Planning Process

- Nine Steps of Planning
  - Identify Problems
  - Determine Objectives
  - Inventory Resources
  - Analyze Data
  - Formulate Alternatives
  - Evaluate Alternatives
  - Make Decisions
  - Implement Plan
  - Evaluate Plan

Identify Problems and Opportunities

- Resource is missing wetland functions or needs enhancement of functions or values
  - Water Quality
  - Wildlife Habitat
  - Flood Control
  - Endangered Species
  - Recreational and Educational Opportunities

Determine Objectives

- Restoration
  - Restore hydrology
  - Restore wetland vegetation
  - Restore wetland habitat
- Enhancement
  - Usually means increasing hydrology (water supply)
    - More Depth
    - More Area
    - Longer hydroperiod
    - Deeper Regime
- Creation
  - Usually for specific function
    - Water Treatment
    - Recreational and Educational

Objectives (Cont.)

- What are Client's objectives?
  - Waterfowl Hunting?
  - Fisheries?
  - Aesthetic Quality?
- What is the Agency Program Objective?
  - Restoration or improvement of wetland hydrology, hydric soils, and hydrophytic vegetation to restore or enhance wetland functions and values.
- Are They Compatible?

Inventory Resources

- Hydrogeomorphic Classification
  - Hydrology/Hydrodynamics
  - Landscape Position / Soil morphology
- Vegetation
  - Existing vegetation
  - Seed bank, Seed wall
- Aquatic Organisms, Waterfowl, Terrestrial Organisms
- Existing easements

Inventory Resources (Cont.)

- National Environmental Policy Act (NEPA)
  - Cultural Resources
  - Endangered Species (ESA)
- Drainage Area
- Watershed Conditions
  - Forest to pasture, urban
  - Sediment Issues
  - Other water quality issues (nutrients, pesticides)
- Water budget
  - Current Hydroperiod and Regime
  - Groundwater Monitoring, Flow Measurement
- Soil
  - Muck or Mineral, Low or high permeability layer
  - Engineering Properties

Inventory Resources - Consider

- Effect on adjacent property
  - Lateral effects (groundwater)
  - Detention Storage (floodwater)

Analyze Resource Data

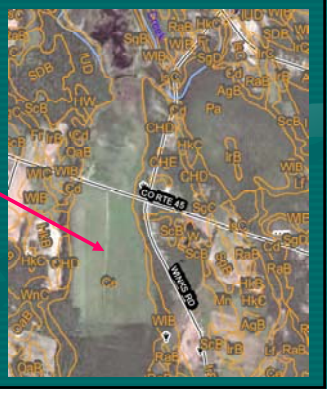
- Water Budget Analysis
  - WETS Tables
  - SPAW Model
  - Stream Gauge Data
- Soil
  - Analyze conductivity rates
  - Engineering Properties
  - Compaction
  - Mineralization of organics
- Vegetation
  - Current trend
  - Seed wall
  - Seed bank

Soils Data

Carlyle Muck

Web Soil Survey

http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx



Soil Physical Properties

Physical Soil Properties– Oswego County, New York

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*in/in*	*Pct*	*Pct*					
Cc—Canandaigua silt loam														
Canandaigua	0-7	0-32	50-80	18-27	1.20-1.40	1.40-4.00	0.19-0.20	0.0-2.9	4.0-15.0	.49	.49	4	8	0
	7-33	0-62	0-80	18-35	1.20-1.40	1.40-4.00	0.19-0.20	0.0-2.9	0.5-3.0	.49				
	33-60	0-100	0-100	0-27	1.15-1.40	1.40-4.00	0.19-0.21	0.0-2.9	0.0-1.0	.64				
Ce—Carlisle muck														
Carlisle	0-56	—	—	—	0.13-0.23	1.40-42.00	0.35-0.45	—	50.0-100.0			3	2	134
CHD—Colton-Hinckley complex, moderately steep														
Colton	0-8	70-91	0-29	0-15	1.10-1.40	42.00-141.00	0.03-0.07	0.0-2.9	3.0-8.0	.05	.15	4	8	0
	8-19	70-100	0-29	0-15	1.25-1.55	42.00-141.00	0.02-0.05	0.0-2.9	0.0-5.0	.17				
	19-34	70-100	0-29	0-15	1.25-1.55	42.00-141.00	0.02-0.05	0.0-2.9	0.0-1.0	.17				
	34-60	70-100	0-29	0-15	1.45-1.65	100.00-200.00	0.01-0.02	0.0-2.9	0.0-0.5	.17				
Hinckley	0-7	70-91	0-29	0-15	0.90-1.10	42.00-141.00	0.11-0.18	0.0-2.9	2.0-7.0	.05	.15	4	8	0
	7-33	70-91	0-29	0-15	1.30-1.40	42.00-141.00	0.01-0.10	0.0-2.9	0.0-1.0	.17				
	33-62	70-100	0-29	0-15	1.30-1.50	100.00-200.00	0.01-0.06	0.0-2.9	0.0-0.5	.10				

Soils Engineering Properties

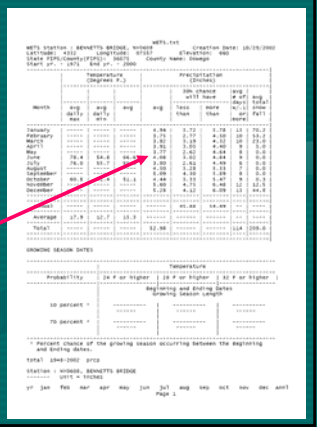
56" Deep

Engineering Properties– Oswego County, New York

Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
AnB2—Arkport-Williamson complex, rolling, eroded												
Arkport	0-3	Very fine sandy loam	CL-ML, SL	A-4	0	0	100	90-100	85-100	30-90	15-30	NP-10
	3-35	Very fine sandy loam, silt loam	CL-ML, ML	A-4	0	0	100	90-100	85-100	30-90	15-30	NP-10
	35-60	Very fine sandy loam, silt loam	CL-ML, ML	A-4	0	0	100	90-100	85-100	30-90	15-25	NP-5
	60-80	Loamy fine sand, silt loam, gravelly loamy fine sand, loamy fine sandy loam	SW-SM, SM, GW-GM	A-1, A-2, A-3	0	0	70-100	47-100	28-100	5-60	0-10	NP-1
Williamson	0-8	Very fine sandy loam	ML	A-4, A-5	0	0	100	90-100	80-100	50-95	30-45	NP-5
	8-19	Silt loam, very fine sandy loam	ML, CL-ML	A-4	0	0	100	90-100	80-100	65-95	15-30	NP-5
	19-43	Silt loam, very fine sandy loam	CL, CL-ML, ML	A-4	0	0	100	90-100	80-100	60-95	15-30	NP-5
	43-60	Stratified silt to very fine sandy loam, silt loam	CL-ML, ML, CL	A-4	0	0	100	90-100	80-100	60-95	15-30	NP-5
Cc—Canandaigua silt loam												
Canandaigua	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	90-100	70-95	20-40	3-19
	7-33	Silt loam, very fine sandy loam, silty clay loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	70-95	20-40	3-19
	33-60	Silt loam, very fine sandy loam, stratified silt to very fine sand	CL-ML, ML, CL	A-4	0	0	90-100	85-100	80-100	70-95	20-30	3-10
Ce—Carlisle muck												
Carlisle	0-56	Muck	PT	A-8	0	0	—	—	—	—	—	—

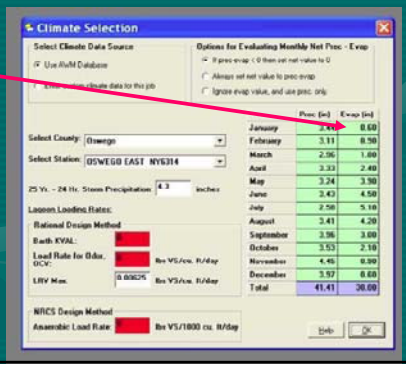
WETS Table for Oswego County

Average Monthly Precipitation



Monthly Evaporation

NRCS AWM Computer Program



Formulate Alternatives

- Restoration or Enhancement
- Structural or non-structural
- Low or High management levels

Evaluate Alternatives

- Feasibility
- Cost
- Stakeholder's Wishes
- Permitting Considerations
- Land Right's Considerations
- Construction Problems

Make Decisions

- Who is the decision maker?
- What does the technical assistance provider (you) do?
  - Always have at least two technically acceptable alternatives available
  - Provide feedback to decision maker and make recommendations
  - Honestly evaluate all proposals based on their merit from a technical standpoint

Implement Plan

- Design, Plans and Specifications
- Easements
- Land Rights
- Secure Funding
- Contracting
- Construction
- Accept Project
- Operation and Maintenance Plan

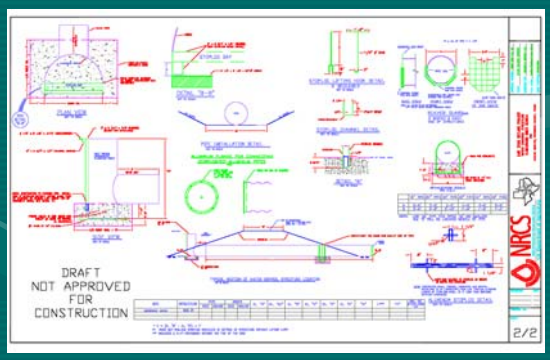
Evaluate Plan

- This means MONITORING
- Monitor for
  - Success of intended function creation or improvement
  - Safety and Integrity of constructed work (Operation and Maintenance)
  - Proper operation of restored features
  - Needed actions or changes to Plan

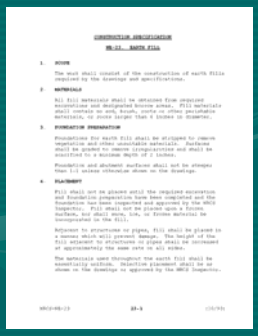
Intermission

Project Implementation

Plans



Specifications



Cost Estimate/Bid Schedule

Muddy Basin
Cost Estimate

Item #	Item	Quantity	Unit	Cost	Cost Ext.
1	Excavation	25,500	CY	$3.50	$89,250.00
2	Earthfill	1500	CY	$1.50	$2,250.00
3	Plastic Pipe, 6"	75	LF	$2.00	$150.00
4	Water Control Structure	1	Ea.	$2,500.00	$2,500.00
5	Seeding & Mulching	15	Ac.	$400.00	$6,000.00
6	Fencing	2500	LF	$2.00	$5,000.00
			Total Cost		$105,150.00

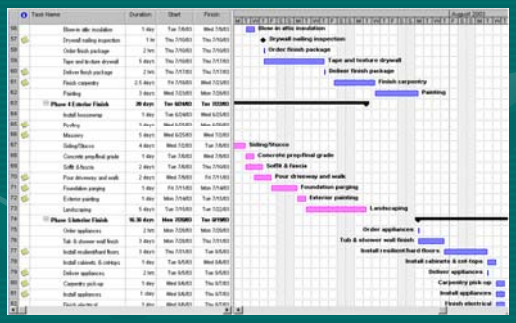
Bid Schedule

Muddy Basin

Bid Schedule

Item #	Item	Quantity	Unit	Cost	Cost Ext.
1	Excavation	25,500	CY	____	_____
2	Earthfill	1500	CY	____	_____
3	Plastic Pipe, 6"	75	LF	____	_____
4	Water Control Structure	1	Ea.	____	_____
5	Seeding & Mulching	15	Ac.	____	_____
6	Fencing	2500	LF	____	_____
			Total		_____

Construction Schedule



Permitting

- Water Storage (Water Rights)
- Dam Safety
- Storm Water Pollution Prevention Plan
- Section 404
- Existing Easements
- Floodplain

Construction Contracts – Provide Means of:

- Getting what we pay for
- Paying for what we get
- Dealing with what we do when things go bad

Types of Contracting

- Federal (Federal Acquisition Regulations)
  - Fixed Price
  - Performance of Work
  - Division of Work
  - Time and Material
  - Force Account
  - Equipment Rental
- Local (NRCS Grants Manual)
- Landowner Agreement

Usually comes down to two options:

- Federal contract
  - Federal agency designs project, and advertises, awards, and makes 100% payment on project where it holds a permanent easement, or owns the land.
- Landowner agreement contract
  - Private landowner hires contractor to implement agency engineer's design, and receives partial or full reimbursement from agency.

Roles Common to ALL Contracting

- Contractor
- Contracting Officer
  - Agency Contract Specialist in Federal Contract
  - Landowner in Landowner Agreement Contracts
- Owner
- Engineer
  - Agency Engineer
  - Private A&E
- Inspector

The Contractor's Role

- Estimates the work and proposes cost (bids)
- Becomes familiar with design and designer's intent
- Implements design diligently
  - Plans
  - Specifications
- Informs Contracting Officer of errors or omissions in design
- Performs Quality Control
- May propose changes (modifications)

Roles and Responsibilities – Contracting Officer

- Awards Contract
- Approves Changes (Modifications)
- Makes Payment
- Settles Disputes (Claims)
- Makes equitable adjustments in cost and time

Roles and Responsibilities - Owner

- Approves Plans and Specifications
- Secures Permits
- Secures funding for project
- Makes payments when due
- Accepts completed work

- NRCS assumes some of the roles of owner on permanent easements, federal contracts

Roles and Responsibilities - Engineer

- Agency engineer, technician or other person legally designing project according to state licensure requirements
- Private engineering firm (A&E)

Do we really need an engineer?

- Are we building structures?
- Are permits required?
- Are flowage easements required?
- Are we using FARS Construction Contracting Procedures?

Engineer's Duties

- Design's project according to RESTORATION PLAN developed by interdisciplinary team
- Prepares Plans and Specifications
- Estimates cost
- Estimates quantities
- Determines contract performance time
- Provides technical assistance to Contracting Officer and Owner
- Determines level of Inspection required

Inspector's Duties

- Becomes intimately familiar with Plans and Specifications
- Observes the work, performs tests, documents test results, and records construction activities (Quality Control)
- Informs contractor, engineer, and contracting officer of adequacy of work and recommends acceptance or rejection

What Contracting Method do I Use?

- Depends
  - Is it a 100% cost share permanent easement?
  - Is it a non-program technical assistance project?
  - Is it a percentage cost share landowner agreement?
  - Is it a large or small project?
  - Is it an interagency cooperative project?

Federal Contracting Pros:

- Roles and responsibilities clearly defined
- Owner has less risk in event of changes and cost overruns
- Contract provides for definite actions to take in event of unforeseen circumstances
- Bonding insures that job gets done, and suppliers get paid
- More protection for agency employees?
- Potentially lower costs because of competitive bid process

Federal Contracting Cons:

- Requires stricter detail in specifications (payment clauses)
- Appropriate for high-cost, large, complex projects
- More contracting workload due to FAR
  - Davis-Bacon
  - Formality in changes, payments, final inspection, site showings, etc.
  - Health and safety requirements more stringent (hard hats, ROPS, etc.)
  - Potentially higher costs because of bonding, reporting, paperwork, etc.

Landowner Agreement Pros:

- Engineer and Inspector duties simplified
- Shorter time frame for starting work
- Potentially lower costs
- Appropriate for low-cost, small, simple projects
- Easy to incorporate non-program work (non-cost share) into overall job (is this a good thing?)

Landowner Agreement Cons:

- Increased landowner liability in event of cost overrun, contractor claims, contractor default
- Role of owner, Agency gets blurred when bad things happen
- Must rely on cost-share rates and/or engineer's estimates to set construction cost reimbursement to landowner
- May not get cost advantage due to true competitive bid.

Shared hats:

- Engineer-Inspector
  - Occurs in both landowner agreements and federal contracts
- Owner-Contracting Officer
  - Occurs only in landowner agreements