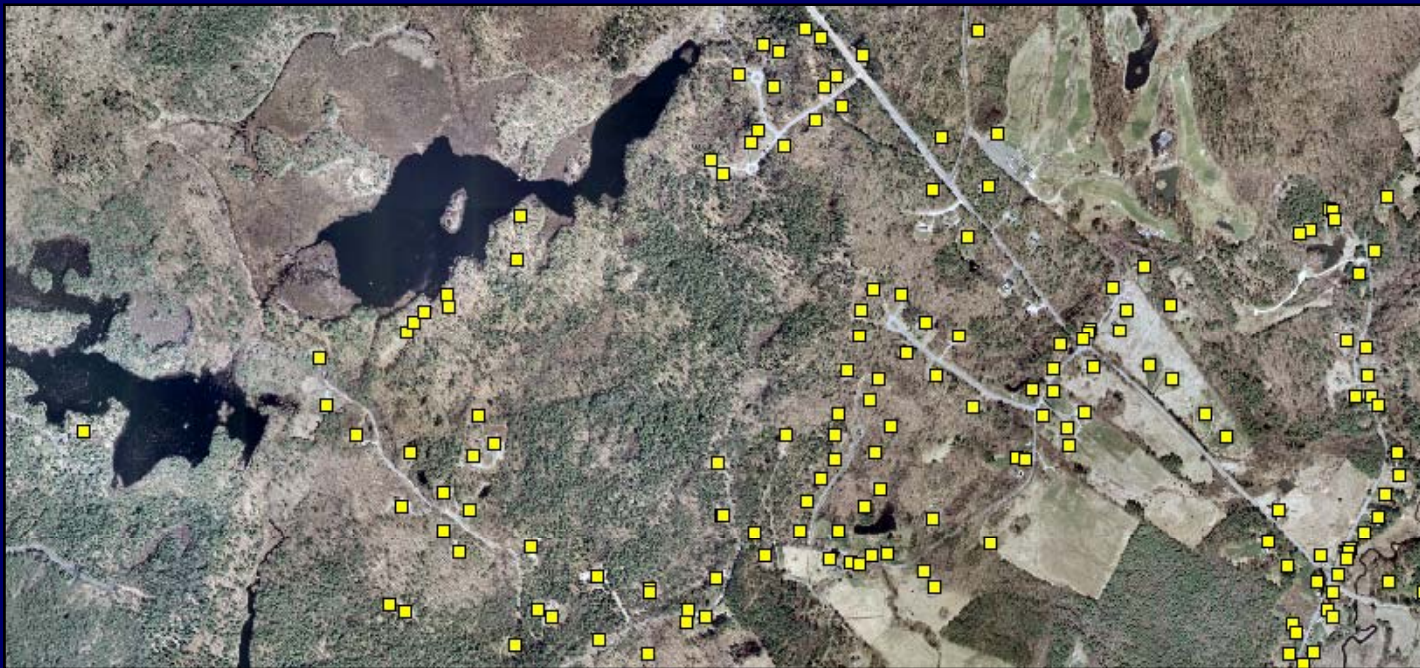# Mapping Regional Development for Smart Growth Planning to Minimize Degradation of Water Quality and to Enhance Green Infrastructure
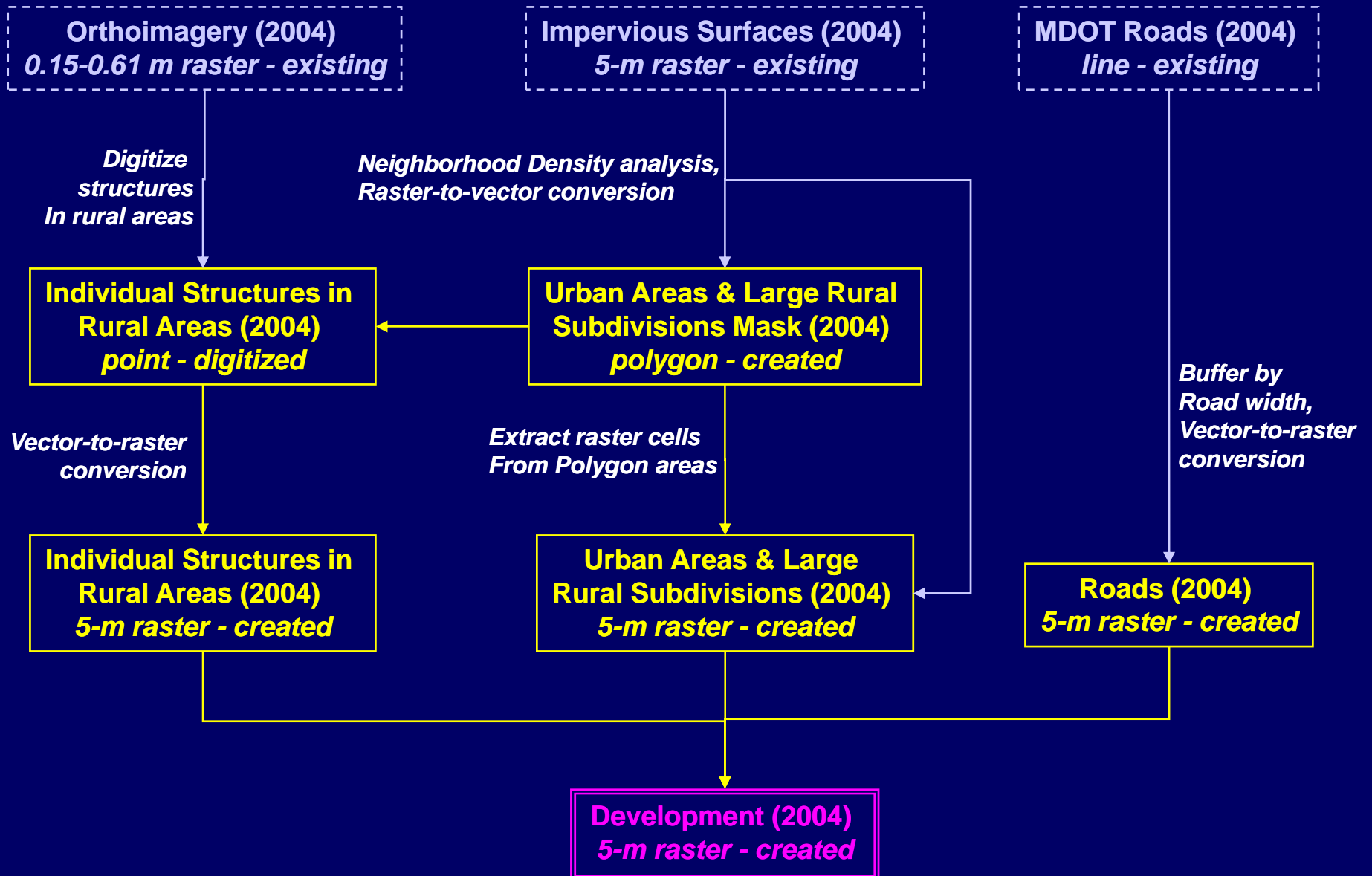
Don Katnik, Maine Dept. of Inland Fisheries & Wildlife
Steve Walker, Maine Dept. of Inland Fisheries & Wildlife
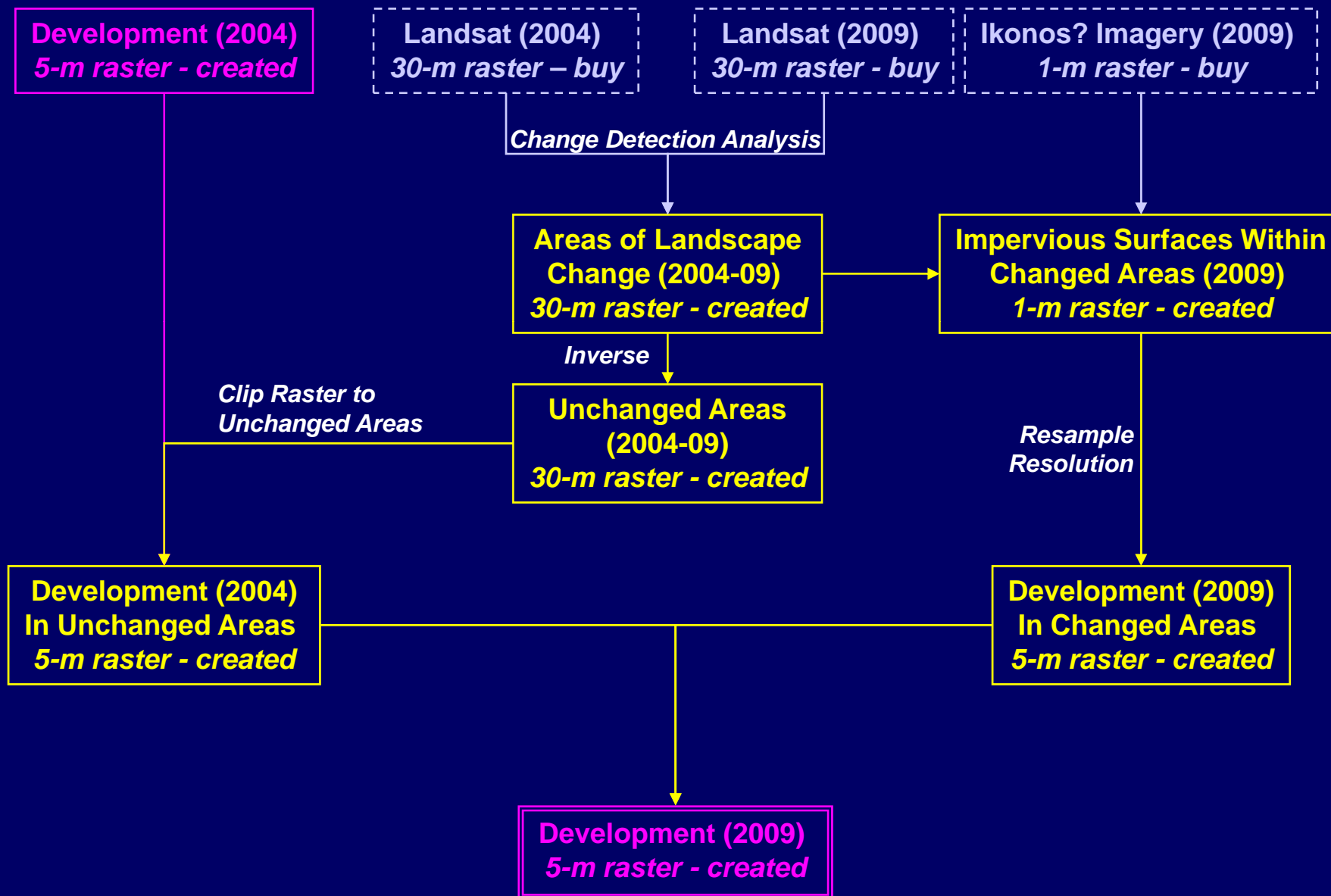*Elizabeth Hertz, Maine State Planning Office*

How This Project Supports Sustainability

- **Riparian areas and water resources are a critical natural resource for long-term sustainability of natural ecosystems**

- ***Beginning with Habitat* provides maps of natural resource data to municipalities & land trusts to encourage Smart Growth development and landscape planning to conserve habitat and open space**

- **The current maps only shows half of the picture: what areas are most valuable to conserve, but NOT what areas are under the most threat from recent development**

- **Showing planners the landscape pattern of growth that their current ordinances & policies is creating will help guide smarter growth**

- **Smarter growth will lead to better conservation of natural resources**

Systems Overview – 2004 Development

Orthoimagery (2004)
0.15-0.61 m raster - existing

Impervious Surfaces (2004)
5-m raster - existing

MDOT Roads (2004)
line - existing

Digitize structures In rural areas

Neighborhood Density analysis, Raster-to-vector conversion

Individual Structures in Rural Areas (2004)
point - digitized

Urban Areas & Large Rural Subdivisions Mask (2004)
polygon - created

Buffer by Road width, Vector-to-raster conversion

Vector-to-raster conversion

Extract raster cells From Polygon areas

Individual Structures in Rural Areas (2004)
5-m raster - created

Urban Areas & Large Rural Subdivisions (2004)
5-m raster - created

Roads (2004)
5-m raster - created

Development (2004)
5-m raster - created

Systems Overview – 2009 Development

Development (2004)
5-m raster - created

Landsat (2004)
30-m raster – buy

Landsat (2009)
30-m raster - buy

Ikonos? Imagery (2009)
1-m raster - buy

Change Detection Analysis

Areas of Landscape Change (2004-09)
30-m raster - created

Impervious Surfaces Within Changed Areas (2009)
1-m raster - created

Inverse

Clip Raster to Unchanged Areas

Unchanged Areas (2004-09)
30-m raster - created

Resample Resolution

Development (2004) In Unchanged Areas
5-m raster - created

Development (2009) In Changed Areas
5-m raster - created

Development (2009)
5-m raster - created

Current/Potential Partners & Roles

BWH STEERING COMMITTEE – sets Program Goals & Objectives, directs GIS Subcommittee to accomplish specific tasks
ME Dept. Inland Fisheries & Wildlife (MDIFW)
ME Natural Areas Program (MNAP)
ME State Planning Office (MSPO)
The Nature Conservancy (TNC)
ME Audubon Society (MAS)
U.S. Fish & Wildlife Service (USFWS)
Maine Coast Heritage Trust

GIS SUBCOMMITTEE – Determines methods to accomplish tasks assigned by Steering Committee; forms taskgroups as needed to carry out specific tasks
(MDIFW, MNAP, MSPO, MFS, TNC, MAS, USFWS)

DEVELOPMENT TRACKING TASKGROUP – Task Oversight
(MDIFW, MSPO)

NOAA
Landsat Imagery, NLCD, Imperv

Other State Agencies
Imperv

USGS
Landsat Imagery NLCD, Imperv

DHS
Imagery Funding

USDA
NAIP Imagery

Image Analysis Contractor

MDIFW GIS Staff

MNAP GIS Staff

USFWS GIS Staff

TNC GIS Staff

MAS GIS Staff

Findings & Lessons Learned So Far

- Considerable interest in acquiring the data (when completed)

- High risk of **Repetitive Motion Injury** when digitizing

- Stylus/tablet works much better than mouse for digitizing

- Coordinating multiple digitizers is time-consuming and complex

- Free NAIP imagery may eliminate need for digitizing

Questions/Contacts For This Meeting

- USGS/NOAA – collaboration on NLCD/Impervious mapping 5-year cycle for updates

- DHS – potential funding for imagery acquisition

- USDA – future "gifts" of NAIP imagery

- Single source contracts?

- Direct billing for large contracts?