Real-World Resiliency Initiatives, MWRA

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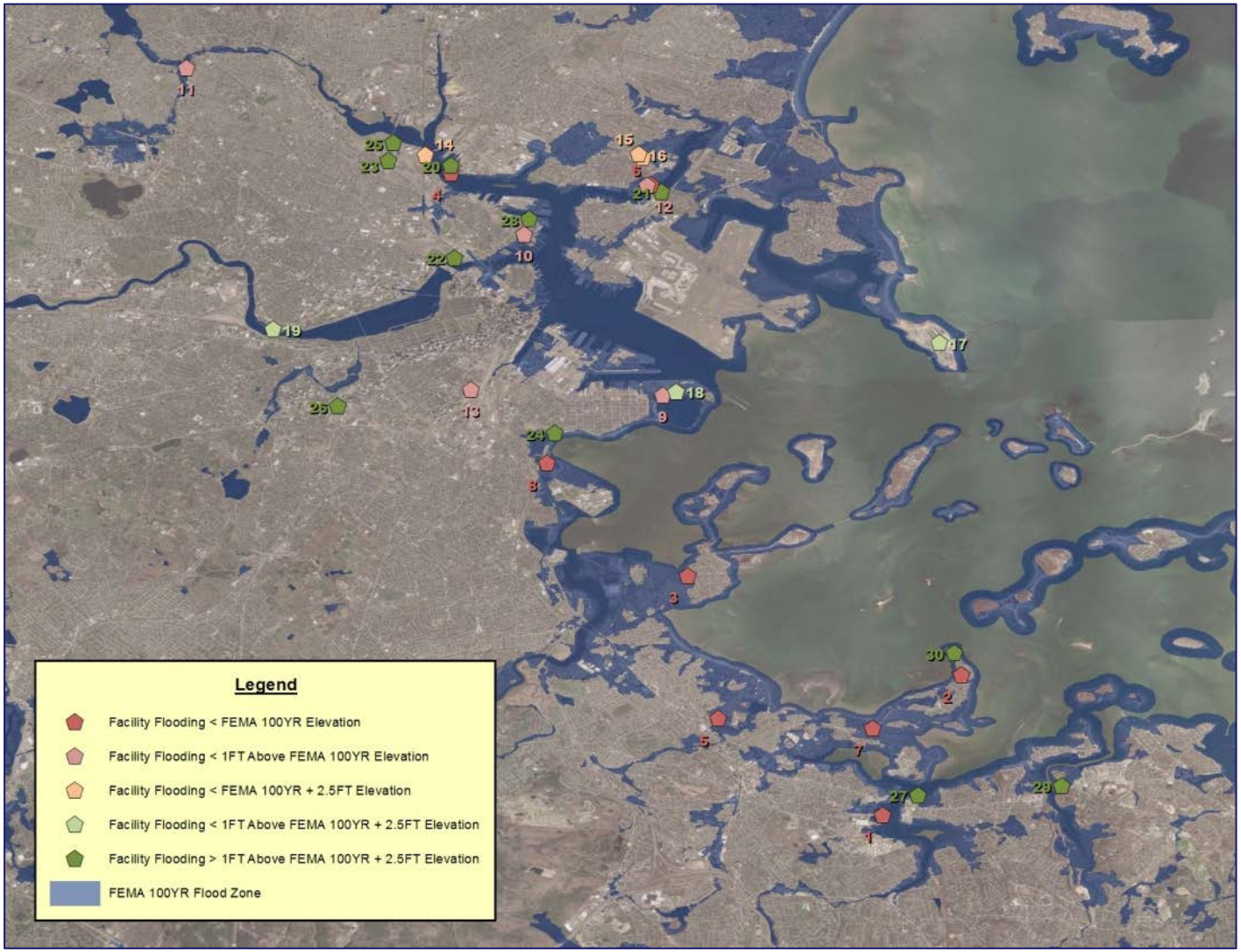
Flood Protection Goals and Design Threat

- **Flood Protection Goals**
  - Protect critical assets from damage
  - Permanent installation or quick deployment
  - Least cost
  - Rapid service recovery
  - Overall system resiliency
- **Design Threat**:
  - FEMA 100 year flood + 2.5 feet

Vulnerability Assessment – FEMA 100 yr. + 2.5 feet



Vulnerability Assessment – Prioritization

Facility			
Ranking	Name	Town	Flooding
1	Pelletizing Plant	QUINCY	< 100YR Elevation
2	Houghs Neck Pump Station	QUINCY	
3	Squantum Pump Station	QUINCY	
4	Alford St Facility	BOSTON	
5	Quincy Pump Station	QUINCY	
6	Chelsea Screenhouse	CHELSEA	
7	Braintree-Weymouth Pump Station	QUINCY	
8	South Boston CSO Tunnel Ventilation Building	BOSTON	
9	South Boston CSO Pump Station	BOSTON	< 1ft Above 100YR Elevation
10	Charlestown Navy Yard Facility	BOSTON	
11	Alewife Brook Pump Station	SOMERVILLE	
12	Chelsea Creek Headworks	CHELSEA	
13	Union Park Detention & Treatment Facility	BOSTON	
14	Mystic River Gatehouse	SOMERVILLE	< 100YR + 2.5ft Elevation
15	Chelsea Administration Facility	CHELSEA	
16	Chelsea Maintenance Facility	CHELSEA	
17	Deer Island Treatment Facility	BOSTON	< 1ft Above 100YR + 2.5ft Elevation
18	Wiggins Pump Station	BOSTON	
19	Cottage Farm CSO Facility	CAMBRIDGE	
20	DeLauri Pump Station	BOSTON	> 1ft Above 100YR + 2.5ft Elevation
21	Caruso Pump Station	BOSTON	
22	Prison Point CSO Facility	CAMBRIDGE	
23	Somerville Marginal CSO Facility	SOMERVILLE	
24	Columbus Park Headworks	BOSTON	
25	Somerville Sampling Building	SOMERVILLE	
26	Ward Street Headworks	BOSTON	
27	Intermediate Pump Station	WEYMOUTH	
28	Bos019/Little Mystic Channel CSO Facility	BOSTON	
29	Hingham Pump Station	HINGHAM	
30	Nut Island Headworks	QUINCY	

Vulnerability Assessment – Impacts

Vulnerability Assessment – Impacts

Flood Protection Options

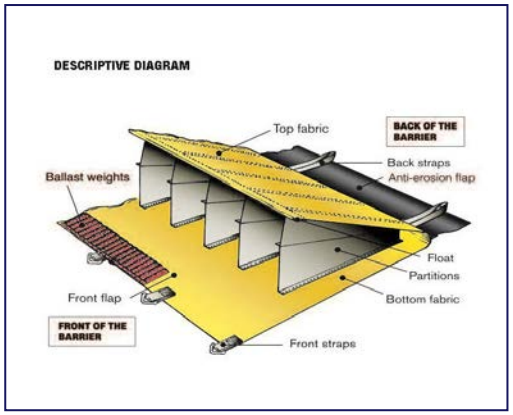
- **Interim and Long Term Solutions**
- **Funding**
  - Current Expense
  - Capital Improvement Projects
- **Physical Approaches**
  - Commercial products with sump pumps
  - Custom built barrier walls with sump pumps
  - Elevate equipment
  - Establish backup facilities
  - Relocate assets

Commercial Products Considered

Water Filled Bladders

Storable Wall Kits

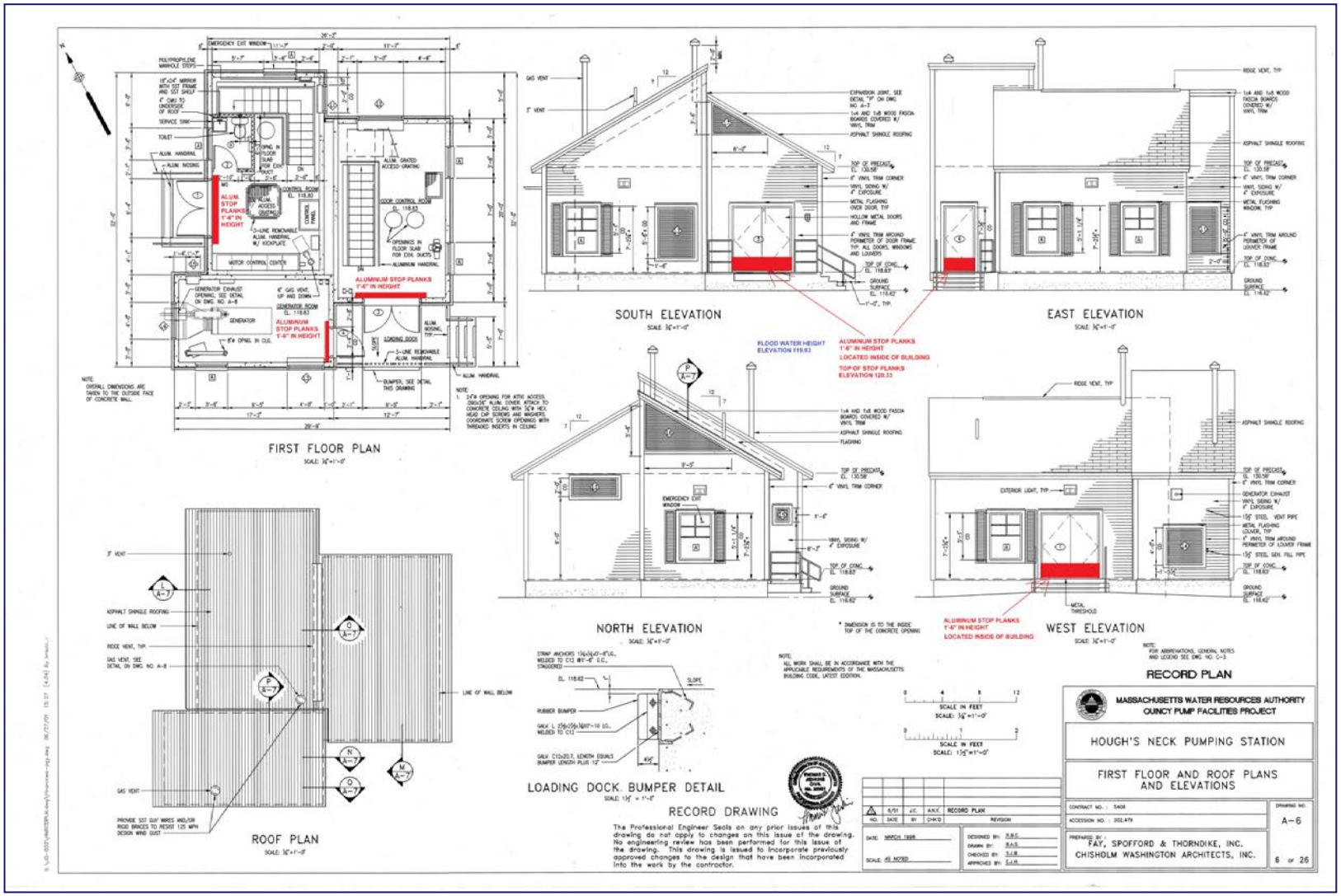
Floating Barrier



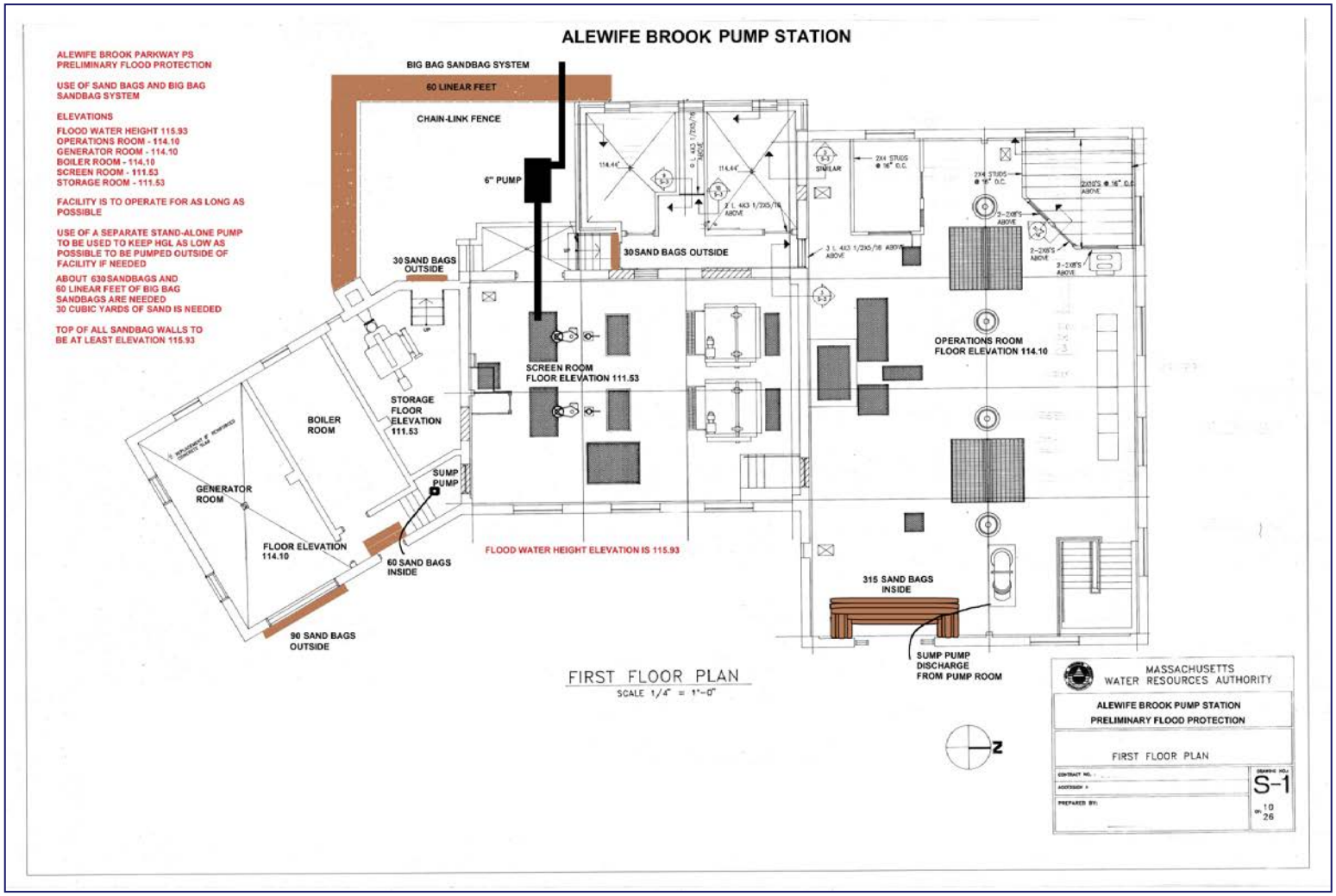
Aluminum Stop Planks

Big “Sand Bags”

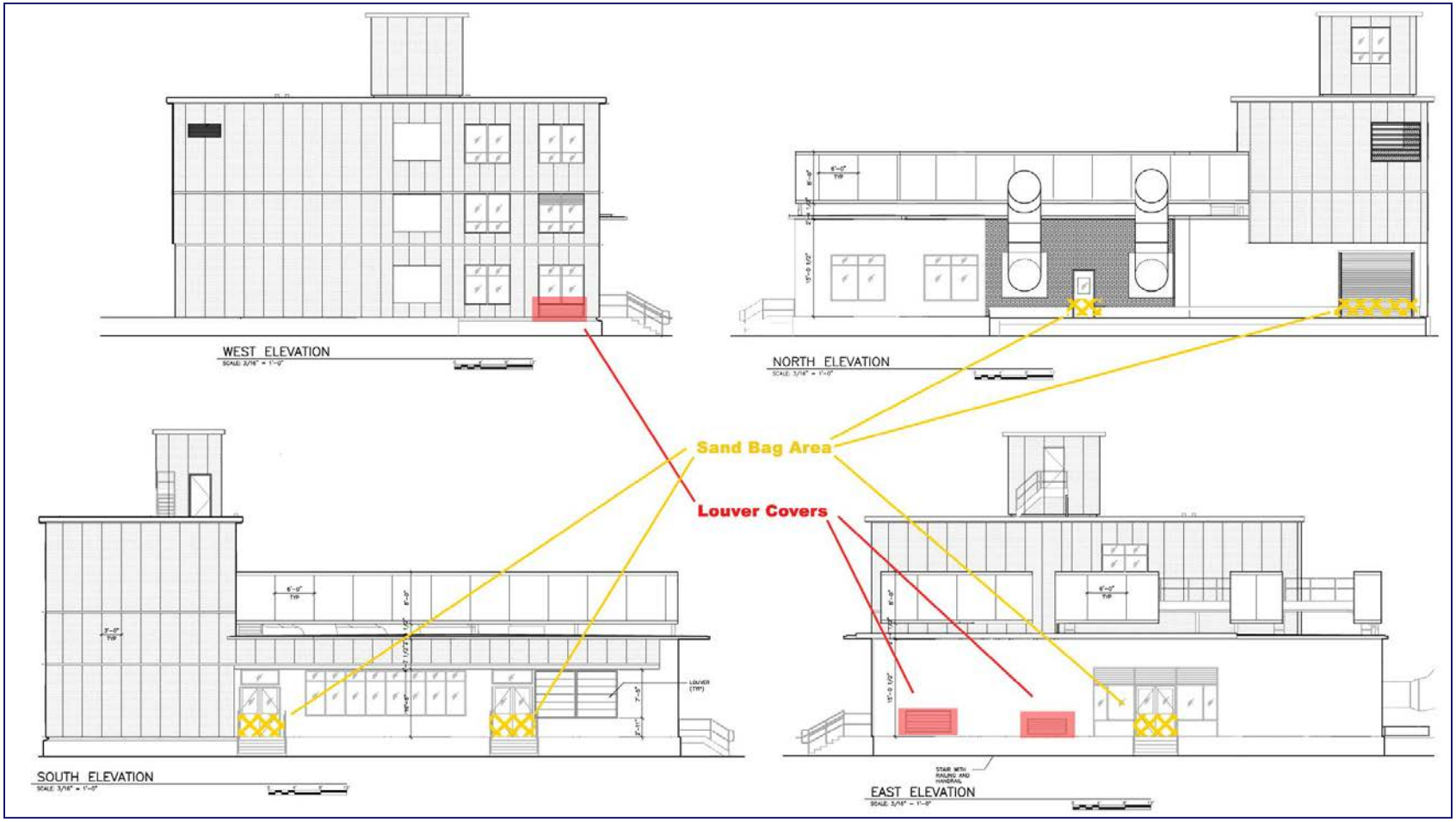
Designs, Permanent – Stop Planks



Designs, Interim – Big “Sand Bags”



Designs – Both Stop Planks and Sand Bags



Commercial Products:

Aluminum Stop Planks for:

Braintree-Weymouth PS

Houghs Neck PS

Quincy PS

Squantum PS

Chelsea Administration

Chelsea Maintenance

South Boston CSO PS

Pelletizing Plant

Commercial Products:

Floating Barrier for:

South Boston CSO Vent Building

Big “Sand Bags” and Regular Sand Bags for:

Alewife PS (interim use)

Chelsea Admin. Generator and Transformer

Custom Build Barrier Walls

Construction of Reinforced Wall with Aluminum Stop Plank

Protecting Generators and Electrical Equipment

Fore River Pelletizing Plant

Chelsea Screen House

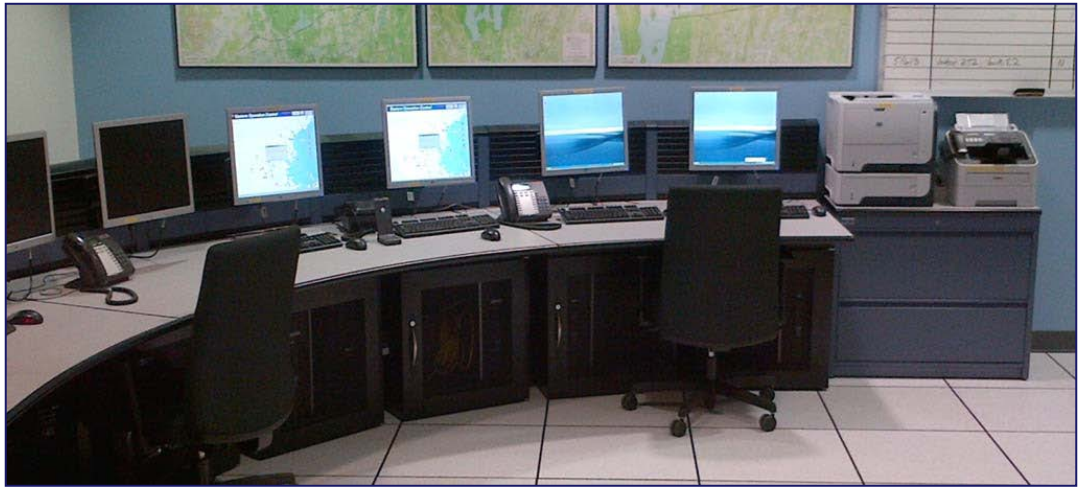
Elevate Equipment – Alewife Brook Pump Station

Capital project that will elevate gate actuators, pump motors, VFDs, motor control centers, switch gear, and PLC cabinet.

Elevate Equipment – Chelsea Creek Headworks

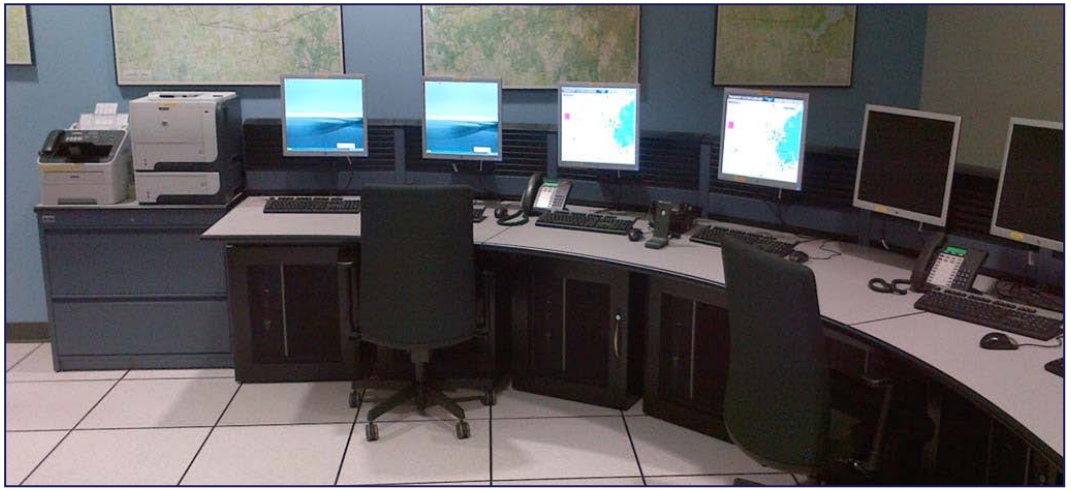
Capital project that will elevate switch gear, transformer, access hatches, communications building, and emergency egress.

Establish Backup Facilities

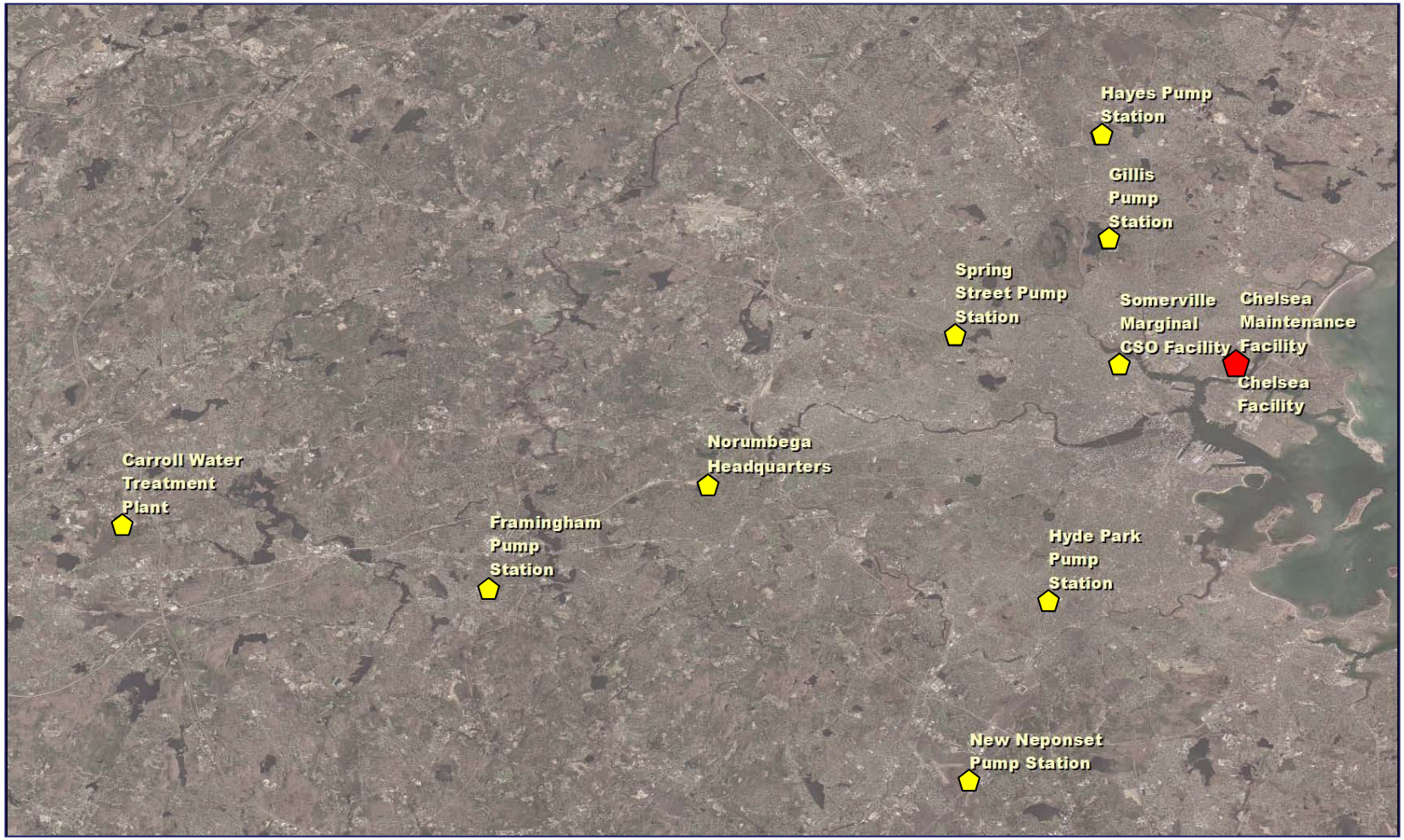


Backup
Water OCC

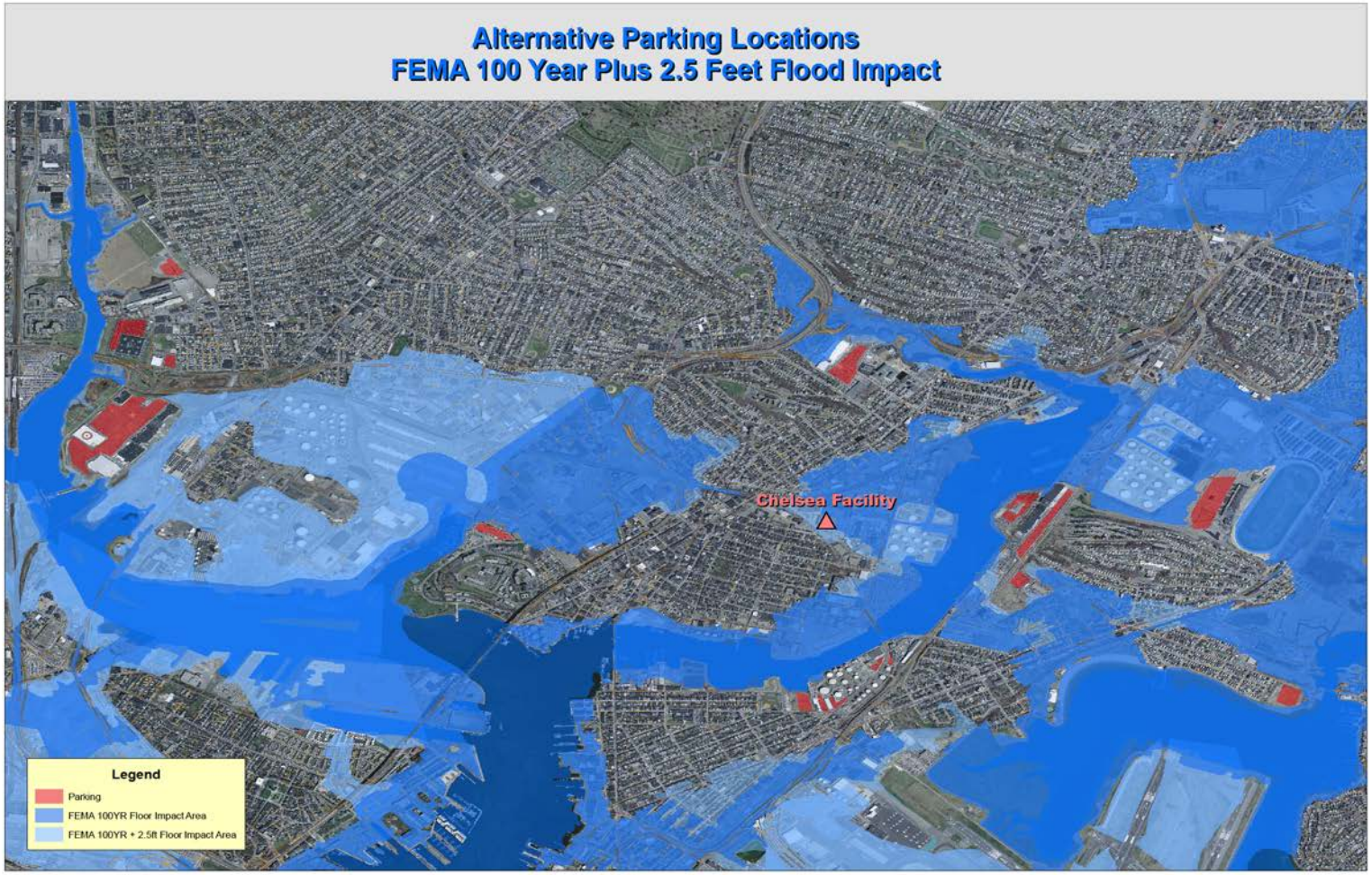
Backup
Wastewater OCC



Relocate Assets – Staff and Mobile Equipment



Relocate Assets – Temporary Rolling Stock Options



Relocate Assets – Annual Emergency Lease

Lessons and Considerations

- Design levels may change over time
- Best to pick a design level and act now
- Different technologies and approaches for different situations
- Prioritize your facilities
- Be willing to establish interim measures
- Practice deployment