

Using New Technology Clay County, Missouri

Presentation

*“Increasing the Efficiency of Field Appraisers
Using Mobile Computing Technology”*

For

Integrating GIS & CAMA Conference

February 19-22, 2006

Orlando, FL

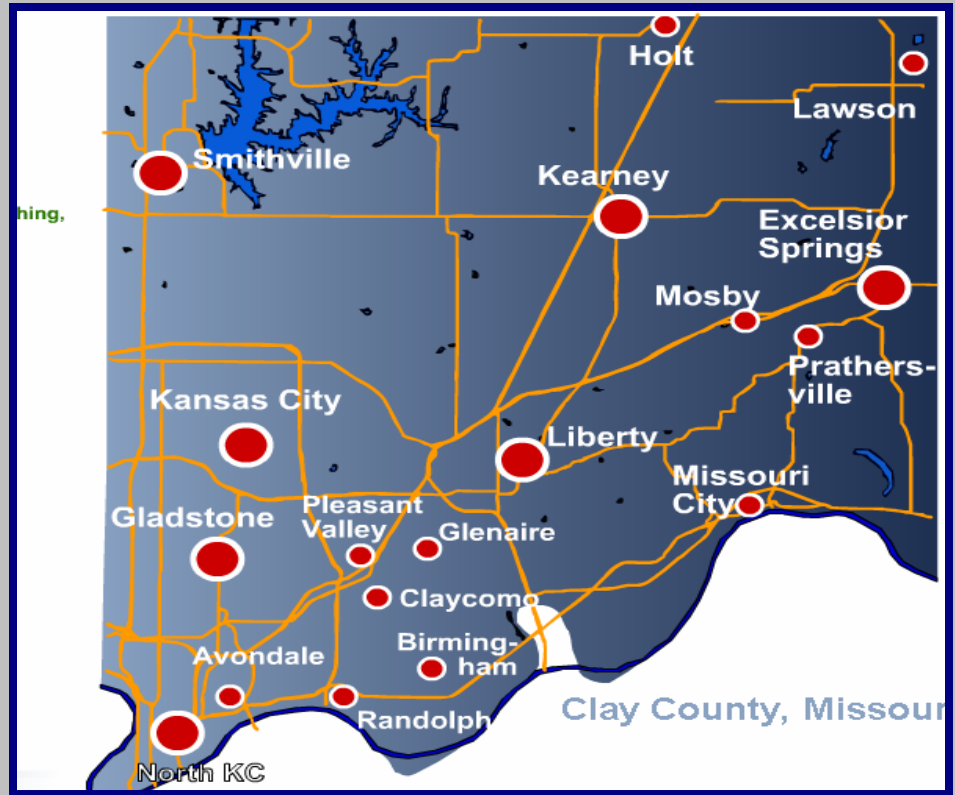
by

Rick Stuart, CAE

TEAM Consulting

Clay County Missouri

- “North of the River” of Kansas City
- Land Area 396 Sq Miles
- Population 200,000
- City density transitions to Suburban and Agriculture on north
- Cathy Rinehart, Elected Assessor
- Tax Base of \$3 Billion
- Value adjusted on odd number years by MO Statute
- Improved parcels of 85,000
- Staff of 23



CAMA Software

- Installation in 2003
- Conversion from internally developed COBOL system in 2004
- Some Conversion issue's with Sketch data and CAMA data
- Field Collection module available

Appraisal Data Review Project

- Field Verification of Residential Parcels property characteristics, sketch and out buildings
- County Appraisal staff participated in mobile field collection process with 40,000 parcels review in 3 months. The remaining parcels were street viewed without property characteristics checked.
- Discovered enough new and omitted properties to cover the cost two times over

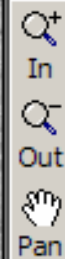
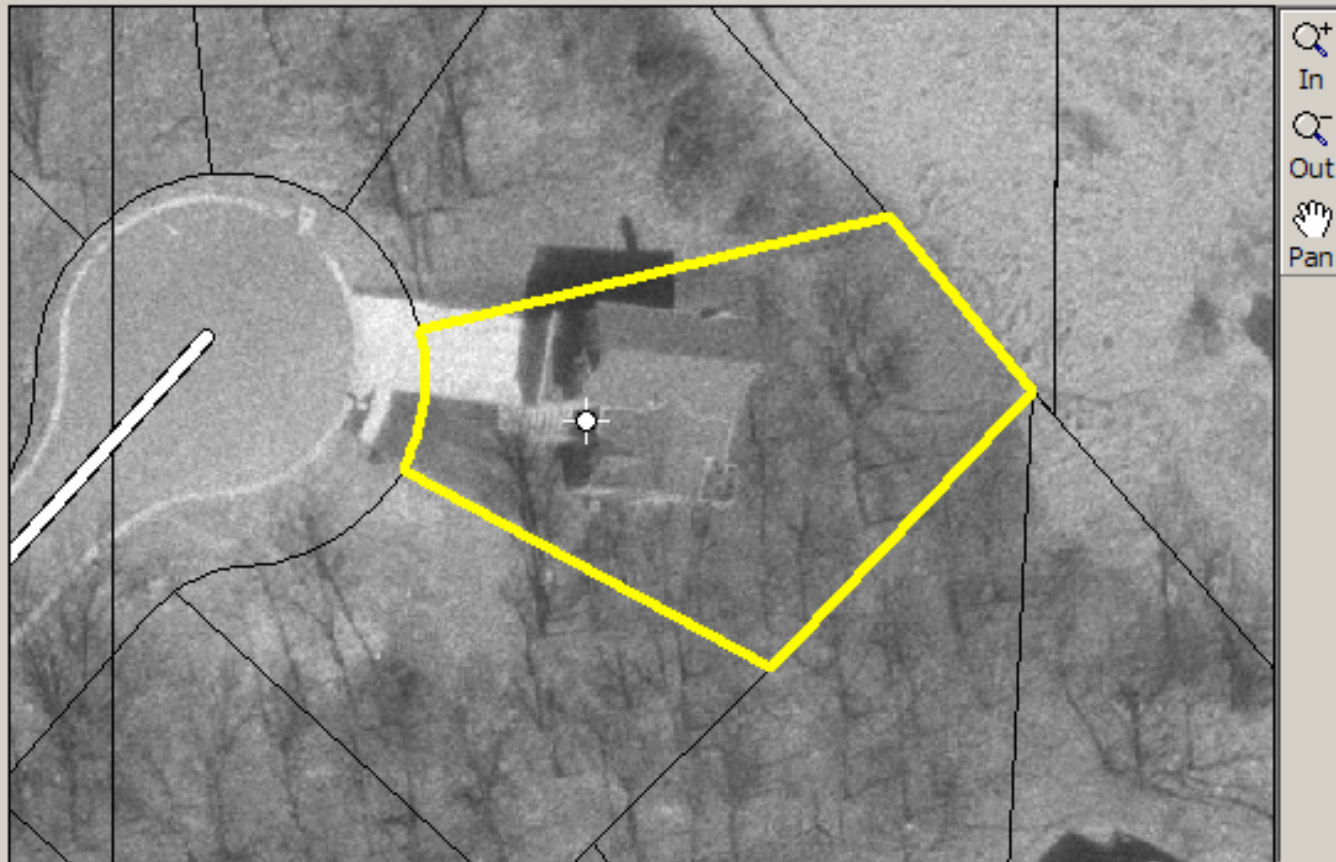
Mobile Field Software Features

- Digital street-view image capture/collection, address verification, and pinpoint structure locations.

X,Y point is recorded for each structure

Photo Wizard

Click the map to create an X,Y point for this image.



<< Back

Next >>

Finish

Cancel

Street Address is verified or corrected


Photo Wizard

Please verify the structure address for this image.

| Number: | Sfx: | Dir: | Street: | Type: | Dir: |
|---------|------|------|----------|-------|------|
| 11907 | | N | CAMPBELL | ST | |
| 11907 | | N | CAMPBELL | ST | |

◀ ▶

| SAU Type: | SAU: | City: | Zip: |
|-----------|------|-------|------|
| | | | |
| | | | |

 [Click to set common street name values.](#)

<< Back Next >> Finish Cancel

Field Process

Historical Manual Process

- Supervisor created list of parcels to review
- Printed paper map and routing
- Printed property record card
- Manual data entry of data into CAMA system

Mobile Field Software Features

- Take existing street view photos, CAMA data, GIS shape files and orthophotography imagery into the field. Shape files such as parcel layers, street centerlines and neighborhood boundaries.

Field Appraiser with table PC



Appraiser creates List of Parcels to Review

Mobile Office 1.00.0007

File View GPS Options Settings

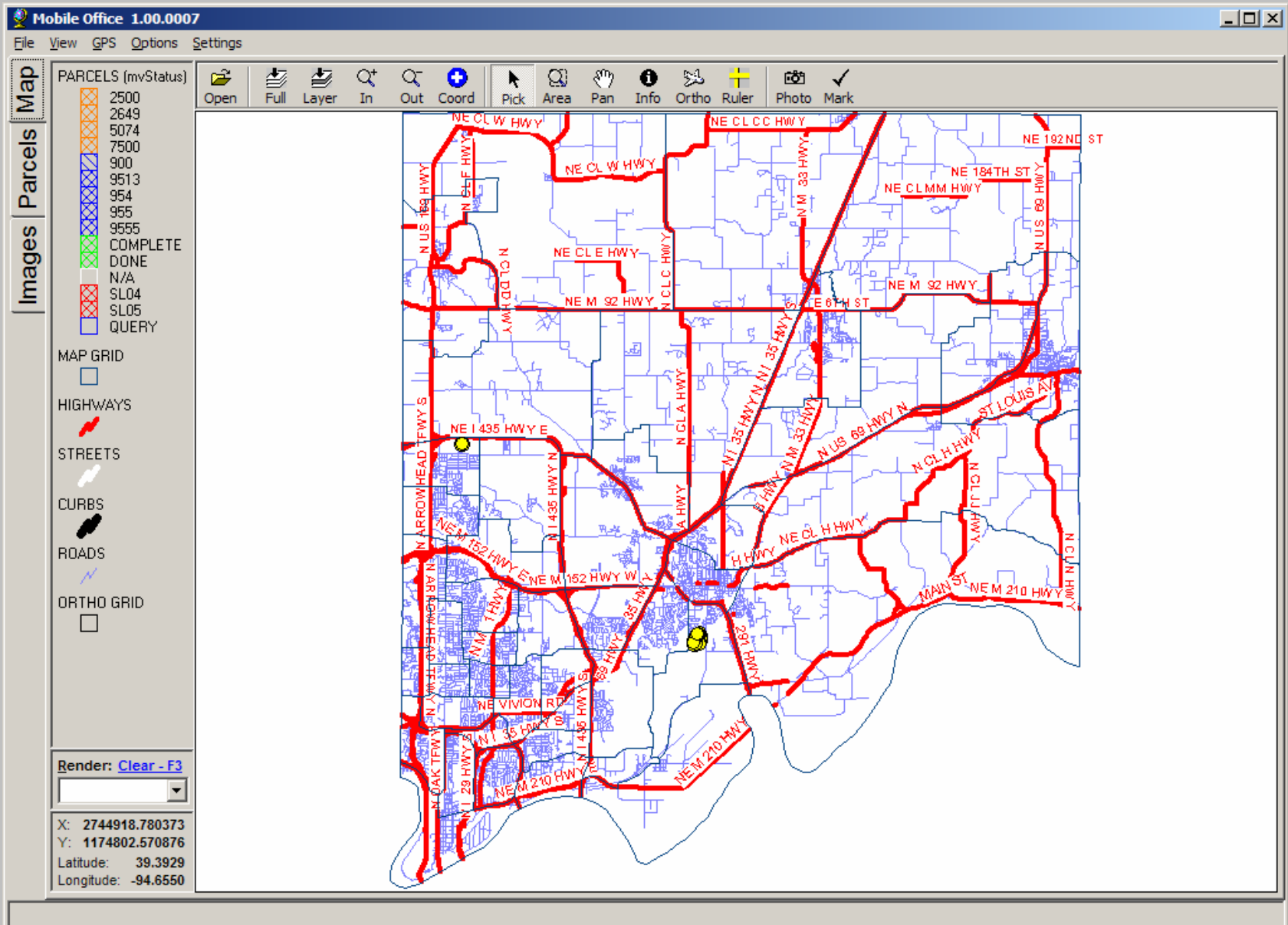
Map Photo Mark Prev Next Parcel: Go

| Parcel | Address | Review | Neighbor | Condition | Impr Value | MV Map | Sale Date | Sale Price | Zip |
|----------------|----------------------|----------|----------|-----------|----------------|--------|------------|--------------|-----|
| 09614000700200 | 001004 WNE 119TH ST | 900 | 2483 | | 30\$122,600.00 | Map020 | 03/01/2002 | \$163,000.00 | |
| 09614000700800 | 011907 W CAMPBELL ST | 900 | 2483 | | 30\$129,300.00 | Map020 | | | |
| 09614000701200 | 011904 W CAMPBELL ST | 7500 | 2483 | | 30\$161,400.00 | Map020 | 07/08/2004 | \$178,950.00 | |
| 09614000701300 | 011902 W CAMPBELL ST | 7500 | 2483 | | 30\$130,700.00 | Map020 | 12/01/2003 | \$165,650.00 | |
| 09614000701400 | 011900 W CAMPBELL ST | 7500 | 2483 | | 30\$166,500.00 | Map020 | 07/30/2004 | \$181,450.00 | |
| 10919000601200 | 009741 W ASH AVE | COMPLETE | 2474 | | 30\$166,500.00 | Map042 | 07/01/2001 | \$175,000.00 | |
| 15409000801100 | 001773 WSHANNON DR | COMPLETE | 4059 | | 30\$110,300.00 | Map037 | 03/26/2004 | \$154,900.00 | |
| 15409000801200 | 001769 WSHANNON DR | COMPLETE | 4059 | | 30\$109,200.00 | Map037 | | | |
| 15409000801400 | 001761 WSHANNON DR | COMPLETE | 4059 | | 30\$118,400.00 | Map037 | 04/01/2002 | \$149,000.00 | |
| 15409000801700 | 001749 WSHANNON DR | COMPLETE | 4059 | | 30\$118,100.00 | Map037 | | | |
| 15409000802600 | 001779 WBRIDGET PL | 900 | 4059 | | 30\$114,000.00 | Map037 | 12/01/2002 | \$190,000.00 | |
| 15409000802800 | 000716 WHOLT DR | SL04 | 4059 | | 30\$144,500.00 | Map037 | 07/12/2004 | \$189,900.00 | |
| 15409000803100 | 000711 WJOSEPH ST | SL04 | 4059 | | 30\$133,300.00 | Map037 | 06/25/2004 | \$196,000.00 | |
| 15409000900100 | 001750 WBRIDGET PL | COMPLETE | 4059 | | 30\$135,000.00 | Map037 | 08/11/2005 | \$0.00 | |
| 15409000900200 | 001774 WSHANNON DR | SL04 | 4059 | | 30\$131,200.00 | Map037 | 04/29/2004 | \$189,900.00 | |
| 15413000101600 | 001800 WSHANNON DR | 900 | 4059 | | 30\$168,300.00 | Map037 | 03/01/2000 | \$153,700.00 | |
| 15413000101700 | 001804 WSHANNON DR | 954 | 4059 | | 30\$171,700.00 | Map037 | 03/17/2004 | \$240,325.00 | |
| 15413000101800 | 001808 WSHANNON DR | 954 | 4059 | | 30\$206,100.00 | Map037 | 02/27/2004 | \$255,389.00 | |
| 15413000101900 | 001812 WSHANNON DR | DONE | 4059 | | 30\$206,600.00 | Map037 | 03/07/2005 | \$252,900.00 | |
| 15413000102000 | 001816 WSHANNON DR | 954 | 4059 | | 30\$160,000.00 | Map037 | 05/27/2004 | \$239,900.00 | |
| 15413000102100 | 001820 WSHANNON DR | 954 | 4059 | | 30\$188,300.00 | Map037 | 08/25/2004 | \$239,900.00 | |
| 15413000102200 | 001824 WSHANNON DR | DONE | 4059 | | 30\$173,000.00 | Map037 | 07/22/2004 | \$248,123.00 | |
| 15413000102300 | 001828 WSHANNON DR | 954 | 4059 | | 30 \$0.00 | Map037 | 03/31/2005 | \$247,400.00 | |
| 15413000102400 | 001832 WSHANNON DR | 954 | 4059 | | 30\$169,100.00 | Map037 | 12/01/2004 | \$249,651.00 | |
| 15413000102500 | 001836 WSHANNON DR | 955 | 4059 | | 30 \$0.00 | Map037 | | | |
| 15413000102600 | 000610 WLINDA CT | 955 | 4059 | | 30 \$0.00 | Map037 | | | |
| 15413000102700 | 000606 WLINDA CT | 955 | 4059 | | 30 \$0.00 | Map037 | 10/18/2004 | \$0.00 | |

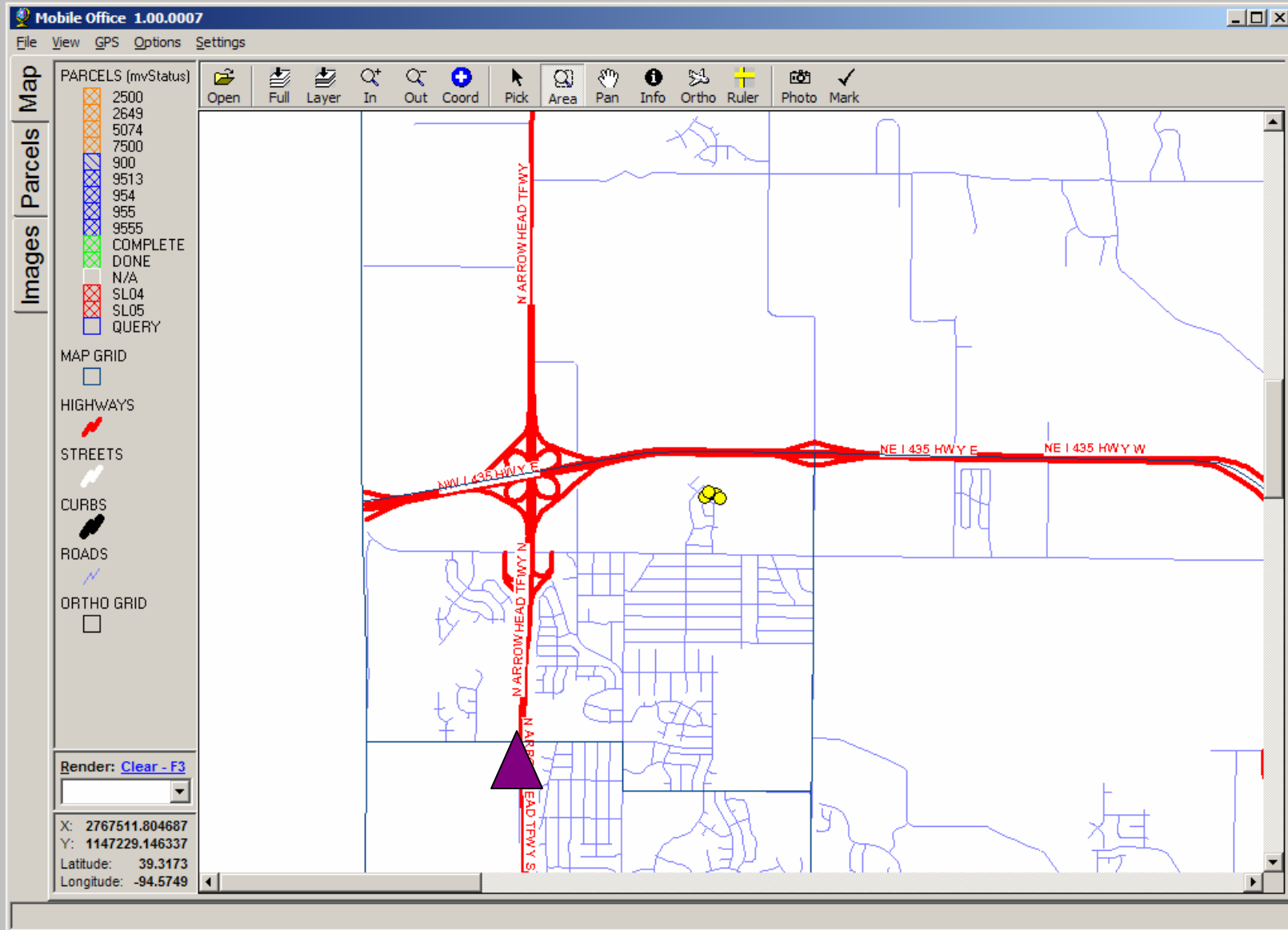
Mobile Field Software Features

- Map routing tool to plot location of vehicle and location of parcel.

Parcels to review highlighted on GIS



Map rotates to GPS position of Appraiser



Mobile Field Software Features

- In field analysis of property characteristics and identification of outliers.

Review parcels are colored by status

The screenshot displays the 'Mobile Office 1.00.0007' interface. The main map area shows a grid of parcels, each labeled with a unique ID. A legend on the left side, titled 'PARCELS (mvStatus)', lists various status codes and their corresponding colors and patterns: 2500 (orange cross-hatch), 2649 (orange diagonal lines), 5074 (orange diagonal lines), 7500 (orange diagonal lines), 900 (blue diagonal lines), 9513 (blue diagonal lines), 954 (blue diagonal lines), 955 (blue diagonal lines), 9555 (blue diagonal lines), COMPLETE (green diagonal lines), DONE (green diagonal lines), N/A (grey diagonal lines), SL04 (red diagonal lines), SL05 (red diagonal lines), and QUERY (blue diagonal lines). The map also shows 'MAP GRID', 'HIGHWAYS', 'STREETS', 'CURBS', 'ROADS', and 'ORTHO GRID' layers. A data popup window is open over parcel 09614000700800, displaying its address as '011907 IN CAMPBELL ST', a review code of '900', and a total value of '\$158,900.00'. The map includes a toolbar with various navigation and tool icons, and a status bar at the bottom showing coordinates: X: 2769993.227998, Y: 1144065.973284, Latitude: 39.3086, and Longitude: -94.5662.

Mobile Office 1.00.0007

File View GPS Options Settings

PARCELS (mvStatus)

- 2500
- 2649
- 5074
- 7500
- 900
- 9513
- 954
- 955
- 9555
- COMPLETE
- DONE
- N/A
- SL04
- SL05
- QUERY

MAP GRID

HIGHWAYS

STREETS

CURBS

ROADS

ORTHO GRID

09604 (Image)

09603 (Image)

Render: [Clear - F3](#)

X: 2769993.227998
Y: 1144065.973284
Latitude: 39.3086
Longitude: -94.5662

Parcel: 09614000700800
Address: 011907 IN CAMPBELL ST
Review Code: 900
Total Value: \$158,900.00


Historical street-view photo's and data

Mobile Office 1.00.0007

File Images View GPS Options Settings

| Image Folder | Image File | Sketch | Detail | Document | Frame |
|-----------------|--------------|--------|--------|----------|-------|
| 20041116 | OG144653.jpg | No | No | No | |
| 096\140\007\008 | 00Sk.jpg | Yes | No | No | |

| Field | Value |
|---------------|---------------------------|
| Address | 011907 W CAMPBELL ST |
| Arch Type | |
| Base Area | 1315 |
| Baths | |
| Bedrooms | 3 |
| Book/Page | 3289-0327 |
| Bsmt Area | 870 |
| Bsmt Fin Area | 0 |
| Cadastral | 000E-0154 |
| City | |
| Condition | 30 |
| Ext Wall | 4 |
| Garage Area | 483 |
| Garage Stalls | |
| Garage Type | 2 |
| HVAC | 15 |
| Impr Value | \$129,300.00 |
| Land Value | \$29,600.00 |
| Legal | FAIRFIELD 2ND PLAT LT 82 |
| Lot Size | 003642X012377 |
| Mail Addr | 11907 N CAMPBELL ST |
| MV Map | Map020 |
| Name Code | 1009003 |
| Neighborhood | 2483 |
| Owner | THOMASSON, TROY A & TR... |
| Parcel | 09614000700800 |
| Permit # | 9752 |
| Permit Amt | 107460 |
| Permit Date | 10/01/2000 |
| Permit Desc | NEW RES |
| Quality | 35 |
| Remodel Date | |
| Review Code | 900 |
| Rng | 33 |
| Roof | 1 |
| Sale Date | |
| Sale Price | |
| Sale Year | |
| Sec | 23 |
| Sqft | 1315 |
| Style1 | 3 |
| Tax Code | 74-14-00-00-0000 |



09614000700800 11/16/2004

Review parcels are linked to CAMA system

TerraScan Fairtest County Assessor's Office Logon : DCLUCKEY

File Edit Find Order Tools Tables View Appraisal File Occupancy Data Contract File

| | | |
|--|--|--------------------------------|
| Date Created 10/04/10 | *** FAIRTEST COUNTY ASSESSOR'S OFFICE *** *** ASSESSMENT RECORD *** | Last Update 07/01/05 |
| Parcel # : 09614000700800 | Map Number : 09-614-00-07-008.00 | |
| Cadastral # : 000E-0154 | Neighborhood : 2483 | |
| Ownership Code : 1009003 | Tax District : 128 | |
| THOMASSON, TROY A & TRACT 1 | New Construct : | |
| 11907 N CAMPBELL ST | Prop Class : 2 RES | |
| KANSAS CITY, MO | RES | |
| Situs : 011907 N CAMPB | ize : 003642X012377 | |
| Legal : FAIRFIELD 2ND | | |
| Value Type | Land Value | Factor Assessed |
| Residential | 29,600 129,300 158,900 | 19% 30,190 |
| Commercial | | 32% |
| Agricultural | | 12% |
| Total Values | 29,600 129,300 158,900 | 0 30,190 |

Page 1 of 3

View: atr.vw Key:PARCEL # Window:1 Rec:8 (8)

TerraScan Find Utility

Parcel number to locate?

Field Appraiser can view and edit CAMA data

TerraScan Fairtest County Assessor's Office Logon : DCLUCKEY

File Edit Find Order Tools Tables View Comparables Exit

| | | |
|---|---|--|
| Date Created 01/04/2001 | *** FAIRTEST COUNTY ASSESSOR'S OFFICE *** RESIDENTIAL APPRAISAL FILE | *** Last Update 10/24/2005 |
| Parcel # : 09614000700800 Appraiser: Entered : | Zone: 1000 | Record # : 1 of 1 New Construct: Res: Comm: Ag : |
| THOMASSON, TROY A & TRACI L 11907 N CAMPBELL ST KANSAS CITY, MO | 64155- | Cost Approach : 173,200 Market Approach : Market Model Value : Final Estimate : 158,900 |
| Situs : 011907 N CAMPBELL ST Legal : FAIRFIELD 2ND PLAT LT 82 | | Map # : 09-614-00-07-008.00 Review Code: |
| NBHD Code : 2483 Lot Size : 63 x 128 Acres : Units/Lots : 29600 Method : UT | Topography: HIGH Street : PAVED Utilities : ALL Amenities : POS.ADJ. Amenities : NEG.ADJ. | Land Notes : # of Units : 29600 Unit value : 1 Adjustments : Lot Value : 29,600 |

Page 1 of 5

View: resident.vw Key:PARCEL # Window:1 Rec:8 (8)



09614000700800

Building Data

| | | | | | | | | | | |
|----------------|----|-----|-----------|------|------------|---------------|------------|-------------|-------------|-----|
| Condition Type | 30 | 1 | Base Area | 1315 | Total Area | 1315 | Foundation | 6 | Fixtures | 10 |
| Quality | 35 | 4 | Style 1 | 3 | 98% | Style 2 | 1 | 2% | Bedrooms | 3.0 |
| Arch Type | 4 | 70% | Roofing | 1 | 100% | HVAC 1 | 15 | 100% | Bathrooms | |
| Ext Wall 1 | 4 | 70% | HVAC 2 | | | Basement Area | 870 | Min Finish | Total Rms | 5.0 |
| Ext Wall 2 | 7 | 30% | | | | Rec Finish | 352 | Part Finish | Garage Type | 2 |
| | | | | | | | | | Garage Area | 483 |
| | | | | | | | | | # Of Stalls | |

Misc Table

| Code | Impr | Description | Year | Size | Cost | Depr% | Value |
|------|------|-------------------|------|------|---------|-------|-------|
| S2F | | SINGLE 2/S FIRE P | | 1 | 4330.13 | | 4330 |
| WOD | | WOOD DECK | | 160 | 16.57 | | 2650 |
| WOD | | WOOD DECK | | 120 | 18.12 | | 2175 |

| | |
|------------|------|
| Year Built | 2003 |
| Actual Age | 2 |
| Remod Year | |
| Remod Type | |
| Eff Age | 1 |
| Phys Depr | 1% |
| Func Depr | |
| Econ Depr | |
| Total Depr | 1% |


Lump Sums

Notes :

Sketch is verified or corrected

TerraScan Fairtest County Assessor's Office Logon : DCLUCKEY

File Edit Exit



reel #: 09614000700800

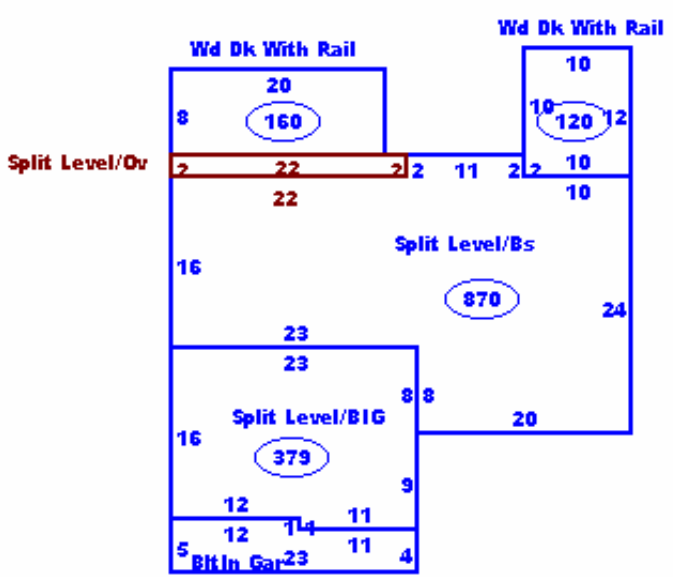


Diagram illustrating a property sketch with dimensions and area calculations. The sketch shows a central area labeled "Split Level/Bs" with an area of 870. To the left, there is a section labeled "Split Level/Ov" with an area of 160. Below that, there is a section labeled "Split Level/BIG" with an area of 379. The diagram includes various dimensions and labels such as "Wd Dk With Rail", "Bit In Gar", and "8 8".

Diagram Labels and Dimensions:

- Top Left: Wd Dk With Rail, 20, 8, 160 (circled)
- Top Right: Wd Dk With Rail, 10, 10, 120 (circled), 12
- Left Side: Split Level/Ov, 2, 22, 2, 2, 11, 2, 2, 10, 10
- Center: Split Level/Bs, 16, 24, 870 (circled)
- Bottom Left: Split Level/BIG, 23, 16, 379 (circled), 8, 8, 20
- Bottom: Bit In Gar, 12, 14, 11, 5, 12, 23, 11, 4

Origin Window [22]

New Photo's are collected from digital camera

Photo Wizard

Use your camera to capture your image(s) now. When you have taken your picture(s) confirm the new image frame number(s) from the camera.

First Frame Number: ◀ ▶

Number of Parcel Images: ◀ ▶

Image Filename Template: ▼

Parcel Image List (mark the Primary Image with a check):

| Frame | File | | ◀ | ▶ |
|---|--------------|--|---|---|
| <input checked="" type="checkbox"/> 419 | DSC00419.JPG | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

<< Back Next >> Finish Cancel

The completed activity is recorded

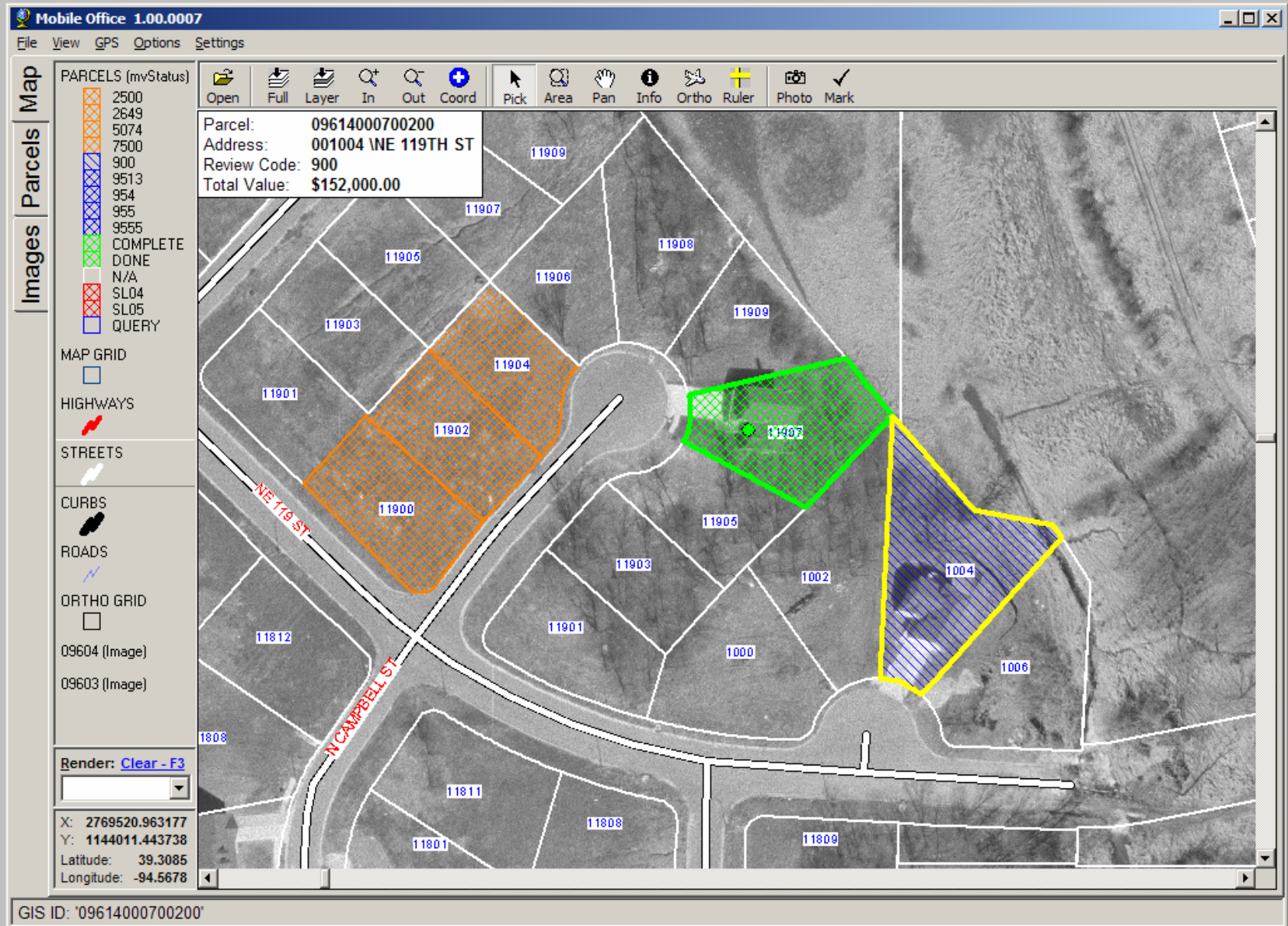
Production

Check any production items which apply then click OK to mark the parcel reviewed.

| Item | |
|--|--|
| <input type="checkbox"/> Occupied | |
| <input type="checkbox"/> Not Occupied | |
| <input checked="" type="checkbox"/> Measure | |
| <input type="checkbox"/> Misc BP | |
| <input type="checkbox"/> Sales | |
| <input type="checkbox"/> Review | |
| <input checked="" type="checkbox"/> Verified | |
| | |
| | |

Parcel Notes:

The completed parcel is colored green on the map



Synchronize Wizard uploads data into the CAMA system

Synchronize Wizard

Please specify the target Mobile Office image folder location.

Image Folder:

A production report tracks productivity

Production Totals

User: **MVSI** Total Parcel Count: **1**

Date: **February 2006**

| Item | Count |
|--------------|-------|
| Occupied | 0 |
| Not Occupied | 0 |
| Measure | 0 |
| Misc BP | 0 |
| Sales | 0 |
| Review | 1 |
| Verified | 0 |

February 2006

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|-----|-----|-----|-----|-----|-----|-----|
| 29 | 30 | 31 | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Microsoft Internet Explorer

005\MobileO\production.htm

| Date | User | Occupied | Not Occupied | Measure | Misc BP | Sales | Review | Verified |
|--------------|-------|----------|--------------|----------|----------|----------|----------|----------|
| 02/01/2006 | ADMIN | 2 | 0 | 3 | 0 | 0 | 1 | 4 |
| 02/02/2006 | ADMIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02/09/2006 | ADMIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 2 | 0 | 3 | 0 | 0 | 1 | 4 |

Done My Computer

Conclusion

- Appraisal staff job satisfaction increased from use of technology, resulting skill level and less “paper work”.
- Appraisal staff more productive due to data:
 - Consistency
 - Accuracy
 - Timeliness
- Appraisal staff focused on valuation work – not data collection
- Substantial reduction in the amount of field work