The Association of State Wetland Managers Presents:

Improving Wetland Restoration Success Webinar Series

Not Lost in Translation: How to Select the Right Wetland Restoration Team

Presenters:

- *Lisa Cowan, PLA, ASLA, Principal, Studioverde*
- *John Bourgeois, Executive Project Manager, South Bay Salt Pond Restoration Project*
- *Matt Schweisberg, Principal, Wetland Strategies and Solutions, LLC*

Moderators: Jeanne Christie & Marla Stelk

Supported by EPA Wetland Program Development Grant 83578301

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2. You were also sent a PDF of today's presentation. This means you can watch the PDF on your own while you listen to the audio portion of the presentation by dialing in on the phone number provided to you in your email.

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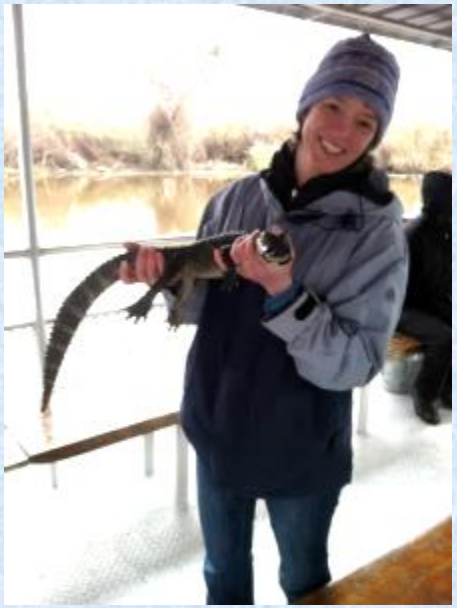
Agenda

- **Welcome and Introductions** (15 minutes)
- **Not Lost in Translation: How to Select the Right Wetland Restoration Team** (60 minutes)
  - Lisa Cowan, PLA, ASLA, Principal, Studioverde
  - John Bourgeois, Executive Project Manager, South Bay Salt Pond Restoration Project
  - Matt Schweisberg, Principal, Wetland Strategies and Solutions, LLC
- **Question & Answer** (20 minutes)
- **Wrap up** (5 minutes)

WEBINAR MODERATORS

Jeanne Christie

Executive Director

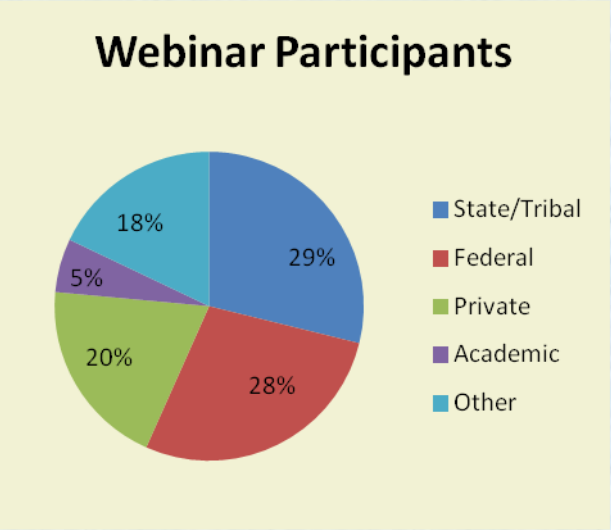


Marla Stelk

Policy Analyst

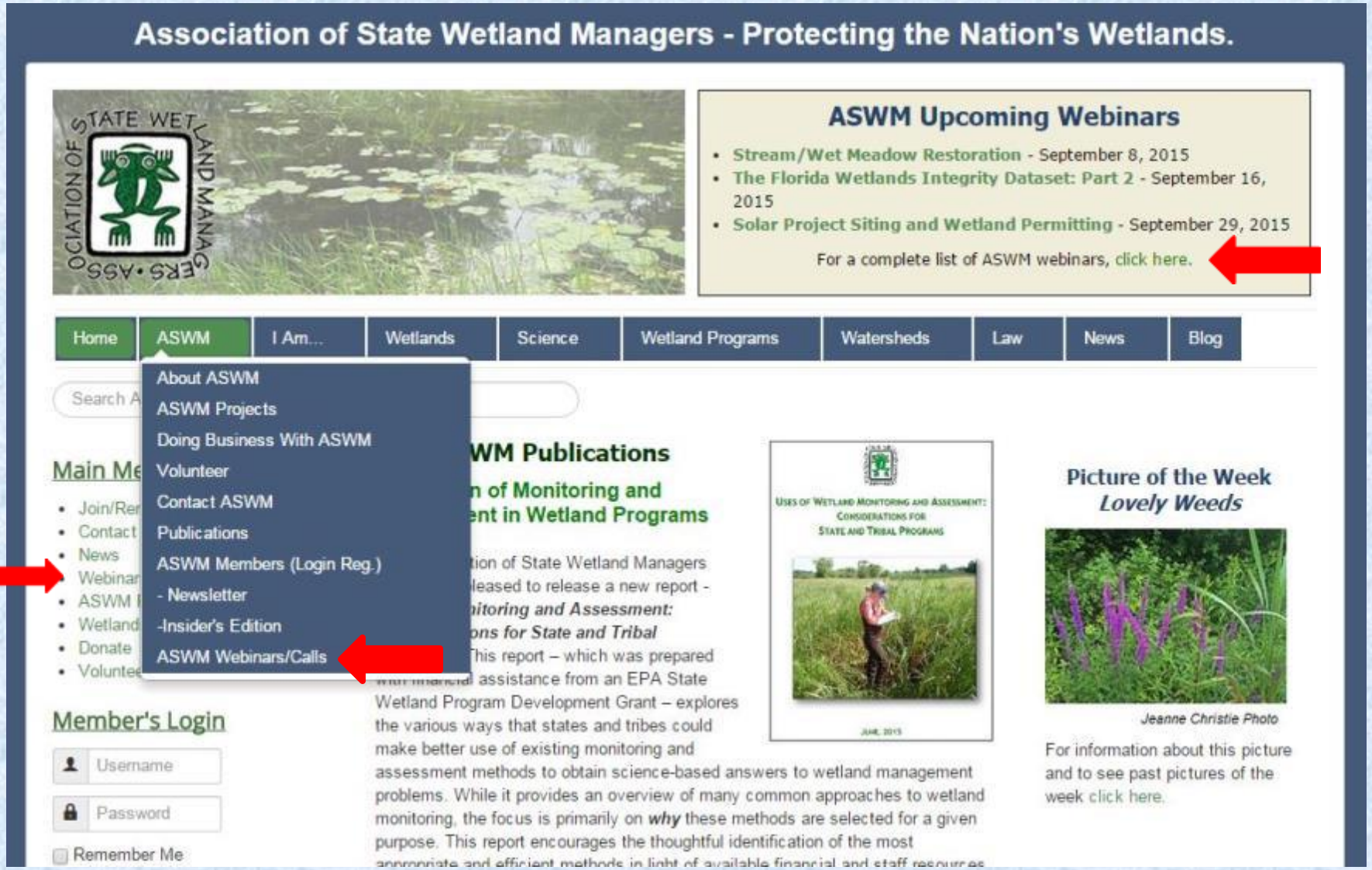
WETLAND RESTORATION PROJECT

- Interdisciplinary workgroup of 22 experts
- Monthly webinar series
- Draft white paper based on webinars, participant feedback, external review
- Pursuing strategies that:
  - Maximize outcomes for watershed management
    - Ecosystem benefits
    - Climate change
    - Invasive species
  - Improve permit applications and review
  - Develop a national strategy for improving wetland restoration success

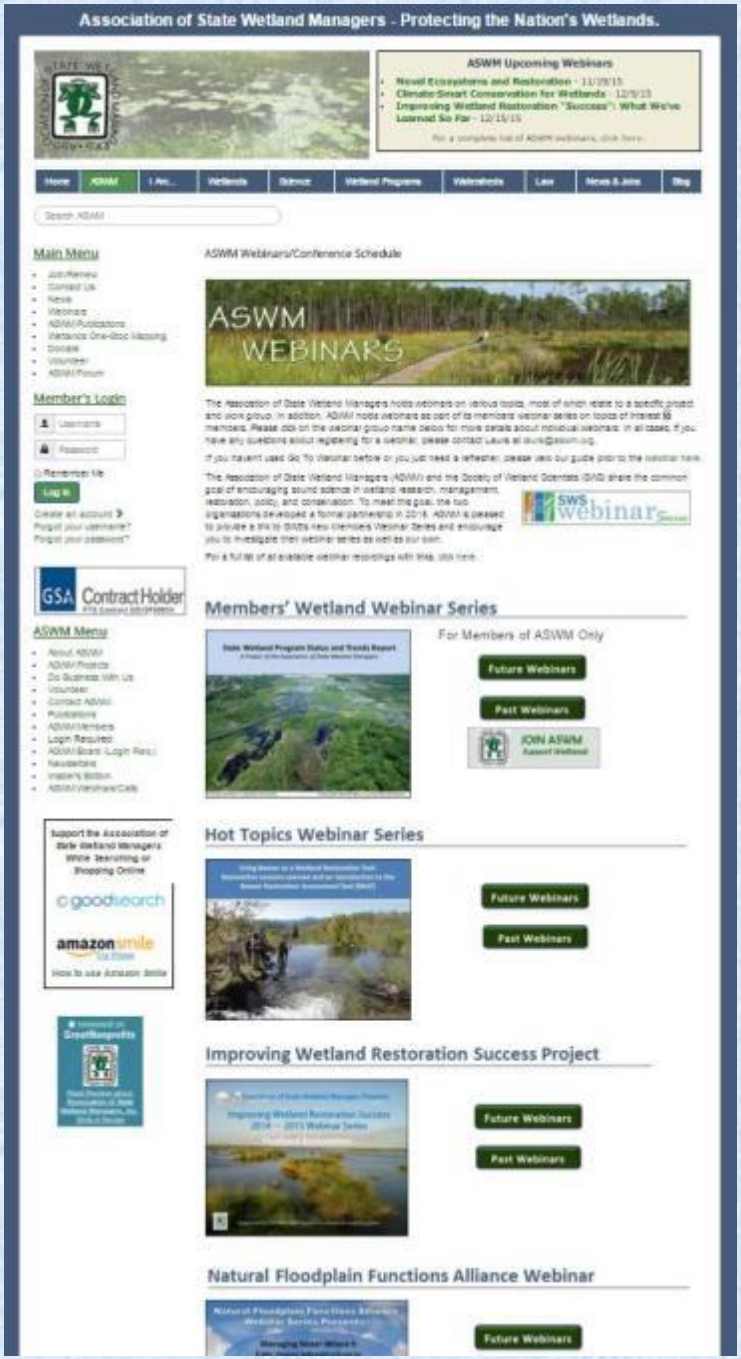


ACTION PLAN ➡ IMPLEMENTATION

WEBINAR SCHEDULE & RECORDINGS



WEBINAR SCHEDULE & RECORDINGS



Future Schedule

Topics for the remainder of 2016:

- **November 17: "Long-term Management & Legal Protections for Voluntary Restoration"**

Ellen Fred, Esq.
Conservation Partners, LLC

Ted LaGrange
Nebraska Game & Parks Commission

Jeff Williams
USDA NRCS

Andrew James
USDA NRCS

- **December = Break**

FOR FULL SCHEDULE, GO TO: http://aswm.org/aswm/6774-future-webinars-improving-wetland-restoration-success-project

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- You must be a participant during the live webinar presentation.
- We are able to track webinar participation by registrants using our GoToWebinar software.
- **Documentation will state that you were a participant for X hours of a specific ASWM webinar.**

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*If you need CEUs for your participation in today's webinar, you **must request** a Certificate of Attendance from ASWM.*

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Please contact **Laura Burchill**
laura@aswm.org
(207) 892-3399

Provide:

- Your full name (as registered)
- Webinar date and Title

PRESENTERS

Lisa Cowan, PLA, ASLA
Principal
Studioverde

John Bourgeois
Executive Project Manager
South Bay Salt Pond
Restoration Project

Matt Schweisberg
Principal
Wetland Strategies and
Solutions, LLC

A "COOKBOOK" APPROACH TO WETLAND RESTORATION WON'T WORK

There are too many variables.

- *Every landscape is different*
- *Purpose of restoration varies*
- *Even a good design may not anticipate events*
- *Time needed varies*
- *Intervention and adaptation may be needed during and after construction*
- *Evaluating progress and completeness is needed*

Major Reasons for Failure (examples)

Overarching

- Poorly Defined Outcomes/Performance Criteria
- Lack of Access to Expertise and Training
- Lack of Accountability and Enforcement
- Altered and Changing Landscapes/Climate
- Separation of Professions – The ‘Silo’ effect

Site-Specific

- Planning issues, i.e., Inadequate Assessment of landscape, hydrology & soils
- Construction issues, i.e., failure to implement design, no adaptive management
- Post construction issues, i.e., poor record keeping, limited follow up activity to address problems

How Do We Improve?

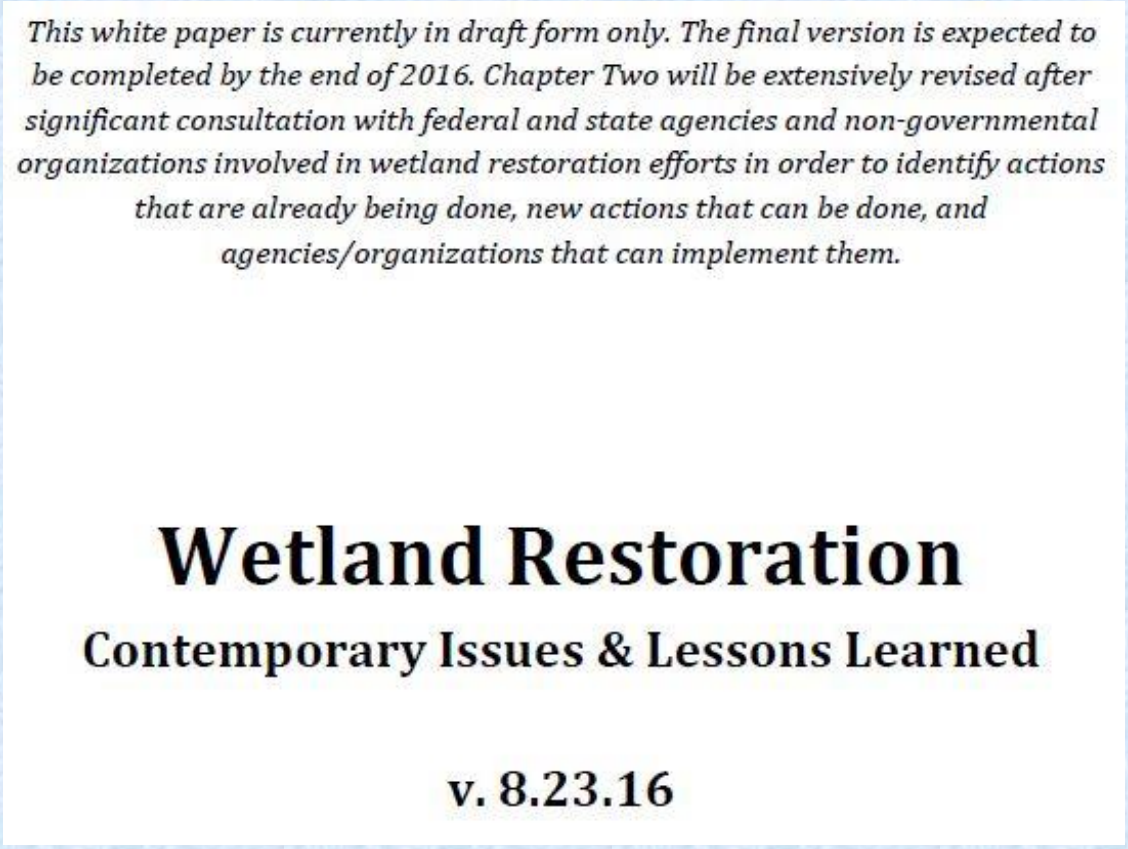
- Better defined goals and performance criteria
- Improve Access to Knowledge and Training
- Require Accountability
- Require Documentation of Credentials
- Develop a Common Taxonomy
- Adopt New Science and Technology into Regulations and Guidance
- Engage Multi-Disciplinary, Integrated Teams
- Regional Data Depositories to Document Reasons for Success and Failure

EACH WETLAND RESTORATION PROJECT IS UNIQUE:

- *Consider both historic and current landscape setting*
- *Analyze how water moves into and out of the site*
- *Evaluate soils present and identify any onsite drainage*
- *Focus first on hydrology and soil first, last on plants*
- *Develop a plan that is achievable for the site*
- *Develop comprehensive cost estimates*
- *Ensure plan is followed*
- *Hire experienced and knowledgeable contractors*
- *Adapt plan as needed during construction*
- *Determine if monitoring criteria will measure progress*
- *Keep good records and share with others*

WHITE PAPER AVAILABLE TO REVIEW

http://www.aswm.org/pdf_lib/wetland_restoration_whitepaper_041415.pdf



Additional Information: http://www.aswm.org/wetland-science/wetland-restoration

Chapter 2: Actions to Improve Wetland Restoration

Overall Recommended Actions

This current document identifies needed actions. In 2015 & 2016, this part of the paper will be expanded and revised to identify how these changes could be implemented by suggesting who, what and how.

RECOMMENDED ACTION #1: Develop Clear Project Goals & Use Appropriate and Quantifiable Performance Standards to Measure Progress

RECOMMENDED ACTION #2: Develop Achievable Performance Criteria for Short Term Evaluation and Establish a Long-Term Management Plan

RECOMMENDED ACTION #3: Establish Appropriate Performance Criteria Based on Restoration Goals & Project Type

RECOMMENDED ACTION #4: Research the Site's Land Use History and Model Potential Future Stressors Using Historical Trend Data

RECOMMENDED ACTION #5: Use a Watershed Approach

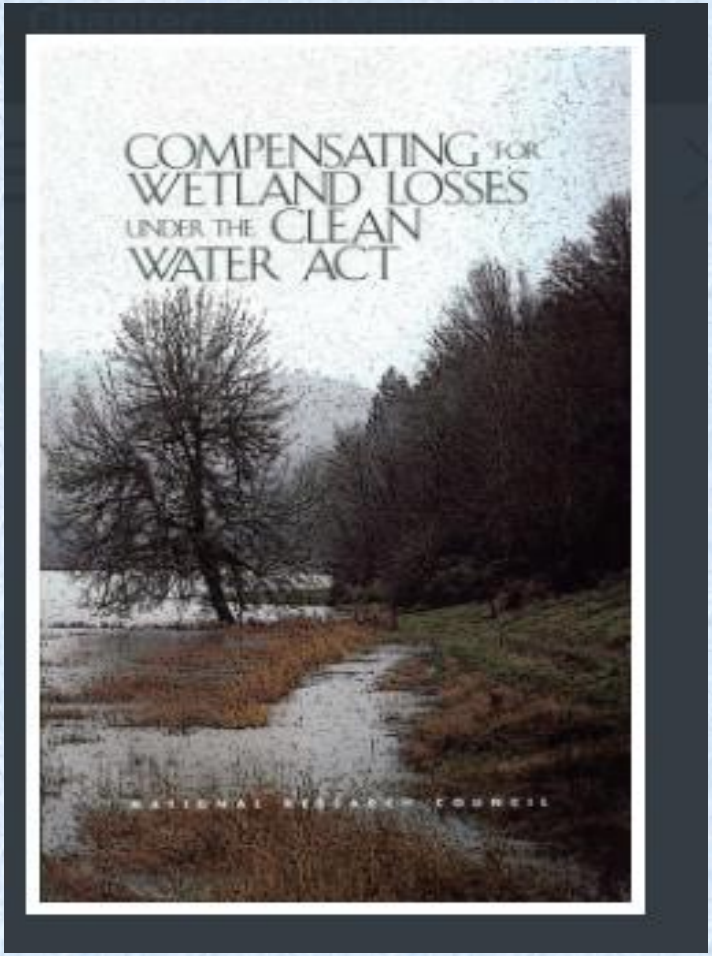
RECOMMENDED ACTION #6: Include Pre and Post Construction Costs in Estimates

RECOMMENDED ACTION #7: Use an Adaptive Management Approach Throughout the Life of the Project

RECOMMENDED ACTION #8: Require Documentation of Credentials, Provide Incentives & Enforce Accountability

RECOMMENDED ACTION #9: Improve Access to Knowledge & Training and Engage Multi-Disciplinary Interdisciplinary Teams

Identifying Challenges Can Lead to Solutions: A Previous Case



National Mitigation Action Plan Recommendations

Example: The Corps and EPA, in conjunction with USDA, DOI, and NOAA, working with States and Tribes, will co-lead the development of guidance on the use of on-site vs. off-site and in-kind vs. out-of-kind compensatory mitigation by the end of 2003.

RECOMMENDED ACTION #2:

DEVELOP ACHIEVABLE PERFORMANCE CRITERIA FOR SHORT TERM EVALUATION AND ESTABLISH A LONG-TERM MANAGEMENT PLAN

Seeking Specific Recommendations

- Who should take action (can be many parties)?
- What should they do?
- How should they do it?

Recommendations Welcome

- Please submit to:

Marla Stelk (one of your moderators today!)

marla@aswm.org

Not Lost in Translation: How to Select the Right Wetland Restoration Team

IT WILL TAKE US A FEW MOMENTS TO MAKE THE SWITCH…

Photo Credit: Marla Stelk

Webinar Framework: The Restoration Design Process

1. Planning/Conceptual Design
2. Preliminary through Final Design, Construction Drawings
3. Construction/Construction Monitoring
4. Post-Construction Monitoring (Note: the maintenance phase will not be covered in this webinar)
5. Wrap-up

DESIGN PROCESS

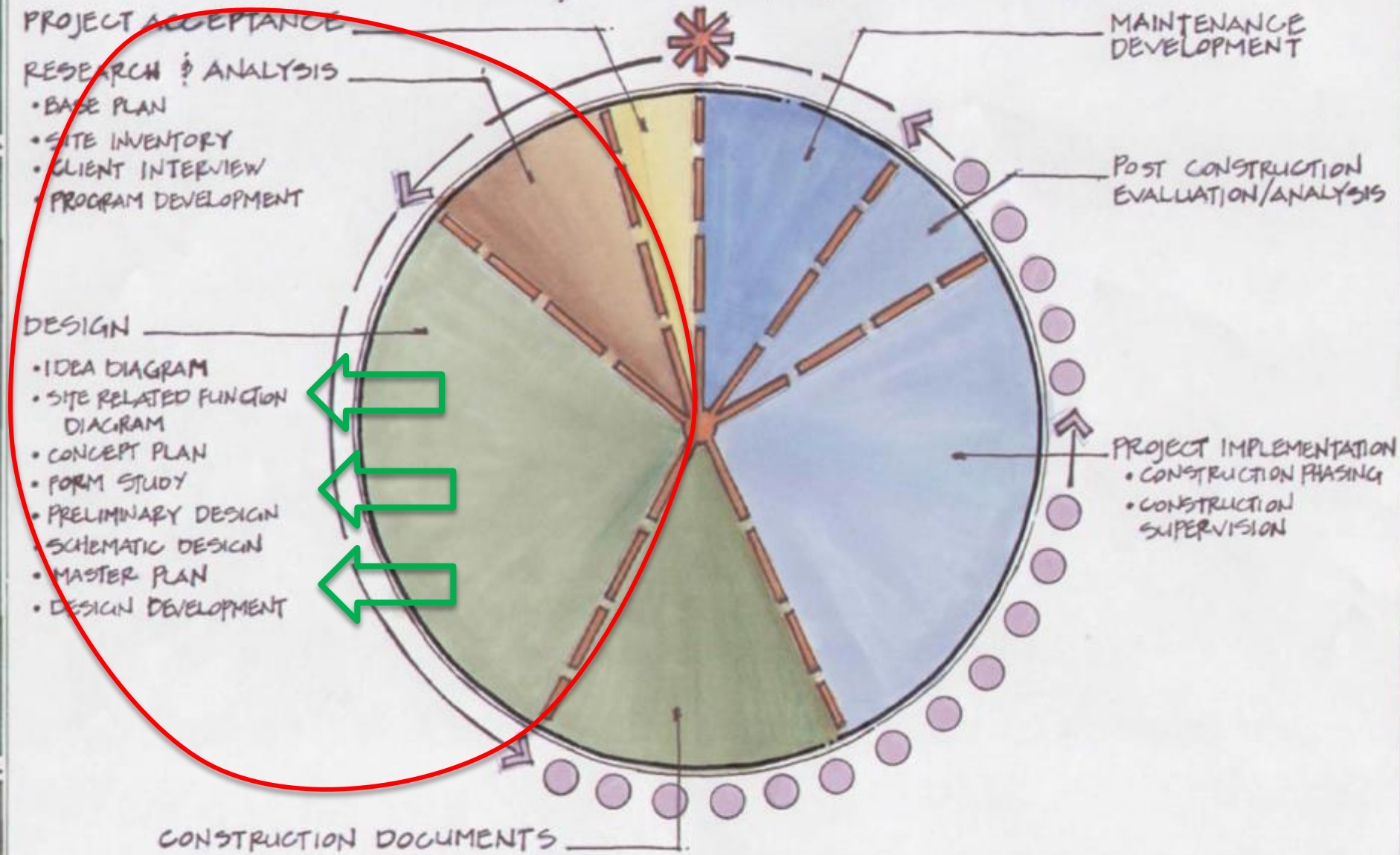


Photo credit: Beechwood Landscape Architecture

Planning/Conceptual Design

- Look to the past…

Planning/Conceptual Design

- But plan for the future!

Planning/Conceptual Design

- Regional Planning Documents? Think about your position in the landscape, both ecologically and politically.

Compiling Your Core Restoration Team

- This team is involved from ***beginning to end***
- Expertise
  - geo-hydrology, soil (hydric) science, wetland ecology, landscape architecture
- Skill Set
  - communication (oral and written)
    - must be able to converse in multiple professional languages
  - interpersonal: working efficiently within a team structure
  - experience: prior experience with restoration projects of the nature and scope at hand
- Communication/Coordination system

Compiling Your Extended Restoration Team

- This team is drawn upon as needed throughout the project
- Expertise
  - construction/earth-moving/cost estimation
  - botany/native plant nursery
  - wildlife biologist
  - erosion & sedimentation control
  - GIS/CAD/surveying
  - real estate
  - cultural resources

Planning/Conceptual Design

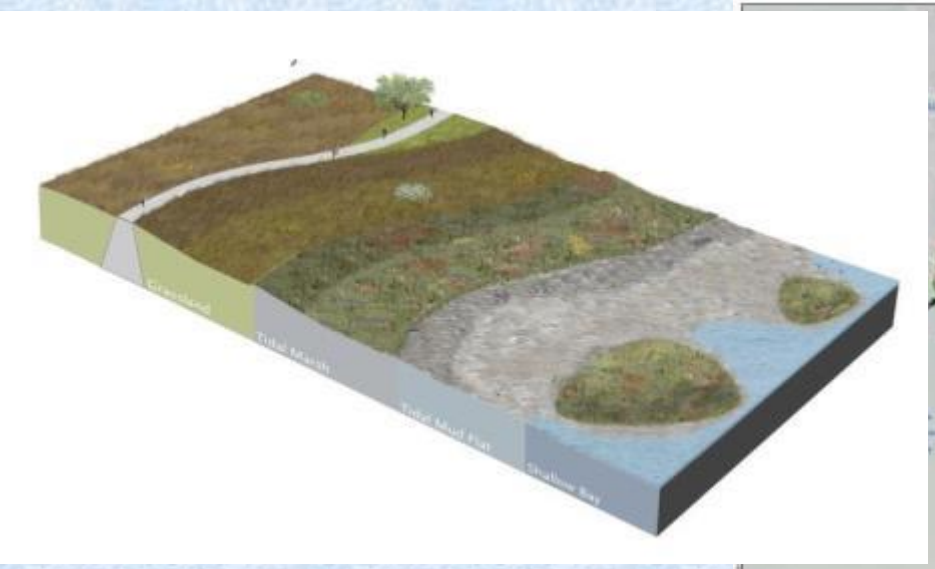
- Know your place.

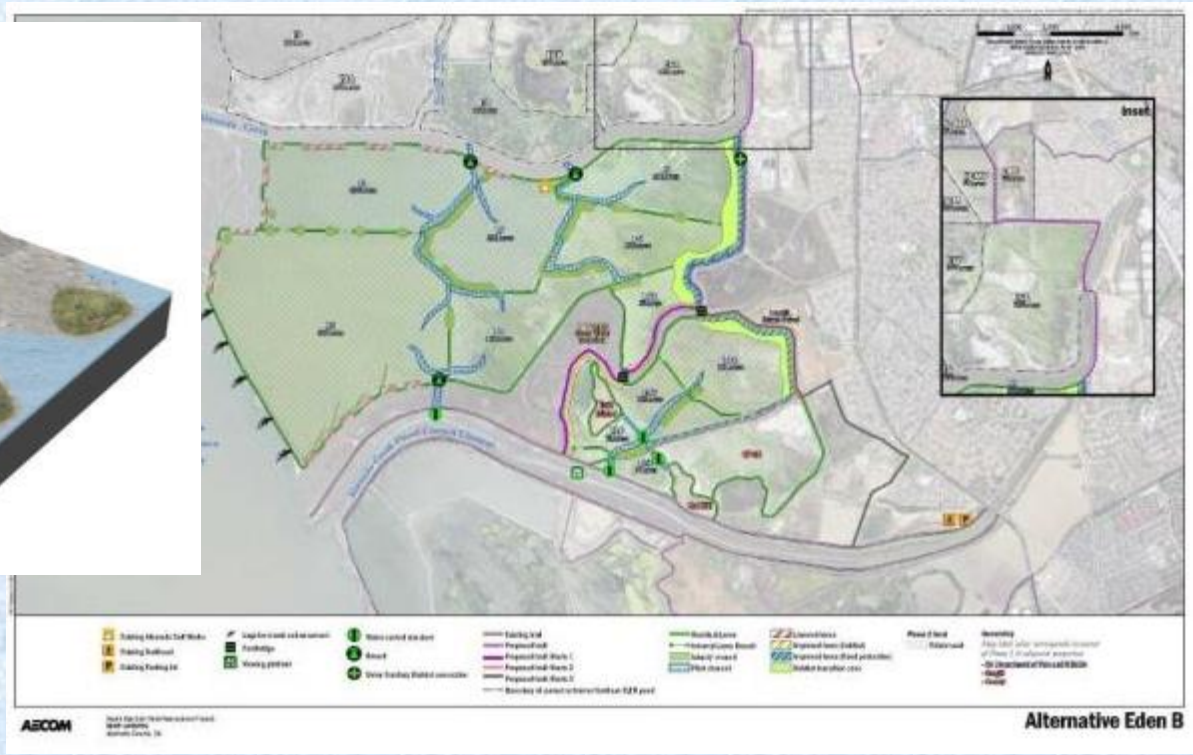
Planning/Conceptual Design

- Early Stakeholder Engagement

Planning/Conceptual Design

- Pretty Pictures Help
  - Before topo lines get drawn, sometimes a more artistic version of the design concept can help solidify the vision for non-technical stakeholders.





Planning/Conceptual Design

- Find a suitable, accessible reference site(s) as close as possible to construction site.

Planning/Conceptual Design

Flexibility

Planning/Conceptual Design

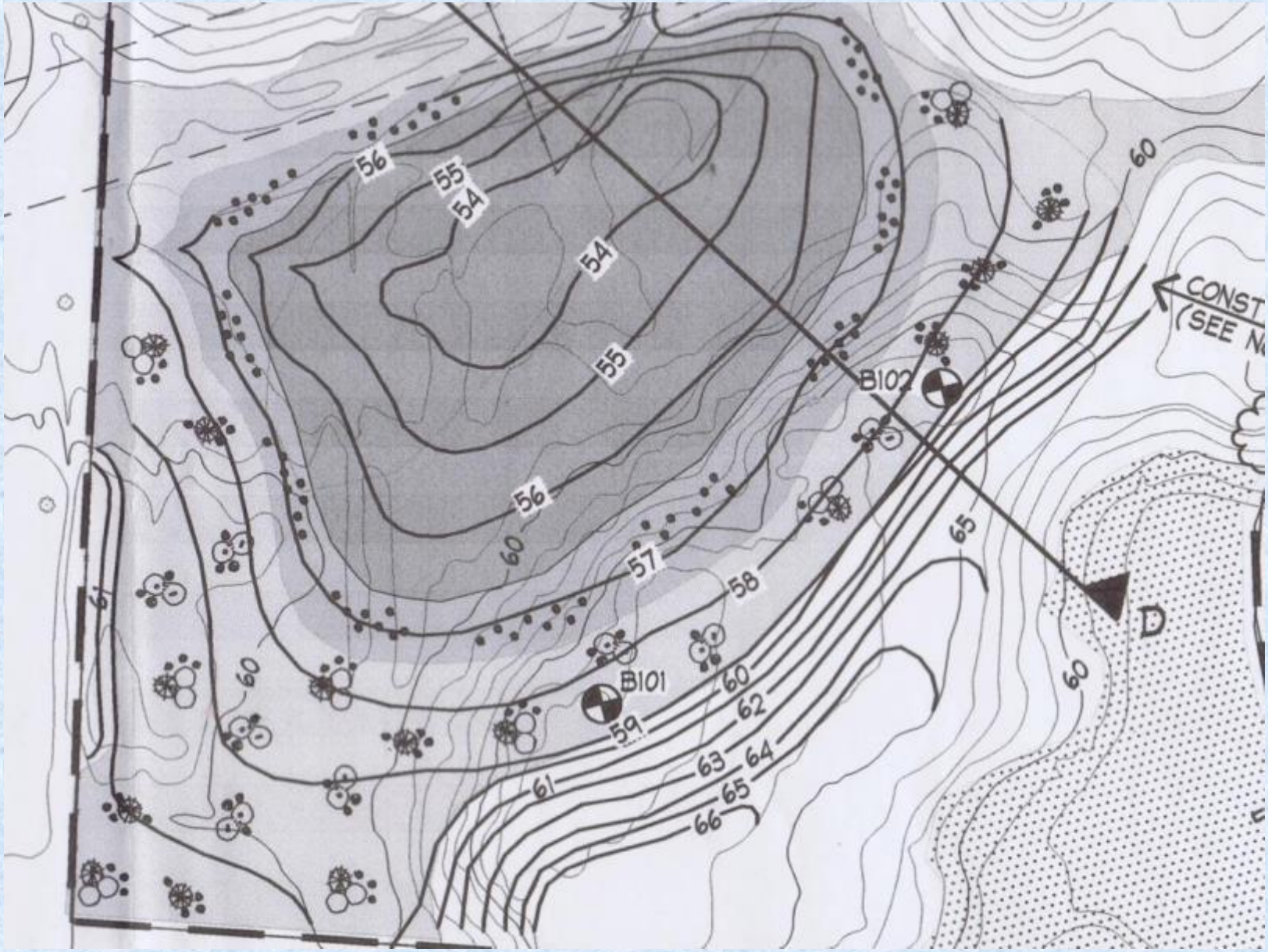
Rand Road Interchange Wetland Mitigation Site, Maine Turnpike Authority

Planning/Conceptual Design

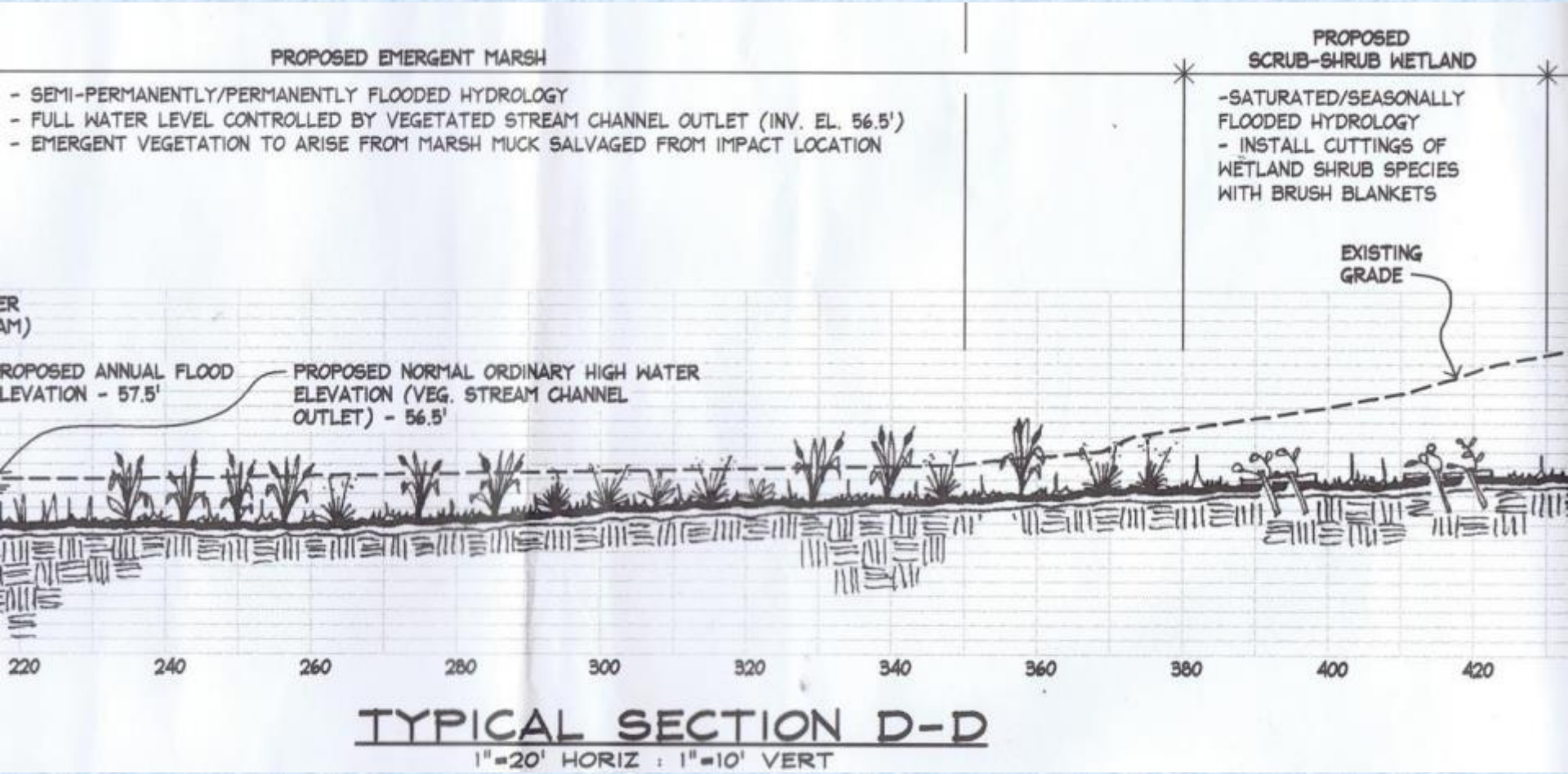
Skill set for the Landscape Architect:

- Highly collaborative and flexible
- Recognizes that the “science guides the process”
- Asks the “right” questions/helps with answers
- Willing to adapt traditional techniques/methods to respond to unique site and design parameters
- Uses graphics and language effectively for target audience

Planning/Conceptual Design



Planning/Conceptual Design

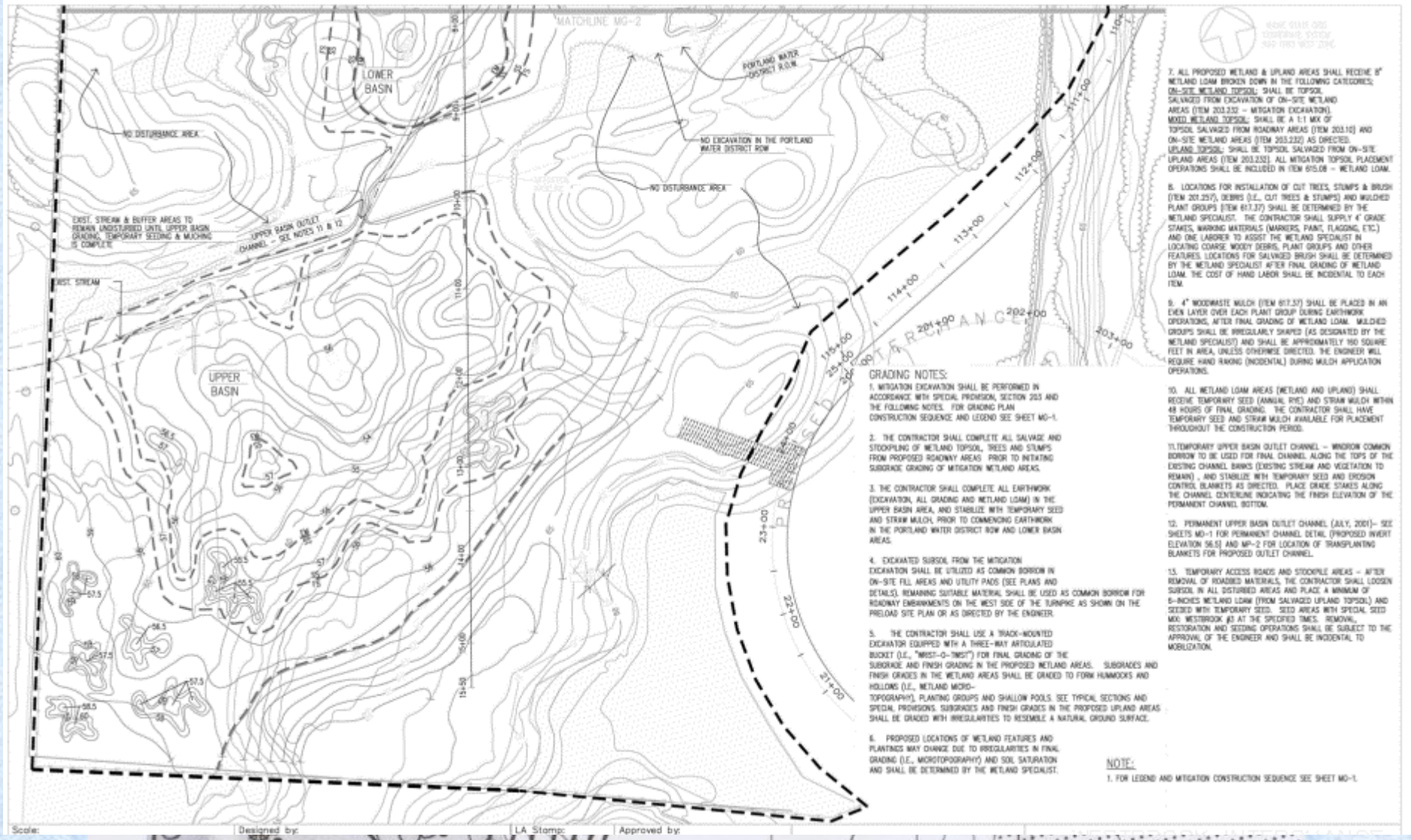


TYPICAL SECTION D-D

1"=20' HORIZ : 1"=10' VERT

Preliminary through Final Design, Construction Drawings

Example: Conceptual Design Plan vs. Construction Document Plan

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GRADING NOTES:

1. MITIGATION EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION, SECTION 203 AND THE FOLLOWING NOTES. FOR GRADING PLAN CONSTRUCTION SEQUENCE AND LEGEND SEE SHEET MG-1.

2. THE CONTRACTOR SHALL COMPLETE ALL SALVAGE AND STOCKPILING OF WETLAND TOPSOIL, TREES AND STUMPS FROM PROPOSED ROADWAY AREAS PRIOR TO INITIATING

5. THE CONTRACTOR SHALL USE A TRACK-MOUNTED EXCAVATOR EQUIPPED WITH A THREE-WAY ARTICULATED BUCKET (I.E., "WRIST-O-TWIST") FOR FINAL GRADING OF THE SUBGRADE AND FINISH GRADING IN THE PROPOSED WETLAND AREAS. SUBGRADES AND FINISH GRADES IN THE WETLAND AREAS SHALL BE GRADED TO FORM HUMMOCKS AND HOLLOWS (I.E., WETLAND MICRO-TOPOGRAPHY), PLANTING GROUPS AND SHALLOW POOLS. SEE TYPICAL SECTIONS AND SPECIAL PROVISIONS. SUBGRADES AND FINISH GRADES IN THE PROPOSED UPLAND AREAS SHALL BE GRADED WITH IRREGULARITIES TO RESEMBLE A NATURAL GROUND SURFACE.

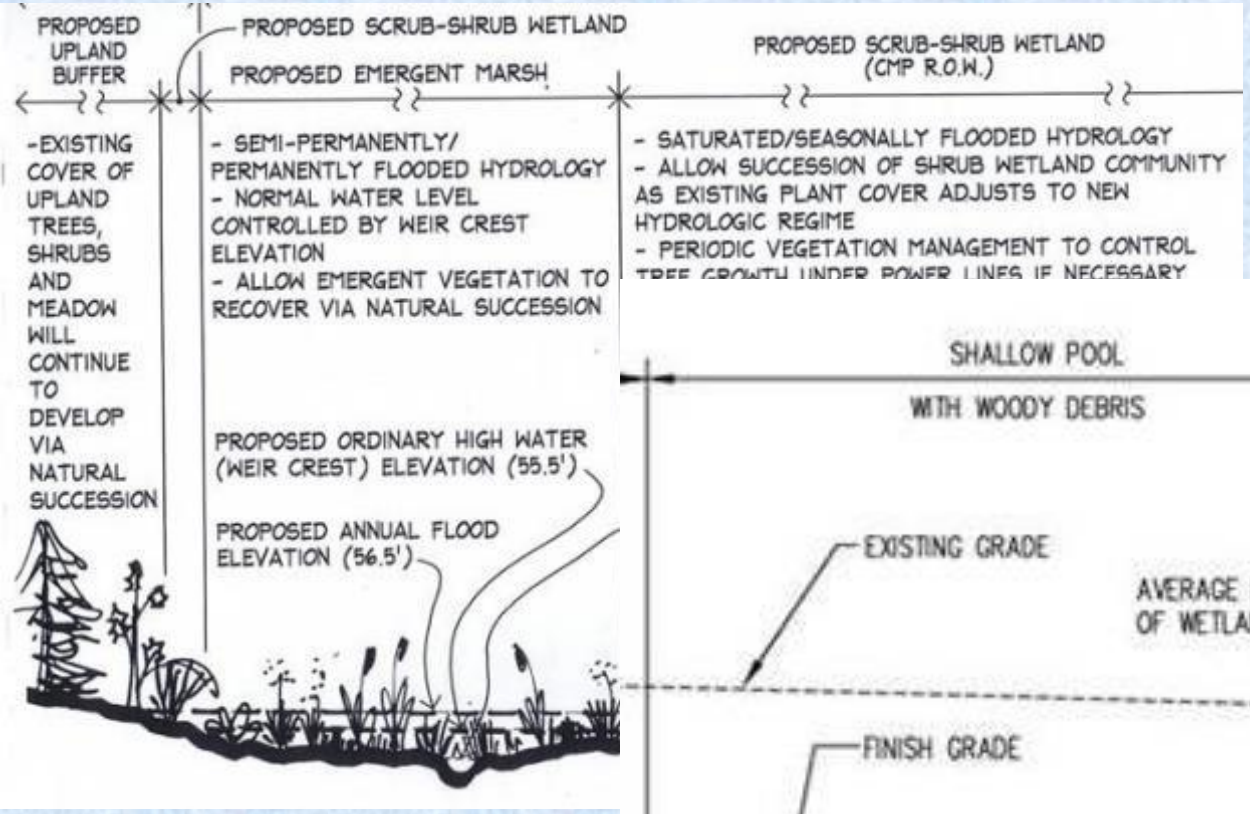
SUBGRADE AND FINISH GRADING IN THE PROPOSED WETLAND AREAS. SUBGRADES AND FINISH GRADES IN THE WETLAND AREAS SHALL BE GRADED TO FORM HUMMOCKS AND HOLLOWS (I.E., WETLAND MICRO-TOPOGRAPHY), PLANTING GROUPS AND SHALLOW POOLS. SEE TYPICAL SECTIONS AND SPECIAL PROVISIONS. SUBGRADES AND FINISH GRADES IN THE PROPOSED UPLAND AREAS SHALL BE GRADED WITH IRREGULARITIES TO RESEMBLE A NATURAL GROUND SURFACE.

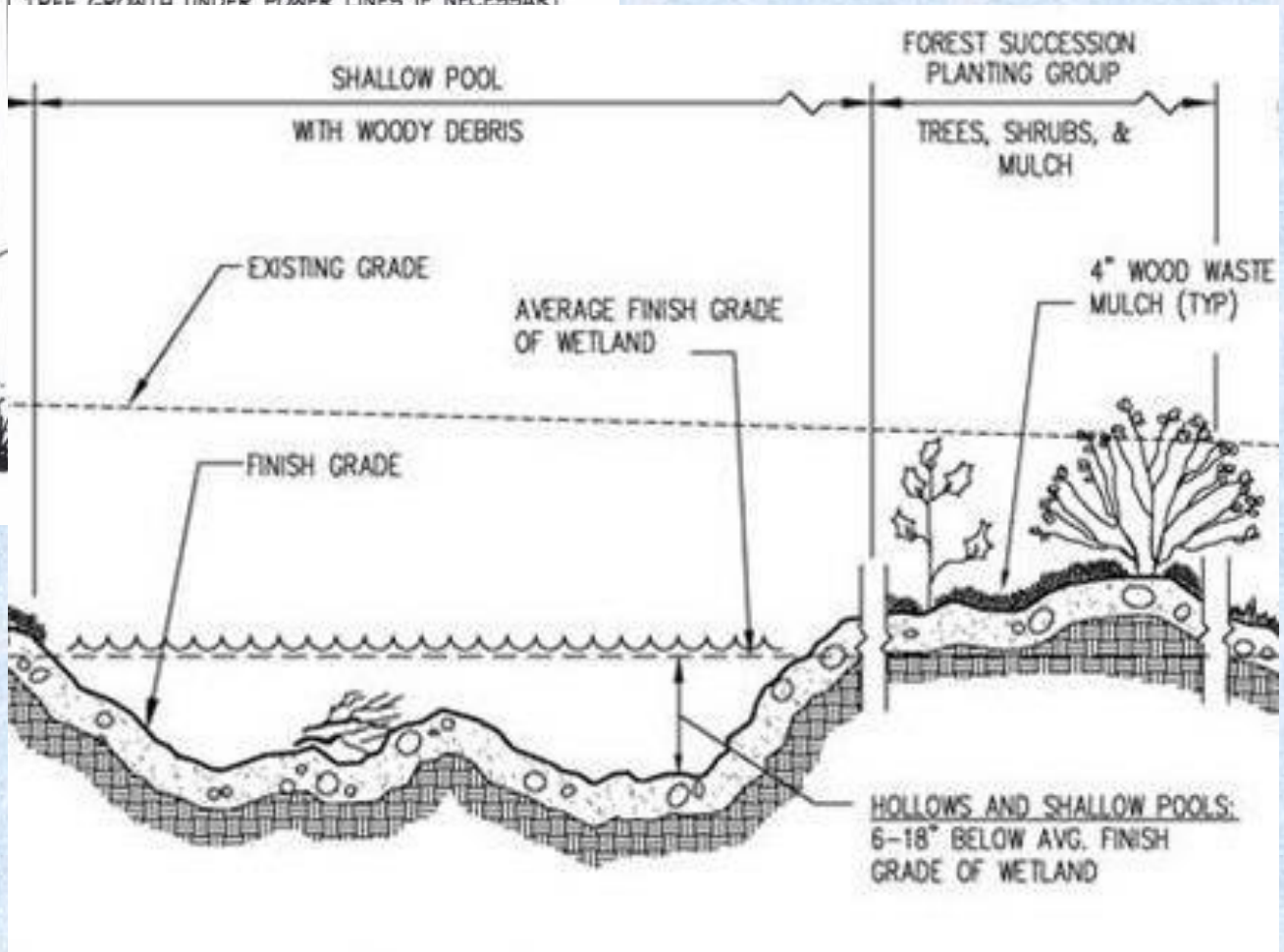
6. PROPOSED LOCATIONS OF WETLAND FEATURES AND PLANTINGS MAY CHANGE DUE TO IRREGULARITIES IN FINAL GRADING (I.E., MICROTOPOGRAPHY) AND SOIL SATURATION AND SHALL BE DETERMINED BY THE WETLAND SPECIALIST.

NOTE:

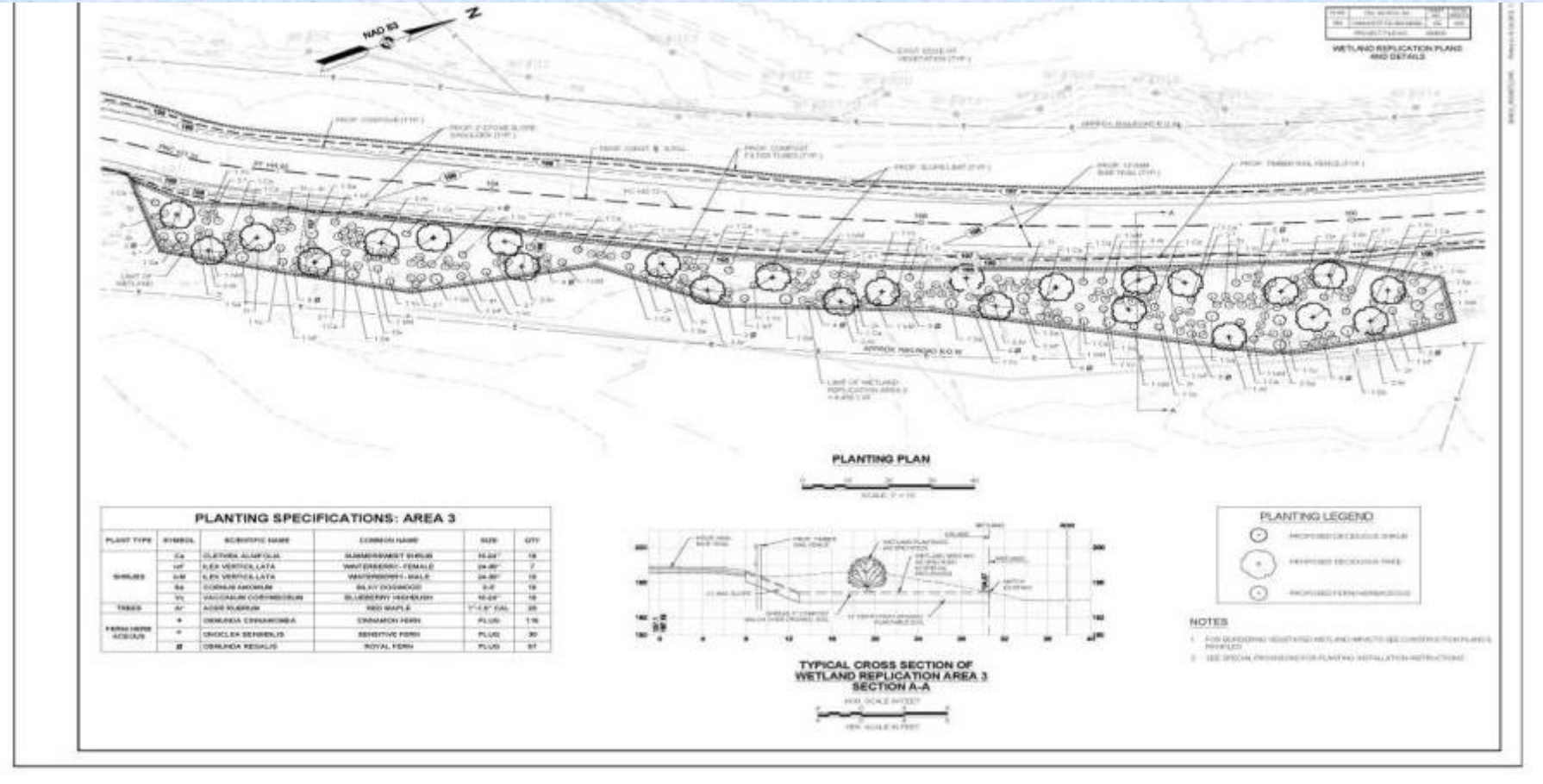
1. FOR LEGEND A

Example: Conceptual Design Detail vs. Construction Document Detail





Preliminary through Final Design, Construction Drawings



Continuity and communication – plant specs

Preliminary through Final Design, Construction Drawings

- Don’t Get Lost In Translation!
  - Taking the step from conceptual design to construction drawings is a critical step.
  - Keep your Core Team members involved throughout the process.

Construction/Construction Monitoring

- Know Your Hiring Process
- Construction Management
- Experienced Operators
- Initial Meeting w/Construction Team

Construction/Construction Monitoring

Inspections: Site preparation

Construction/Construction Monitoring

Skill set for the construction monitoring team:

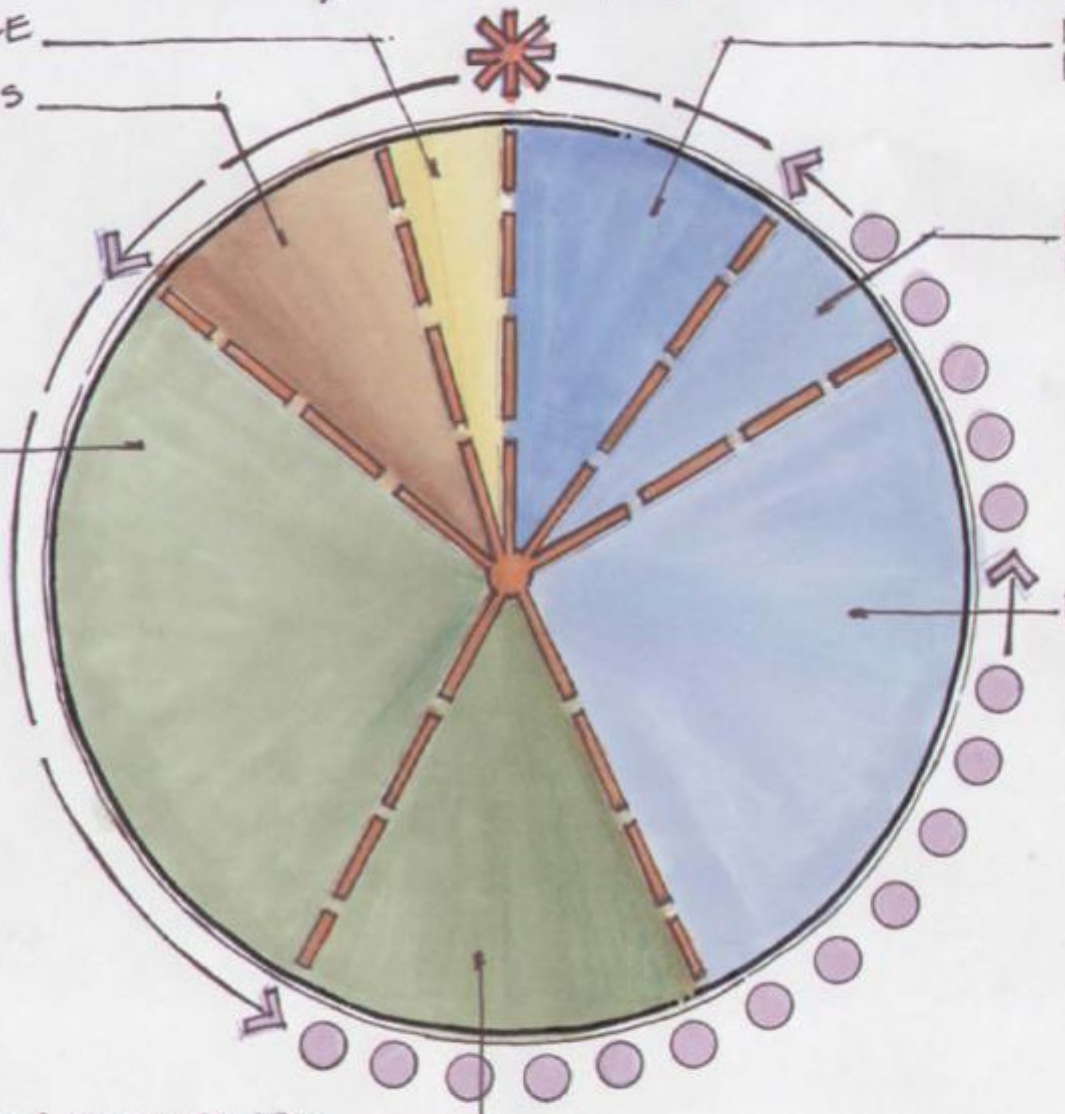
- Understands Best Management Practices:
  - general (e.g., to prevent erosion), and
  - project specific (e.g., to prevent soil compaction).
- Can read, interpret and enforce contract documents
- Field oriented and good with contractors (but knows when and where to draw the line).
- Right professional on site at the right time

Post-Construction Monitoring

Skill set for post-construction monitoring team:

- Understands the importance of and creates as-built documents that support post-construction monitoring.
- Re-assesses and adapts protocols for documentation, monitoring and metrics in light of post-construction conditions

DESIGN PROCESS



PROJECT ACCEPTANCE

RESEARCH & ANALYSIS
- BASE PLAN
- SITE INVENTORY
- CLIENT INTERVIEW
- PROGRAM DEVELOPMENT

DESIGN
- IDEA DIAGRAM
- SITE RELATED FUNCTION DIAGRAM
- CONCEPT PLAN
- FORM STUDY
- PRELIMINARY DESIGN
- SCHEMATIC DESIGN
- MASTER PLAN
- DESIGN DEVELOPMENT

CONSTRUCTION DOCUMENTS
- LAYOUT PLAN
- GRADING ANALYSIS
- PLANTING SCHEDULE
- CONSTRUCTION DETAILS/SPECIFICATIONS
- MATERIAL SELECTION

PROJECT IMPLEMENTATION
- CONSTRUCTION PHASING
- CONSTRUCTION SUPERVISION

POST CONSTRUCTION EVALUATION/ANALYSIS

MAINTENANCE DEVELOPMENT

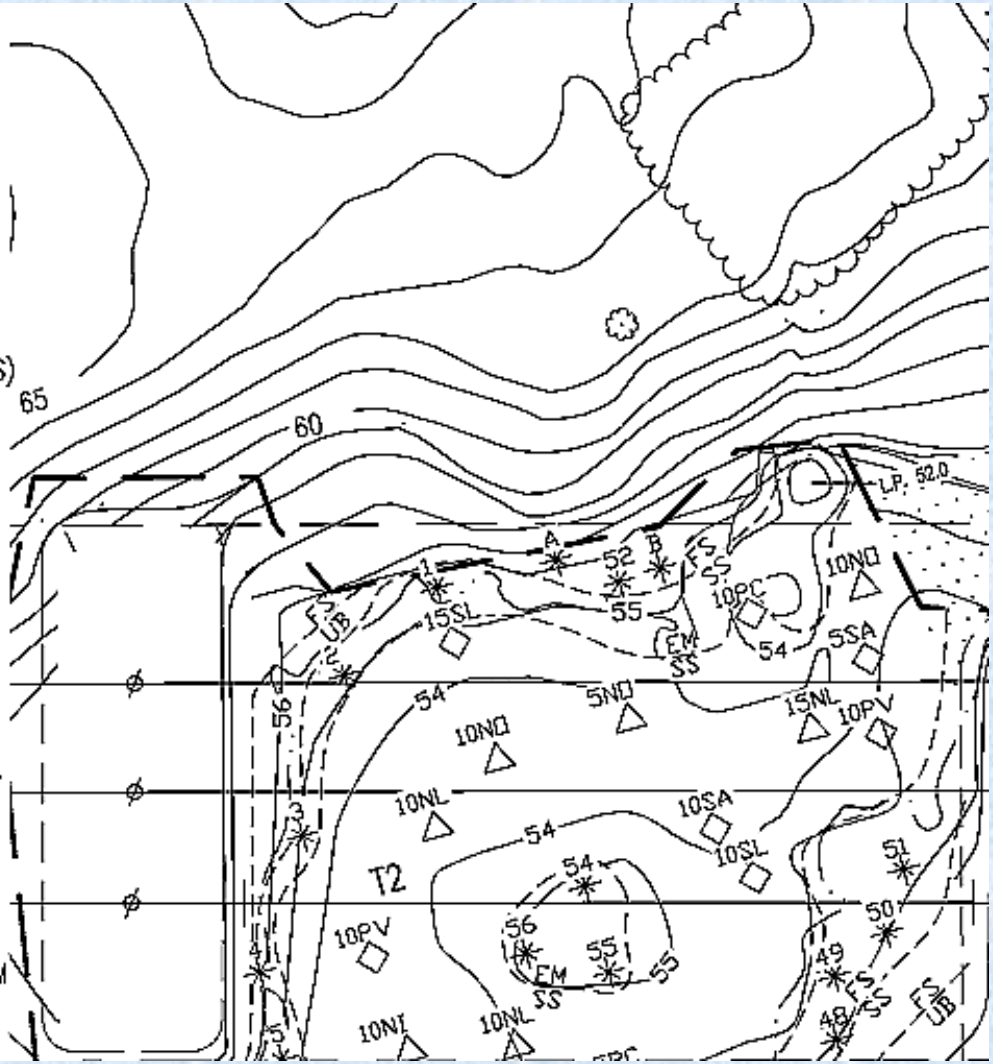
Post-Construction Monitoring

3. EXCAVATION AND GRADING WERE COMPLETED JUNE–JULY, 2001. SEEDING WAS COMPLETED IN LATE OCTOBER, 2001 (DORMANT SEEDING).

4. APPROXIMATELY 8 INCHES OF SALVAGED TOPSOIL WAS INSTALLED THROUGHOUT THE WETLAND MITIGATION SITE AS FOLLOWS:
–ON SITE WETLAND TOPSOIL (SALVAGED FROM ON–SITE WETLAND AREAS) WAS INSTALLED IN THE EMERGENT ZONE;
–MIXED WETLAND TOPSOIL (SALVAGED FROM ROADWAY AND ON–SITE WETLAND AREAS) WAS INSTALLED IN THE SCRUB/SHRUB AND FOREST SUCCESSION ZONES;
–UPLAND TOPSOIL (SALVAGED FROM ON–SITE WETLAND AND UPLAND AREAS) WAS INSTALLED IN THE UPLAND BUFFER ZONE.

5. WATTLES (FASCINE BUNDLES OF SALIX SPECIES) WERE INSTALLED AROUND THE POLE PADS IN EARLY MAY, 2001. DUE TO LOW SURVIVAL WATTLES WERE REPLACED IN SEPTEMBER, 2001 WITH THE FOLLOWING CONTAINER GROWN PLANTS:
20 ALNUS RUGOSA, 16 ILEX VERTICILLATA, 20 SALIX SHRUB SPECIES, 16 VIBURNUM RECOGNITUM.

6. PLANTINGS WERE INSTALLED IN SEPTEMBER 2001. PRIOR TO INSTALLATION A SIGNIFICANT QUANTITY OF ROOTED CUTTINGS FOR THE SCRUB–SHRUB PLANT GROUPS WERE REJECTED AS DEAD OR SUBSTANDARD. IN–KIND REPLACEMENTS WERE NOT AVAILABLE AND SUBSTITUTIONS OF CONTAINER GROWN (CG) PLANTS AT A RATIO OF 1 CG/5 CUTTINGS WERE MADE IN SOME GROUPS. THE PLANT ESTABLISHMENT PERIOD ENDED IN SEPTEMBER, 2002 AFTER PLANT REPLACEMENTS WERE COMPLETED. PLANT LISTS DO NOT INCLUDE REPLACEMENT SUBSTITUTIONS (CONTAINER–GROWN CEPHALANTHUS OCCIDENTALIS, CORNUS SERICEA, SALIX DISCOLOR, VIBURNUM RECOGNITUM AND SAMBUCUS CANADENSIS) DUE TO UNAVAILABILITY OF ROOTED CUTTINGS.



As-built Plan

Post-Construction Monitoring

More skill set considerations for post-construction monitoring team:

- Specialized technical expertise depending on your outcome goals, e.g., wildlife biology, geo-hydrology, hydric soils, botany (e.g., invasives) etc.
- Detail oriented
- Statistically valid sampling, if appropriate

- Communication! (Keep a Core Team member involved throughout)
- Reassess & adapt protocols for documentation, monitoring metrics in light of post-construction conditions

Post-Construction Monitoring

After final grading & before planting

After re-grading "adjustment"

Long-term protection / preservation

Post-Construction Monitoring

- Appropriate methods and success criteria / goals
  - Compensatory vs Voluntary Restoration
  - Scale- and Goal-specific
  - Trajectories and acceptable range of variation

Post-Construction Monitoring

- Adaptive Management
  - Specific applied studies to further the goals of the project
  - Not simply “trial and error”

Recommendations:

Cause of Failure	Recommendation	Selected Measures
Contractor “drama” and poor wetland performance, before, during and after construction due to inadequate contract documents.	Construction documents do not effectively communicate and anticipate complexity of wetland construction. This should be balanced with some built-in flexibility to allow contractor to work efficiently and effectively.	1. Realistic performance goals determined early by experienced core team. 2. For contract document preparation, qualified design professional should lead and perform quality control. 3. Develop consistent and effective contract language and graphics with contractor in mind. 4. Keep Core Team involved in reviews
Loss of original project vision due to a “hand-off” of responsibilities.	Keep your “Core Team” involved from start to finish.	Have the foresight to select a team with the skill set to oversee all phases of the project. Plan for turnover and provide redundancy where possible. Document your decision-making process and be transparent with your decisions.
Lack of continuous contact, inspections, communication	Inspections by key Team members	Up-front schedule for inspections and/or meetings at critical points in construction process requiring approval before proceeding to next step/phase
Inadequate Budget and/or unrealistic schedule	Every aspect must be compared and contrasted to available budget and appropriate timeframes	Ongoing communication/meetings to review budget, expenses, and schedule

Questions?

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John Bourgeois, South Bay Salt Pond Restoration Project
John.Bourgeois@scc.ca.gov

Matt Schweisberg, Wetland Strategies and Solutions, LLC
matt@wetlandsns.com

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Thank you for your participation!
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