

# INVASIVE INFRASTRUCTURE

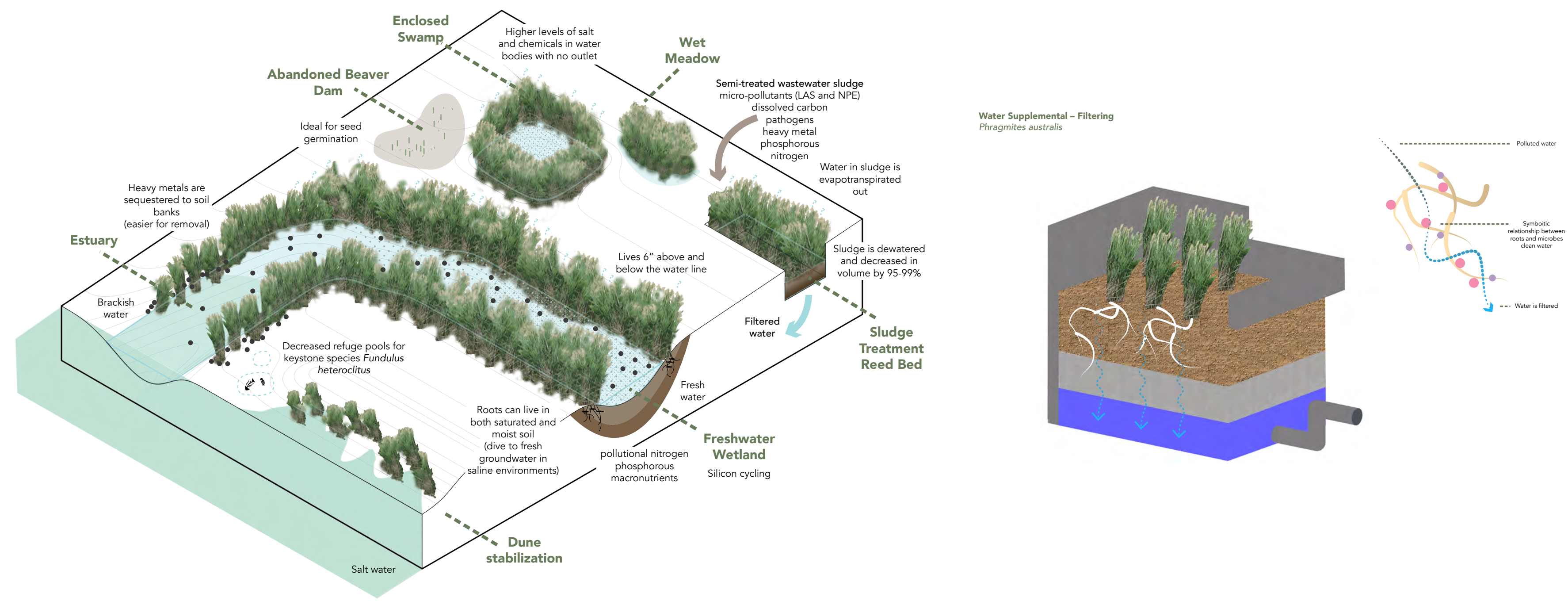
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Estuaries are key ecologies to filter water flows between coastal and inland conditions, serving as natural critical infrastructure. In Boston, the Neponset River Estuary has become polluted, depleted of native species, and put under serious threat from toxic chemical buildup due to decades of runoff, dumping, and sedimentation. The loss of tidal wetlands from coastal development has also made the estuary critically vulnerable to impending sea level rise.

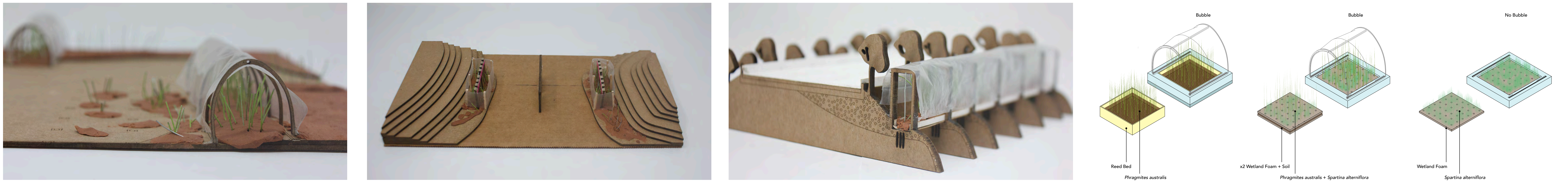
Although it is an intruder to the Neponset River system, *Phragmites australis* is an indispensable asset to the remediation and resilience of this area. *Phragmites* grows rapidly in anthropogenic environments to remediate water and soil, dewater sludge, and remove excess nutrients and other pollutants. *Phragmites* can take over polluted areas and condition soil for the eventual reclamation of the native *Spartina alterniflora*.

This project is a research-based system to utilize existing ecology as green infrastructure for resilience and public health. We are proposing a series of discrete interventions utilizing *Phragmites australis* to restore and strengthen marshland while addressing multiple contaminant types across various timescales and threats. In the Neponset River Estuary, these interventions include a series of temporary and flexible inputs along current coastal infrastructure that will act as natural filters to remove toxic chemicals from runoff and industry before they are released into the coastal water system. Implementing these interventions will also generate new marsh that will increase the productivity of the estuary and strengthen the current coastline.

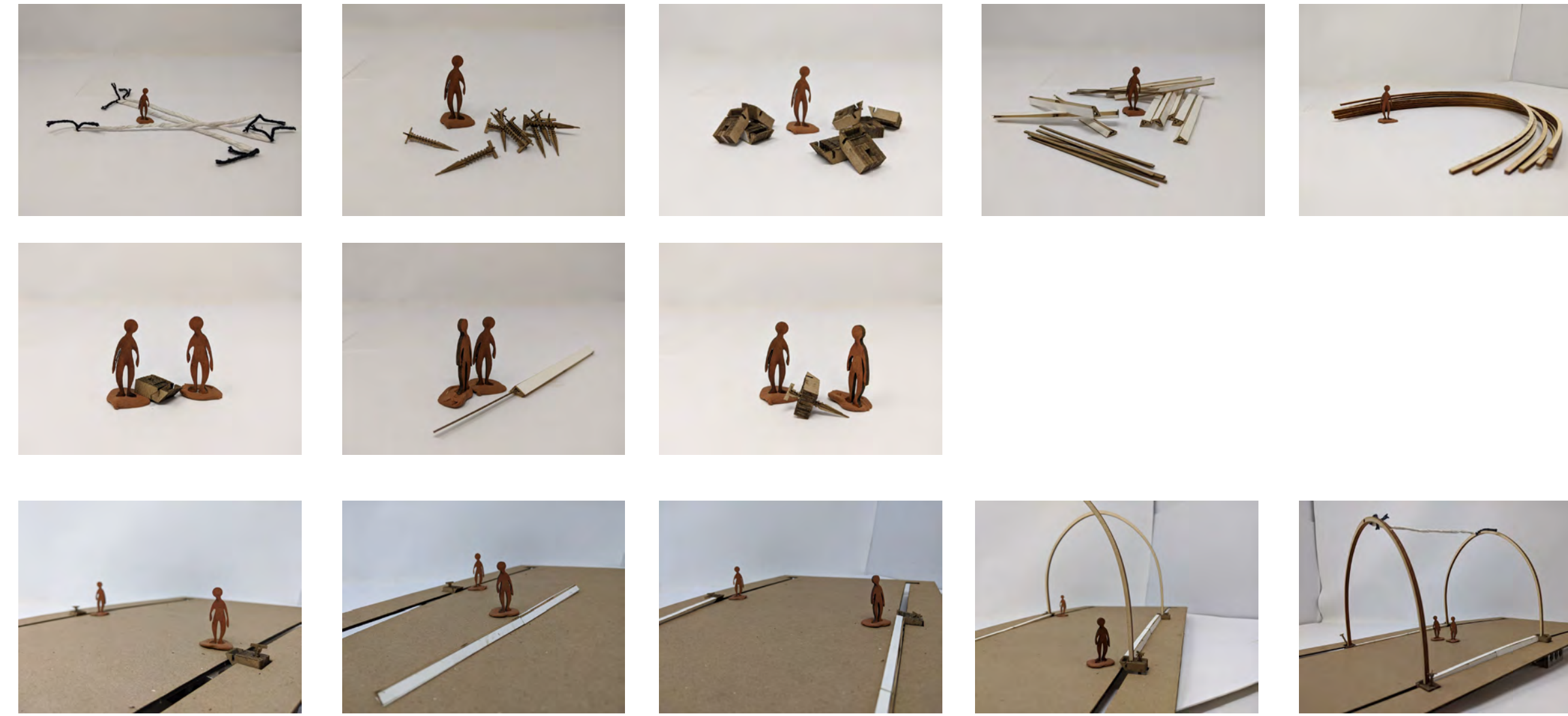
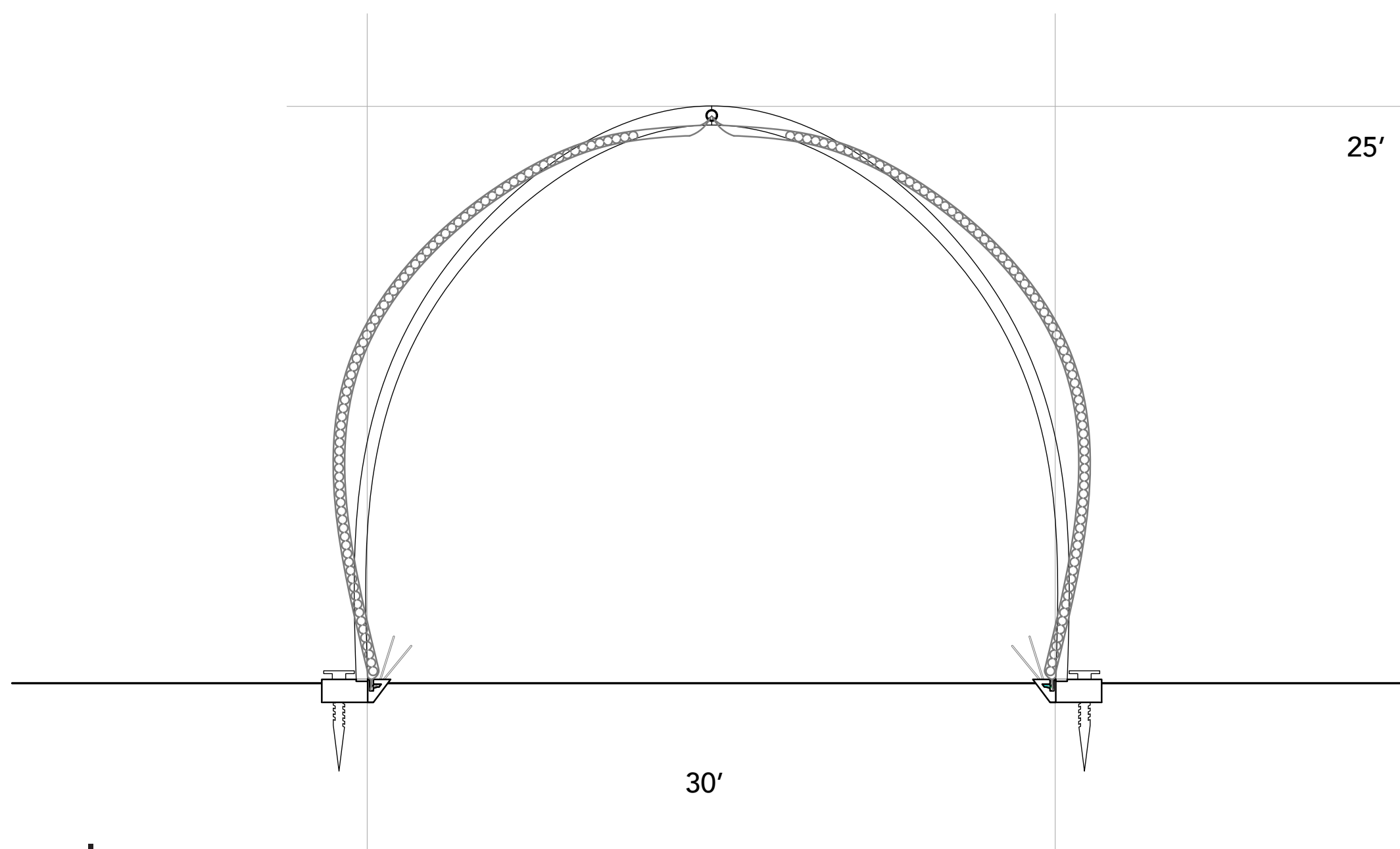
## Phragmites australis



## Remediation Strategies



## Inflated Structure and Assembly



## PCB + Toxin Removal

