

Area-wide planning approach for brownfield revitalization

Case studies in the Northeastern United States

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1st generation Brownfield policy in the U.S.

Brownfield problem

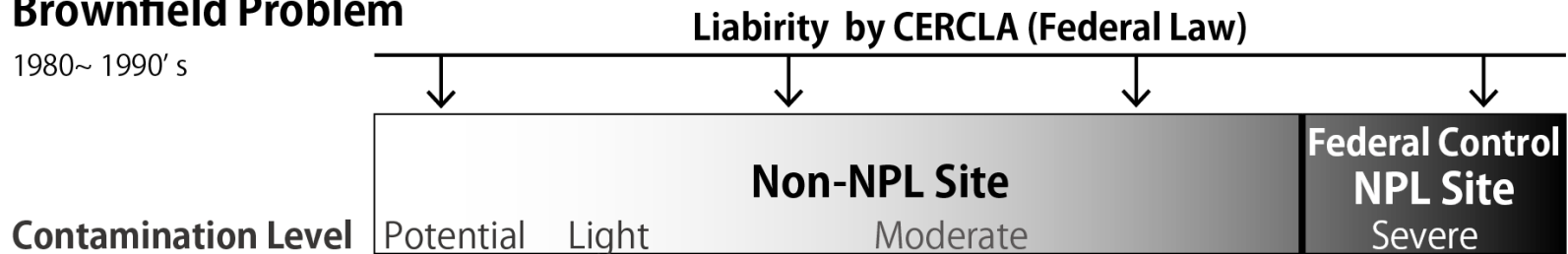
- Retrospective, strict, joint and several liability by CERCLA (Superfund law, 1980)
- Renders kept away from former industrial land development

1st generation brownfield policy

- State government created “Voluntary (non-federal) ” Cleanup Program (VCP) for private owner and developer
- Liability protection after cleanup based on VCP process

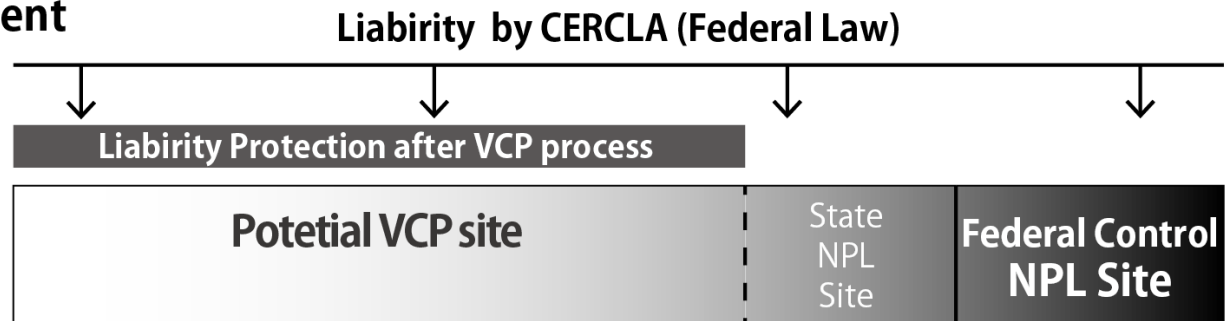
CERCLA and Brownfield Problem

1980~ 1990' s



Voluntary Cleanup Program(VCP) by State government

1990' s~



Emergence of 2nd generation brownfield policy

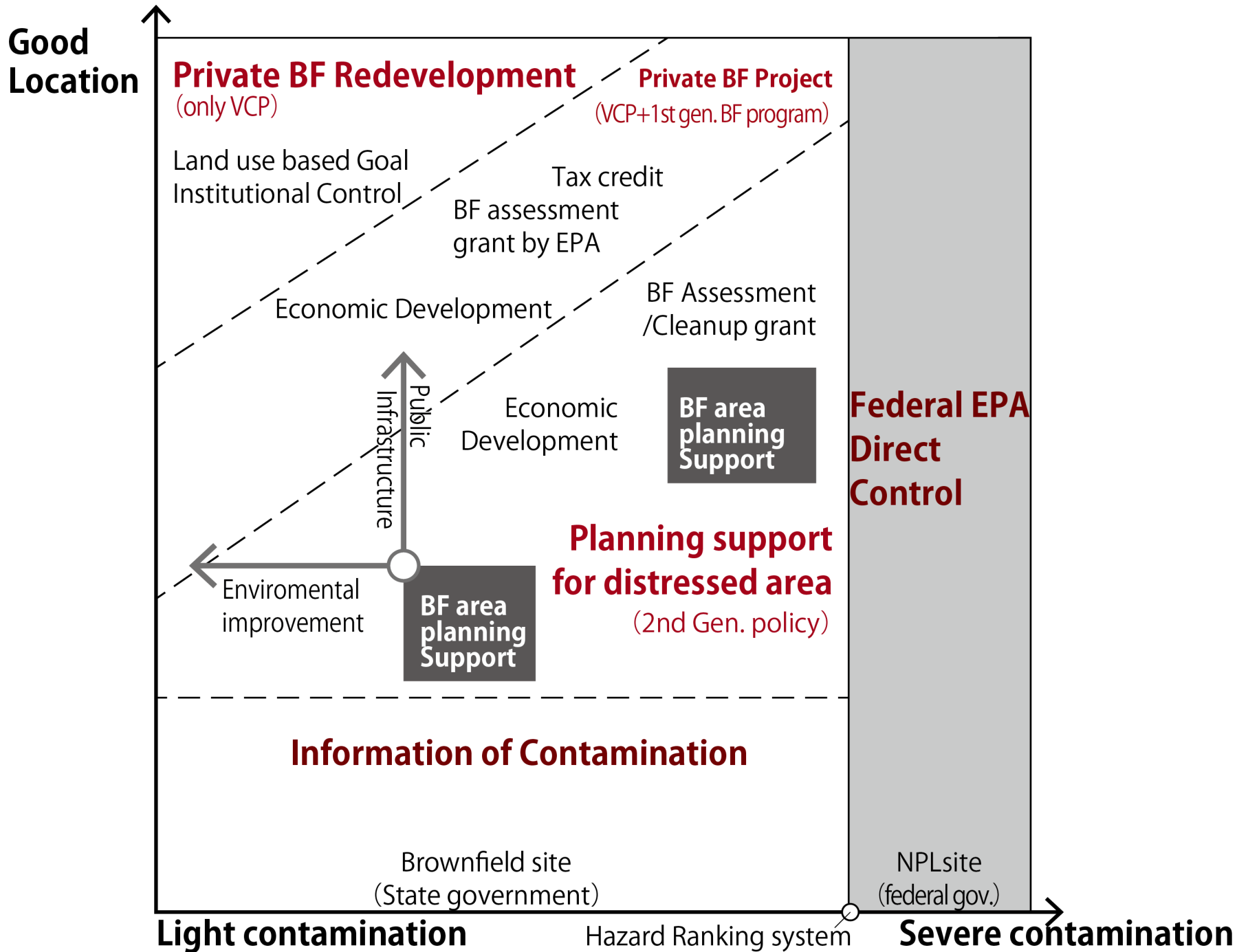
Limitation of 1st generation brownfield policy

- Brownfield redevelopment only in good location sites
- Public funding for assessment and cleanup could not attract private investment for reuse of land in distressed urban area and rural area
- Redevelopment only of in BF sites, no contribution to revitalization of surrounding area

2nd generation brownfield policy in the U.S

Second Generation of brownfield program (Evan van Hook et al., 2003)

- Integrated public assistance (planning, assessment, cleanup and reuse of land) for multiple brownfield sites in distressed area
- Planning based on environmental information, cleanup priority on revitalization plan
- New York State Brownfield Opportunity Area (BOA) started in 2003, Beginning of 2nd generation BF policy
- US EPA imported BOA for federal brownfield program in 2010



Case Study: Buffalo in New York State

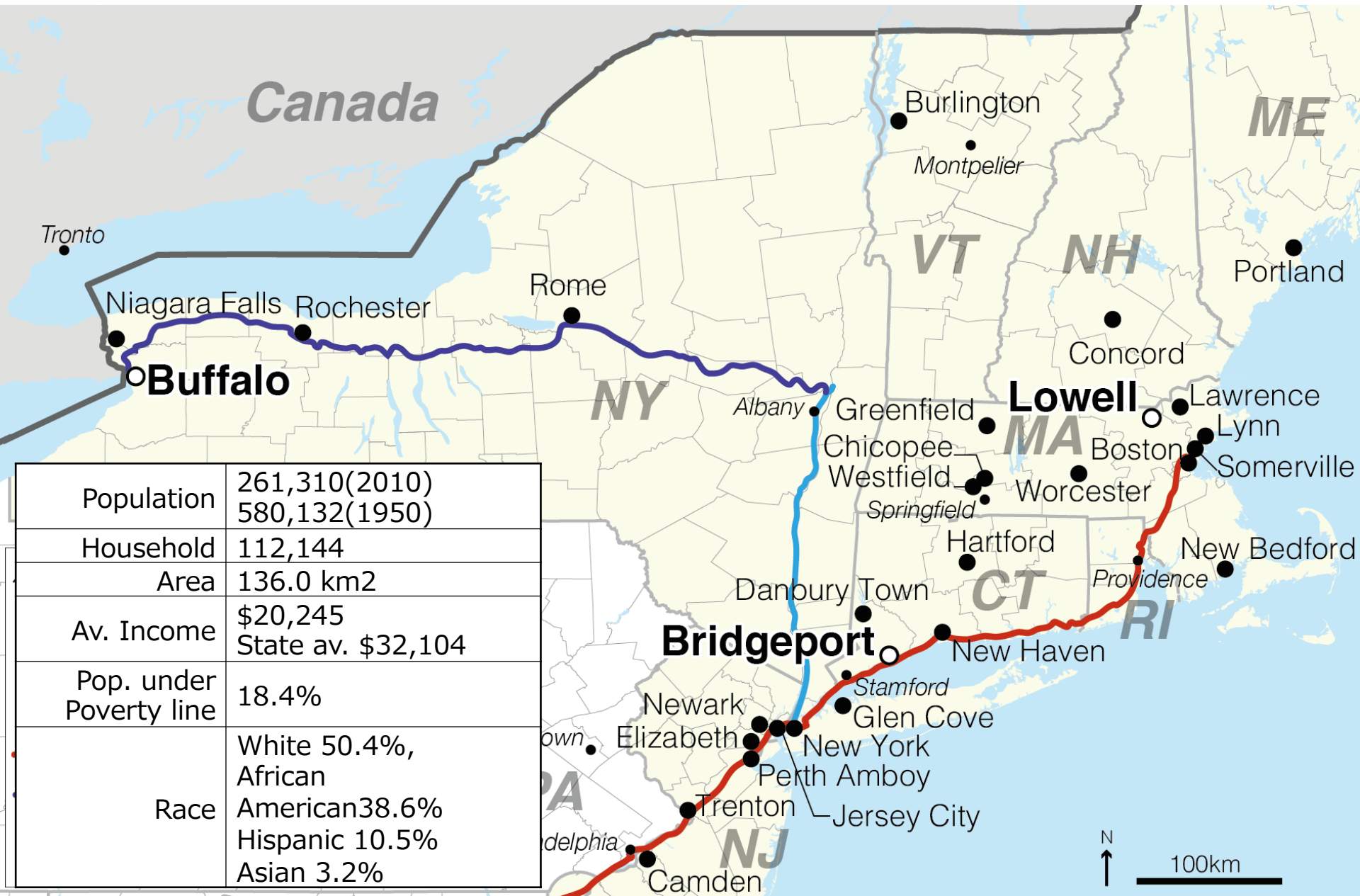


Fig. Case Study Cities in the Northeast

Major BF projects in Buffalo

History of industrial land redevelopment

Successful BF Redevelopment in Downtown

- HealthNow HQ

Revitalization of Downtown fringe

- Canalside (Waterfront development)
- Buffalo Niagara Medical Campus

BOA designated area

- South Buffalo
 - Lakeside Commerce Park
 - Riverbend Commerce Park
- Buffalo Harbor
- Buffalo River Corridor
- Tonawanda St. Corridor

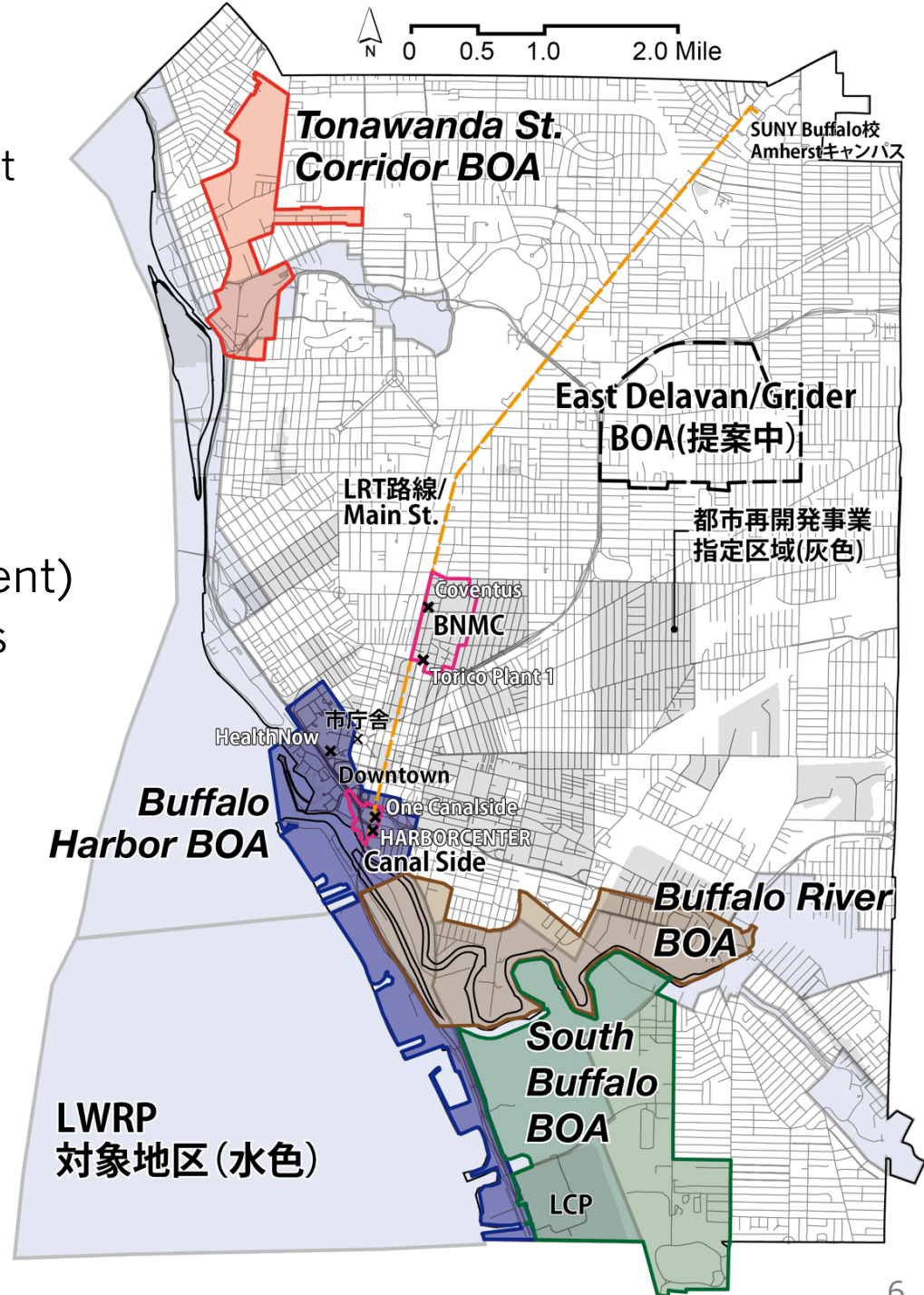


図53. Buffalo市の主なBF再生事業の位置 (筆者作成)

BOA and City master plan

- Strategic investment corridor in the city master plan(2005) = BOAs
- Main St. Corridor = Canalside and BNMC (Downtown fringe)
- New zoning code (Unified Development Ordinance) based on BOA master plans

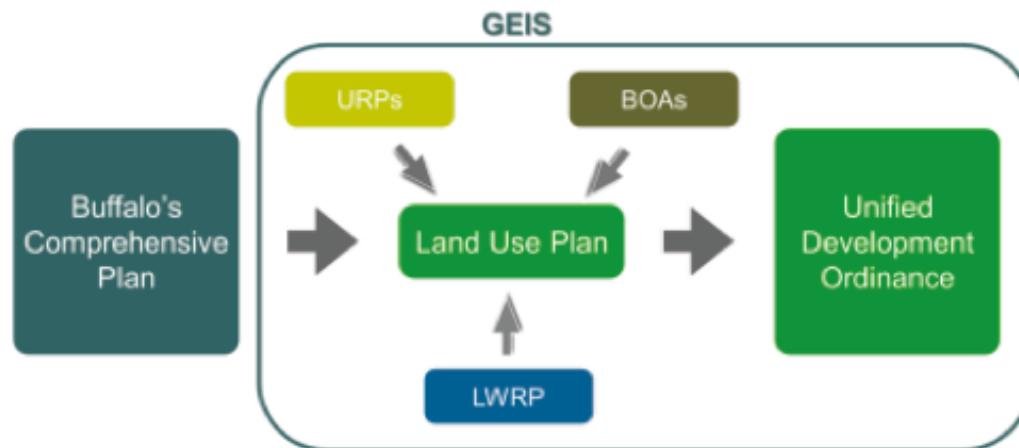


図54. BOAとその他の都市計画の関係

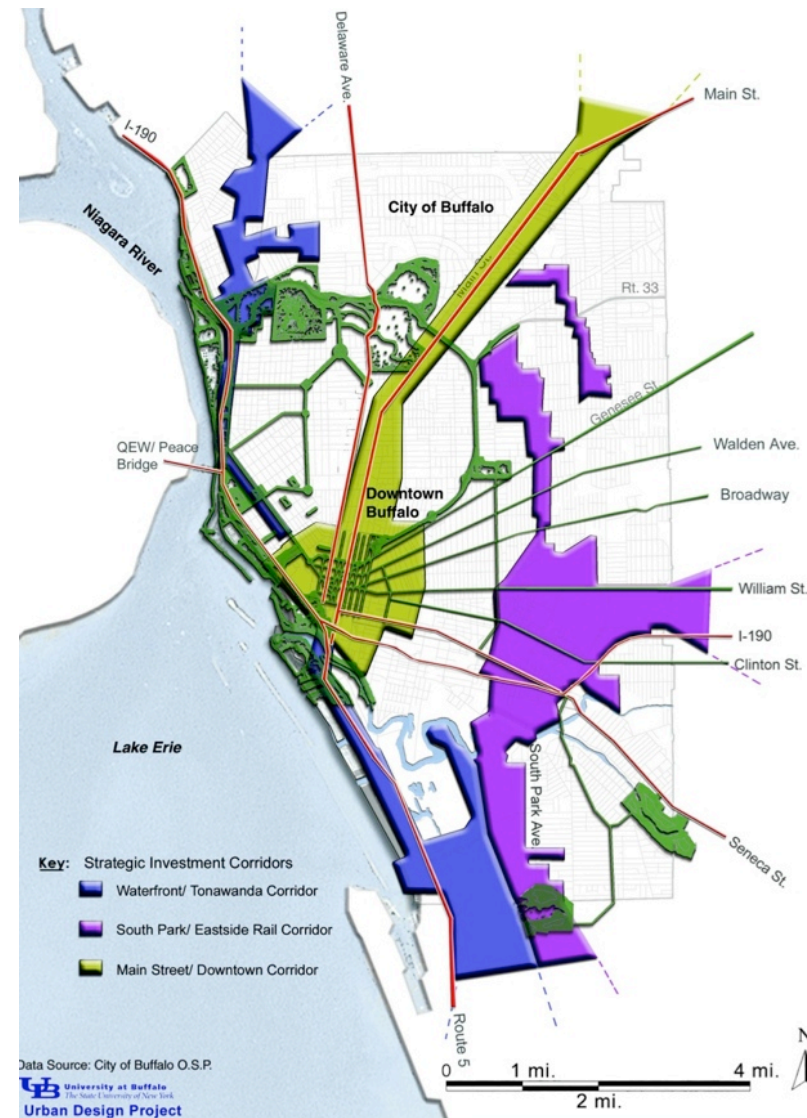
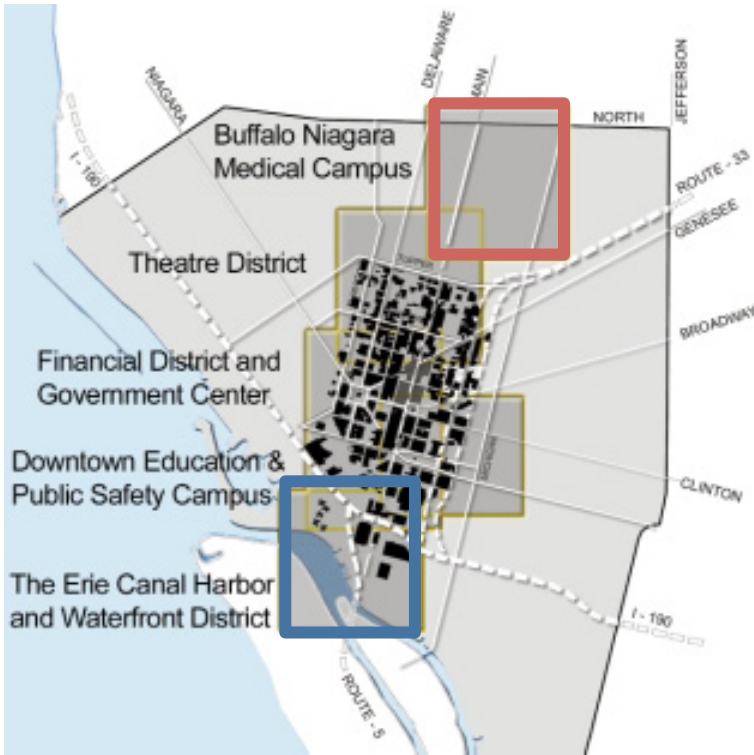


図55. Buffaloの戦略的投資回廊

Downtown Fringe BF projects

Extended downtown

- Planning initiative from late 90's
- Concept of extended downtown
- Brownfield Cleanup Program (BCP) utilized by private developers



Erie Canal Harbor Development

- Economic Dev. Project by State and City
- BCP fully used by Private Developer



図57.公園整備完了後のCanal Side



図58. One Canalside
(筆者撮影,2014/6)

Buffalo Niagara Medical Campus

- University at Buffalo, Medical institution and Hospital
- BCP used in some plot



図59. 建設中のConventus
筆者撮影 2014/6



図60. Trico Plan No.1 外観



Lackawanna Steel (Right) and Union Ship Canal (Left)
 Brian Wroblewski's History Gallery, A small slice of Buffalo's massive industrial might from the late 40's,



Republic Steel in 1950's
 Buffalo State University, Department of History & Social Studies, The Monroe
 Fordham Regional History Center



South Buffalo Area, aerial photo 2011

Bing Map 2011/4-taken in 2011/7

North-South 3.5km East-west 800ha



South Buffalo, Before BOA

Industrialization of South Buffalo

- 3 Steel plants based on Buffalo river, Erie Canal, Rail and Buffalo Port
- 3 plants closed during 70s and 80s and became brownfield sites
- 3 municipal land fill sites

South buffalo redevelopment plan

- City prepared the conceptual redevelopment plan funded by EPA BF pilot and NY State Environmental Restoration Fund
- Leading Project 1: Lakeside Commerce Park
- BOA Step 2 designation in 2005
- Leading Project 2: City acquired Northeast corner of the area after remediation by the owner (Riverbend Commerce Park)

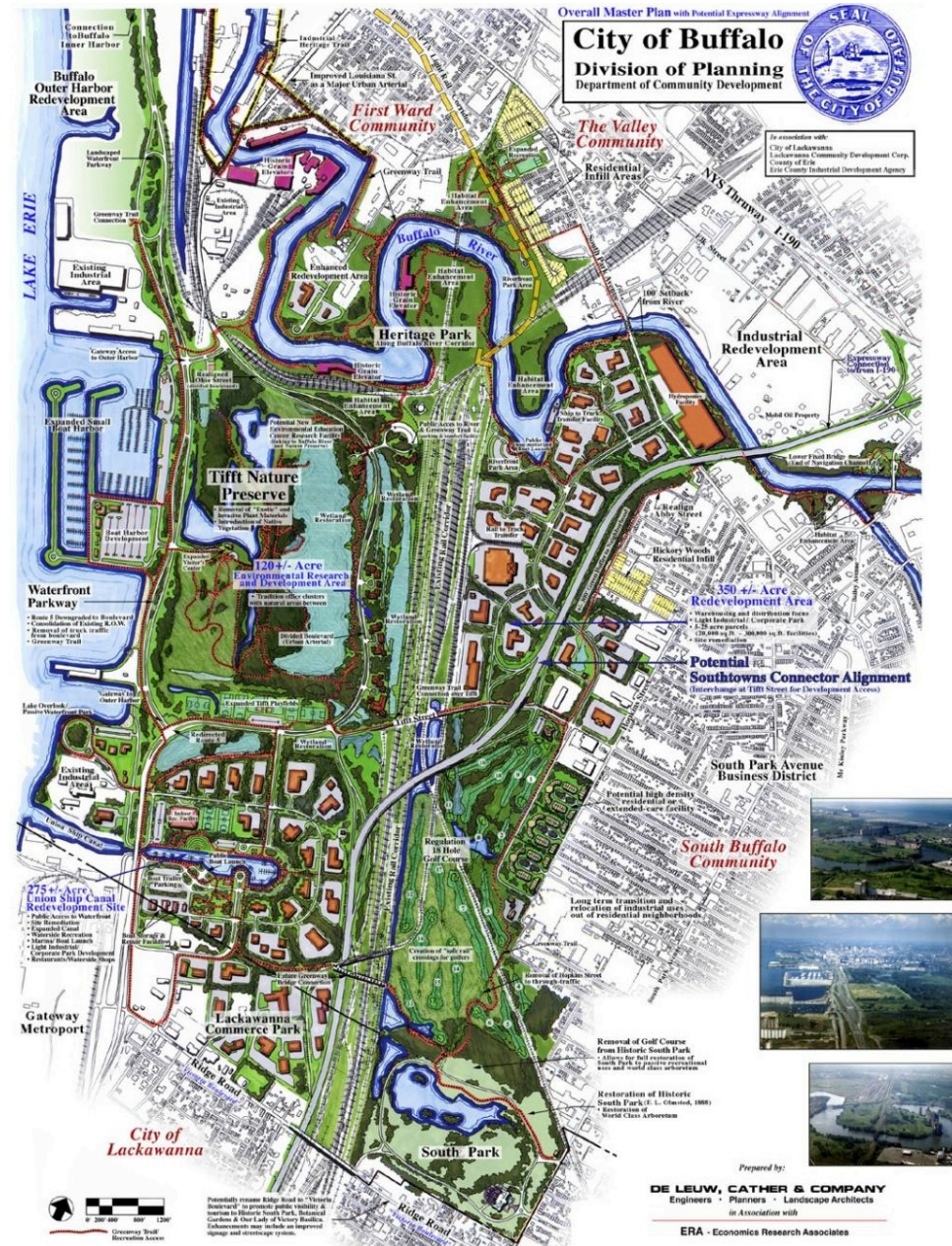


Fig. South Buffalo Redevelopment Plan 1997

Before BOA 2 : Lakeside Commerce Park(LCP)

- Steel plant closed in 1982 and the site used as scrap yard
- Listed in BF inventory by EPA Brownfield assessment Pilot
- South Buffalo Redevelopment Plan provided conceptual idea
- City foreclosure in 2001, Urban renewal plan in 2003
- Canal Ship Park (Open Space in along canal) by New York State Environmental Restoration Fund
- Greening not only for citizen but for attraction of new businesses to the commerce park



Before Redevelopment (Google Earth, March 1995)



LCP today (Google Earth, June 2014)

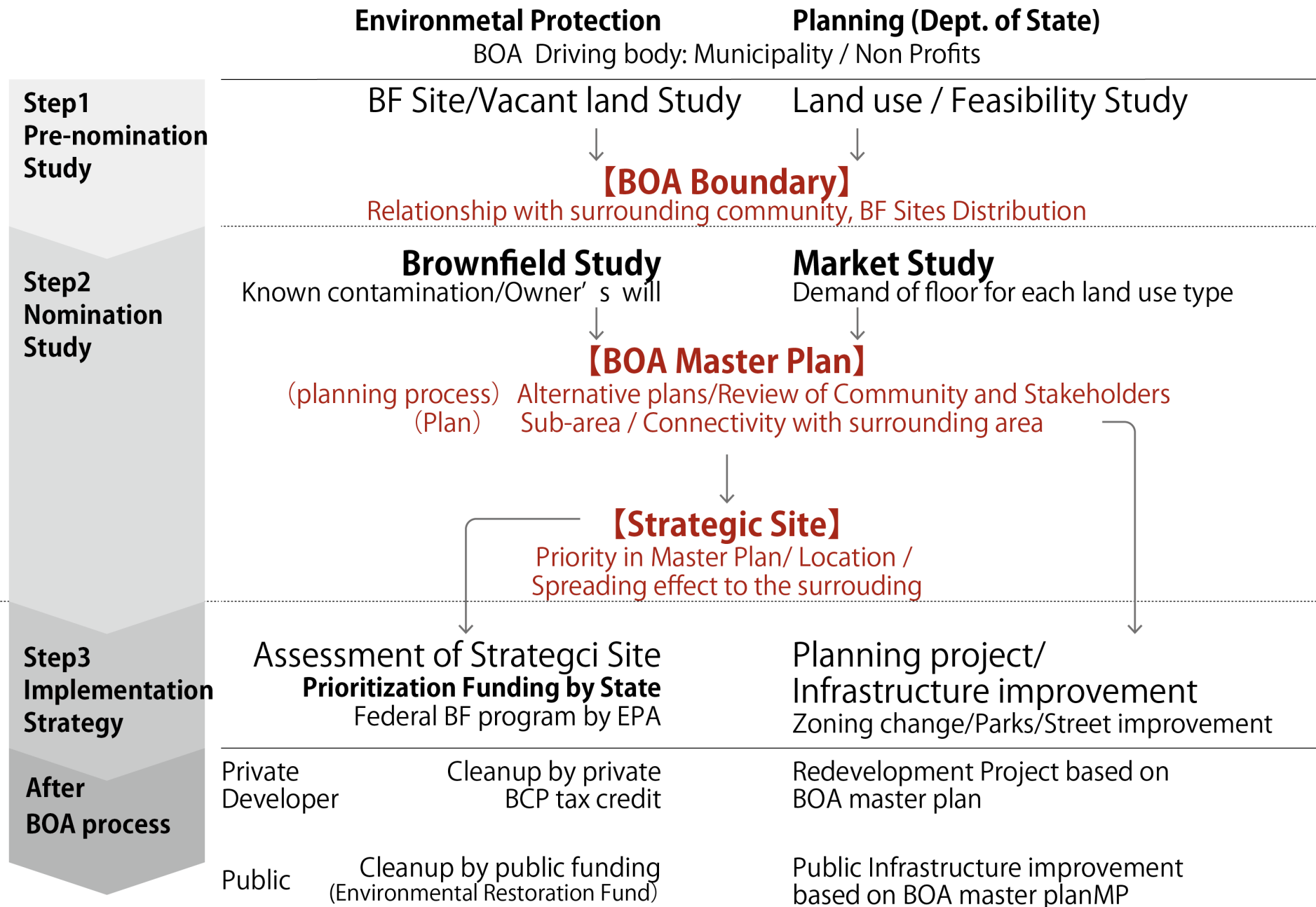


South Buffalo, Ship Canal Commons (June, 2014)

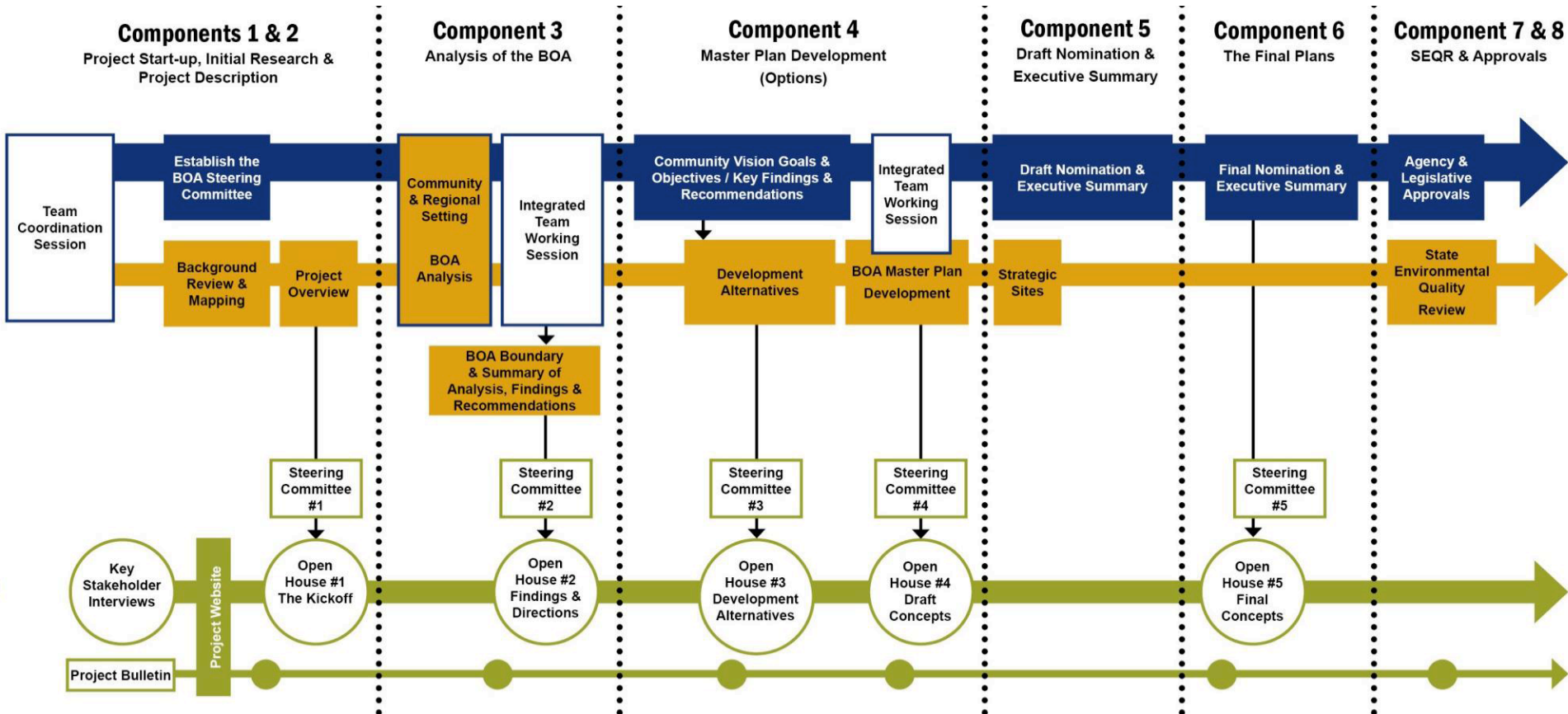


South Buffalo, Lakeside Commerce Park (June, 2014)

Integrated process of Environmental Protection and Planning - BOA



Planning Process of BOA Step 2



South Buffalo BOA Master Plan 1

Aggressive greening policy

- Greening land fills and less developable land
- Clear differentiation of development area and open space (not Vacant land)



Fig.75. South Buffalo BOA master plan, green network
South Buffalo BOA Nomination document, P131



Fig.67. South Buffalo BOA Step 2 BOA master plan (2010)

South Buffalo BOA Master Plan 2

Flexibility in land use, connectivity for urban structure

- Flexibility in land use - Office, R&D or Light industrial use
- Concrete open space designation and important streets with Form Based Code



Fig.66. Riverbend area Master plan and Important structure of green and major streets (2011)



Green infrastructure systems



Future vision for RiverBend

South Buffalo BOA master plan Land Use Table

City of Buffalo, South Buffalo BOA Nomination document, 2010, P.133 のTable 5.1に基づき作成、割合は筆者追加

Land Use	Area (acre)	Ratio	Floor Area(sq ft)	Estimated Job
R&D	33	2%	500,000	700
Business Park	220	11%	3,800,000	12,500
Business Services	66	3%	2,100,000	2,800
Industrial	317	16%	2,800,000	1,800
Rail	190	10%	0	0
Mixed Use	102	5%	4,400,000	2,800
Neighborhoods	138	7%	N/A	N/A
Development Area	1066	54%	N/A	N/A
Tifft & South Park	450	23%	N/A	N/A
Natural Areas	212	11%	N/A	N/A
Golf	133	7%	N/A	N/A
Parks & Open Space	107	5%	N/A	N/A
Non-development	902	46%	N/A	N/A
Total	1,968	100%	13,600,000	20,600

2 Layers of Planning for

Sub Area and Prioritization

- 810ha framework plan and 10 sub area for timely implementation

Leading projects (Some public projects)

- Lakeside Commerce Park completed in 2011
- Riverbend area- Detailed Master plan in 2012, 2014 development started
- Golf course on land fill – Feasibility study in 2014
- Enhancing connectivity to leading projects for maximum spill over effect (BOA step 3 Implementation Strategy)

Fig. Riverbend Master Plan (2011)

Fig. South Buffalo leading projects

Fig. South Buffalo Golf Course, Conceptual Plan (2014)



Alternative plans for swinging market and community discussion

Diversity moderate



Diversity High

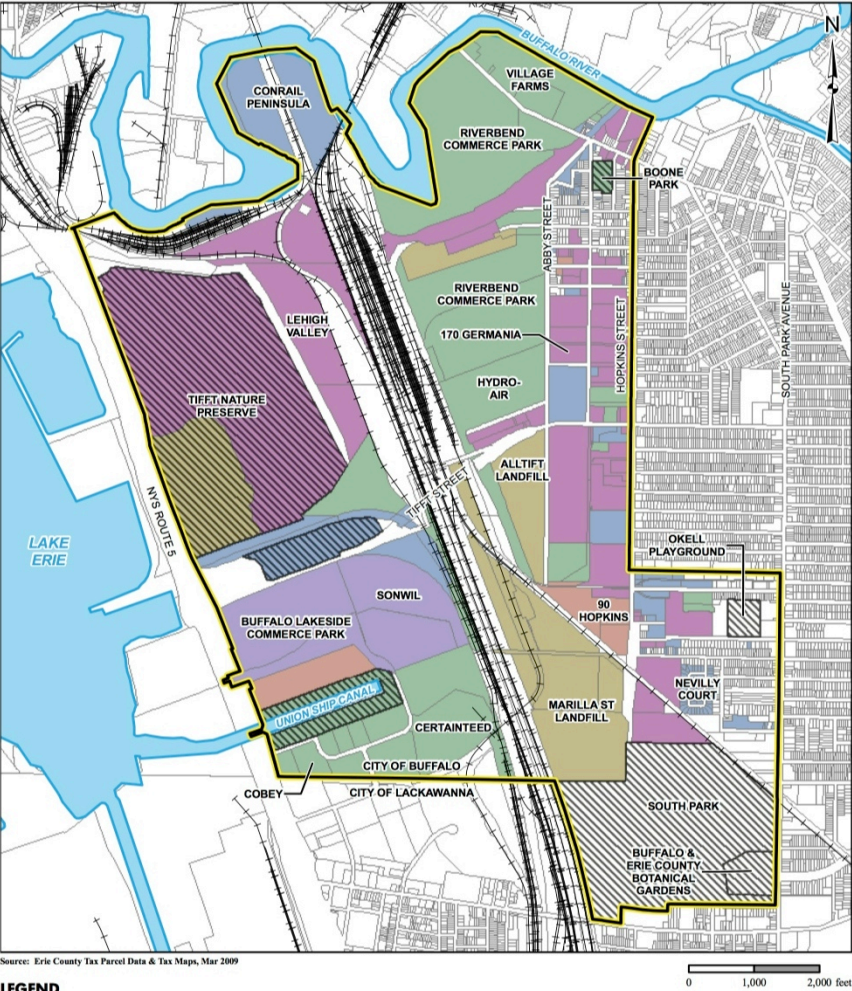


Diversity Maximum



BOA Analysis: Detailed Brownfield inventory

Known and Unknown Contamination

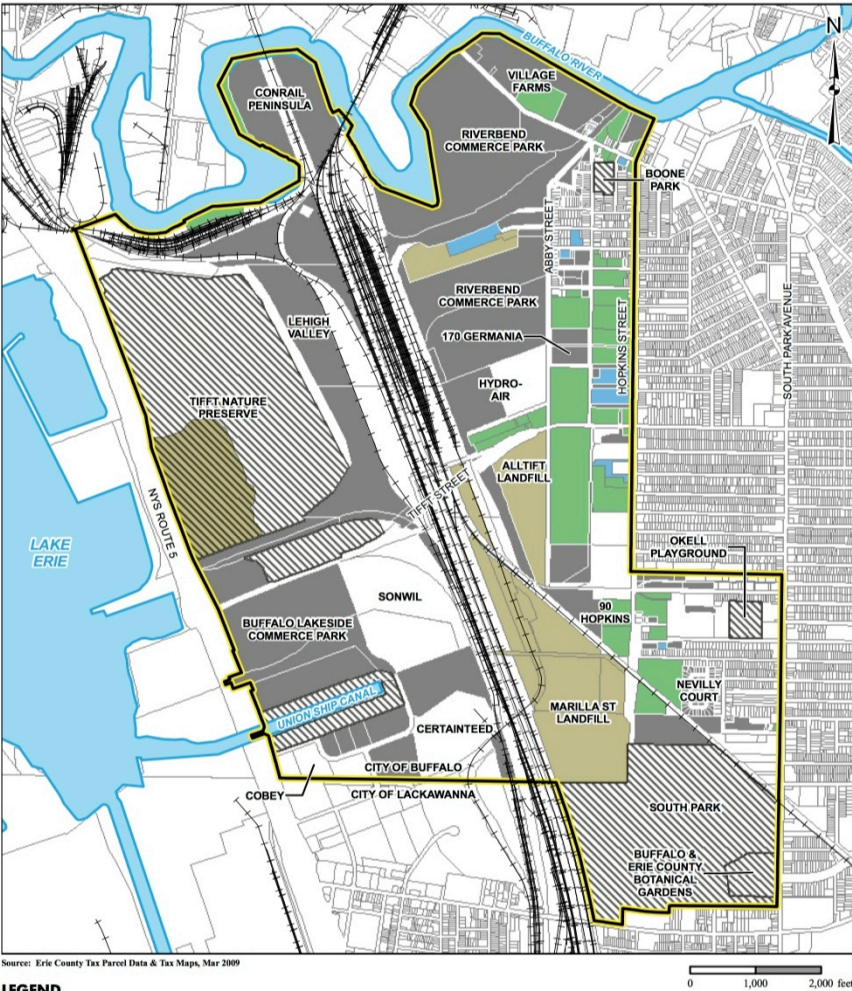


LEGEND

BROWNFIELD TYPE:

- REMIEDIATED/ REMEDIATION-ON-GOING
- BROWNFIELD
- KNOWN CONTAMINATION
- NO KNOWN CONTAMINATION
- NO SITE CHARACTERIZATION
- CLOSED LANDFILL

Vacant Lot



LEGEND

- PARKS / OPEN SPACES
- UNDERUTILIZED PROPERTIES
- VACANT LANDS
- UNOCCUPIED / ABANDONED BUILDINGS
- CLOSED LANDFILLS

Example of Inventory for each plot

Site 15

Hydro-Air Components, Inc.

Location: 100 Rittling Boulevard
Owner: Hydro-Air Components, Inc.
SBL # / Acres: 132.12-1-9.121 / 31.1
Brown field Status: Remediated

Location Map: Location on Underutilized Sites Location Map and Brown fields Site Map: 15

Current Use/Status:
This parcel was recently remediated and redeveloped into a manufacturing facility. However, this facility occupies less than half of the parcel with the section closest to the active rail corridor remaining undeveloped.

Zoning:
M3 Heavy Industrial

Owner: Hydro-Air Components, Inc.

Gross Floor Area (sq. ft.): 156,700

Year Built: 2006

Stories: 1 (28 feet)

Original Use: Manufacturing

Current Use: Manufacturing

Condition: Good

Existing infrastructure, utilities, and site access:
The site contains new infrastructure and utilities installed to serve the Hydro-Air facility. A new street, Rittling Boulevard, was constructed to access the facility from Tift Street. This street which is in general alignment with Abby Street on the north does not connect to Abby Street. The active rail corridor forms the western boundary of the site.

Building Profile:
The on-site Hydro-Air Components building occupies the eastern portion of the site and has the following characteristics:

Approximately 15 acres remain unoccupied on the western portion of the site.

Proximity to existing transportation networks:
An active rail corridor is located to the immediate west of these parcels. Tift Street is located to the immediate south, Hopkins Street is located to the east and Furhmann Boulevard and NYS Route 5 are located to the west. A new pedestrian and bicycle path is located along Tift Street to the southwest. Port access is approximately 1 mile to the southwest on Lake Erie. Access to the NYS Thruway I-190 is approximately 3 miles north.

Natural and cultural resources/features:
The Buffalo River is located to the north of the River Bend site across South Park Avenue. South Park and the Botanical Gardens, part of the Frederick Law Olmsted-designed parks and parkways system and listed on the National Register of Historic Places, is located approximately 3/4 mile to the south. The Concrete Central Elevator, also listed on the National Register, is located to the northwest on the Buffalo River. The George J. Hartman Play elds are located to the southwest along Tift Street. Tift Nature Preserve and State freshwater wetlands are located to the west of the active rail corridor. A FEMA 100-year oodplain (Special Flood Hazard Area) encompasses the majority of Tift Nature Preserve and portion of the Buffalo Lakeside Commerce Park across Tift Street.

Adjacent uses:
N: Vacant (River Bend site)
S: Industrial/commercial, vacant
E: Industrial/commercial, vacant
W: Railroad lines and rail yards

Environmental and land use history; list of previous owners/operators:
This site was originally part of a larger Voluntary Cleanup known as Steel elds Ltd. NYSDEC Site #V00619. An application was approved into the Brown eld Cleanup Program for Hydro-Air Components Inc. in August 2006. The site is the location of the former Donner-Hanna Coke storage yards and is currently listed in the Registry of Inactive Hazardous Waste Disposal Sites as site #915017. Development of the site was completed in Spring 2007 with the construction of an approximately 144,000 square foot manufacturing facility and additional of ce space. The remedial construction was completed in September 2007. An Environmental Easement was executed by the NYSDEC and led in the Erie County Clerk's of ce on December 21, 2007. A Final Engineering Report and Certi cate of Completion were issued December 28, 2007. A Site Management Plan was accepted

on December 28, 2007 and is in place to address management of excavated soils during construction, maintain and monitor groundwater and maintain the soil vapor mitigation system, and ensure the site is restricted to industrial/commercial use.

Known or suspected contaminants and media affected (air, water, soil, etc):
Known contaminants included petroleum, SVOCs, metals, and other VOCs. These contaminants had impacted soil and groundwater. A remedial effort included removal of soils impacted with benzene and SVOCs attributable to coking process wastes. Groundwater has been impacted with benzene and removal of the soils is anticipated to have a positive impact on affected groundwater. Oxygen Releasing Compound (ORC) led "socks" have been inserted into strategically placed wells to passively treat the groundwater. Although there are no target compounds in the groundwater requiring a soil vapor mitigation system, Hydro-Air included an active sub-slab vapor mitigation system manufacturing area and of ce space as a preventative measure. A Final Engineering Report has been issued detailing remedial efforts at the site. An Environmental Easement containing a soil/ ll management plan, prohibiting groundwater use, and restricting the site uses to commercial, is in place.



South Buffalo Step2 Strategic Sites

- Strategic BF Sites are priority sites based on BOA master plan
- Strategic Site Designation (Not responsible party / Will to follow BOA master plan)
- Priority State funding for assessment and cleanup

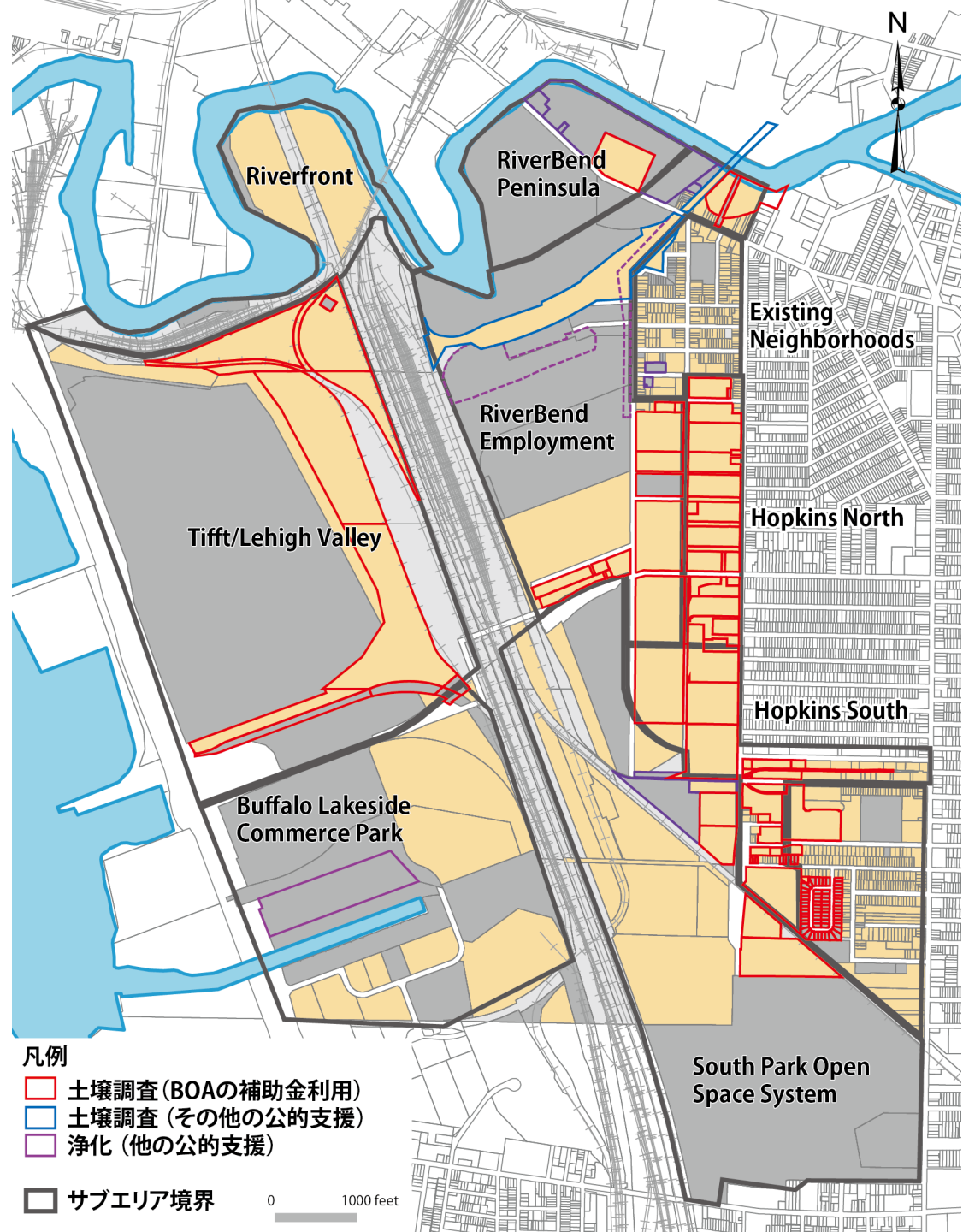


Fig. South Buffalo BOA Step 2 Strategic sites
City of Buffalo, South Buffalo BOA Nomination document,
2010, pp.189-224

Strategic Sites in Step 3

- 86 plot in Step 2 narrowed down to 49 plot in Step 3
- Connectivity to leading project and owner's past redevelopment records
- Enhancing connectivity to leading projects for maximum spill over effect, private BF sites near publicly owned leading projects

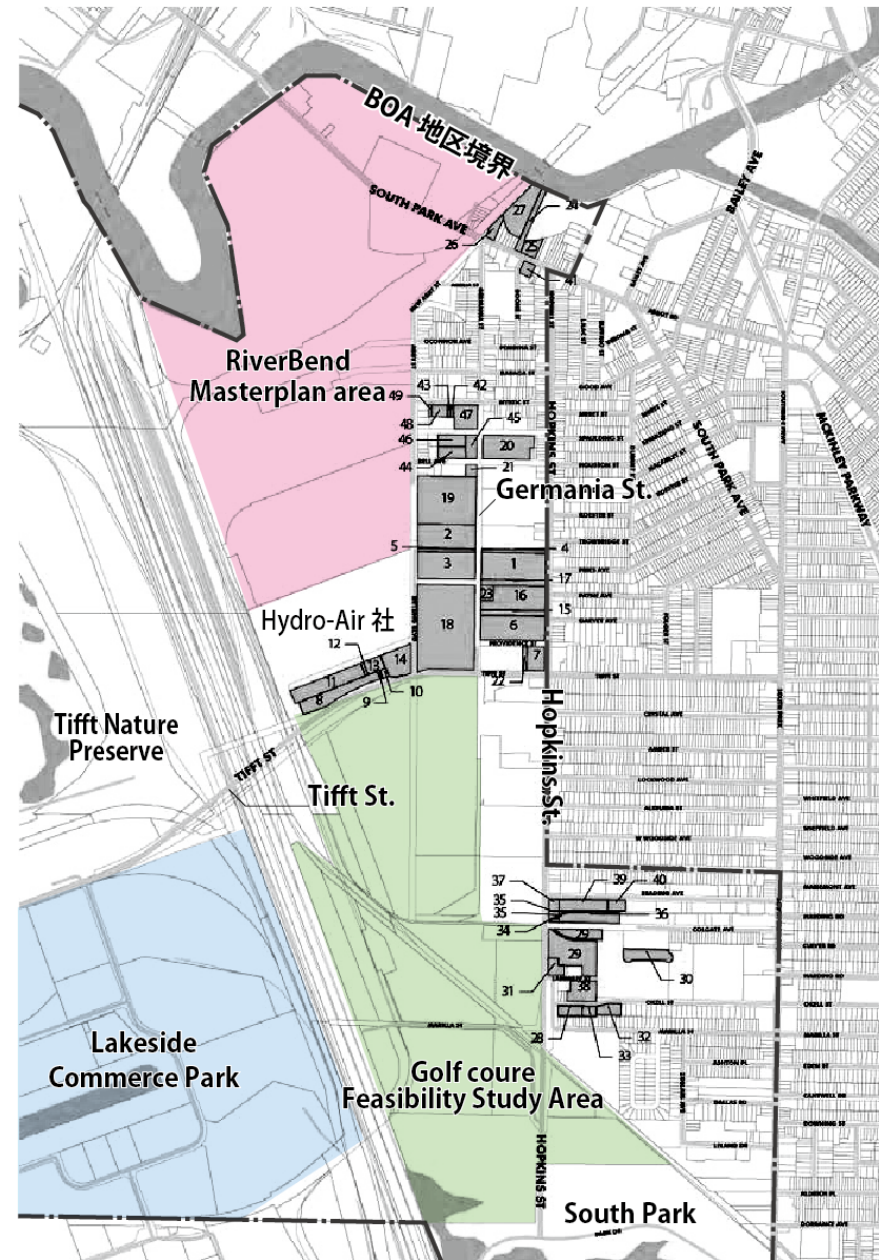
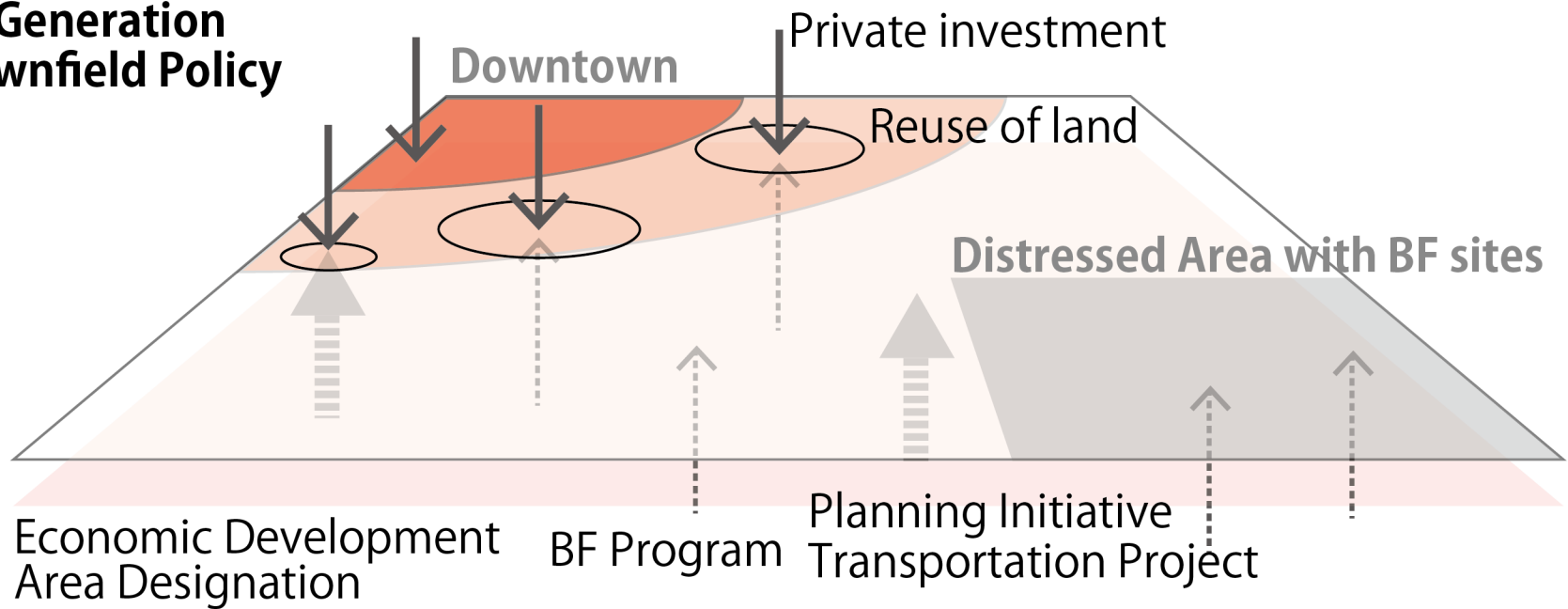
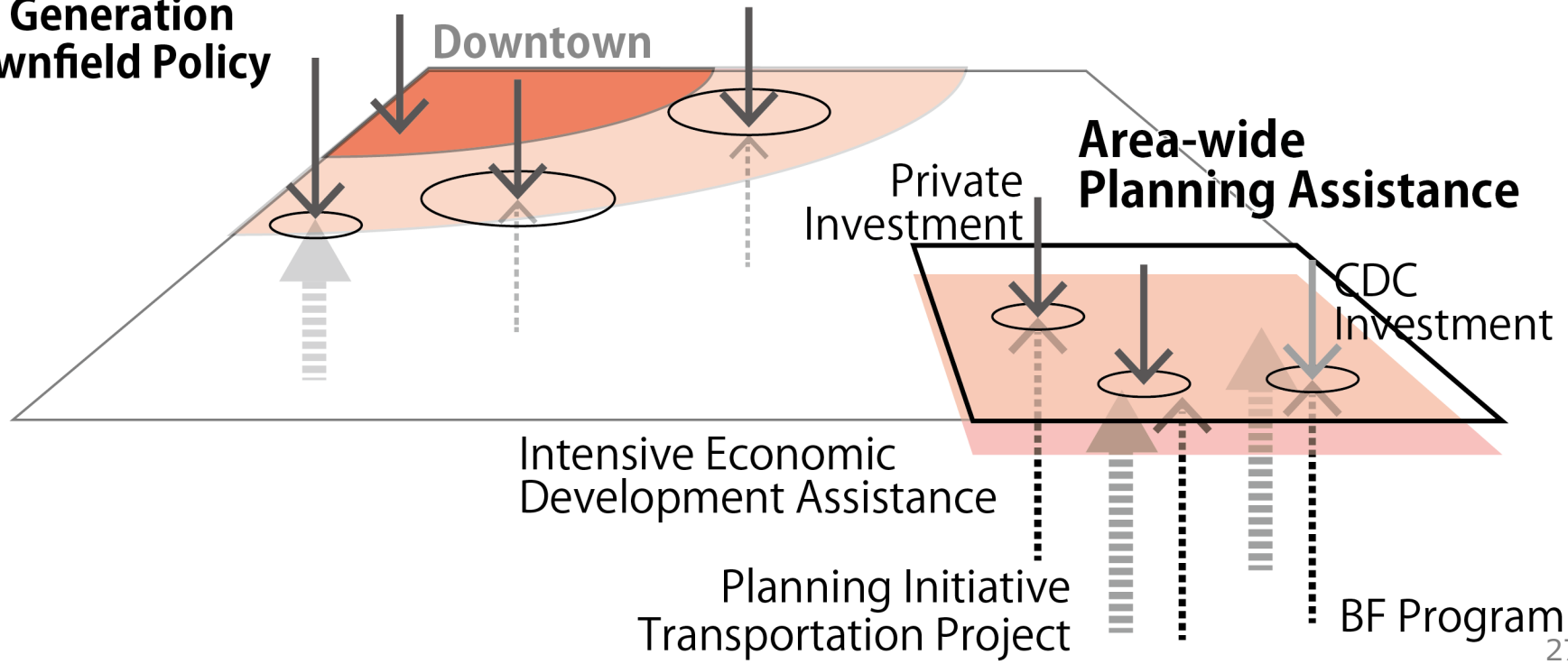


Fig. Step 3 Strategic sites

1st Generation Brownfield Policy



2nd Generation Brownfield Policy



Buffalo BF planning process

省庁名 Federal Grant

部局名 State Grant

City Wide

BNMC

Harbor area

Buffalo River

South Buffalo

Tonawanda St.

Inner Harbor

Outer Harbor

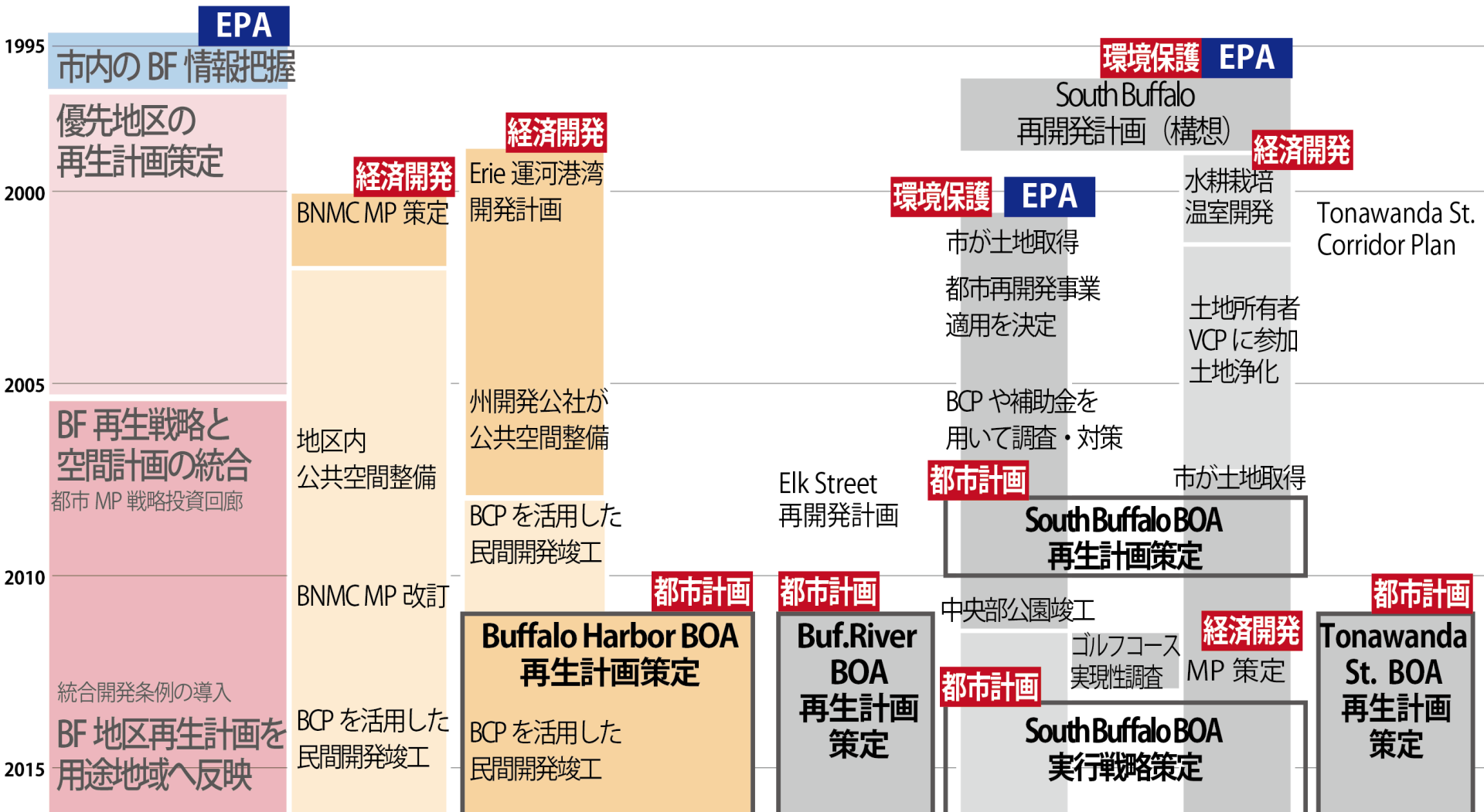
地区

Lakeside C.P.

その他

Riverbend

地区



Spatial Planning for brownfield regeneration

Visual revitalization by aggressive greening strategy

Greening landfills and other difficult land to redevelop and regaining public access to brownfield at low cost

Differentiation and Control of density

Clearly differentiating natural open space and medium density development area in BOA master plan to concentrate development demand and minimize negative impact of vacant land

Two layers of planning, BOA framework and detail master planning of Sub-area

Framework plan in 500+ acre scale for connectivity and continuity

Detail master plan of sub-area in 100 acre scale for flexible and fast-track implementation