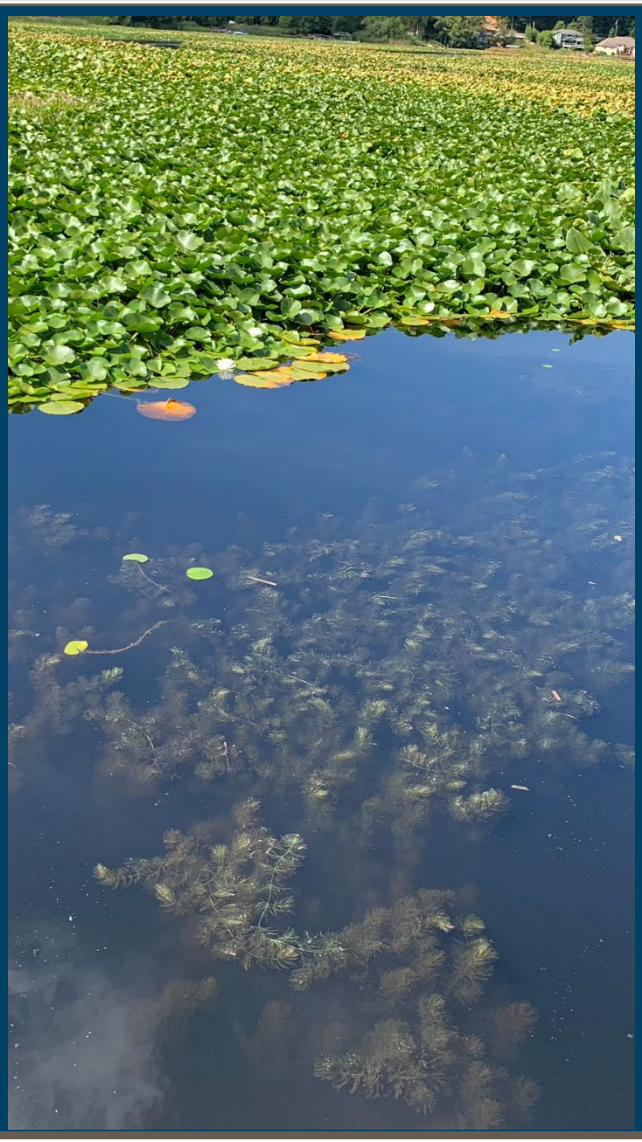
Welcome Steering Committee



Introductions:

Please type the following into chat:

- Your name
- # of years at Long Lake
- What you love about the lake

Zoom Info:

- Please mute when not speaking
- Please “Raise your Hand” and wait to be called on to speak
- If you are calling in from a phone:
  - *6 Toggles between mute/unmute
  - *9 To "raise your hand“

TETRA TECH

Long Lake IAVMP Steering Committee Kickoff

Kitsap County

February 16, 2022

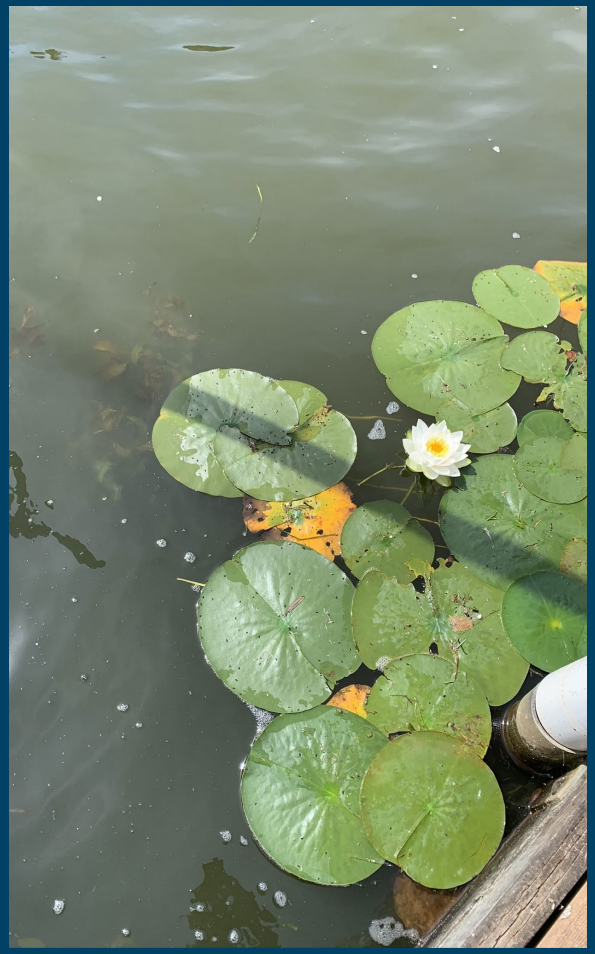
complex world | CLEAR SOLUTIONS™

Agenda

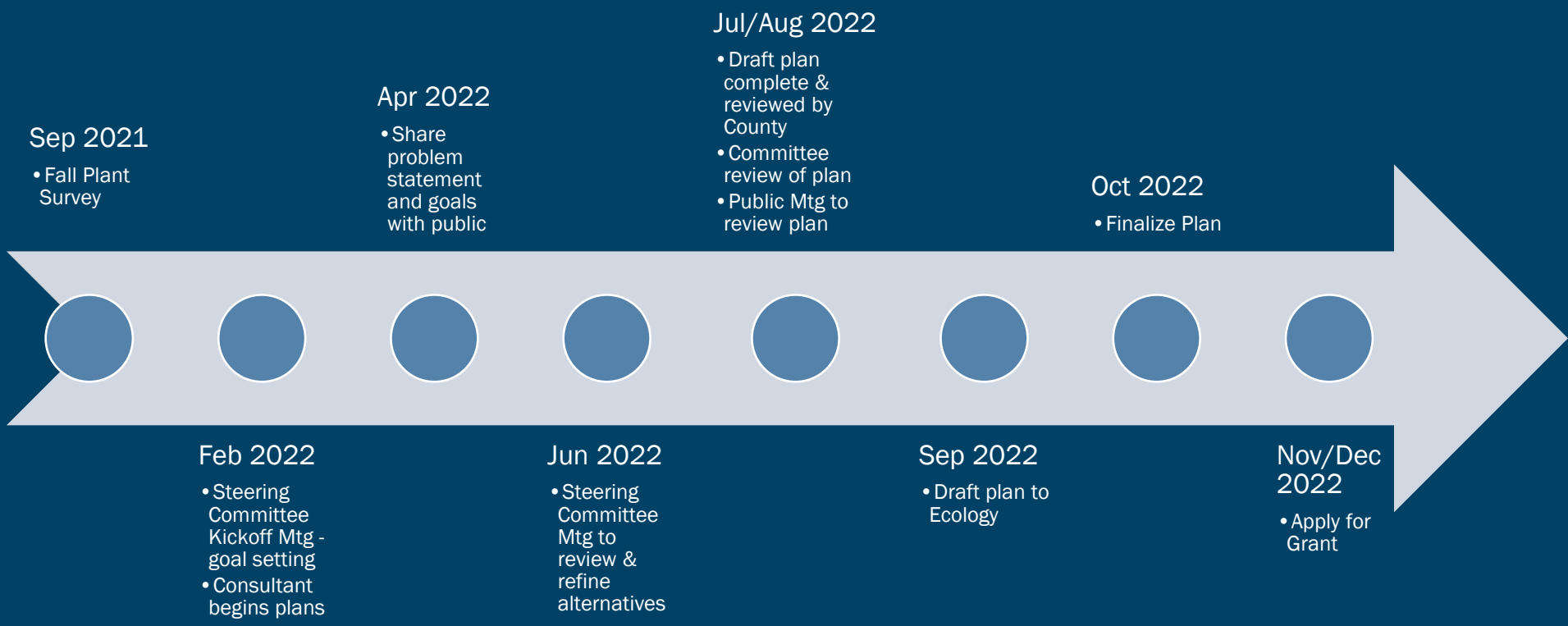
- Introductions and Housekeeping (10 min)
- Project Actions & Timeline (5 min)
- Benefits of Native Plants (5 min)
- Results of 2021 Vegetation Survey (15 mins)
- Brief Summary of Past Management Efforts (5 min)
- Discuss Problem Statement (15 min)
- Key Plant Species & Potential Management Options (15 min)
- Discuss Management Goals (30 min)
- Next Steps (5 min)

Introduction

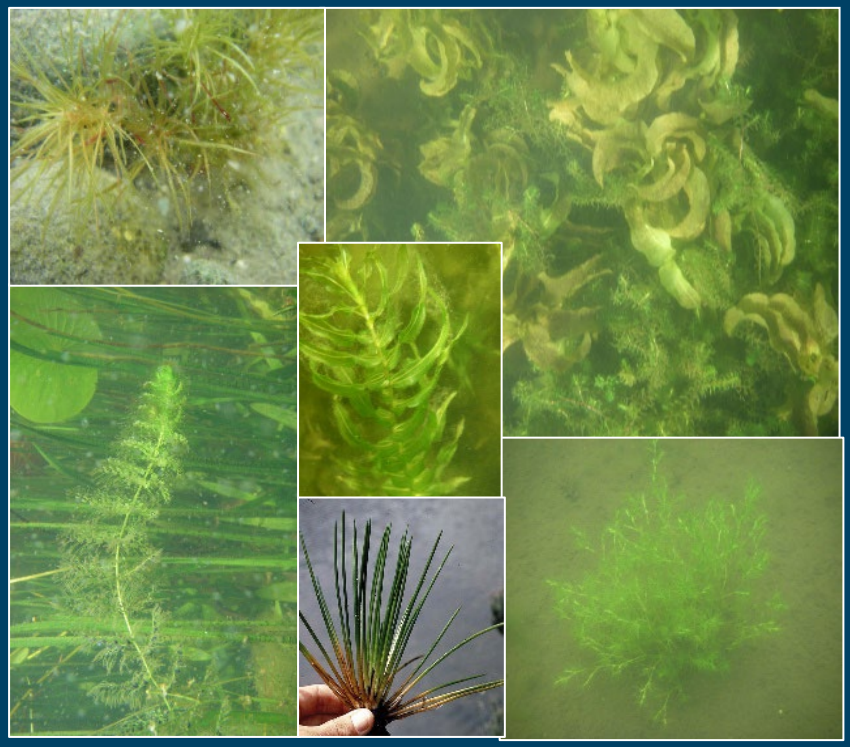
- Kitsap County Team
  - Jennifer Haro
  - Eric Baker
  - Charlotte Garrido, County Commissioner
- Tetra Tech Team
  - Harry Gibbons, PhD
  - Shannon Brattebo, PE
- Long Lake Steering Committee Members



Project Actions & Timeline



Benefits of Aquatic Plants



- Fit well into lake ecosystem
- Good for fish - act as nursery
- Filter out pollution & protect water quality
- Habitat for other aquatic life – birds, turtles etc.
- Have natural controls

Invasive Aquatic Plants

- Often create nuisance conditions in lakes
- Displace native plants & harm local ecology
- Adaptable; prolific; Few natural enemies
- High cost to control

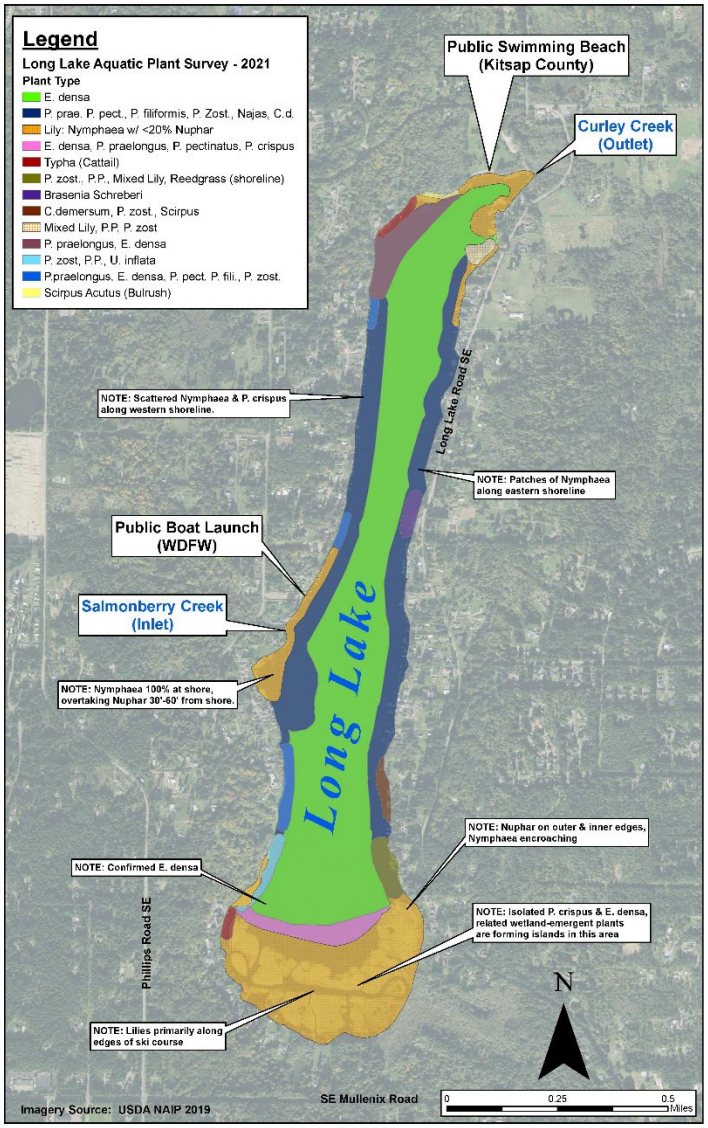
Long Lake Vegetation Survey - 2021

- Increased diversity with more native species
- Dense plant growth in majority of littoral area
- Spring 2021 aquatic plant growth accelerated relative to normal seasonal patterns
  - Approximately 6 to 12 weeks ahead
- **3 of the 4 non-native, invasive plant species have been reduced in both density and coverage**
  - Eurasian watermilfoil – not observed
  - Curlyleaf pondweed – scattered patches
  - Brazillian elodea – coverage/density greatly reduced

Photos: Dean Miller, CILL

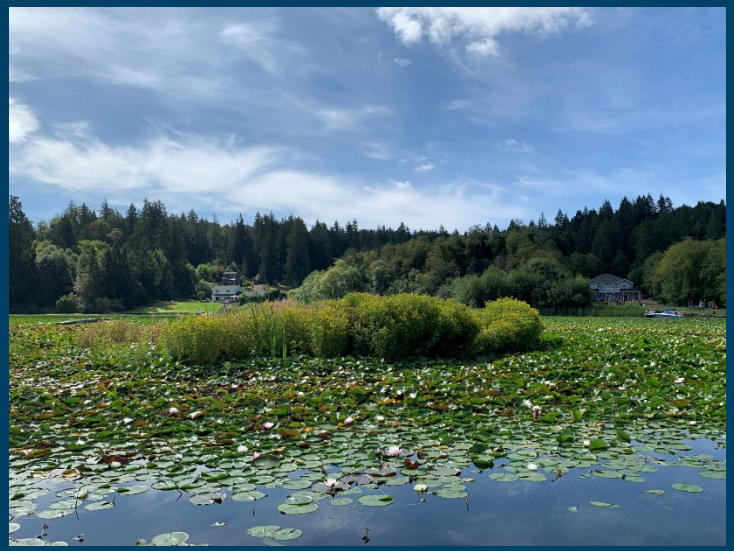
Long Lake Vegetation Survey - 2021

- Plant species
  - *Nymphaea* (Fragrant Water Lily)
    - Non-Native, Significant Expansion, Dense Coverage
  - *Egeria densa* (Brazillian elodea)
    - Non-Native, Dominant submersed plant
  - *Potamogeton Crispus (curlyleaf pondweed)*
    - Non-Native, Coverage Minimal
  - *Potamogeton Praelongus* (white-stemmed pondweed)
    - Native, Dense Coverage Littoral Shorelines



Long Lake Vegetation Survey - 2021

- *Nymphaea* (Fragrant Water Lily)
  - Significant expansion in density and coverage
  - Accelerated lake aging (eutrophication)
  - Sediment accumulation
  - Reducing the lake's open water area
  - Excessive growth has resulted in floating masses of plant material – islands
- <u>Will require significant management actions</u>



Past Management Efforts

- Long history of aquatic plant management
  - Brazilian elodea has existed in the lake for over 40 years
  - Harvesting in the 1990s had no effect on dominance
- 20-year study by University of Washington
- EWM was not present during UW study but was observed during 1996 IAVMP study – not recently observed
- Curlyleaf pondweed recent invader – 2006
- Management during 2006 – 2010 resulted in more diverse community
- Gap between 2010 and 2018 with no management
- Targeted native pondweeds (nuisance growth) – 2020
- Management during 2018 – 2021 – treatments for pondweeds and fragrant white lily expansion

Problem Statement

Beneficial Uses

Habitat/ Water Quality	• Fish • Birds • Otters, Beavers
Recreation	• Fishing • Swimming • Boating and Paddling • Water Sports • Seaplane landing/take off
Aesthetics	• Wildlife Watching • Beauty and Calmness • Views

Problem Statement

Beneficial Use	Impacts
Habitat	• Degradation of habitat for animal and aquatic species • Displaces native plant species • Lake becoming shallower, sediment accumulation
Water Quality	• Low DO • Degradation of water quality for humans/pets • Potentially leads to toxic algal blooms
Recreation	• Difficulty fishing • Difficulty swimming • Difficulty boating and paddling – clog up boat motors/paddles • Use of lake restricted • Restricts access to homes and docks
Aesthetics	• Dense mats on surface can be unsightly • Beauty compromised

Problem Statement

Further Discussion/Notes

Overview of Management Options for Aquatic Plants

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Kitsap County

Type of Control	Method	Description
None	No action	No management strategy implemented to control and reduce aquatic plant growth
Manual	Hand-pulling, raking, cutting by citizens or divers	Plants removed by manually pulling, raking from the shore or dock, or cutting from the shore or dock using specialized cutting equipment
Chemical	Aquatic herbicides	Chemicals applied directly to plants or lake sediments to inhibit or restrict plant growth or to kill existing plants
Mechanical	Harvesters, weed cutters	Specialized equipment that cuts plant material and leaves in place (cutters) or removes (harvester)
Dredging	Mechanical dredging, diver dredging	Specialized equipment used to remove plants and sediment (mechanical dredging) or plants (diver dredging)
Bottom Barrier	Burlap, geotextiles/plastic	Material laid down and anchored to a lake bottom to block sunlight and prevent plant growth
Biological	Insects, herbivorous fish (grass carp)	Introduction of a natural enemy from a weed's native range to control a non-native invasive plant

Key Plant Species in Long Lake

- Brazilian Elodea
  - Noxious Weed of Concern – Kitsap County
  - Class B Weed – WA State Noxious Weed Board
- Curlyleaf Pondweed
  - Noxious Weed of Concern – Kitsap County
  - Class C Weed – WA State Noxious Weed Board
- Fragrant Waterlily
  - Class C Weed – WA State Noxious Weed Board
- Native Pondweeds - ?

Brazilian elodea (*Egeria densa*)

- On the WA State quarantine list
- Found in still and flowing waters
- Forms dense masses of growth near water surface
- Reproduces by roots and plant fragments
- Control is difficult

Management

- Manual: for small infestations (***collect all plant material***)
- Chemical: several herbicides
- Mechanical: not recommended – may increase infestation
- Dredging: diver assisted
- Bottom barrier effective for small infestations
- Biological: grass carp

Curlyleaf Pondweed (*Potamogeton crispus*)

- Grows in shallow to deep, still to flowing water
- Can form dense surface mats
- Tolerant of disturbance
- Spreads by seeds, rhizomes and **turions** – Peak biomass in late spring/early summer
- Some evidence that early season cutting/harvesting can slow turion production

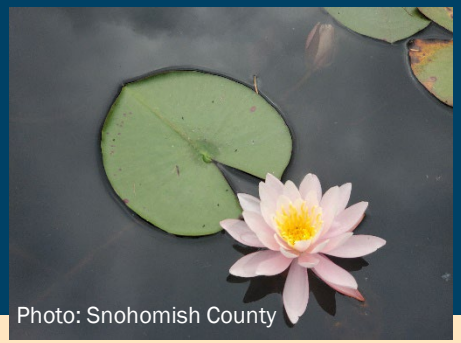
Management

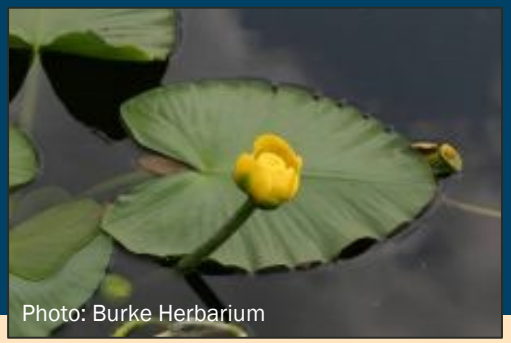
- Manual: repeated cutting and raking (must collect plant fragments)
- Chemical: herbicides (potential control success with ProcellaCOR)
- Mechanical: harvesting (must collect plant fragments)
- Dredging or Drawdowns
  - Bottom barrier
  - Biological: grass carp

Fragrant Waterlily (*Nymphaea odorata*)

- Spreads by floating seeds and rhizomes (horizontal roots)
- Seeds further disperse via wind and waves
- Attributed to lake filling (sediment accretion)
- Leaves can be confused with the native yellow waterlily (spatterdock, *Nuphar polysepala*)

Fragrant waterlily





Yellow waterlily/ Spatterdock

Management

- Manual: repeated cutting below water line; dig rhizomes; cut flowers
- Chemical: herbicides
- Mechanical: diver-suction dredge
- Dredging
  - Bottom barrier
  - Biological: no known biological control

Management Goal

- **First Step: Steering Committee must determine management goal for vegetation**
- Native vs. Non-Native
- Control vs. Eradication
  - Control = Long term management
  - Eradication = Aggressive, hit it hard and fast, may not be possible with current plant density
  - Eradication only end goal for Class A Noxious Weeds
  - No Class A Noxious Weeds in Long Lake
- Must be balanced approach for aquatic habitat
- Appropriate Management Tool Depends on Vegetation Present and Management Goals

Management Goal Discussion

Short Term Goals

- Get rid of invasives and allow natives to flourish
- Control lily expansion
- Avoid further damage to ecosystem

Long Term Goals

- Restore balanced ecosystem
- Long Term Commitment to control plants to maintain uses
- Slow lake aging & eutrophication process
- Ensure all homeowners have access to water
- Ongoing long-term funding

Priority Areas

- High use recreational areas
- Shorelines
- South End

Plant Priorities

- BOTH – Emergent and Submersed
- Invasives

Management Goal Discussion

Further Discussion/Notes

Additional Concerns

- Would like to see continued commitment to managing aquatic plants long-term
- Most effective historical plant control was draining/drawdown of the lake
- Issue with aquatic plants is the lack of consistent management
- Water is too stagnant
- Recent solutions for management have added more toxicity to the lake
- Continued De-stabilization of the lake's ecosystem
- Have several folks that use the lake that are not homeowners and do not contribute any funds for management
- Should find a way to get funds from everyone that uses lake

Next Steps

Steering Committee Meeting #2
1. Present **Draft Plan**
2. Get feedback/input

Map invasive species → Develop Draft Plan → Community Feedback → Finalize & Implement

1. **Community Public Meeting with Q&A**
2. Feedback via **online survey**

Steering Committee Meeting #1
1. Develop **Problem Statement**
2. Identify **Goals**
3. Discuss **control options**