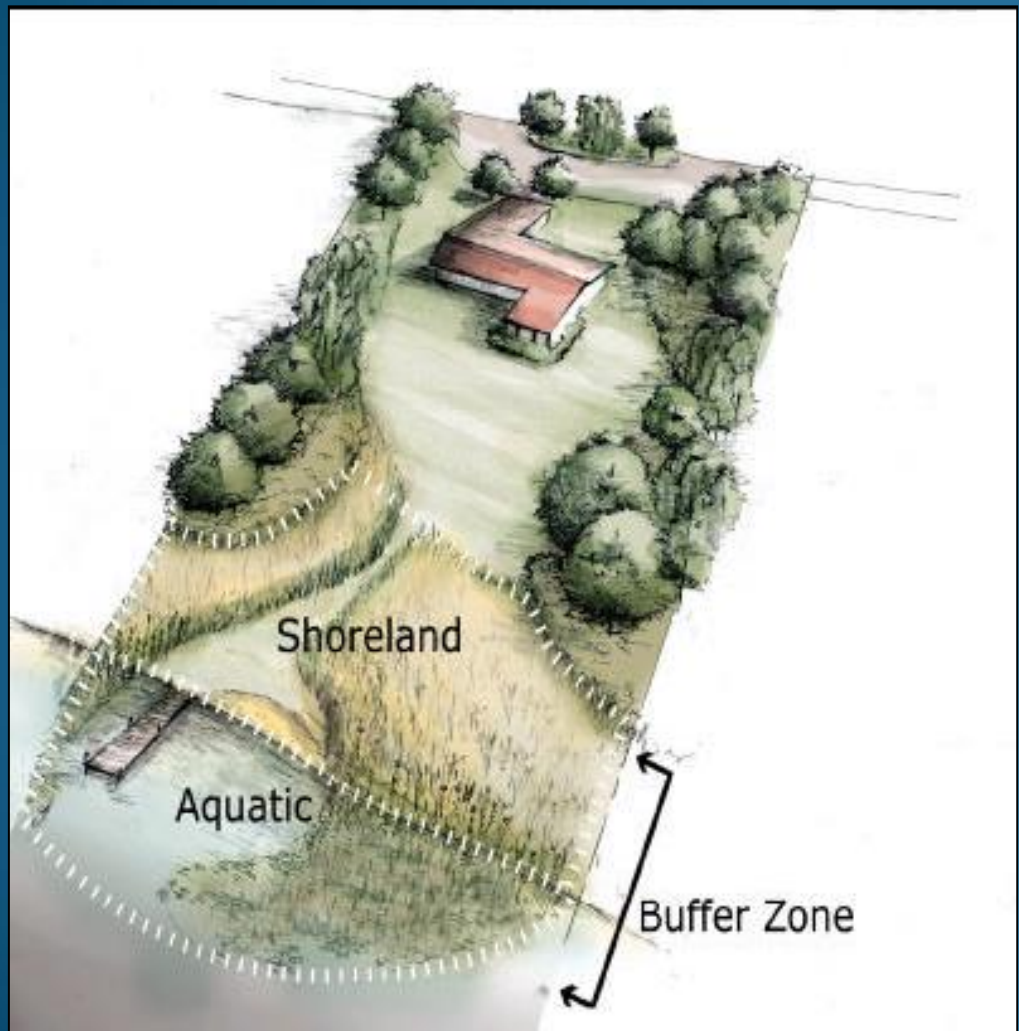




Designing and implementing sound lakeshore habitat restoration projects



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Talk outline: ten themes

1. Initial landowner meeting

Explore property and the site's existing conditions

- Protection vs. no mow areas vs. accelerated recovery techniques review
- Example site assessment sheet

Begin identifying landowners goals for their property

- Goals and objectives for the site are discussed
- Background materials shared
- Overview video provided

Discuss partner opportunities and roles / project resources

- Technical support partners: land and water; consultants; zoning shops; UW-Extension agents; WDNR lake coordinators and water resource specialists
- Create a network of helpers to assist you

Develop a draft project timeline and preliminary budget ceiling

- Timeline components
- Budget considerations

Discuss a communication strategy for your team going forward

- Determine appropriate communication plan for your team
- Talk routinely about project evolution

2. Create base plan (first layer) / site sketch of existing conditions

Sketch out

- Compile the information from your site assessment into a base map (first layer)
- Transfer the site sketches into a scaled base map

Map out existing vegetation

- Trees, shrubs, & groundlayer vegetation
- Identify suitable planting area(s) for the site

Identify biological features of your site

- Native plant communities by ecological zone: upland; transitional; and aquatic
- Critical habitat areas like fringe wetlands, ephemeral ponds, or rare plants
- Identify nuisance plants and animals present on site

Create human use map and identify patterns of use on lakeshore and property

- House and outbuilding structures
- Septic system and utility lines
- Recreational use areas and view corridor
- Identify problem areas and elements of the site that need attention in the planning process

Inventory soil conditions

- Access soil type(s) around the property; identify soil types for all new planting areas
- Denote and map out wet versus dry zones on the property
- Complete soil borings if necessary and/or as state standards require for practices chosen

3. Lakeshore property owner's needs and desires

Describe desired conditions

- Describe wanted landowner patterns of usage and revegetation areas
- Talk the project through with family members that have an interest in the project and agree on the game plan together
- Inform the neighbors about your project; talk through their concerns

Identify appropriate state standards and permitting needs

- Check with county offices and WDNR on appropriate state standards and permitting
- Identify suitable planting area(s) for the site

Site preparation review

- Identify site preparation needs and to-do's
- Create a timeline for implementing the site preparation steps needed for your project

Utilize "bubble" shapes on a map to define functional spaces

- Identify lakeshore planting area and other native planting locations
- Designate activity areas around the property using bubble shapes
- Begin identifying areas of surface water runoff that need control
- Begin to identify areas suitable for accepting water runoff for infiltration
- Begin identifying areas of erosion concern and potential treatments

4. Analyze your site – map out desired outcomes / planting areas

Reference area process

- Visit a reference site similar to your targeted plant community / an undeveloped location on your lake with similar site characteristics

Layout initial planting scheme

- Finish mapping out native planting areas by ecological zone
- Consider any invasive species problems with your site

Plant lists

- Work with your team to develop a native plant list(s) by ecological zone / soil types
- Make sure you have all three layers of vegetation in your plan: trees / canopy; shrubs / mid-layer; and groundlayer of wildflowers, grasses, ferns, sedges, rushes
- Remember the 1/3 rule for grasses, sedges, and rushes, especially at the water's edge
- Arrange for and / or contract your native plant material order

Develop storage plans and access area specifics

- Access dock, boat hoist, and equipment storage needs for your site
- Finalize access area logistics for your project

Incorporate ecological design elements suitable for the site

- Consider assorted ecological design elements for your project

Design a maintenance and monitoring strategy for your project

- Consider how you will maintain and monitor your site as a team
- Create a timeline for implementation
- Devise a watering plan



Talk outline: ten themes [continued]

5. Develop water conservation strategies - review and planning

Perform an assessment of surface water flow and movement

- Complete the New Hampshire "Follow the flow" site assessment process
- Map out the findings from your site review

Map out drainage features of your lakeshore property

- Create a detailed map of drainage patterns, and slopes
- Identify erosion prone areas of your site

Identify "broken" connections and opportunities for reestablishing water infiltration

- Identify hydrological disconnections
- Explore ways of minimizing human use and disturbance in these sensitive areas

Identify water conservation strategies that can enhance your site and that fit your budget

- Sketch out locations for improving water runoff infiltration and other areas suitable for recharge into a water conservation layer

6. Develop erosion control plans and solutions

Have a professional engineer oversee a site assessment

- Complete a topographic survey of the site
- Review signs of erosion; delineate the causes of erosion on site; assess the types of erosion found on the property
- Complete an NR328 assessment including the erosion intensity (EI) score worksheet for the property

Begin to identify erosion control treatments

- Review the types of erosion present and the treatment options available
- Explain the findings of your erosion control assessment to the landowners and planning team
- Talk through bioengineering options and treatments as a team; agree on an erosion control plan for your site
- Work through the budget considerations of your erosion control plan as a team; establish a cost estimate for the work
- Discuss cost-share options available (if applicable)

Map out final erosion control treatment areas

- Identify the needed permits and materials; pinpoint the state standards in play with your erosion control plan and what the specifications are that you need to meet
- Complete erosion control treatment cross-sections and plan requirements according to state standards and permit needs
- Have a landowner and WDNR meeting to review final erosion control plan logistics
- Order erosion control products and materials; submit and obtain final permits needed
- Add the erosion control map as a layer to your final plan

7. Consider long-term maintenance and monitoring strategies

Watering

- Watering devices-delayed / remote timers; in ground systems discussion; etc.
- Identify your water source
- Formalize landowner commitment to watering in plan

Invasive species control

- Conduct an invasive species assessment
- Perform needed pre-installation treatments for invasive species present on site
- Review tips for recognizing future invasive species on your site with landowners / maintenance
- Develop a monitoring plan for invasives on your site

Develop protection strategies you want to utilize for your native plantings

- Review sprays and deterrents available
- Talk through the fencing options
- Discuss the need for future supplemental plantings / fill in any gaps and the warranty of plant material from nursery partner
- Have a signage discussion
- Talk about rules for pruning trees to open views and consulting your local zoning office

Finalize your maintenance and monitoring plans

- Combine your maintenance and monitoring strategies into a final plan

8. Compile final conservation plan / identify installation process and timeline

Combine all steps (layers) into a final draft conservation plan

- Base layer – initial site assessment findings
- Human use, view corridor, critical habitat locations, and storage information according to landowner preferences / wants
- Planting areas denoted by ecological zone
- Water conservation areas and strategies
- Erosion control plan treatment areas
- Include the maintenance and monitoring strategies of your site into the final plan

Final plan review with your team

- Confirm native plant order
- Review project specifications / state standards and permits together
- Identify final installation timeline and "to-do's"
- Compile and review together final cost estimate
- Complete a project bidding process (if desired)
- Schedule a pre-installation meeting with project installers, landowners and planners
- Discuss cost-share reimbursement process (if applicable)



Talk outline: ten themes [continued]

9. Project installation

Site preparations

- Invasive species control completed
- Turf grass treatment is completed

Partner communication

- Goals and objectives for the site are discussed
- Make sure all partners and the installers understand the installation process and your conservation plan components

Digger's hotline / permits in place

- Call digger's hotline a week or two before your installation time
- Make sure the final permit needs are met and that the needed permits are in hand

Schedule project installation

- Remember to include your lake community in the installation (if appropriate / feasible)
- Schedule your project installation with your team
- Recognize that a phased approach to installation may be needed: start with erosion control and water conservation treatments getting installed first; then your native trees and shrubs; followed by the groundlayer native plantings

Install water conservation & erosion control strategies

- Create a network of helpers to assist you

10. Implement the long-term maintenance and monitoring strategies

Follow through on maintenance needs

- Complete watering, weeding / invasive species control, and supplemental plantings according to plan
- Conduct regular check ups of fencing, erosion control treatments, and water diversion systems as needed

Implement the monitoring protocol

- Conduct the site monitoring protocol you developed for your site
- Tweak future plans according to your findings
- Share the project with your lake community, local media, and others interested in lakeshore conservation work

Explore property and the site's existing conditions

Protection vs. no mow areas vs. accelerated recovery techniques review
 Example site assessment sheet

1. Protection of intact buffers

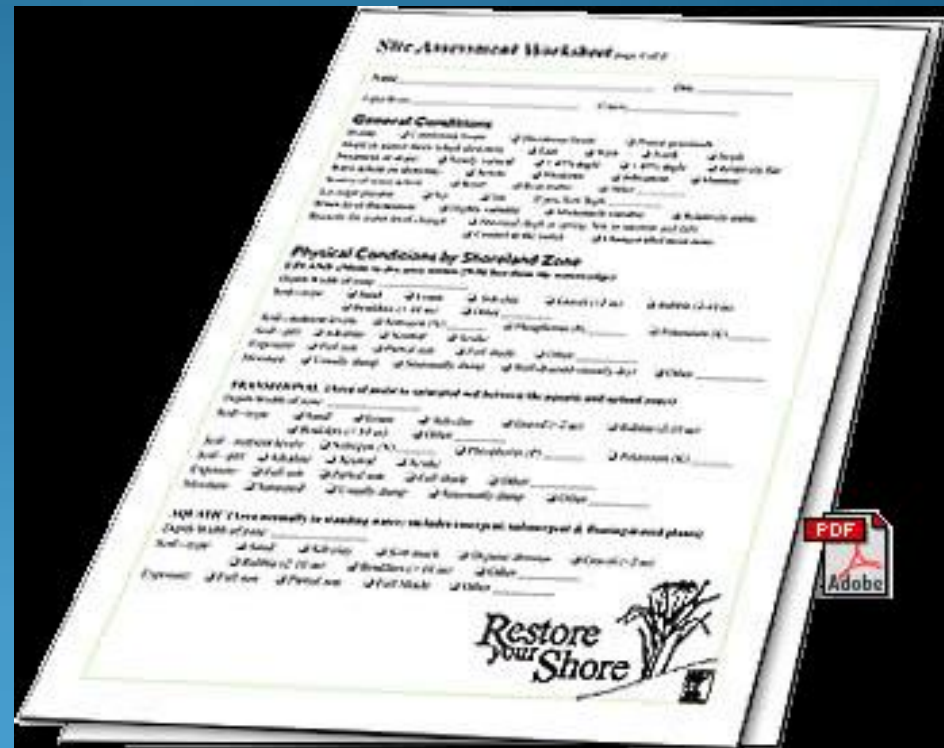
- No serious erosion problem
- Native vegetation present
- Diversity of structure
- Shoreland buffer requirement met

2. 'No mow' > natural colonization / recovery

- Native elements present including seed bank
- Turf grasses not well established
- Areas screened from view
- Discourage trampling
- Look for opportunities to see results and promote

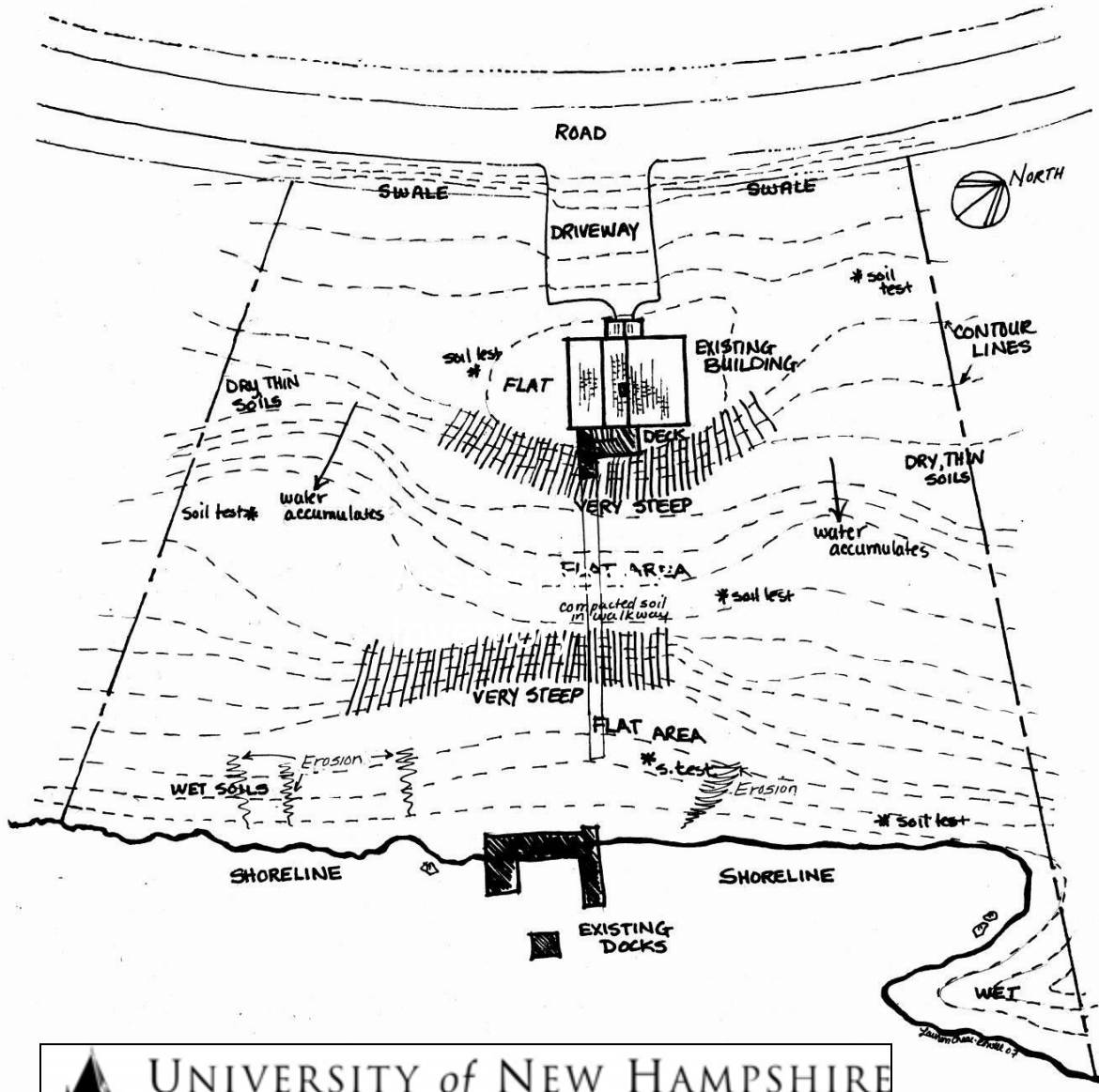
3. Accelerated Recovery

- Turf grass well established
- No native plants present
- Exposed soil
- Lots of traffic
- Sand beach maintained
- Quick results wanted



Assessment & Inventory

- Wet areas
- Seeps/Springs
- Paved Areas
- Compacted areas
- Point sources
 - Culverts
 - Drains
 - Sumps
- Paths / trails
- Concentrated flows
- Flat areas
- Sloped areas



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COOPERATIVE EXTENSION

Begin identifying landowners goals for their property

Goals and objectives for the site are discussed

Background materials shared

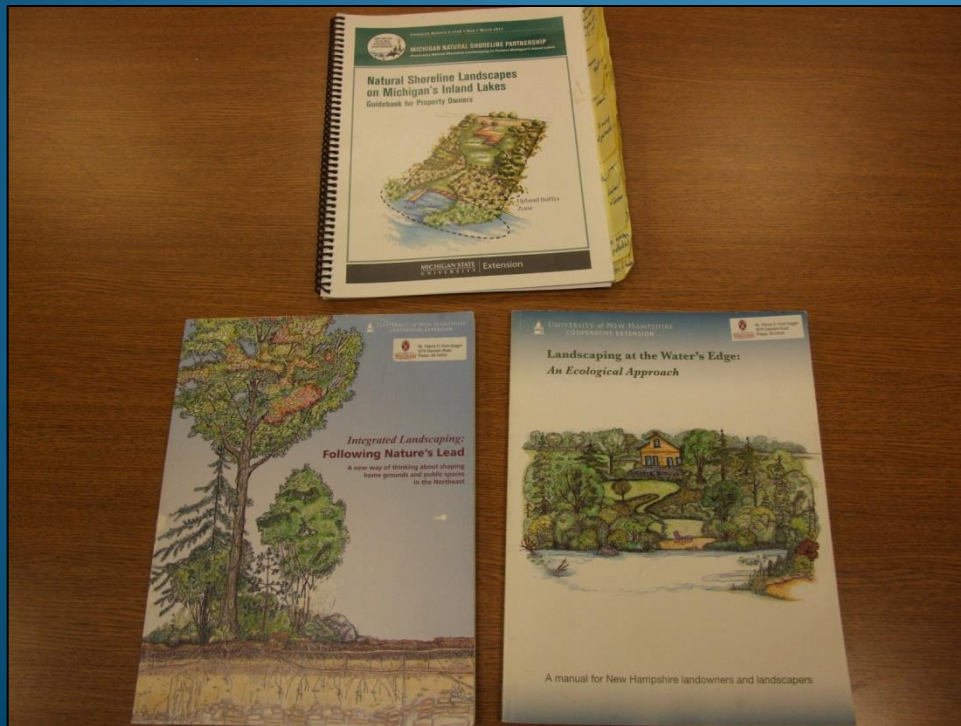
Overview video provided



Discuss partner opportunities and roles / project resources

Technical support partners: land and water; consultants; zoning shops; UW-Extension agents; WDNR lake coordinators and water resource specialists

Create a network of helpers to assist you



Develop a draft project timeline and preliminary budget ceiling

Timeline components
Budget considerations



Discuss a communication strategy for your team going forward

Determine appropriate communication plan for your team
Talk routinely about project evolution



Restoration vs. Gardening



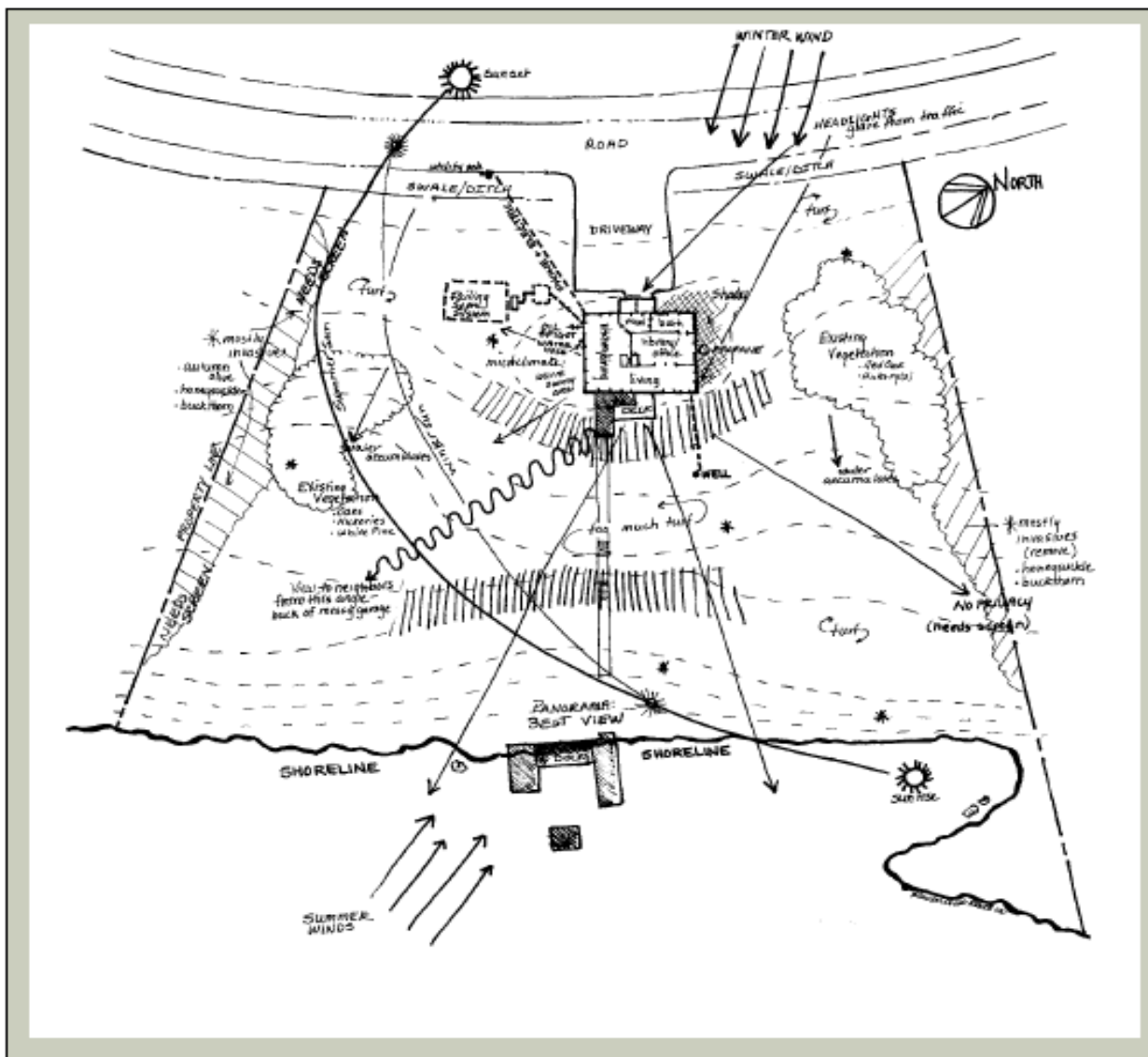
Lakeshore restoration:

- Soil is not changed
- Uses native plants
- Less formal look



Traditional gardening:

- Soil is altered with add-ons
- Non-natives commonly utilized
- Tidier aesthetic to the eye of many



Sketch out

Compile the information from your site assessment into a base map (first layer)

Transfer the site sketches into a scaled base map

Figure 4-3b. Continuation of the base plans showing existing plants, utilities, indications of wildlife, weather patterns, microclimates and views. The interior layout, or floor plan, is necessary to determine indoor and outdoor relationships of function and space. Inventory details are added.



Map out existing vegetation

Trees, shrubs, & groundlayer vegetation
Identify suitable planting area(s) for the site



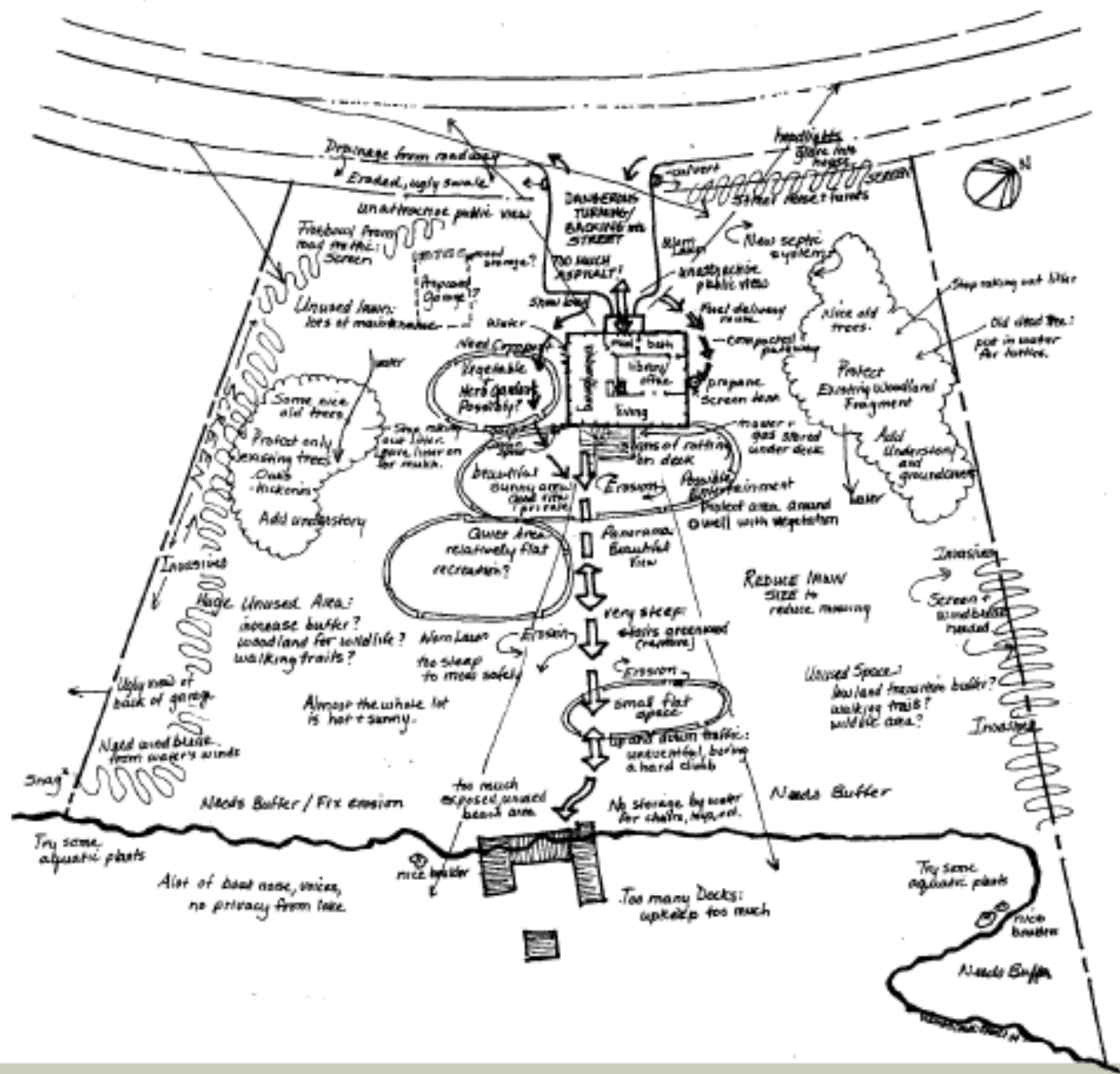
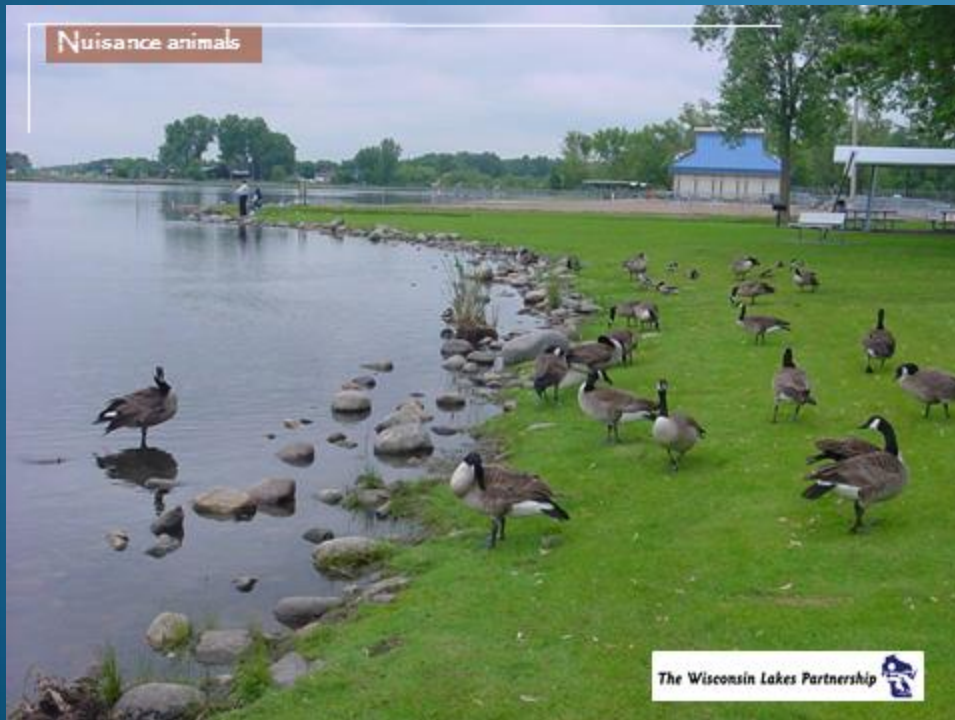


Figure 4-3c. Site analysis is a thorough gathering of information depicting current functions, uses of space and the relationships between them. Capabilities, limitations and interacting elements are recorded.

Identify biological features of your site

Native plant communities by ecological zone: upland; transitional; and aquatic
Critical habitat areas like fringe wetlands, ephemeral ponds, or rare plants
Identify nuisance plants and animals present on site



Create human use map and identify patterns of use on lakeshore and property

House and outbuilding structures

Septic system and utility lines

Recreational use areas and view corridor

Identify problem areas and elements of the site that need attention in the
planning process



Inventory soil conditions

Access soil type(s) around the property; identify soil types for all new planting areas

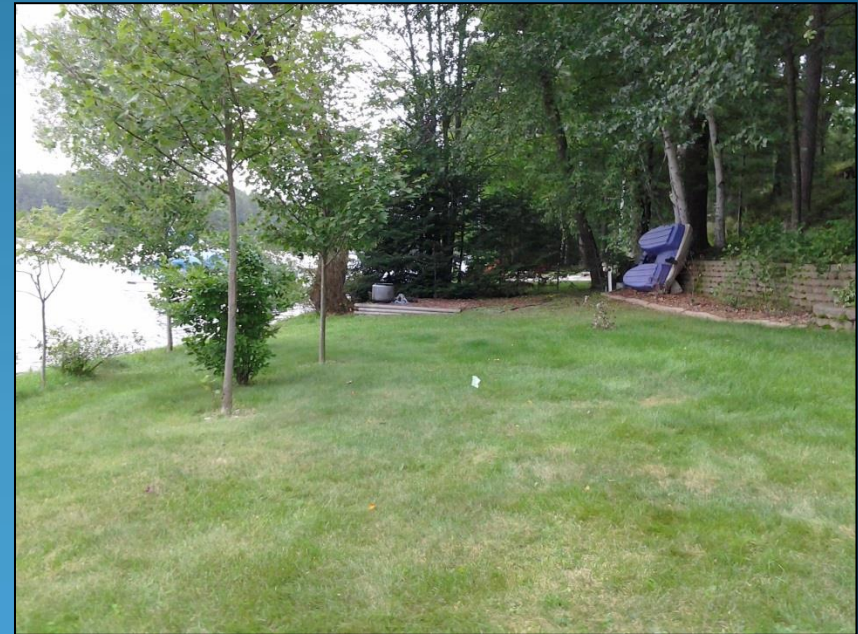
Denote and map out wet versus dry zones on the property

Complete soil borings if necessary and/or as state standards require for practices chosen



Describe desired conditions

Describe wanted landowner patterns of usage and revegetation areas
Talk the project through with family members that have an interest in the project and agree on the game plan together
Inform the neighbors about your project; talk through their concerns



Identify appropriate state standards and permitting needs

Check with county offices and WDNR on appropriate state standards and permitting

Identify suitable planting area(s) for the site



Site preparation review

Identify site preparation needs and to-do's

Create a timeline for implementing the site preparation steps needed for your project



Utilize “bubble” shapes on a map to define functional spaces

Identify lakeshore planting area and other native planting locations

Designate activity areas around the property using bubble shapes

Begin identifying areas of surface water runoff that need control

Begin to identify areas suitable for accepting water runoff for infiltration

Begin identifying areas of erosion concern and potential treatments



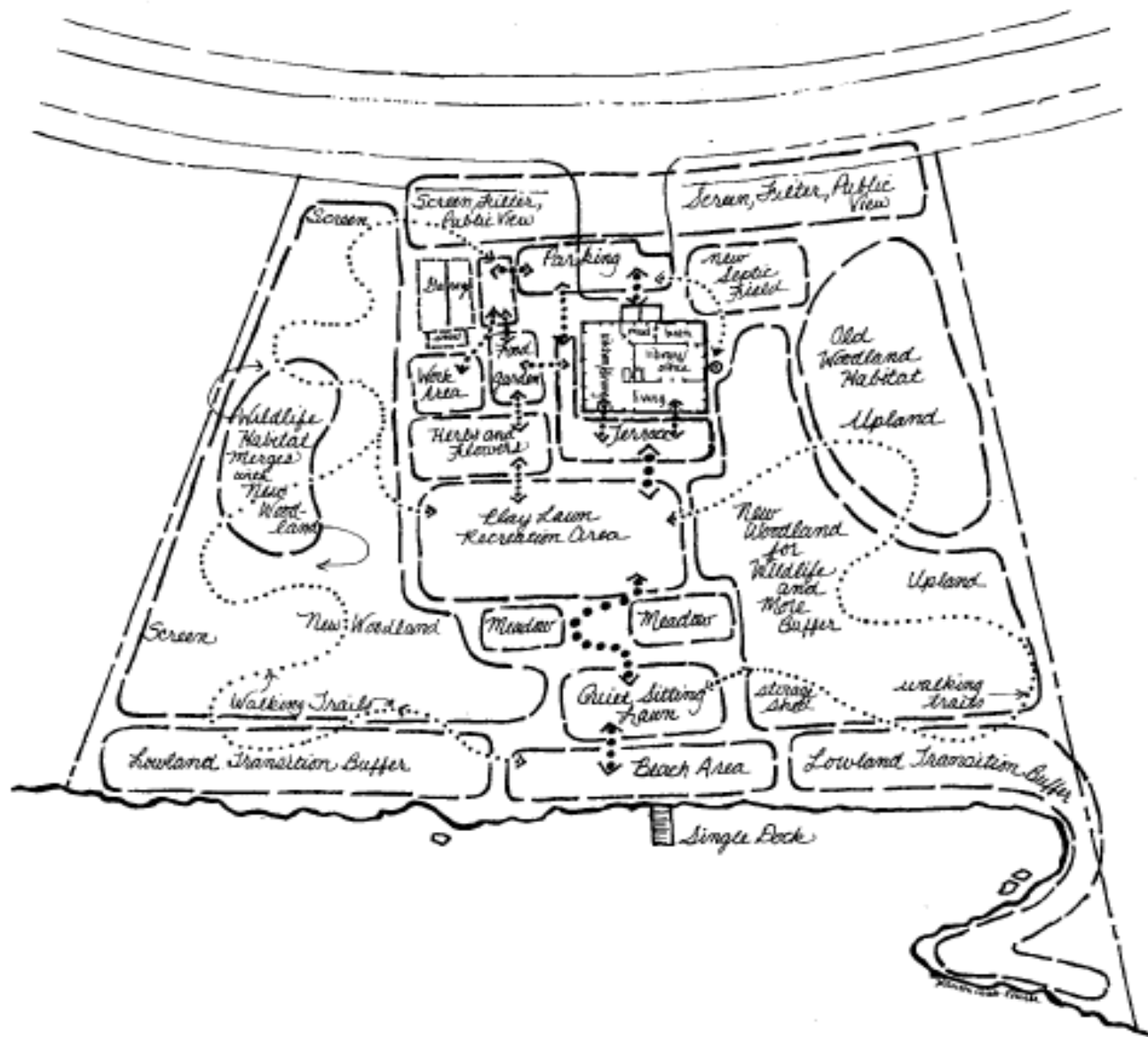
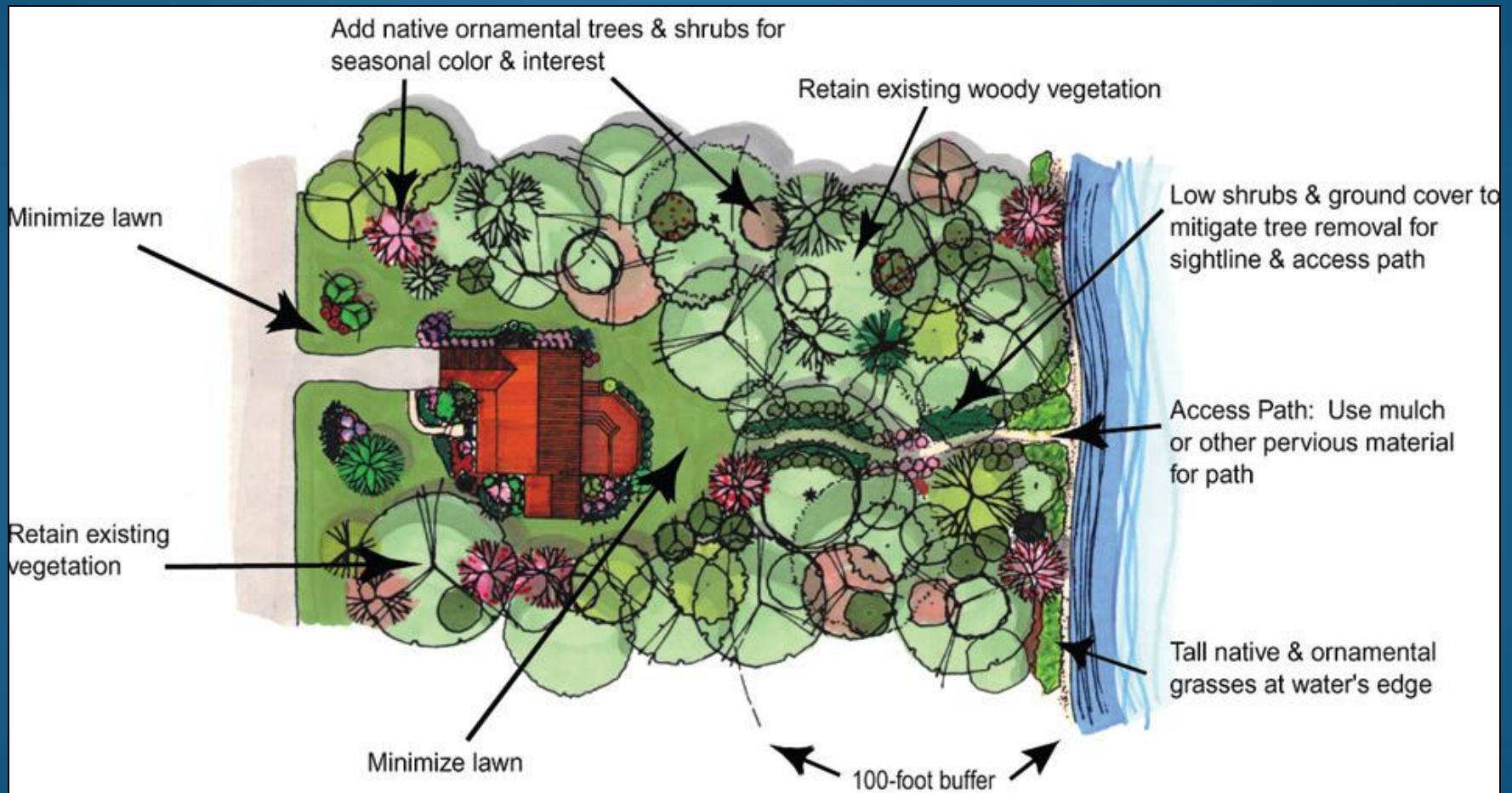


Figure 4-3d. In helping the design to flow, functional bubble diagrams map out indoor functions, outdoor activities and circulation patterns based on the capabilities and limitations of the site analysis.

Reference area process

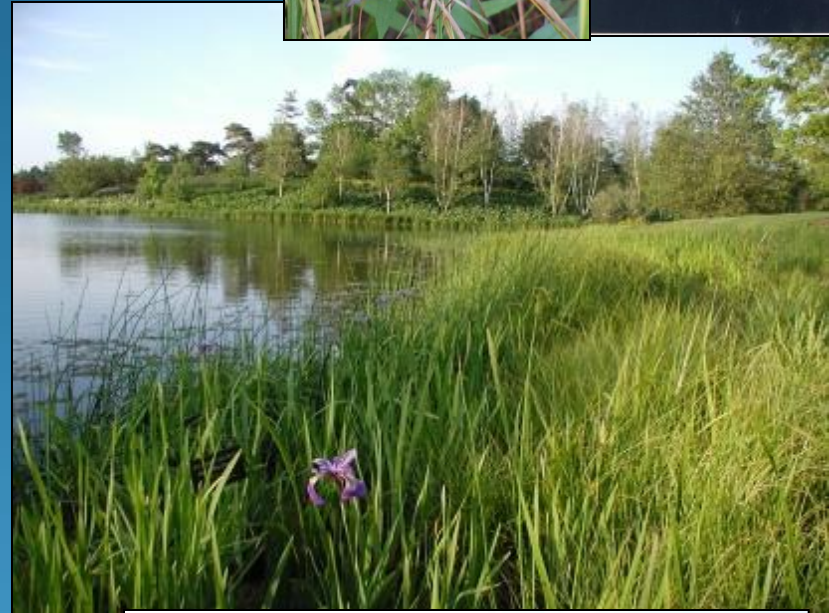
Visit a reference site similar to your targeted plant community / an undeveloped location



Use reference sites

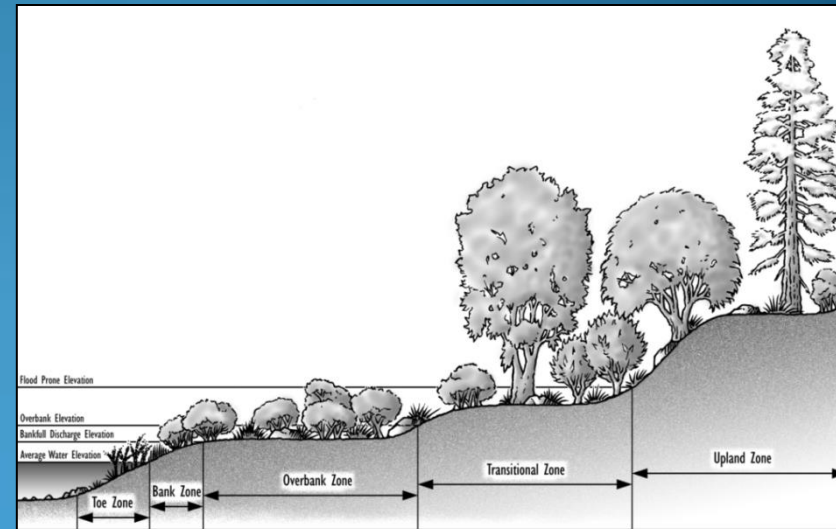
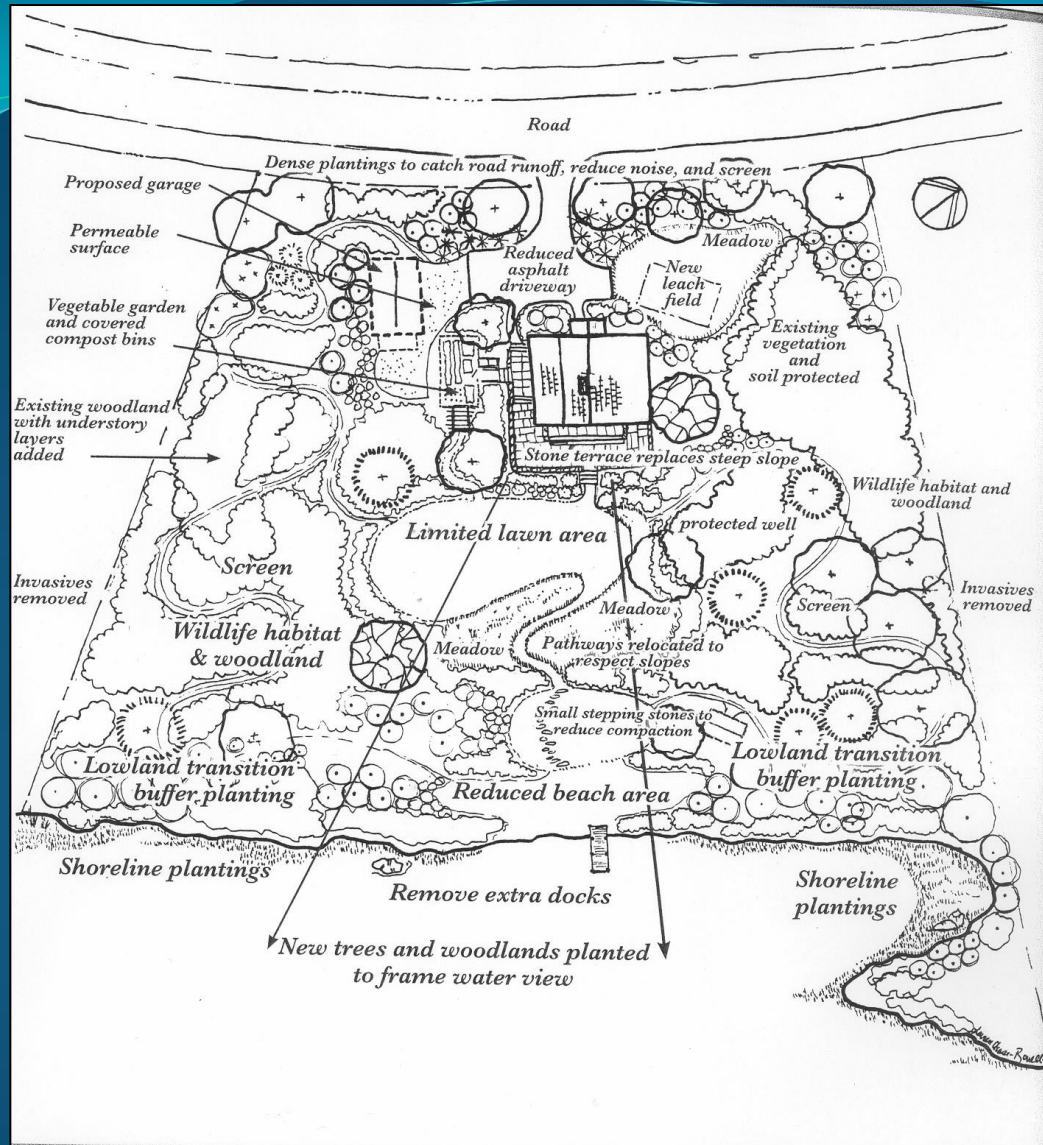
Find an undisturbed area of the lake with similar soil, moisture and light conditions and investigate it:

- What kinds of native trees, shrubs, wildflowers are there?
- What patterns are these plants found in at the site?
- Look to mimic what you see there in your revegetation efforts.



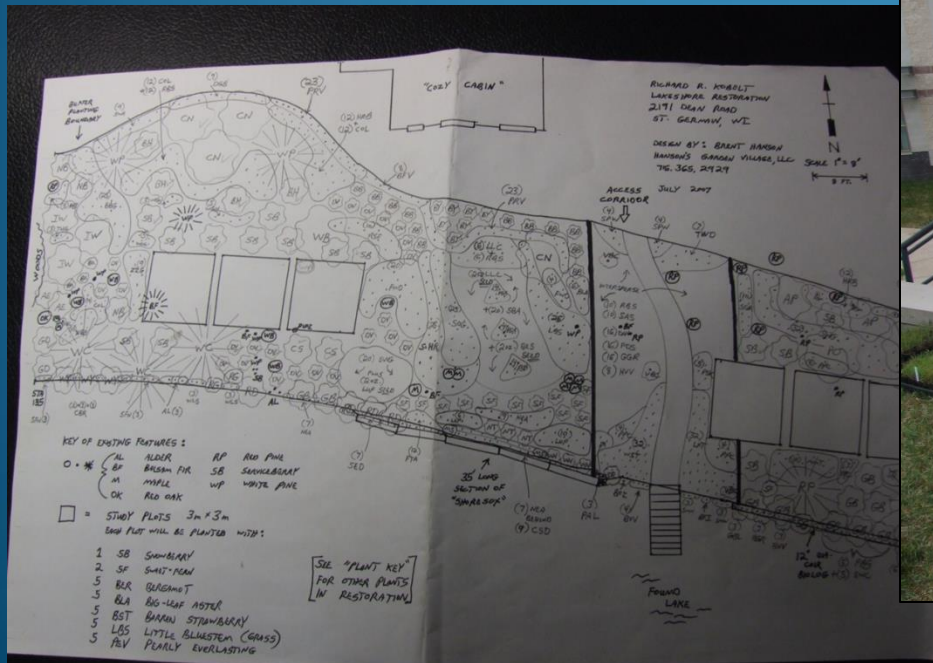
Layout initial planting scheme

Finish mapping out native planting areas by ecological zone
Consider any invasive species problems with your site



Plant lists

Work with your team to develop a native plant list(s) by ecological zone / soil types
 Make sure you have all three layers of vegetation in your plan: trees / canopy; shrubs / mid-layer; and groundlayer of wildflowers, grasses, ferns, sedges, rushes
 Remember the 1/3 rule for grasses, sedges, and rushes, especially at the water's edge
 Arrange for and / or contract your native plant material order



Develop storage plans and access area specifics

Access dock, boat hoist, and equipment storage needs for your site

Finalize access area logistics for your project



Incorporate ecological design elements suitable for the site

Consider assorted ecological design elements for your project

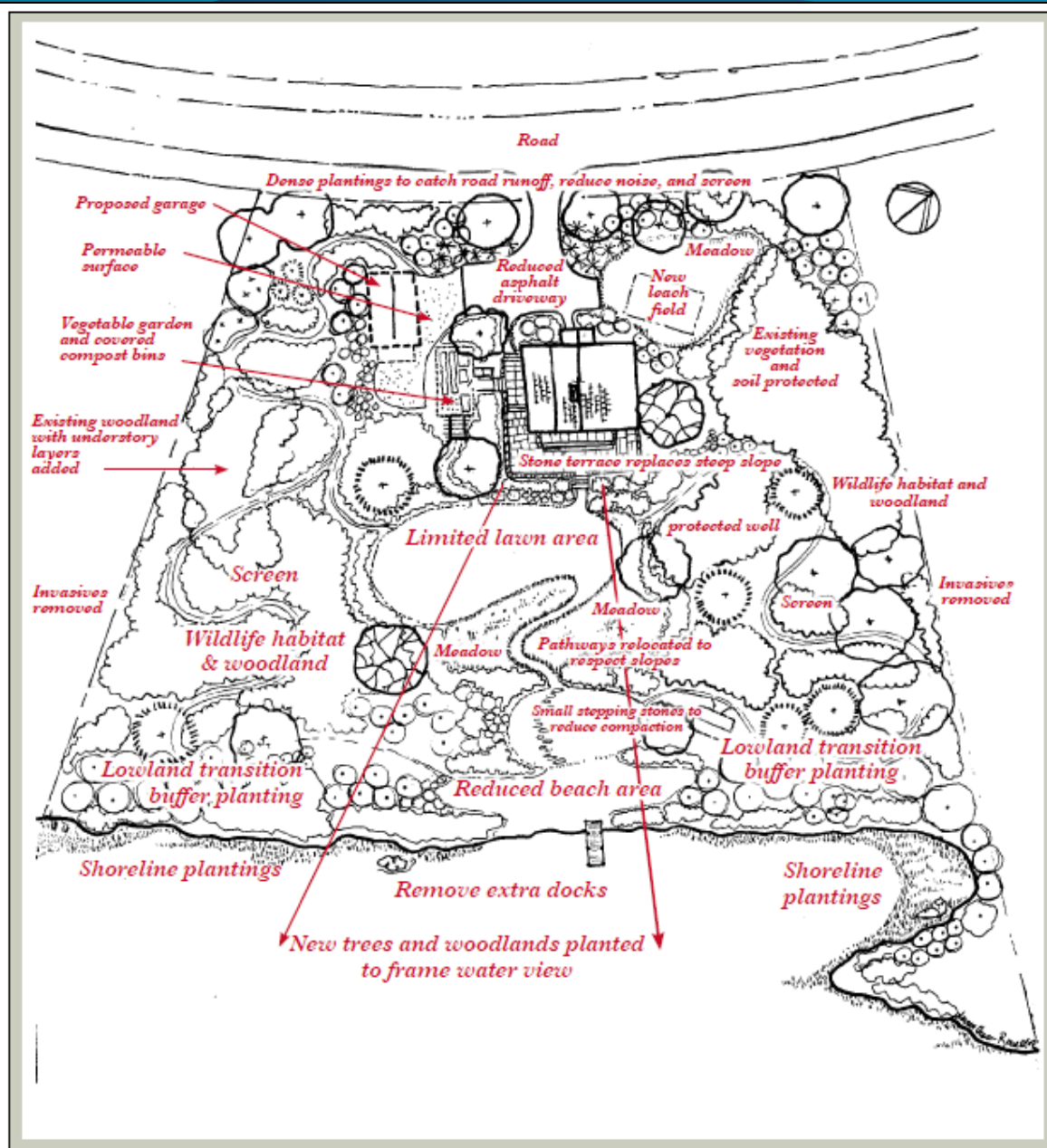


Figure 4-3e. The conceptual plan provides a visual overview of all the features, vegetation and actions planned to establish an ecological landscape that protects water quality, provides a diverse wildlife habitat, and is pleasing and functional for human use.

Design a maintenance and monitoring strategy for your project

Consider how you will maintain and monitor your site as a team

Create a timeline for implementation

Devise a watering plan





Perform an assessment of surface water flow and movement

Complete the New Hampshire “*Follow the flow*” site assessment process

Map out the findings from your site review

- What is the extent of lands and roads above your site that contribute runoff water, and where will the runoff enter your property?
- Where does the water that runs off impervious surfaces (driveways, walkways, roof, compacted soils, plastic, etc.) go?
- How will that water, along with the additional runoff generated in your new design, run over the site?
 - Where will that water then run off from your site?
Does it enter the water body directly?
- Most importantly: How might you tweak your design to take advantage of these factors in creating diversions, detention and infiltration areas?

Map out drainage features of your lakeshore property

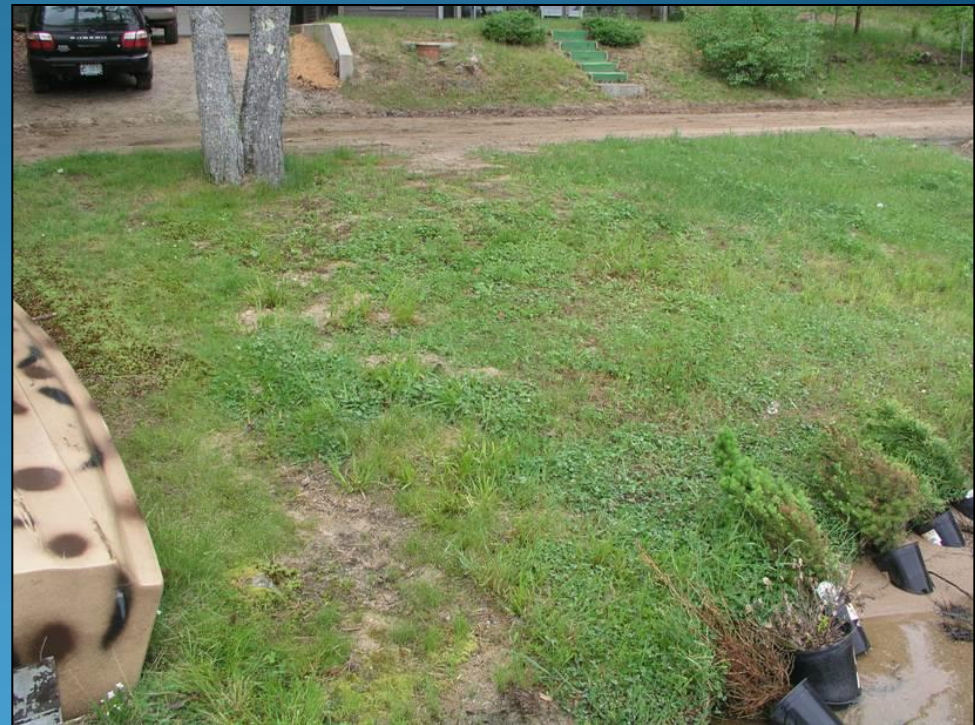
Create a detailed map of drainage patterns, and slopes
Identify erosion prone areas of your site



Identify “broken” connections and opportunities for reestablishing water infiltration

Identify hydrological disconnections

Explore ways of minimizing human use and disturbance in these sensitive areas



Paths to dock shows sheeting and start of rilling

Identify water conservation strategies that can enhance your site and that fit your budget

Sketch out locations for improving water runoff infiltration and other areas suitable for recharge into a water conservation layer

Dealing With Home-Site Runoff

Minimize contributing waters sources

From off-site: roads, neighboring properties

From your site: driveways, boat ramps, foot paths, compacted surfaces, gutters, sump pumps, seeps



Dealing With Home-Site Runoff

- Diversion -away from steep areas into vegetated areas
- Interruption- break up the flow so it can't build up velocity
- Spread the flow over a flat vegetated area
- Increase groundwater recharge through infiltration
- Protect shore area with riparian buffer

