



Asset Management on the Web - Where are we and where are we going?



Presented by:

Barry Davis P.Eng. -
Assistant Director
Engineering Public Works
- City of Burnaby

Dan Kaloutsky- Account
Manager – Hansen Canada

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

- Asset Life Cycle
 - Creation
 - Design and Construction
 - Management
 - Inventory, Service Requests, Operations, Maintenance
 - Renewal/Rehabilitation
 - Condition assessment, Predictive modeling, Capital Improvement Plan



Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

Sanitary and Combined Sewer System
Drainage and Waterways
Roads, Sidewalks and Street Furniture
Water Mains, Hydrants and Fittings
City Buildings and Rental Properties
Parks and Golf Courses
Fleet Vehicles and Minor Equipment
Shop and Sign Stores Inventory



Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

The application Burnaby uses to record assets, their condition and the maintenance recorded against them, is Hansen.

Each infrastructure asset has a unique key value in its Hansen component table.

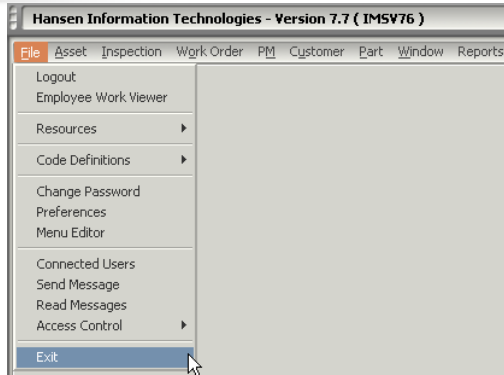
This value is also recorded in the attribute table that represents that specific feature in ESRI ArcGIS. This allows the link that connects the GIS spatial and Hansen tabular information



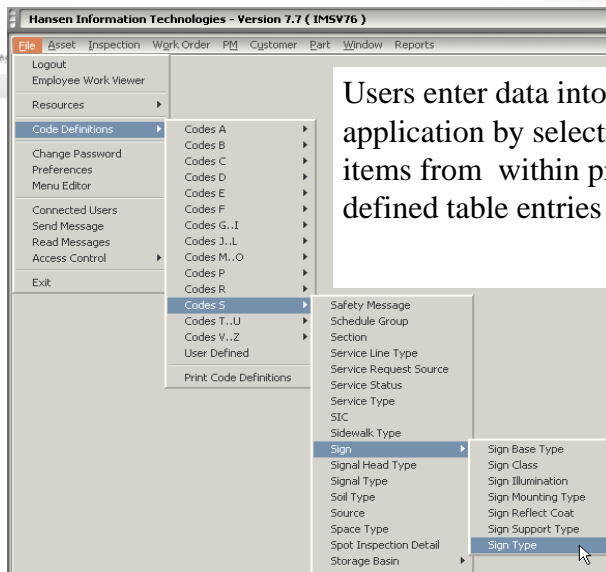
Asset Management - Where are We?



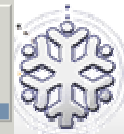
Web based Solutions to Infrastructure and Asset Management



The Hansen application provides users with a series of menu selection items.



Users enter data into the application by selecting items from within pre-defined table entries



Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Inventory

Main ID: SMH CH001239 To: SMH CH001235 #

Address: 7943 16TH AV BURNABY BC

Qualifier: 16TH AVE FROM LANE E/6TH ST EAST TO 4TH ST
O/S 3.4 METERS SOUTH OF NORTH PL (16TH AVE)

Address: 7943 16TH AV BURNABY BC

Area: GLENBROOK2 Parcel: BC -

Sub-area: X Coord:
District: Y Coord:
Loc: S Z Coord:
Map #: |

Location / Structural / Associated / Assets / Comments / Maint / Insp / Custom

An example of an asset tracked, is this Combined Sewer main.

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Inventory

Main ID: SMH CH001239 To: SMH CH001235 #

Address: 7943 16TH AV BURNABY BC

Main Line Type	IC	Dir From Ups		Joint Type	
Manufacturer		Dir From Dwn		Joint Length	2.400
Surface Cover	S	Ups Depth	0.000	Design Flow	0.00
Critical Rating		Dwn Depth	0.000	Friction Factor	0.000
Pipe Type	CONC	Ups Invert Elev	112.790	Ground Water Level	0.000
Pipe Shape	CIRC	Dwn Invert Elev	111.660	Incoming Mains	1
Diameter	375	Length	137.160		
Height	0	Slope	0.00824		

Location / Structural / Associated / Assets / Comments / Maint / Insp / Custom

The characteristics of the main, such as length slope and invert elevation are recorded .

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

Service Line	Diam	Distance	From	Lateral Address
CS006611	100	0.000	D	
CS006612	100	0.000	D	
CS006613	100	0.000	D	
CS006614	100	0.000	D	
CS006615	100	0.000	D	
CS006616	100	0.000	D	
CS006617	100	0.000	D	

Services that are connected to the main are referenced by association.

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

Work Order #	Activity	Act Type	Act Group	Initiated	Scheduled	Completed	S
237580	SMPC			04/05/2004	04/16/2004	04/13/2004	
291306	SMF			02/11/2004	02/12/2004	02/12/2004	
266428	SMPC			09/10/2003	10/16/2003	09/22/2003	
261867	SMF			08/13/2003	08/12/2003	08/18/2003	
244534	SMPC			04/03/2003	04/16/2003	04/09/2003	
238448	SMF			02/12/2003	02/12/2003	02/17/2003	
221838	SMPC			09/13/2002	10/16/2002	09/16/2002	
217746	SMF			08/14/2002	08/12/2002	08/16/2002	
201322	SMF			05/01/2002	05/01/2002	05/07/2002	
198356	SMPC			04/08/2002	04/16/2002	04/18/2002	
191550	SMF			02/14/2002	02/12/2002	02/15/2002	
170623	SMF			08/15/2001	08/13/2001	08/16/2001	
147525	SMPC			01/16/2001	04/16/2001	04/24/2001	

Maintenance both scheduled and demand, is recorded against an asset.

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

A screenshot of a web-based 'Vehicle Inventory' form. The form contains the following fields and values:

Vehicle ID	236	Transmission		Purchased	01/01/1992
Description	VAN SEWERS GRUMMAN	Engine	GGM74T	Warranty Expires	/ /
Address		Cylinders	0	Purchase Cost	45000.00
Vehicle Type	VAN/VUC	Axle		Depreciated Value	0000.00
Manufacturer	GMC	Tire Type		Expected Life	15
Model #	91 GRUMMAN VAN	Tire Size	8R19.5	Usage Unit	
Serial #		# Tires	6	Warranty Usage	0.00
Vehicle ID #	1GDKP32N7M3500106	Gross Vehicle Weight	6590	Avg Monthly Usag	0.00
Engine #		Size/Cargo Capacity		Total Usage	212488.00
Model Year	1991				
License	1971VM				
Driver Class					
Building	SEWR				
Building Level	FSWR				

Other assets such as vehicles are recorded with their specific attributes.

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

A screenshot of a web-based 'Asset Network/Cost Browser' interface. It shows a list of assets and their associated costs:

Asset	VEH	Unit ID	236	Description	VAN SEWERS GRUMMAN
Calculate Costs					
Charged / / To / /					
(+ 236 - \$32964.61					
EE000040 - \$0.00					
SE000931 - \$138.00					
SE001005 - \$0.00					
SE001007 - \$0.00					
SE001013 - \$0.00					
SE001032 - \$0.00					
SE001045 - \$0.00					
SE001049 - \$197.35					
SE001054 - \$0.00					
SE001059 - \$0.00					
SE001061 - \$0.00					
SE001098 - \$0.00					
SE001106 - \$0.00					
SE001108 - \$0.00					
SE001116 - \$0.00					
SE001124 - \$0.00					
SE002013 - \$0.00					

Asset Type: EQ
Unit ID: SE002037
Description: PUMP HYDRAULIC 3"
Area: SEWERS
Unit Type: PUMP

Costs are recorded against the maintenance of the asset and therefore a historical costing is available.

Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

The linking on a common key allows Burnaby to provide attribute data on our assets when users access the Burnaby WebMap

A user of the intranet version of Burnaby's WebMap turns on the layers that they wish displayed on their map.

The user can then select a specific feature they wish to get further information on and use the identify tool to get that information.

The resulting asset specific information displayed is data originally from the Hansen application linked by the common key



Asset Management - Where are We?



Web based Solutions to Infrastructure and Asset Management

The screenshot displays a web-based infrastructure management application. A map interface shows a network of pipes and streets, including 'HASTINGS ST' and 'SPRINGER AV'. A data window titled 'Infrastructure Data ...' is open, showing 'Drainage Main Attributes' for a specific asset. The attributes are as follows:

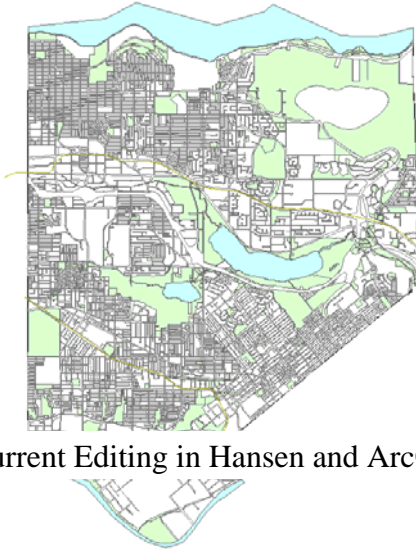
Drainage Main Attributes	
From:	DM005738
To:	DM005739
Area:	BEECHER
Slope:	15.25%
Diameter:	250mm
Design No.:	58073-2
Length:	42.5m
Material:	
Installed:	1959-01-01
Status:	III SERVICE

At the bottom of the data window, there are two buttons: 'Print Window' and 'Close Window'. The map background shows a network of pipes and streets, with a globe icon in the bottom right corner.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



Concurrent Editing in Hansen and ArcGIS



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

The ability to create or modify an asset in both the Hansen and ArcGIS application concurrently has been a goal.

Hansen teamed up with Marshall GIS and developed a set of tools that allow the user to create Hansen Assets from the GIS populating both sides with the necessary component key values for the required links.



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Hansen specific Arc extensions were created

New Edit tools were created to assist in the creation and modification of assets from within ArcGIS

An additional set of QA/QC tools were created

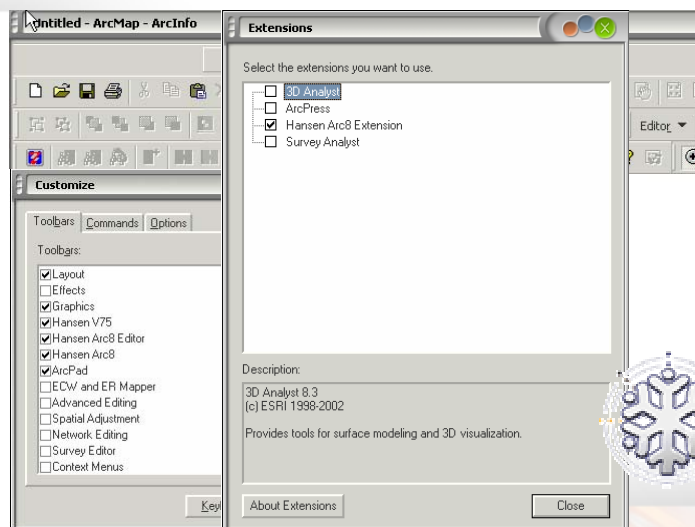
A data synchronization tool was developed to allow data migration from the GIS to Hansen to ensure information currently held as attributes could be migrated to Hansen tables



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Inventory

Main ID: SMH | SM003372 To: SMH | SM003371 #

Address: 5025 RUMBLE ST BURNABY BC

Qualifier: RUMBLE ST FROM END OF LINE WEST TO NELSON AVE O/S 5.9 METERS SOUTH OF SOUTH FL (RUMBLE ST)

Address: 5025 RUMBLE ST

Area: BURNABY BC

Area: SOUTH SLP1 Parcel:

Sub-area: SAN X Coord:

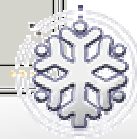
District: Y Coord:

Loc: S Z Coord:

Map #:

Location / Structural / Associated / Assets / Comments / Maint / Insp / Custom

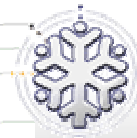
Once a ArcGIS – Hansen link has been established the user receives a “map” icon.



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Selected GIS Assets

Type	From ID	Type	To ID	#	Address
SMH	SM003754	SMH	SM003753	4958	IRMIN
SMH	SM003373	SMH	SM003372	5075	RUMBLE
SMH	SM003755	SMH	SM003754	4931	IRMIN
SMH	SM003375	SMH	SM003370	4922	IRMIN
SMH	SM003371	SMH	SM003370	4957	RUMBLE
SMH	SM003753	SMH	SM003752	5042	IRMIN
SMH	SM003370	SMH	SM003369	4909	RUMBLE
SMH	SM003372	SMH	SM003371	5025	RUMBLE
SMH	SM003376	SMH	SM003375	7438	NELSON

Buttons: Group, View

Sewer Main

The spatial selection results in a list of mainlines.
The user can then apply group maintenance against the selected set.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Hansen V75 QAQC

Please select the layers you wish to check against Hansen V75:

- PGD.SANITARYFITTING
- PGD.SANITARYMAIN

Please select the asset types you wish to check against Hansen V75:

NOTE: Only layers with the required fields are listed here.

Run QAQC Rset QAQC

CompType	CompKey	UnitId	MainComp1	UnitId2	MainComp2	ParLineNo

Total: 0

Orphan Hansen Assets Orphan GIS Assets Incorrect Compkeys Unreconciled GIS Data

Select All Select None Save to File Reset Cogs View Log Quit QAQC

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Service Request

Service # 1383 Problem WOTHR

Location: REQUEST CHECK OF SERVICE MON MAR. 8 PLEASE MAKE SURE TILE AND CAP IS SHOWING.

Address: 5455 MONARCH ST

City, Prov, Postal Code: BURNABY BC

Asset: WSI Unit ID: W5021106

Info Location Calls Comments Cogs Work Orders Log Linked Schedule Search

Customer Service Tracking

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Service Request

Service # 4667 Problem EEECB

Location 65 PERCENT DAMAGE

	Number	Dir	Name	Suffix	Dir	Sub
<input checked="" type="radio"/> Address	7715		MARY	AV		
<input type="radio"/> Intersection						
<input type="radio"/> Block						

Compass Dir

City, Prov. Postal Code BURNABY BC -

Area Sub-area District Map #

Parcel

Asset

[Info](#) [Location](#) [Calls](#) [Comments](#) [Costs](#) [Log](#) [Linked](#) [Schedule](#) [Search](#)

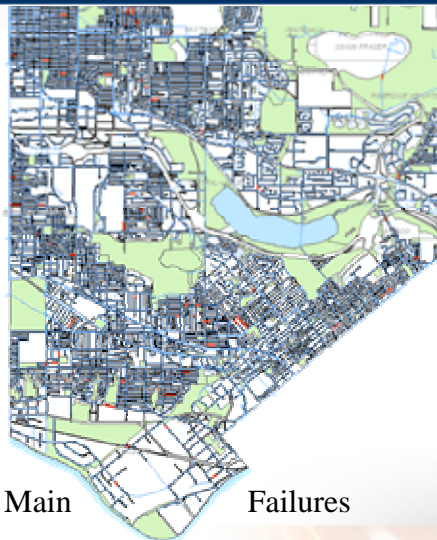


— Chafer Grub/Beetle Infestation

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



Water Main

Failures



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



A map displays all water main failure records.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



A specific water main with a failure record is selected.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Main ID	WND	WF012071	To	WV	WV003514
Address	5190 CAMBRIDGE ST BURNABY BC				
Qualifier	O/S 4.3M E OF W PL ON SPRINGER AV				
Address	5190	CAMBRIDGE	ST	BURNABY	BC
Area	CAP HILL		Parcel		
Sub-area			X Coord		
District			Y Coord		
Loc	S		Z Coord		
Map #					

The selected water main is displayed.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Work Order #	231014	Roadway			
Asset	WND	WF012071	To	WV	WV003514
Address	5190	CAMBRIDGE	ST	W/O Type	WO
Activity	VMNF WATERMAIN FAILURE				
Initiated	12/01/2002	Source		Authorization	WATER
Scheduled	/ /	Maint Type		Assigned To	23040
Due	/ /	Problem		Crew	
Initiated By	10145	Priority			
Project		Service #	0	<input type="checkbox"/>	Out of Service
Budget #	50-11045-0000			<input type="checkbox"/>	Potential Service Request
Started	/ /	Result		Distance	0.00
Completed	12/01/2002	Condition		Pressure	0.00
Comp By	23040	Quantity	0.000		
Hours	0.00				
Down Time	0.00	<input type="checkbox"/>	Major Failure		

The failure is recorded against the main as a work order as repairs and costs are involved.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Work Order # 231814 Roadway
Asset VWN Main ID WND WF012071 To WV WV003514
Address 5190 CAMBRIDGE ST WD Type WO
Activity WVNF WATERMAIN FAILURE
Date/Time Reported 12/01/2002 21:00
Date/Time Turned Off 12/01/2002 21:45
Date/Time Reactivated 12/02/2002 20:00
Nature of Failure
 Circumferential
 Longitudinal
 Corrosion
 Contractor Activity
 Hole
 Coupling/Bell
Leak
Orig Main Material CI Orig Installed 01/01/1952
Damage to Private Property
 Concrete
 Yard/Garden
 Flood Damage
Affected Properties 15 N SPRINGER AV
Nature of Damage
 Superintendent Notified
 Photos Taken
 Damage to Public Property
 Asphalt
 Concrete
 Boulevard
 Other
VIEWED BY JOE DRAKE
Work Order / Comments / Activities / Failures / Costs / Standard / Spot Insp / Log / Schedule / Watermain Failure

A Burnaby built custom screen holds specific main line failure information.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



A map of the WRc CCTV inspection results of sewer or storm mains using formulas residing in Hansen

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management



A specific sewer main can be selected, in this instance a combined mainline in order to view the specific WRc CCTV inspection data.



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

The selected mainline is displayed in Hansen.



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Formula-Based TV Inspection

Inspection # 18372 Work Order # Activity WRC_SF
 Main ID SMH CH000377 To SMH CH000340 #

Started 02/19/2002 Crew Leader Reverse Setup Prior History
 Completed 02/19/2002 Operator Sketch
 Comp By VIDEOTECH Weather Media
 Project Flow Depth 0.000 Format SVSH Media # 535-41
 Crew Pipe Det Index 43:20 To 112:40

Schematic
 Surveyed Length 105.300 Surveyed Width/Diam 600 Surveyed Height 0 Legend

Inspection Data Observations Summary Images Comments

The inspection is recorded as a formula-based TV inspection recorded against a specific mainline

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Formula-Based TV Inspection

Inspection # 18372 Work Order # Activity WRC_SF
 Main ID SMH CH000377 To SMH CH000340 #

CM000377	Seq	From	To	Width	Index	Position	Tq	Offset	Obse	Description
	U	0.000	0.000	0.000	4320			0.00	ST	START OF SURVI
	U	0.100	0.100	0.000	4325			0.00	WL	WATER LEVEL
	U	2.000	2.000	0.000	4435	03		0.00	H	HOLE IN SEWER
	U	2.000	2.000	0.000	4430	12		0.00	H	HOLE IN SEWER
	U	2.000	2.000	0.000	4425	09		0.00	H	HOLE IN SEWER
	U	3.100	3.100	150.000	4600	11		0.00	CN	CONNECTION
	U	10.200	10.200	100.000	4740	10		0.00	CN	CONNECTION
	U	17.400	17.540	150.000	4915	02		0.00	CN	CONNECTION
	U	18.400	18.400	250.000	4950	10		0.00	CN	CONNECTION
	U	24.600	24.600	0.000	1500	12		0.00	SSL	SURFACE DAMAG
	U	29.600	29.600	100.000	5210	10		0.00	CN	CONNECTION
	U	30.800	30.800	100.000	5255	03		0.00	CN	CONNECTION
	U	36.700	36.700	100.000	5415	03		0.00	CN	CONNECTION
	U	39.100	39.100	100.000	54.4	10		0.00	CN	CONNECTION
	U	50.100	50.100	150.000	5650	10		0.00	CN	CONNECTION

CM000340

Inspection Data Observations Summary Images Comments

No Image Loaded
 Insert
 Modify
 Remove

Surveyed Length 105.300
 Surveyed Diam 600
 Surveyed Height 0

Each observation is recorded as a separate line item in the inspection.

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Formula-Based TV Inspection

Inspection # 18372 Work Order # Activity WRC_SF
 Main ID SHH CH000377 To SHH CH000340 #

Observation	Description	# of Observations	Sum of Ratings
B	BROKEN PIPE	1	80.0000
CC	CRACK CIRCUMFERENTIAL	2	20.0000
CN	CONNECTION	16	0.0000
CX	CONNECTION DEFECTIVE	3	0.0000
EL	ENCRUSTATION LIGHT	2	2.0000
FH	FINISH OF SURVEY	1	0.0000
H	HOLE IN SEWER	9	720.0000
ID	INFILTRATION DRIPPER	1	0.0000
IS	INFILTRATION SEEPER	1	0.0000
ISJ	INFILTRATION SEEPER AT JOINT	1	0.0000
JN	JUNCTION	2	0.0000
SSL	SURFACE DAMAGE SPALLING LARGI	1	120.0000
ST	START OF SURVEY	1	0.0000
WL	WATER LEVEL	1	0.0000

Observation Summary Overall Summary

Inspection Data Observations Summary Images Comments

The total inspection observations are recorded in an observation summary

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Sewer Main Formula-Based TV Inspection

Inspection # 18372 Work Order # Activity WRC_SF
 Main ID SHH CH000377 To SHH CH000340 #

Rating Label	Rating
Mean Service Score	0.0190
Mean Structural Score	8.9269
Peak Service Score	2.0000
Peak Structural Score	240.0000
SERVICE GRADE r2	1.0000
STRUCTURAL GRADE r3	5.0000
Total Service Score	2.0000
Total Structural Score	940.0000

Observation Summary Overall Summary

Inspection Data Observations Summary Images Comments

The final WRC related values are automatically generated and appear in the overall summary

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

GRAVELEY ST

Linear Asset Inspection

Inspection # 4277 Work Order # 90543 Activity SWINSP

Asset SW Unit ID RV000859

Rating Label	Rating
Overall Rating	10.9091

Observation Summary Overall Summary

Inspection Data Observations Summary Images Comments

Sidewalk Inspection Program

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Additional asset information spatially represented in ArcGIS such as service connections

Display of Burnaby's pavement management data pavement quality index (PQI)

Develop asset condition information for all assets

Develop performance prediction curves

Link to our ERP financial solution providing better life cycle costing and cost information

Review decision support systems to assist in developing long term capital planning and financial sustainability

Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Field based computing providing access through wireless connectivity to both the spatial and attribute information to field crews.

Develop the spatial display of capital improvement plans to improve decision making within the organization

Hansen 8 – a new totally re-written browser based version of the application using XML and providing open APIs for connectivity to other City applications will advance our ability provide this information to the desktop



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Hansen 8

Phased software implementation path

Permits, work orders then assets

Geo-Administrator will continue to be the Hansen/ArcGIS edit tool

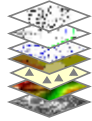
XML web services application using Microsoft .NET architecture

Represents a 100% server-side application accessible via the Internet, with zero client-side software required on the PC



HANSEN 8 GIS INTEGRATION

The Road Ahead



GeoAdministrator for integrated editing of asset and land management spatial data in ArcGIS with Hansen 8

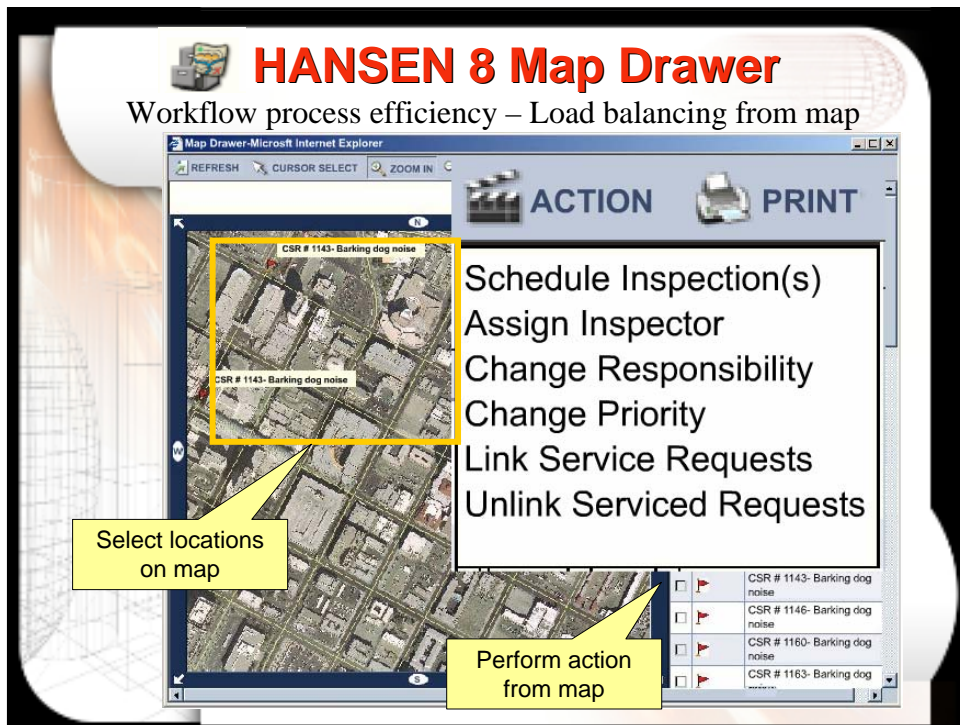
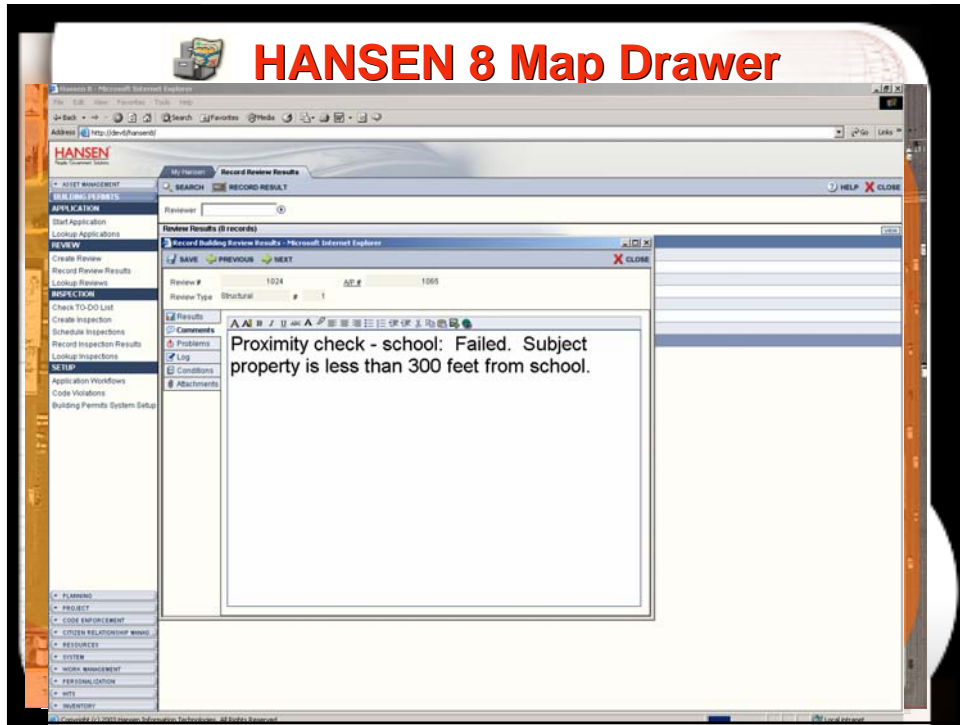
Easy-to-use, embedded, browser-based map display application for the non-GIS Hansen users



The Map Drawer – both ESRI's ArcIMS and Intergraph's WebMap



Marker	Description
	CSR # 1069 - Residential Water Conservation "Unable to locate.
	CSR # 1070 - Loose animal -- NON-AGGRESSIVE
	CSR # 1071 - Mayor, Council, and City contact information.
	CSR # 1072 - Graffiti - Gang Related
	CSR # 1073 - Mayor, Council, and City contact information.



My Horizon Submit a Service Request Custom Variables Manager Workflow Manager

PREVIOUS ADD A NEW CALL NEXT

Potential Duplicate Service Requests (7 records)

Request #	Request Type	Request Date	Priority	Responsibility	Address
1263	Noise-Dog - Barking dog noise	11/17/2003 9:59:05 AM	2	BVLAV	1019 FRANKLIN AVE LAS VEGAS NV 89104
1266	Noise-Dog - Barking dog noise	11/16/2003 8:28:06 PM	2	BVLAV	1042 FRANKLIN AVE LAS VEGAS NV 89104
1268	Noise-Dog - Barking dog noise	11/16/2003 5:49:29 PM	2	BVLAV	1019 FRANKLIN AVE LAS VEGAS NV 89104
1265	Noise-Dog - Barking dog noise	11/16/2003 4:41:33 PM	2	BVLAV	1015 FRANKLIN AVE LAS VEGAS NV 89104
1261	Noise-Dog - Barking dog noise	11/16/2003 11:26:49	2	BVLAV	1015 FRANKLIN AVE LAS VEGAS NV 89104
1250	Noise-Dog - Barking dog noise	11/16/2003 10:44:04	2	BVLAV	1009 FRANKLIN AVE LAS VEGAS NV 89104
1192	Noise-Dog - Barking dog noise	11/14/2003 9:21:25 PM	2	BVLAV	1009 FRANKLIN AVE LAS VEGAS NV 89104

Cross Street: [D] Location: City, State, ZIP: [LAS VEGAS, NV]

do about it?
 lem. It might simply be
 y order to be remedied.
 at (403) 268-CITY

they are make a complaint.

- The owner of the offending dog will be sent a letter letting them know that a complaint has been made against them and why.
- You will be sent a package with a log sheet on which you must keep documentation of the barking incidents for a minimum of 5 days. Then send it back to Animal Services and an officer will investigate the problem.

Map Drawer Microsoft Internet Explorer

Map Location: 1009 FRANKLIN LAS VEGAS NV 89104

Legend:

- Rural Street
- Rural Street Sign
- Rural Street Lights
- Rural Sewer Main
- Rural Manhole
- Urban Street
- Urban Street Sign
- Urban Street Lights
- Urban Sewer Main
- Urban Manhole
- Urban Sewer Line Service Point
- Urban Parcels
- Image

Current Map Contents:

- 1009 FRANKLIN LAS VEGAS NV 89104
- 1015 FRANKLIN LAS VEGAS NV 89104
- 1042 FRANKLIN LAS VEGAS NV 89104

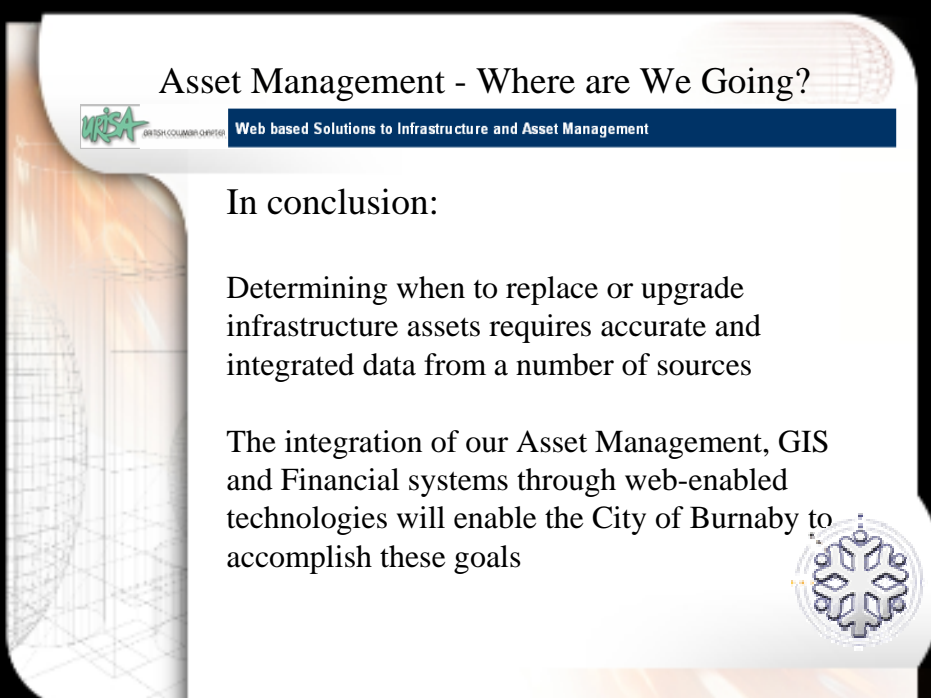
Asset Management - Where are We Going?

Web based Solutions to Infrastructure and Asset Management

In conclusion:

Determining when to replace or upgrade infrastructure assets requires accurate and integrated data from a number of sources

The integration of our Asset Management, GIS and Financial systems through web-enabled technologies will enable the City of Burnaby to accomplish these goals



Asset Management - Where are We Going?



Web based Solutions to Infrastructure and Asset Management

Questions?

Barry Davis – 604-294-7186
davis@city.burnaby.bc.ca

Dan Kaloutsky - 905-272-5929 ext. 228
d.kaloutsky@hansencanada.ca

<http://www.hansen.com>

<http://www.city.burnaby.bc.ca>

