



EPA RESEARCH INTO INTEGRATED RESOURCE MANAGEMENT FOR MUNICIPAL SERVICES

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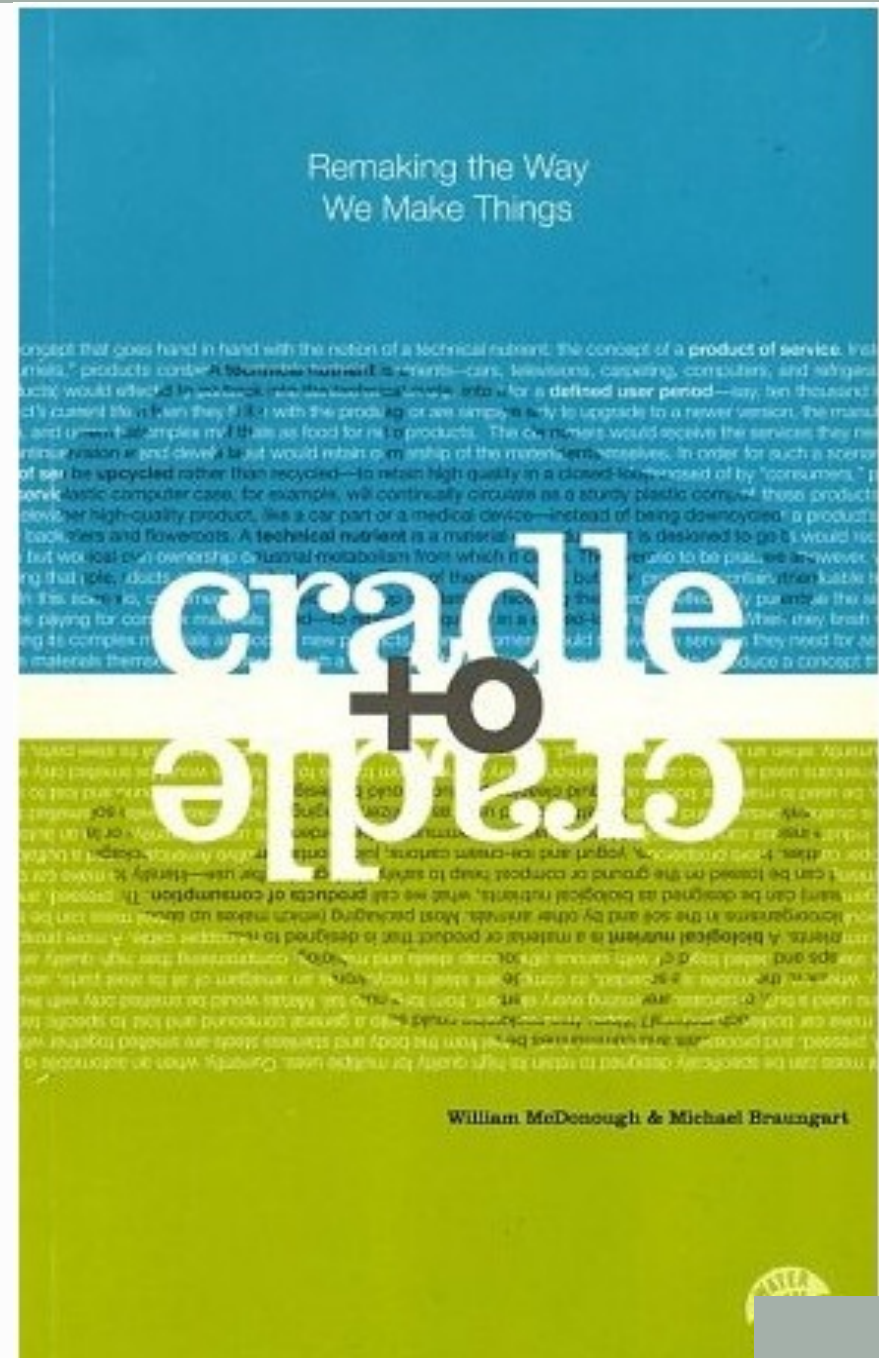
Danvers, MA – October 20, 2015

FOURTH ANNUAL REPORT
OF THE
STATE BOARD OF HEALTH
OF
MASSACHUSETTS.

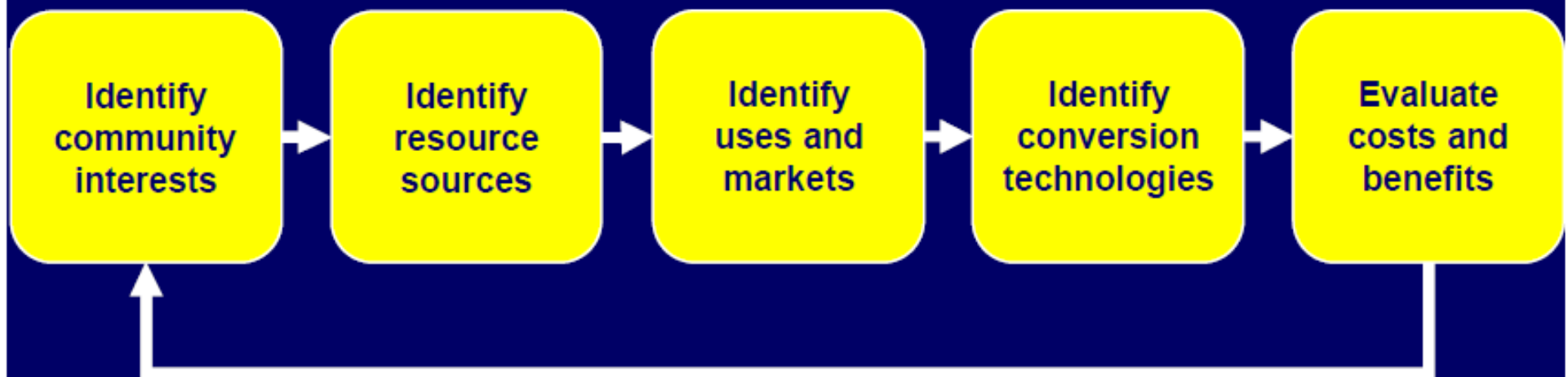
JANUARY, 1873.

We must never despair of success in the search for the means of converting our waste into useful and harmless products, however great may be the difficulties in the way.

Waste Is a Resource Out Of Place



Integrated Resource Management Process



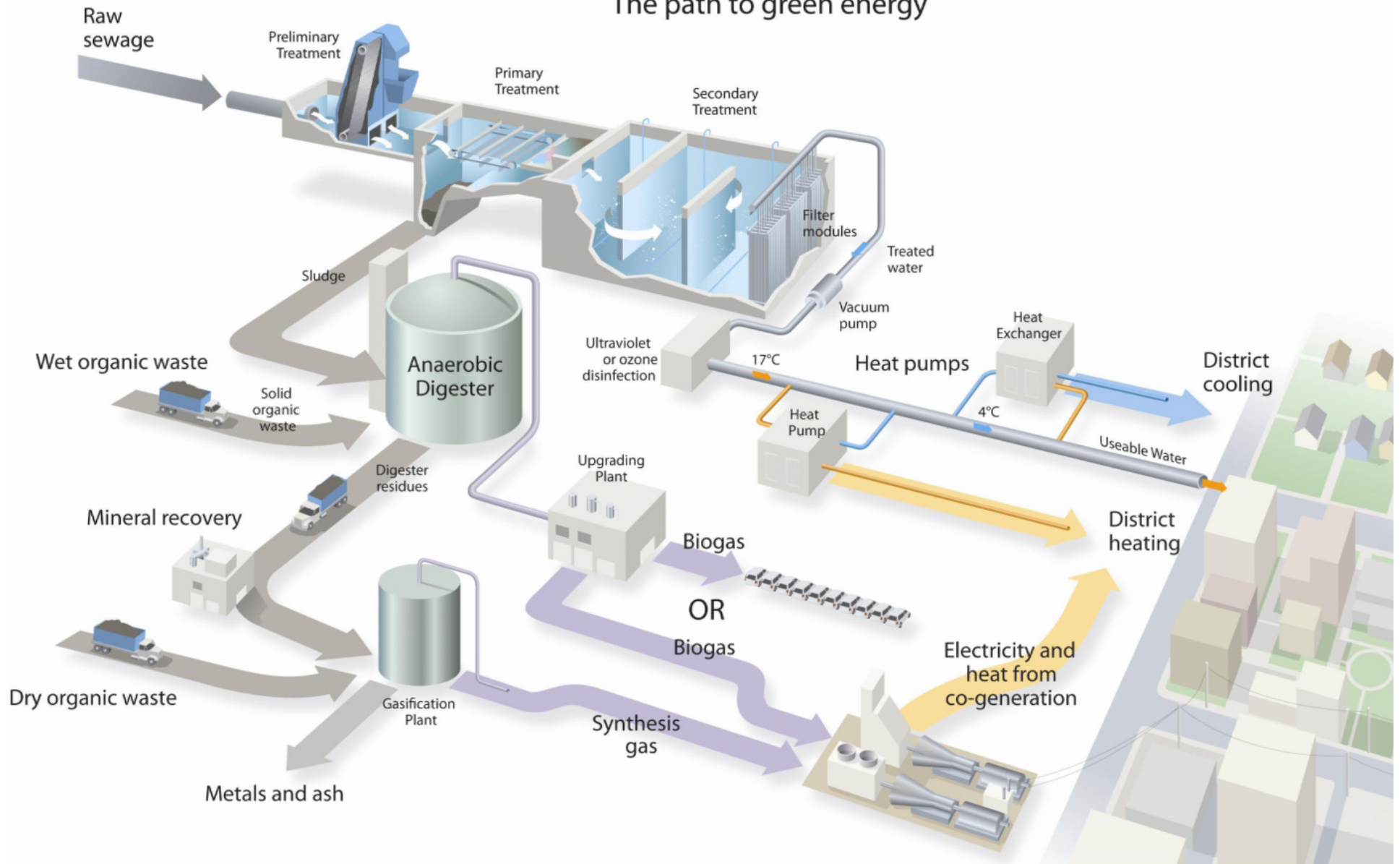
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PEOPLE first

TECHNOLOGY last

INTEGRATED RESOURCE RECOVERY

The path to green energy



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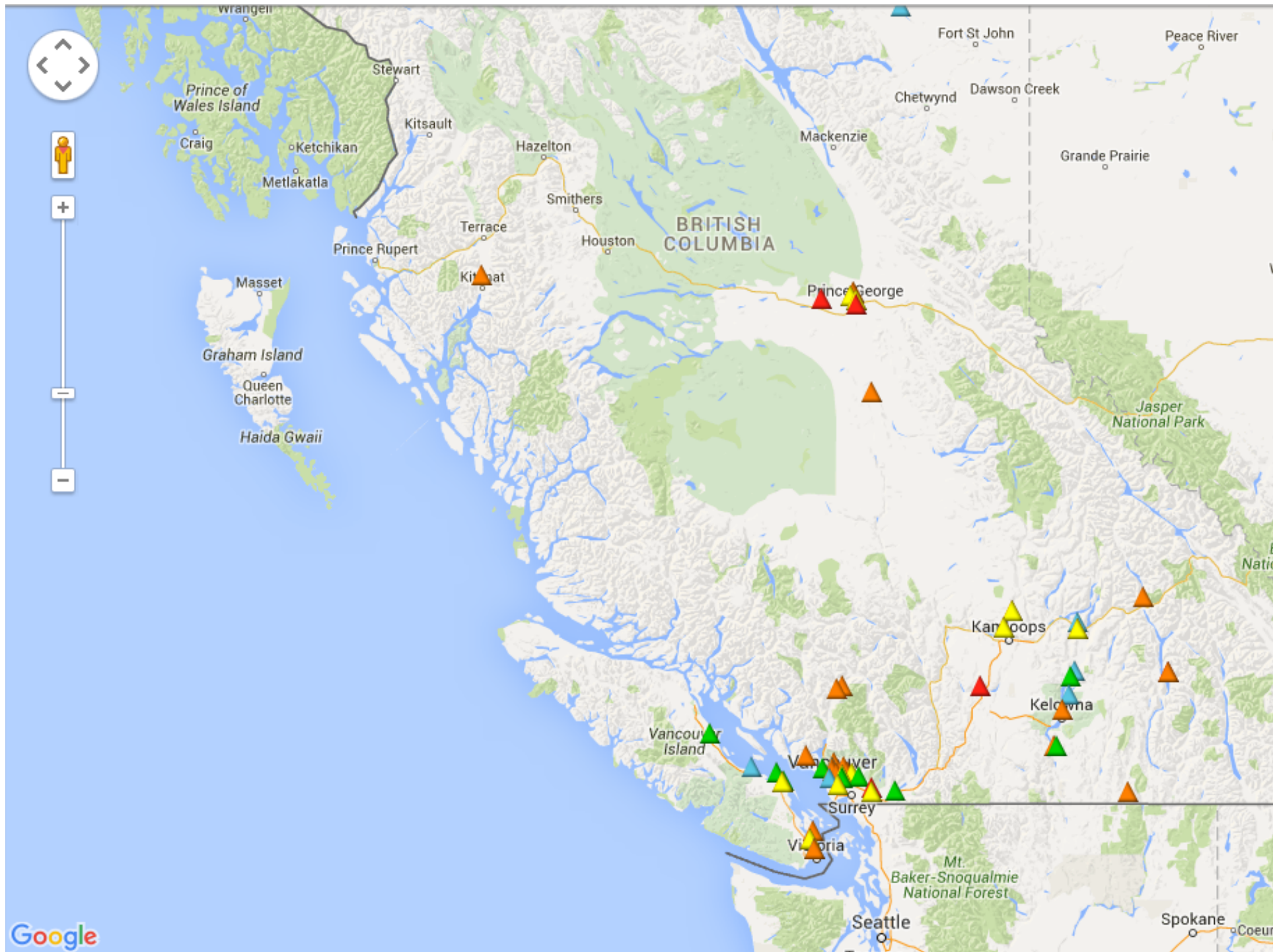
INTRODUCTION TO
**WATER RESOURCE RECOVERY
FACILITY DESIGN**



Second
Edition



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EPA Research:


Integrated Resource Management

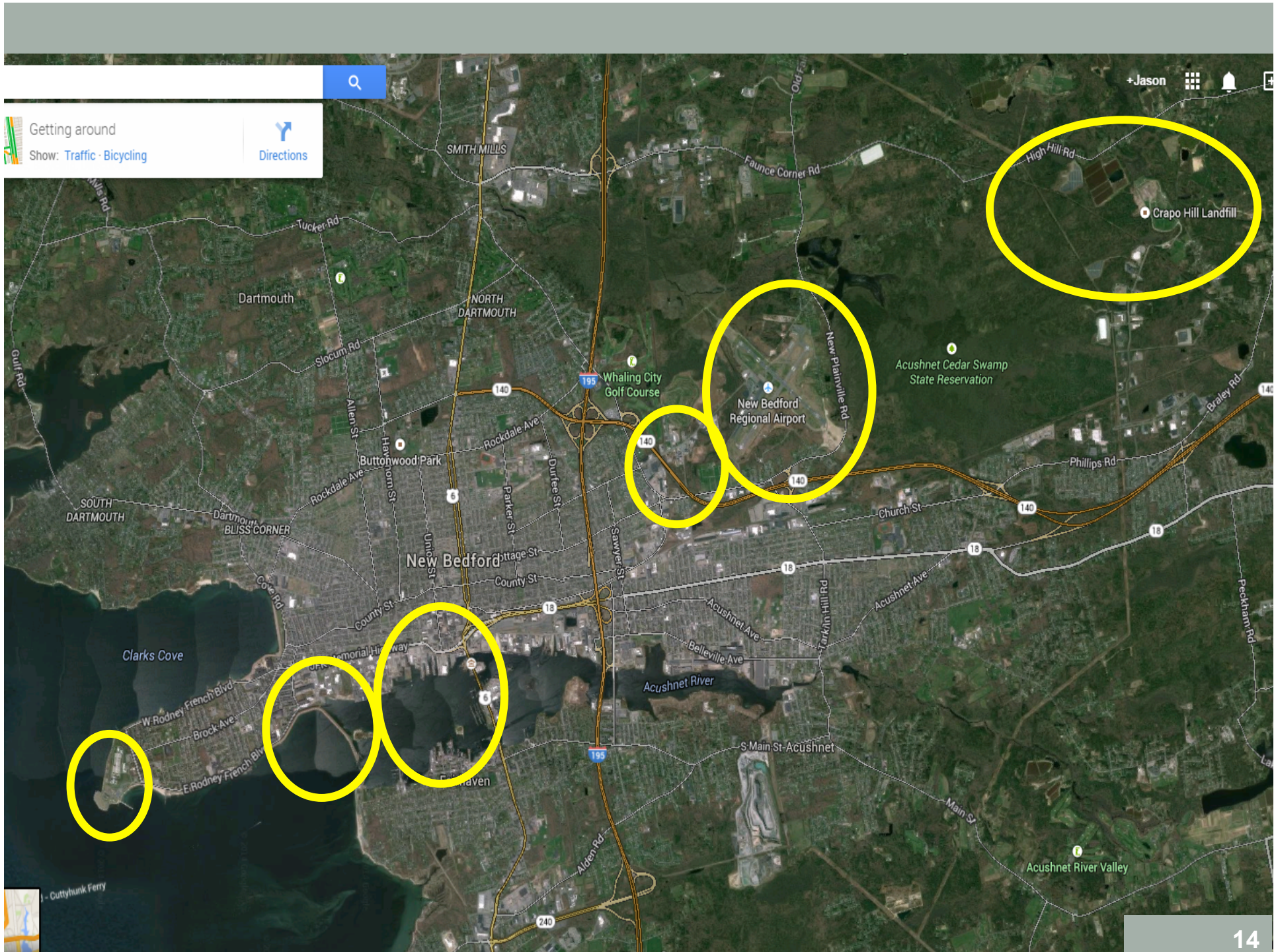
New Bedford, MA

Project Basics

- Collaborative: Joint project of EPA (Region 1 Offices of Environmental Stewardship and Ecosystem Protection, Office of Research and Development, Office of Water/Office of Science and Technology), City of New Bedford, and Greater New Bedford Regional Refuse Management District
 - EPA contractor: Industrial Economics with Regenesi Group
 - New Bedford contractor: CDM Smith
- **Goal: To examine IRM as a concept and produce the first published literature on its efficacy while also helping New Bedford manage complex issues surrounding biosolids, solid waste, clean energy, and water quality**

Project Structure

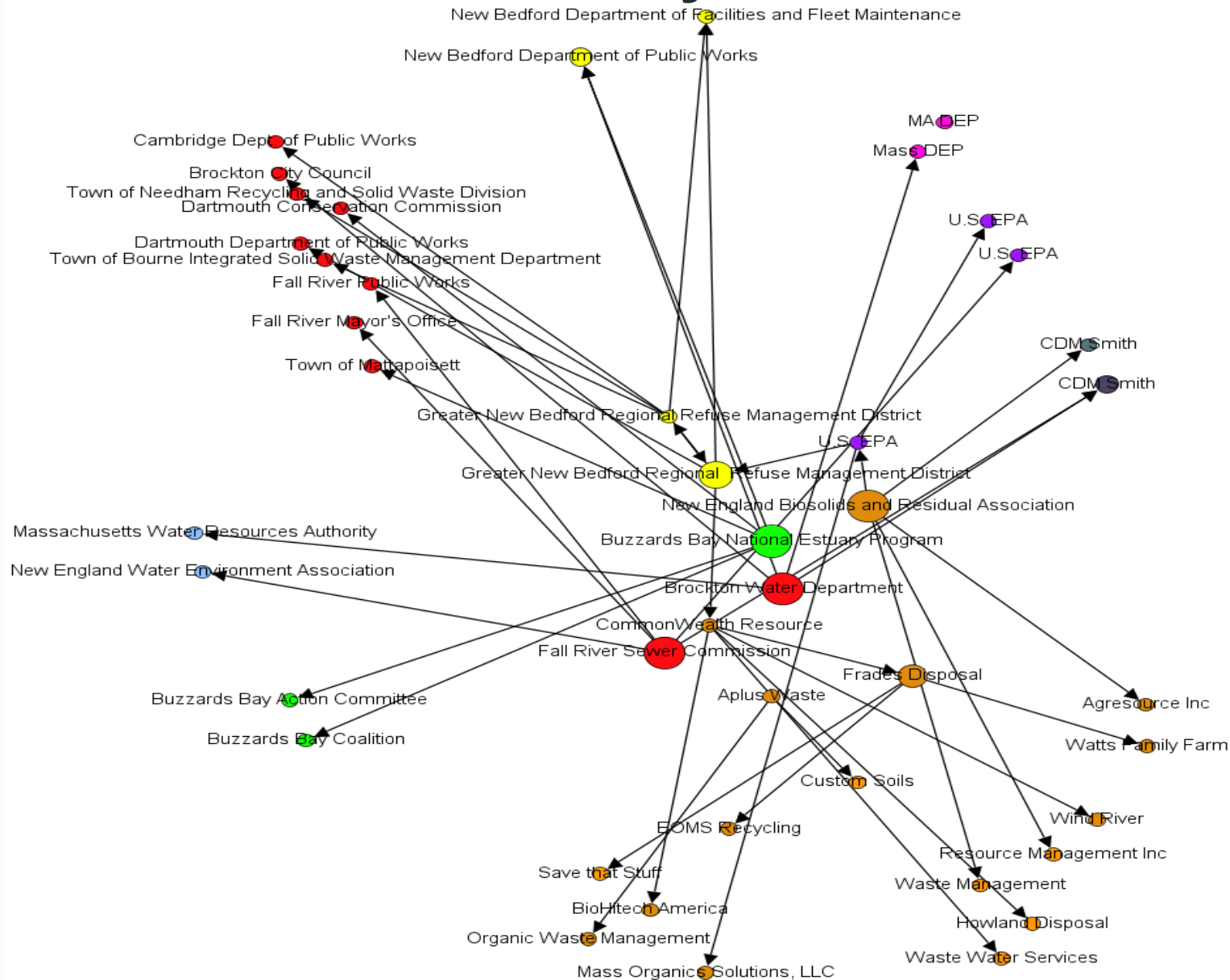
- Project Preparation:
 - Selection of a case study site
 - Initial Discovery Phase:
 - Preliminary stakeholder identification and interviews
 - Preliminary data collection
 - Social network analysis
 - IRM Implementation Phase:
 - Develop final stakeholder group
 - Scenario development
 - Conduct cost benefit assessment and decide on project (*described in Analysis section*)
 - Facilitate implementation
- 
- Completed





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Social Network Analysis



Phase 2: Stakeholder Concerns

- Extending Landfill Life
- Public Health
- Odor Control
- Long-term biosolids solution
- FOG Management
- Collection System infrastructure
- Creation of Local Jobs
- City Role as Green Leader
- Nutrient (N and P) issues in Buzzards Bay
- Greenhouse gas mitigation
- Climate Change Resiliency
- Green Vehicle Fuels
- Non-point source pollution
- New Bedford's status as a green leader
- CSO's at treatment plant
- Protecting local fishing industry
- Treating fish industry byproducts
- Connecting to markets by rail transit
- Producing green vehicle fuels
- Creating local jobs
- Reducing landfill organics
- Improving regional air quality
- Creating markets for products (fertilizer, etc.)
- Having an informed community

Phase 2: Data / Findings

- Limited sources of high-quality, non-biosolids organic waste
 - No readily available fish waste looking for a home
 - Not as much readily available food waste as assumed
 - All of Southern New England is thinking about anaerobic digesters and organics diversion and landfill space.
- Biosolids remain a regional (Southeast MA) challenge
- Nutrients (e.g., nitrogen) are critical regional issue
- Design challenge: long-term infrastructure decisions in a dynamic, fast-changing business environment
- Process challenge: key regional stakeholders who can “activate” solutions to waste issues are not yet coordinating
 - Begin IRM process of stakeholder integrations as early as possible
 - Important to make sure all team members understand the basic concepts up front
 - Need a willing partner / internal champion

Phase 3: Scenario Building and Analysis

- Domain experts (civil, architecture, landscape architects, cost estimation, energy) work on iterative ideas
- Assemble and compile report with costs/benefits for various scenarios vs. traditional alternatives
- Publish results: see you in 1-2 years!

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