is designed specifically to incorporate new or revised data from DXF files, GPS Point Files, COGO data, deed descriptions, and sketches into your parcel map.

You have the option of using an adjustment or combination of adjustments to incorporate data sets into the parcel map. The flexibility of the SAW ensures both accurate data such as a COGO plat and less accurate data such as a property sketch can be incorporated into the parcel map. The **Spatial Adjustment Wizard**'s intuitive interface and complete functionality ensures that incorporating parcel data is easy to do.
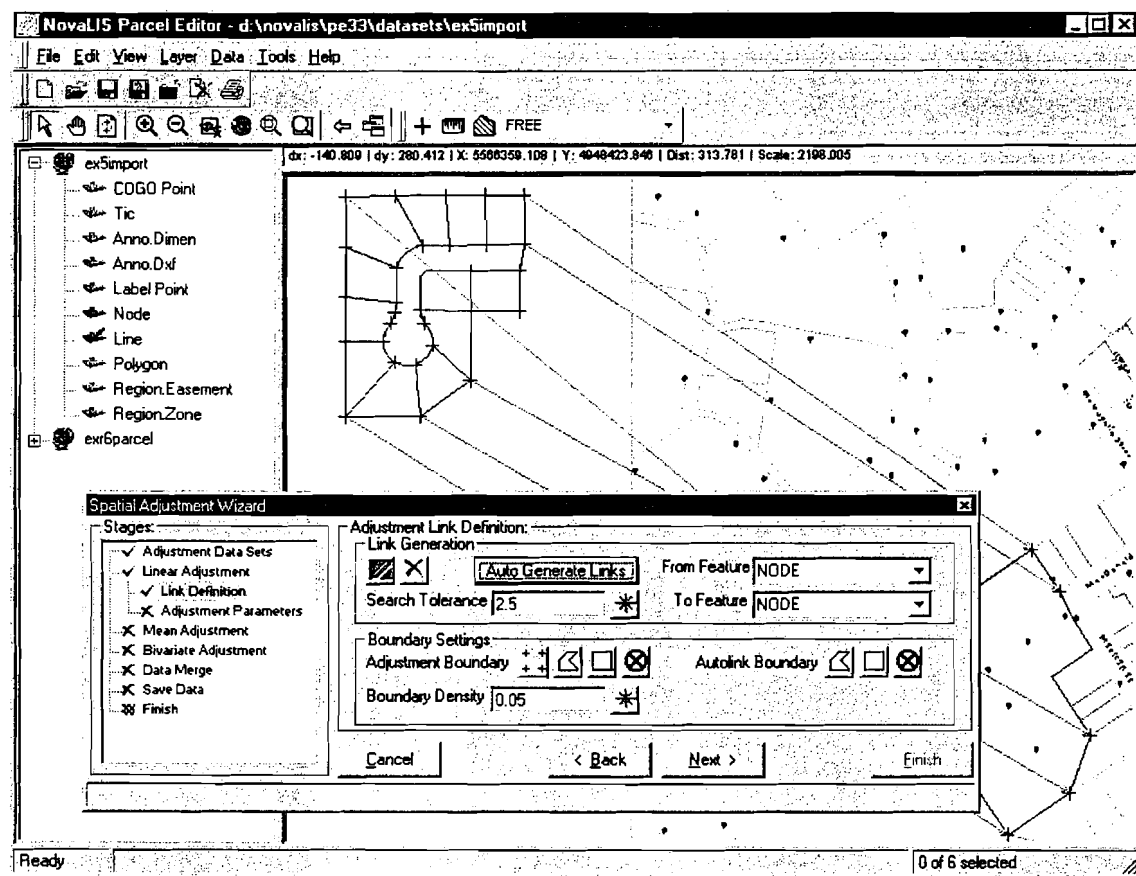
Export Features Wizard

The *Export Features Wizard*, accessed from clicking the *File/Export/Features* menu command, is a tool that enables you to export features from the current edit coverage to a new or another existing coverage. This is captured in a wizard driven 3-step process that allows the user to;

1) Select a coverage to copy features to
2) Select the features to copy and
3) Attribute the copied features separately so that they may be stored in either a new or an existing coverage with different information than the source coverage.

The Export Features Wizard is especially useful for maintaining historical records of land transactions. For example, before an editing function such as a parcel merge, you could export the line features that are to be deleted to another coverage. By doing this, you would have a record of the original position and descriptive characteristics of the original features.
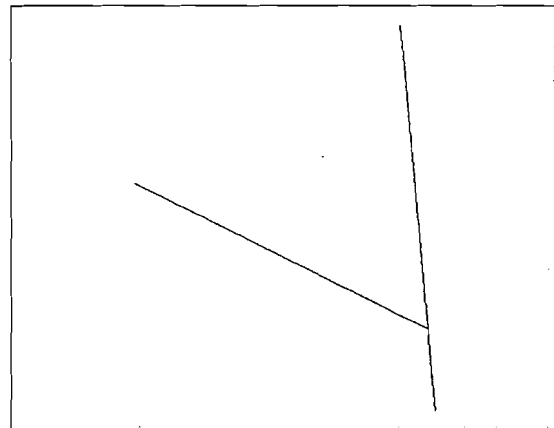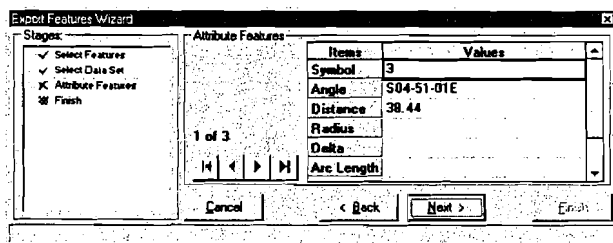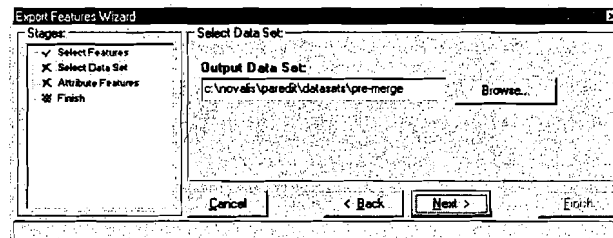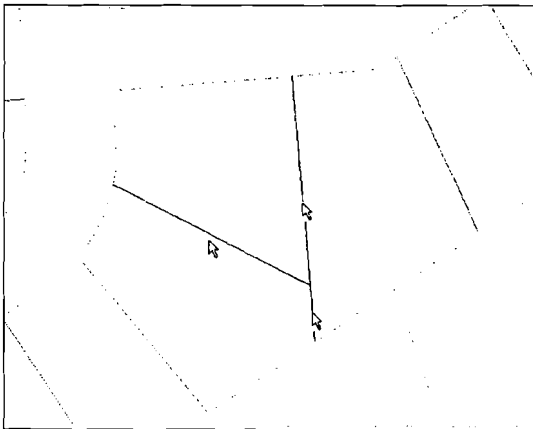
Assigning Attributes to Features

Parcel Editor enables you to assign a full range of attributes to line, point, polygon, node, annotation, and region features. Attributes of selected features can be viewed and edited. This makes Parcel Editor ideal for assigning user-specific polygon attributes such as parcel ID, block number, and section number. Parcel Editor COGO functions, including the COGO Spreadsheet and COGO Construction Wizards, assign and maintain COGO attributes such as deed distances and directions.

Parcel Editor employs a number of methods for attributing line, point, polygon, and region features. A number of features can be selected, and attributes can then be entered one by one. You can also update a group of attributes in a selected set with the same value (e.g. plan number) using the *Mass Update Tool*. Finally, Parcel Editor also has a function for *Snake* attribution, which adds sequential attributes such as lot numbers to a group polygons along a path defined by the user. With this function a line is drawn to establish the order of polygons to attribute; an attribute is then incremented and applied in order (e.g. a series of lot numbers that increase by two).
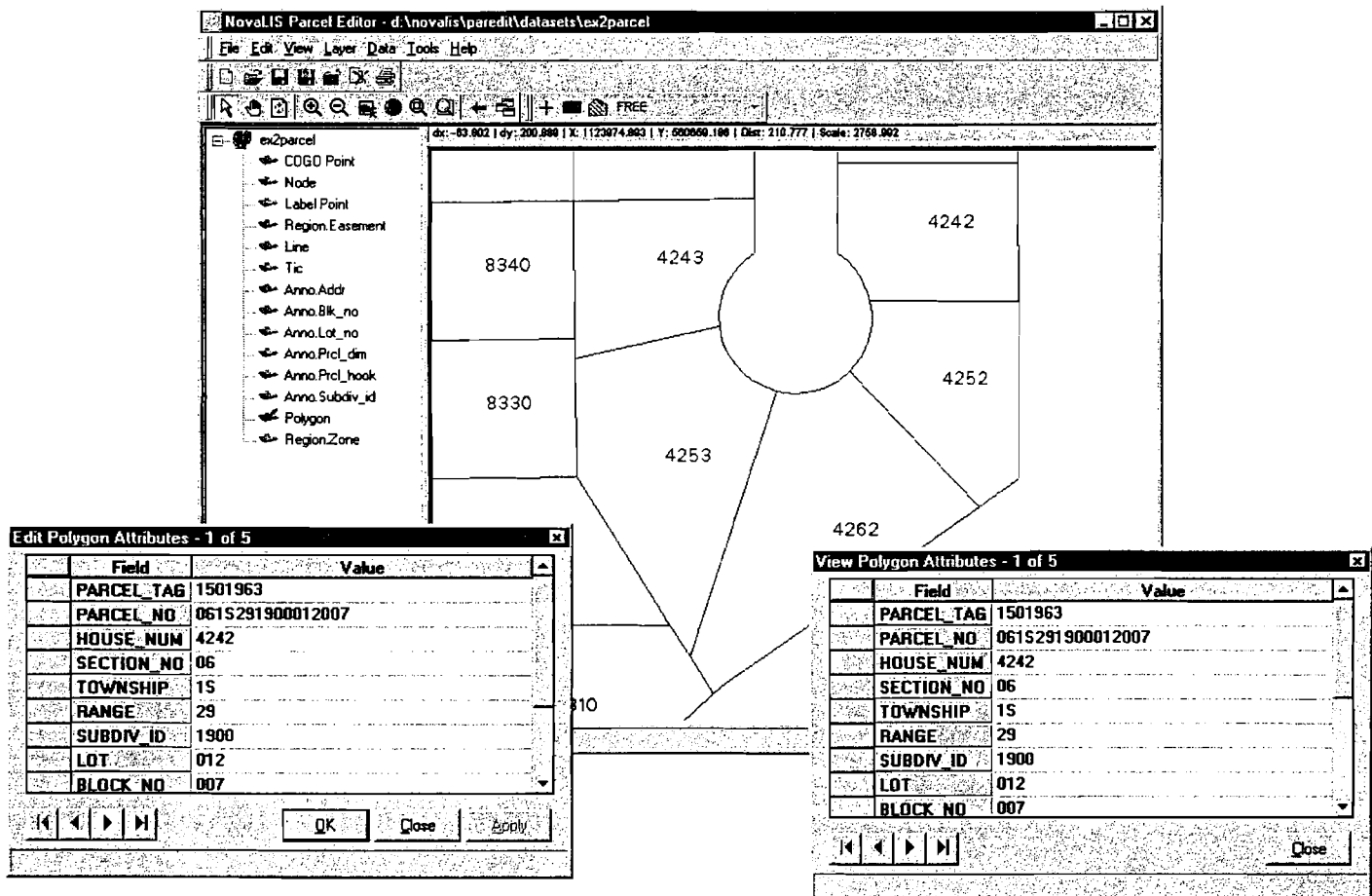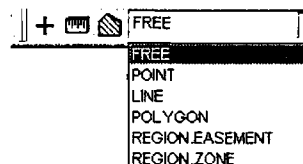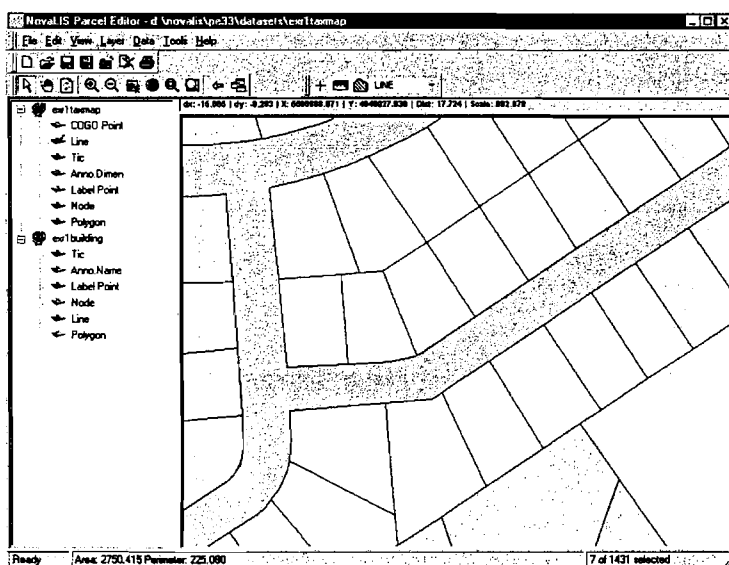
Measure Toolbar

The measure toolbar can be used to measure within the current edit coverage. Specifically the user has the capability of interactively measuring user specified point features, distances and areas.

1) The Measure Point tool returns x and y coordinates of features such as COGO points.
2) The Measure Distance tool returns the lengths of either lines or the distance between two specified points.
3) The Measure Area tool returns the area of an enclosed area such as a polygon.

Use the feature list to select the feature to be used for one of the three measurement types

The example below shows the measure tool returning the Area and Perimeter of the lines that make up a closed area.


The results of the measure tool are displayed in the lower left of the status bar. Not only can you receive actual feature measurements, but each of the point, distance, or area measure tools can be used to measure free areas. This means that you have the power to define and measure your own point location, line length, or area definition. These results are very useful in finding the approximate or exact measurements of coverage features for a comparison to actual plan data.

Snap to Background

The *Snap to Background* tab is on the *Environment Options* dialog box, which appears when you click the **Tools/Options** menu command. This tab enables you to specify snap tolerance settings for features that will be snapped from a "From" coverage (which is always the current edit coverage) to a "To" coverage (which can be any background coverage you currently have open, or the edit coverage) during editing. The snap environment can be specified to control the order in which the snap coverage features will be searched.

The snap environment is active when you are performing edits, such as editing lines or importing coverage features. You can add, modify, reorder, or remove the snap tolerance settings at any time during an editing session.
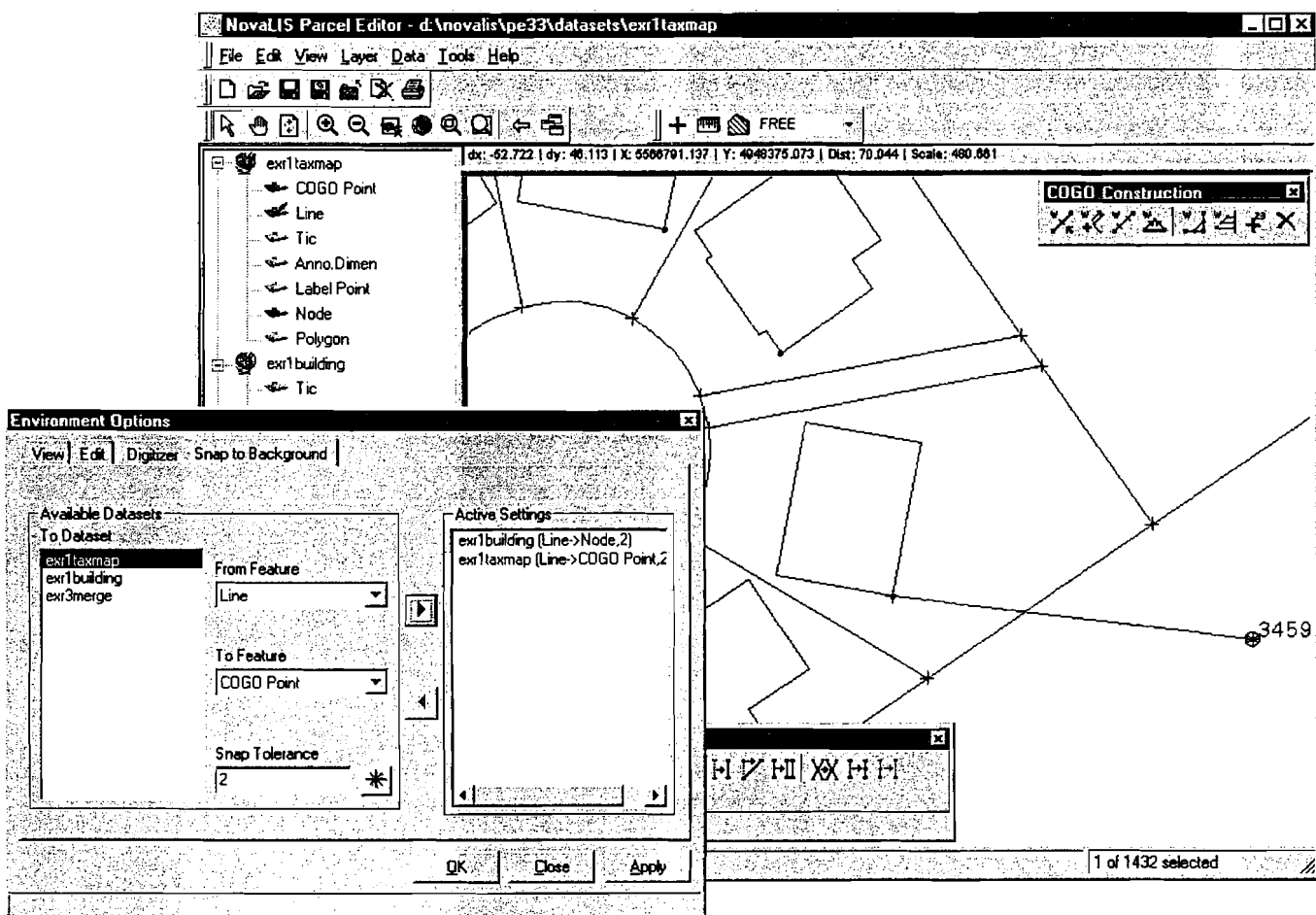
Annotation Styles

Parcel Editor provides functionality for automating Annotation entry and placement. Various Annotation Styles can be predefined with specified level, size, orientation, and position characteristics already set up.

Annotation styles only need to be set up once, but can be modified and/or deleted. In addition, they can be configured to automatically generate annotation from feature attributes. For example, a subdivision plat/plan can be entered in the COGO Spreadsheet with an annotation style being created for the parcel's bearing. After the annotation style is used, the parcel bearing will automatically be displayed on the map.

Edit Annotation Toolbar

Annotation can also be entered, moved, and modified to your preference by using the tools that are available on the *Edit Annotation Toolbar*.
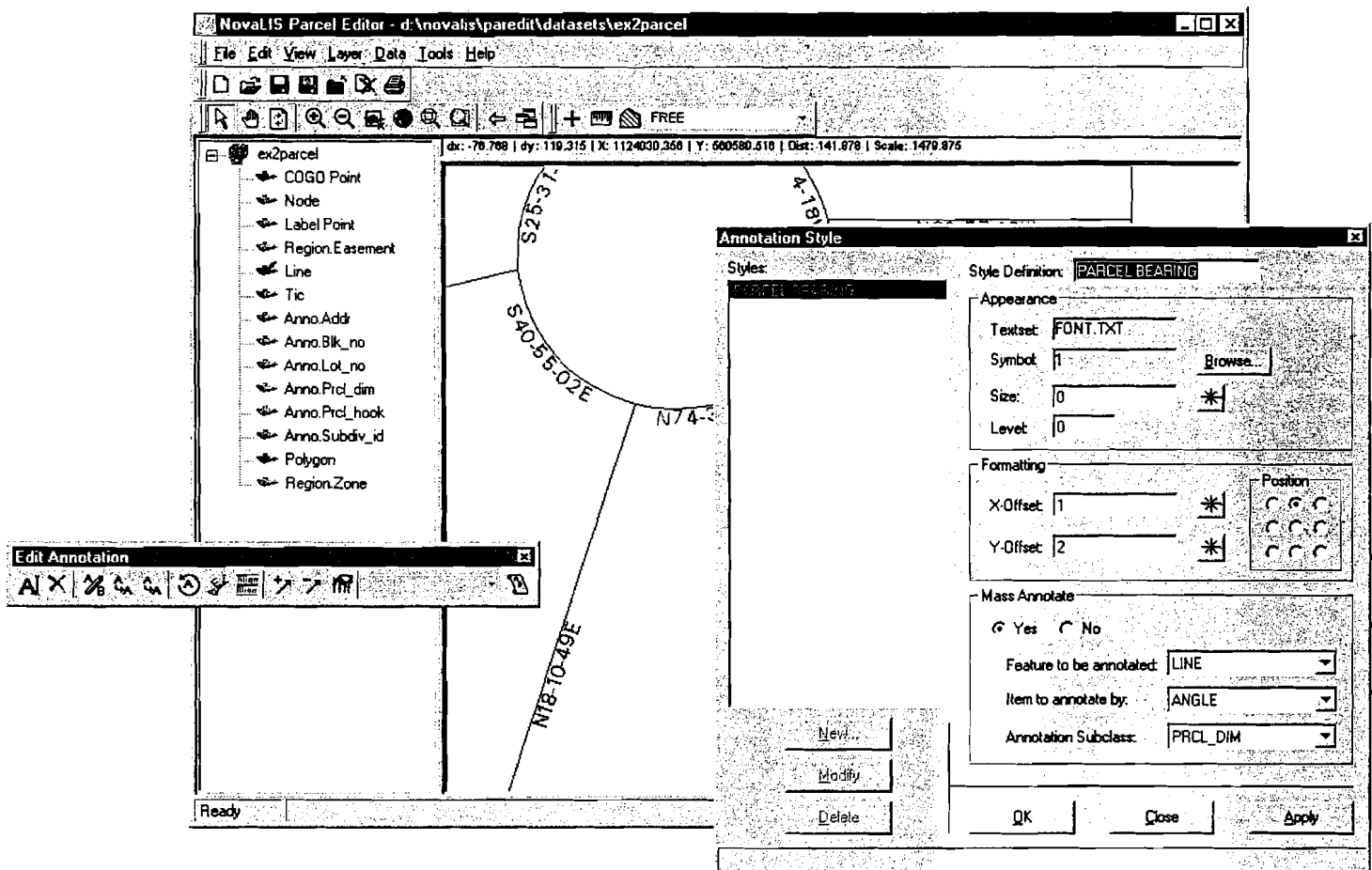
Editing Functions

Parcel Editor provides the functionality to enter and edit TIC, line, point, polygon, and region features. These editing functions are provided as feature-editing toolbars. Toolbars exist for deleting, creating, merging, and editing lines, polygons, and regions.
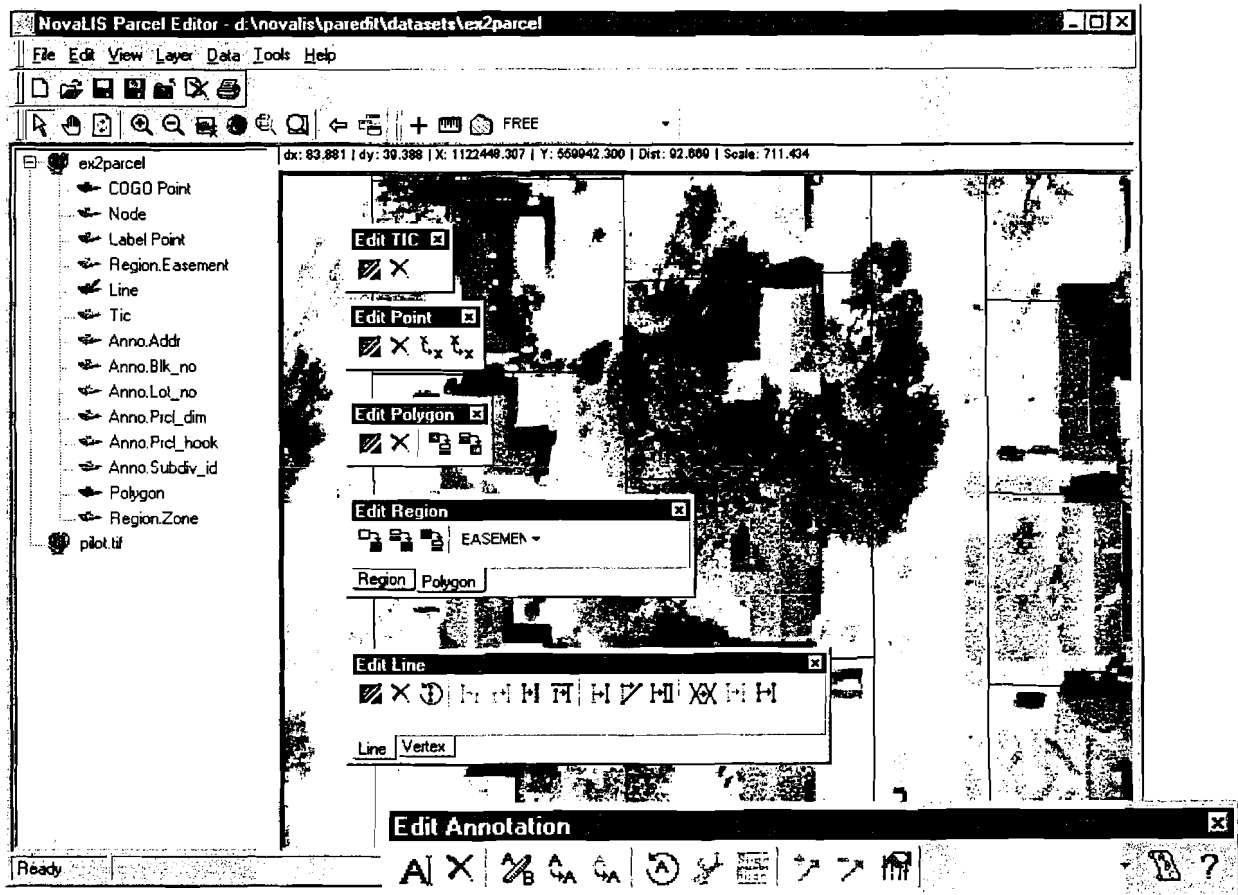
Parcel Editor allows for the setting of all necessary edit controls, including tolerances, snapping, and arc/node snapping in an environment that can be stored and recalled. This means system tolerances only have to be set once, yet they can be easily updated to accommodate a variety of conditions.

In addition, when you perform parcel maintenance, many different operations are used to complete a task. Custom toolbars can be used to group commands together for simplicity and proficiency.

Parcel Editor toolbars are customizable, enabling you to configure them to your needs.
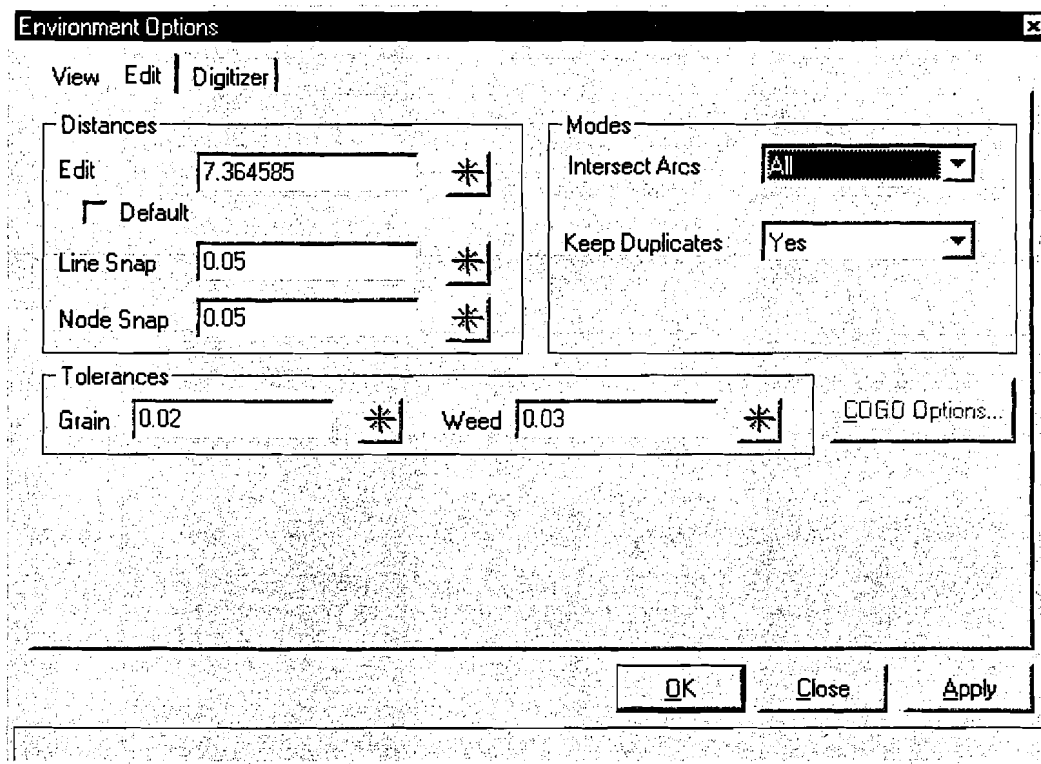
Custom User Tool Support

Maximizing software and system efficiency is important to any production-based company or institution.
The Parcel Editor macro functionality supports both VBA and AML and provides easy-to-use tools that allow you to write or edit macros, and integrate them into the Parcel Editor interface. The tools include:

VBA Editor – used to edit or create a new VBA macro
AML Editor – used to edit or create a new AML macro
AML Script Integrator – used to plug an AML into a Parcel Editor Macro (PEM) file for execution within Parcel Editor
Tool Manager – used to add, modify or delete the configuration (ie. tool name, PEM file, name for tool icon) for custom macros, also called tools, within Parcel Editor

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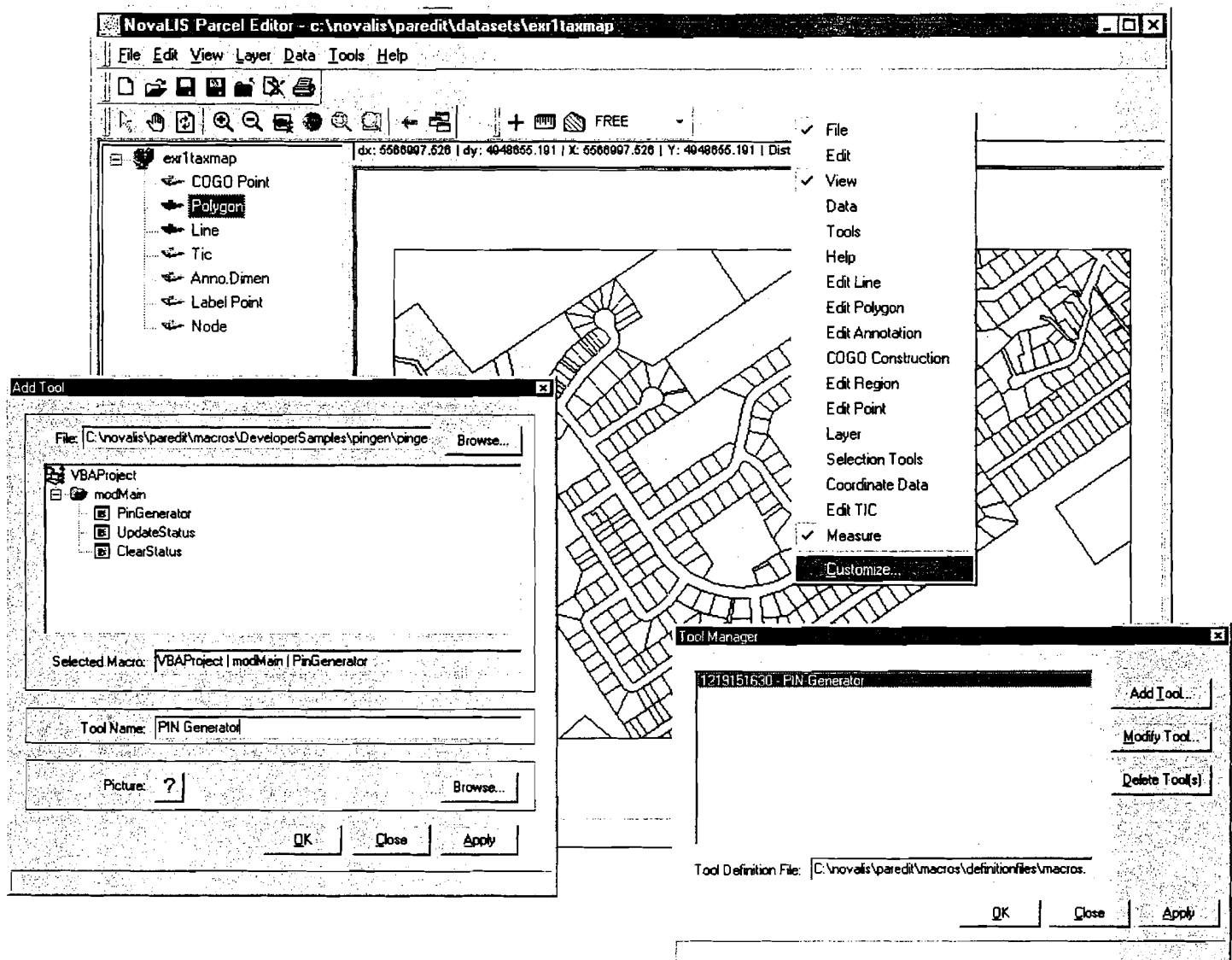
Once the user tool has been created, it can now be added to a new or existing toolbar by right-clicking anywhere on the Parcel Editor toolbar area. Select Customize from the menu. In the *Customize* dialog box.

The ability to run macros gives users the flexibility to incorporate additional functionality within Parcel Editor. This may be important to organizations that have specific criteria to meet, or have existing tools for maintaining their land records maps.

New Features

Parcel Editor's new features include operability on ESRI's **ArcInfo 8** Workstation platform and tools for custom macro development. The ability of **Parcel Editor 3.4** to operate on ArcInfo 8 Workstation provides a consistent transition for users as they migrate to ArcInfo 8. The Parcel Editor 3.4 provides more flexibility to our customers and assist business partners in moving their projects forward into an integrated production environment.

Enhancements range from an improved GATE interface to adding an APPLY button to our Query Builder interface.

"We have invested considerable time and effort in training our map maintenance staff. The ability to migrate to ArcInfo 8 without changing these processes is extremely important to us," says Phillip Veazey, GIS Coordinator for Escambia County, Florida.
"Support for custom macro development is also very important to our organization," adds Veazey. "Most ArcInfo users have accumulated large libraries of their own AML tools which can now be used within the Parcel Editor Environment", he said.

Parcel Editor also includes support for VBA scripting which enables users to customize Parcel Editor using the same VB tools as ArcMap.

Additional enhancements include:

- Access to public USERTOOLS;
- Expanded command line functionality to run Parcel Editor from other applications;
- Support for background data display of SDE layers running on DB2 and Sqlserver databases;
- New APPLY button to the Query Builder;
- MapExtent preserved when switching between Background and Foreground coverages;
- New ini settings to allow the user to specify custom $amlpath or $menupath settings;
- New Nselect function added to the Selection toolbar.

In addition, NovaLIS is now offering to its users a service for uploading and downloading custom AML and/or VBA scripts. Custom tools can now be shared.

Arc8 Migration

Parcel Editor 3.4 is also designed to provide a consistent transition for users as they migrate to ArcMap.

- The Parcel Editor user interface is ODE based, and therefore very similar to the Arc 8.0 interface
- Parcel Editor uses the ActiveBar - ActiveX control also used by ArcMap, making the user interface customization identical to ArcMap.
- The VBA scripting environment will allow users to write new tools that will easily migrate to a future ArcMap based Parcel Editor.

NovaLIS will help users make the transition to ArcMap through future Parcel Editor upgrades, so that their map maintenance processes will change as little as possible. A prototype Parcel Editor "8" running on ArcMap has been developed and was shown at the San Diego User's conference. This prototype includes customization of the ArcMap user interface to match the current Parcel Editor user interface, integration of the COGO spreadsheet plus improved split and merge wizards that take advantage of the new ArcMap components. We are working with Leica to integrate ArcSurvey. We are also working with ESRI's development team to help define the new Parcel Geodatabase Model. Parcel Editor will fully support this model.

The next generation of parcel management software

NovaLIS Technologies is working with ESRI to provide organizations that maintain digital maps the best map maintenance solution on the market. ESRI's ArcGIS 8.1 using GeoDatabase technology, combined with NovaLIS Technologies' Parcel Editor 8.1 software, will provide mapping professionals with a complete parcel mapping solution.

"We need to provide an easy, user friendly, step-by-step process for the mappers in our County," says Karen Isley, Information Systems Consultant to Mecklenburg County. "We believe Parcel Editor 8.1 will give us the best combination of core functionality, customized tools and workflow capabilities to meet our diverse requirements."

The steps required to migrate from current methods of maintaining digital maps to those used to manage data within a GeoDatabase are different for each organization. Parcel Editor will ease this transition by enabling mapping professionals to continue using tools they are familiar with, such as the COGO spreadsheet which supports the new database model.

NovaLIS Technologies' Parcel Editor 8.1 features a series of highly customizable Workflow Palettes to aid in the productivity of property and street centerline maintenance in the ESRI GeoDatabase. Other planned features for the release include parcel split, parcel merge, subdivision entry, snake attribution, and support for addressing. The software has a Workflow Palette Manager that integrates mapping functions customized by NovaLIS, user defined tools, and off-the-shelf functions in ArcMap to build business process menus for end users.

Parcel Editor 8.1 will also include a number of default Workflow Panels. These panels provide specific functions to mapping professionals, and can be added to customized Workflow Palettes. These palettes can optionally be configured and then locked down by an administrator to ensure that all mappers within the organization update maps by the same method.

Parcel Editor 8.1 is scheduled for release in the second quarter of 2002. Current users with paid-up support and maintenance will receive the next release for free under their agreement. NovaLIS Technologies is scheduled to release definitive parcel maintenance solution for ESRI's GeoDatabase in Q3 – 2002. NovaLIS is working with ESRI to provide organizations that maintain digital maps the best map maintenance solution on the market. ESRI's ArcGIS 8.1 using GeoDatabase technology, combined with NovaLIS Technologies' Parcel Editor 8.1 software, will provide mapping professionals with the most advanced parcel mapping solution.
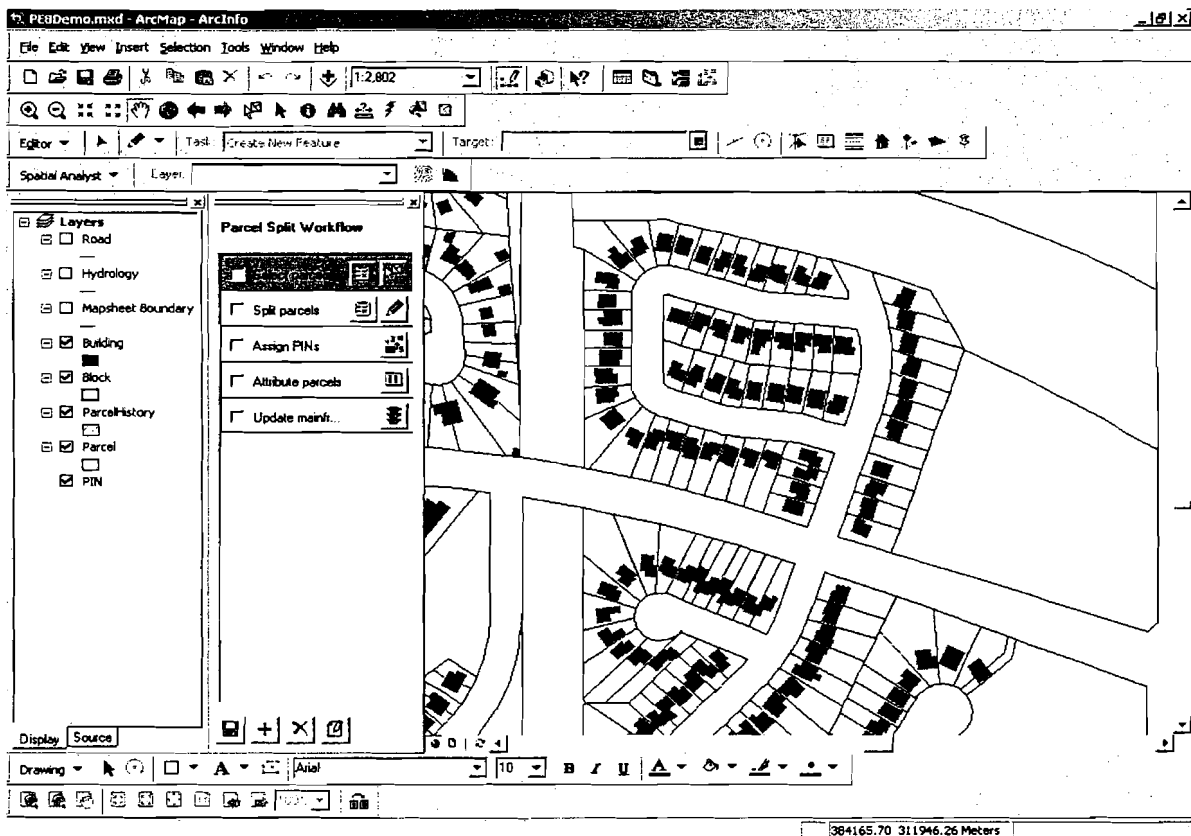

Parcel Editor 8.1 Prototype Viewer

Customer References

NovaLIS Technologies has been providing land records management solutions for nearly a decade. Our products have been and are currently being implemented throughout North America. There are presently more than 100 installations of the NovaLIS product solutions in the United States, in Canada, and Worldwide.

NovaLIS Software Client Install Base

NovaLIS is proud of the extensive list of clients worldwide who are utilizing the NovaLIS suite of land records management products.

United States

VA	City of Danville County of Fairfax Henrico County Prince William County Government	NC	Cleveland County County of Brunswick Mecklenburg County Rockingham County
CA	Calaveras Council of Governments City of Burbank City of Rancho Cucamonga City of San Bernardino County of Yolo Mendocino County Assessor Calaveras Council of Governments City of Burbank City of Rancho Cucamonga City of San Bernardino County of Yolo Mendocino County Assessor	FL	Volusia County County of Santa Rosa City of New Port Richey Collier County Property Appraiser Escambia County Seminole County Property Appraiser St. John's County GIS Program
CO	County of Bloomfield Otero County	GA	Columbia County County of Athens-Clarke Gwinnett County Fulton County Columbus County
MO	Boone County City of Liberty	MA	City of Worcester Town of Nantucket Town of Needham
IA	Johnson County Linn County	ID	City of Rexburg Madison County Assessor

NY	Delaware County Dutchess County Fulton County Oswego County Real Property Tax Service Putnam County Schohaire County Seneca Nation of Indians Town of Amherst Town of Yorktown Ulster County	OH	Athens County GIS Butler County City of Columbus Clermont County Auditor's Office Lake County Lucas County Auditors Office Mahoning County Miami County Ross County GIS Trumball County Wood County Auditor's Office
LA	Vermom Meyer	IN	Evansville Area Plan Commission
CT	Town of Waterford	WI	Bad River Band of Lake Superior Chippewa Indians
AL	Baldwin County	AK	Kenai Peninsula Borough
NJ	Huntington County	OK	Tulsa County
MD	Harford County Government	RI	Town of South Kingstown
MI	Wayne County	SC	Dorchester County
MN	City of Roseville	TN	Nashville and Davidson County
WA	Clark County	TX	Midland Central App. Dist.

Canada

AB	City of Calgary City of Leduc	ON	City of Oshawa Region of York
NWT	Natural Resources Canada	PEI	City of Summerside
BC	The Corp of The District of North Vancouver Vancouver Port Authority	YK	Indian Affairs & Northern Development
NS	Cape Breton Regional Municipality (CBRM) Municipality of the County of Kings	SK	Saskatchewan Municipal Affairs Saskatchewan Property Management Corporation

Australia

NSW	Leichhardt Municipal Council Shoalhaven City Council	QLD	Caloundra City Council

United Kingdom

UK	Northern Ireland

Product upgrade support

We provide a series of scripts and documents to support upgrades of our products to help in the migration to new release. These take the following form:

- Database scripts to update data model changes
- Install shield which will take install/uninstall differences under consideration
- Release notes identifying new and modified functionality

Release notes will contain the following headings and will include references to 3rd party software where appropriate:

- What's new?
- Current limitations
- Fixed problems
- Required NSD changes
- Required database changes
- Shell developer notes
- Frequently asked questions
- Obtaining technical support
- Suggestions for improving performance
- Troubleshooting
- Known problems
- Incompatibilities with other versions
- Last-minute notes

An install guide is provided with descriptions of pre-requisites and known problems with the following headings and will include references to 3rd party software where appropriate:

- Notes on installation
- Before you install
- To install (client install)
- Environment setup
- Debugging installation problems
- Obtaining technical support

To determine new functionality requirements to include in future releases, we use a tracking system to log enhancements and/or defects. This information is received through multiple sources from marketing, development, products and clients through project activities, BETA testing and technical support. We also use (in certain circumstances), customer surveys to prioritize new functionality. User group meetings act as a focus for determining new functionality and priorities.

Training

Introduction to Parcel Editor training

Overview

Introduction to Parcel Editor provides the concepts and hands-on experience needed to maintain a land records map. The course covers introductory GIS concepts in addition to parcel maintenance tools. Participants are actively engaged in the learning due to the project-oriented approach. Participants learn about bringing data into Parcel Editor, using COGO, spatial editing, The Spatial Adjustment Wizard (SAW), maintaining GIS integrity, attribute update, annotation tools, data output and adding AML or VBA user tools. Each of these procedures can be operated with ease following training to keep an agency's mapping investment current.

Over the 3-day course period you will learn Parcel Editor functionality through lecture, demonstration and hands-on exercises, including a comprehensive "project" to complete the course. You will take your detailed manual home for reference purposes.

Objective
The objective of the Introduction to Parcel Editor course is to enable users to confidently use Parcel Editor. Lectures will be interspersed with exercises and trainees will have their own computer to use to reinforce the material being presented. Real life examples will be used to display training concepts.

Outline

Topics covered include:

- Introduction to Parcel Editor
- Bringing Data into Parcel Editor
- COGO Data Entry
- COGO Construction Tools
- The Spatial Adjustment Wizard (SAW)
- Maintaining GIS Integrity
- Editing Features
- Working with Attributes
- Working with Annotation
- MAXimizing Productivity

- Appendix 1: Basic Survey Principles
- Appendix 2: Parcel Editor Configuration
- Newington Project

Advanced Parcel Editor training

Overview

The Advanced Parcel Editor Course offers the knowledge and hands-on experience needed to become an advanced Parcel Editor user. This course focuses on the concepts and methods used to configure the Parcel Editor environment. Participants take an in-depth look at data quality issues and how to make appropriate decisions when using the Spatial Adjustment Wizard (SAW).

This course is designed for users of Parcel Editor and ArcInfo, who need to know how to best use Parcel Editor to handle parcel maintenance issues.

The course adopts a problem-solving approach. Lectures are interspersed with exercises and workshops. Through the exercises, participants first become familiar with recommended procedures, and then use their problem-solving skills to apply these techniques to realistic situations.

Objective

The objective of the Advanced Parcel Editor Course is to enable system administrators and ArcInfo advanced users to configure the Parcel Editor environment and make sound decisions when using the Spatial Adjustment Wizard.

Outline

Section 1:   Parcel Editor Configuration
     Exercise 1:   Creating a Parcel Editor Template
Section 2:   SAW Advanced Concepts
     Exercise 2:   Adjusting the parcel fabric to GPS points
Section 3:   SAW Scenarios & Solutions
     Exercise 3:   Adjusting a COGO Plat and CAD file
Exercise 4:   Adjusting multiple subdivisions using a control network

Section 1: Parcel Editor Configuration

- What Is a Template?
- Template Configuration
- Customizing Layout Definition Files
- Log File Maintenance
- Adjustment Reports
- Working with Initialization Files
- Customizing Parcel Editor
- System Variables
- Environment Variables
- File Control Options

Section 2: SAW Advanced Concepts

- The SAW Process
- SAW Preparation
- Linear Adjustment
- Mean Adjustment
- Bivariate Adjustment
- Link Definition
- Adjustment Boundary Definition & Options
- Merging Hints

Section 3: SAW Scenarios & Solutions

The SAW Scenarios and Solutions section presents different scenarios in which the SAW could be used. As you go through this section, think through the SAW process and present your solution for the scenario using the worksheet provided. This section is designed to promote discussion among the participants. Consideration should be given to data quality, the type of adjustment, primary and secondary coverages, the adjustment boundary and merging.