



STORAGE POND DEVELOPMENT – PLANNING & DESIGN FOR CONSTRUCTION

- 1) Planning to acquire sufficient water – is there sufficient water to satisfy your needs when you need it?
- 2) Consider reclaimed water recycling
- 3) Siting a storage pond within the constraints and opportunities – do you have a suitable site?
- 4) Knowing whose water you are capturing and water movement over property lines
- 5) Mapping the site and sources - what are the requirements and process?
- 6) Designing storage facilities – what is required?
- 7) Typical fees for planning and design?
- 8) Permitting the construction – what are the required permits and fees?



LISTEN UP GUYS ! I'M IN CHARGE HERE NOW!

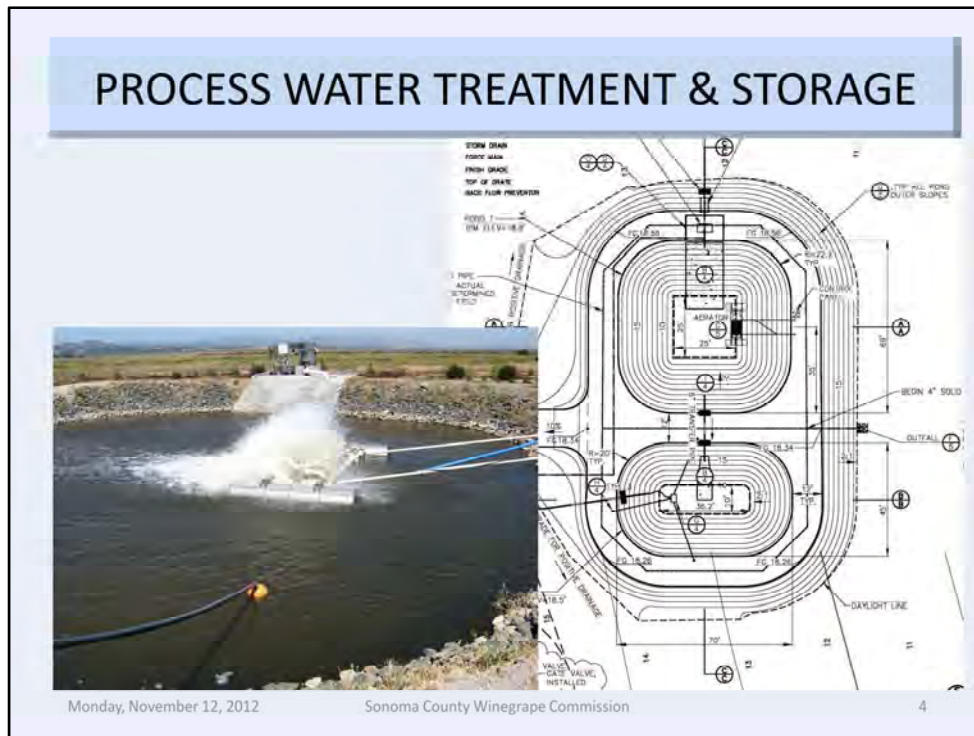
Each site's topography and climate presents unique problems to resolve, and opportunities to serve the user's needs. The Engineer's role is to work through those problems and opportunities to identify the optimal site.

- 1) Determine whether adequate water resources are available to meet owner/operator's needs.
- 2) Provide adequate storage volume to serve the owner/operator's needs.
- 3) Minimize disruption to productive lands to preserve value
- 4) Minimize construction costs
 - a) Select a site with maximum storage to excavation ratio
 - b) Select site with appropriate soil materials
- 5) Minimize permitting requirements
 - a) Perform geotechnical evaluation to determine site is stability in accord with CA Division of Dam Safety rules
 - b) Select a site with minimal environmental impacts.
 - c) Incorporate measures to mitigate impacts
- 6) Trade-offs and compromises among those factors are usually required to achieve the goal.



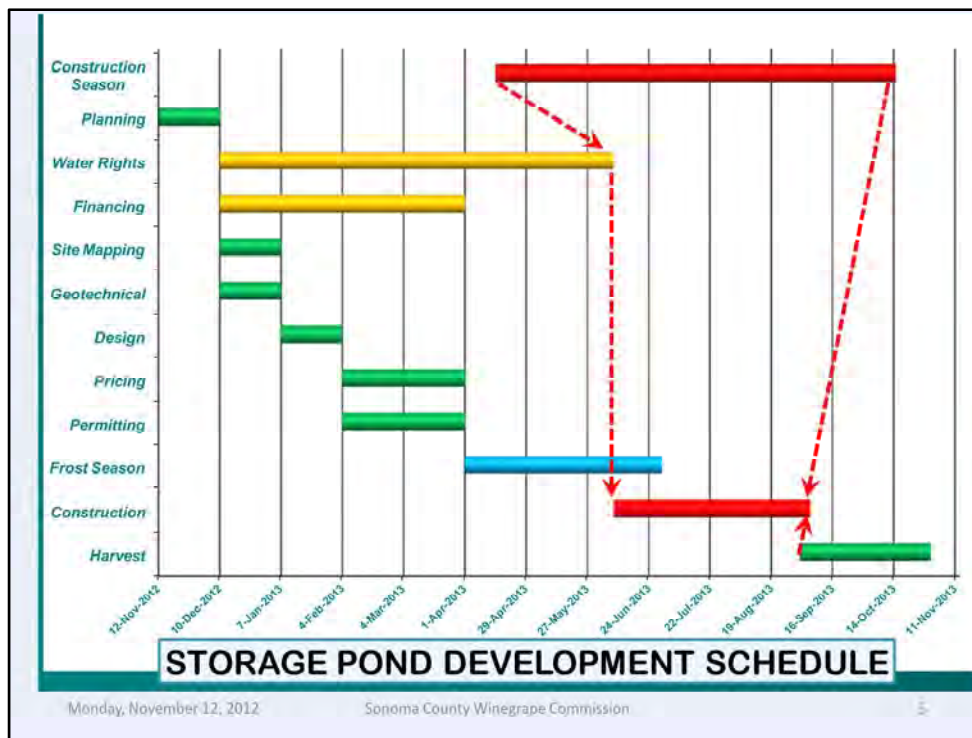
Siting this pond below the existing vineyards provided for gravity collection from surface runoff and vineyard sub-drains.

- 1) We had to survey the parcel boundary below it to maximize use of the land, but assure the fill slope did not run out over it.
- 2) Also took advantage of a gap in the trees to avoid costs of removal and related permit issues.



This process wastewater pond was sited to minimize the take from productive vineyards for both it's footprint and the access route.

- 1) The site is so flat the wastewater has to be pumped to it, and pumped out for re-use.
- 2) The footprint is minimized by selecting the optimal depth in relation to existing ground level.
- 3) Optimal depth also minimizes the excavation quantity and cost.



This schedule incorporates the major steps for pond development and assumes a viable site. The timeline starts today, November 12, 2012 with a one year time span.

- 1) Construction Season - Stormwater regulations permit start as early as April 15 and end no later than October 15.
- 2) Planning - You have a feasible site which readily meets your storage needs without major constraints. We can proceed with this step on the basis of County GIS maps, Google Maps, and a site review.
- 3) Water Rights - Assumes you have adequate water rights which require only routine documentation and registration. This process may be shorter than I have indicated, but I want to demonstrate that it could effect your schedule.
- 4) Financing – You either have the capital in hand, or qualify for adequate funding and need only to determine the costs.
- 5) Site Mapping – To develop the basis of the design and construction plans.
- 6) Geotechnical Investigation
 - a) Assure the dam will be stable under ordinary and seismic forces.
 - b) Determine whether the pond will require a liner to minimize seepage.
- 7) Assumes that design is straight-forward without major complications in terms of the siting, conveying, geologic conditions, available suitable soil materials, and erosion protection.
- 8) Pricing – Obtaining the contractor pricing or developing an Engineer’s estimate.
- 9) Permitting – Environmental and construction.
- 10) Frost Season – Doubtful you could have your pond in place for the 2013 season.
- 11) Construction - hemmed in between water rights registration and harvest season. This could start earlier if the water rights are established. Construction could also continue later if it does not upset your harvest season.

OUTLINE OF PROCEDURE FOR CONSTRUCTION OR ENLARGEMENT OF DAMS AND RESERVOIRS WITHIN STATE JURISDICTION

File application for water rights with State Water Resources Control Board, Division of Water Rights, 1001 I Street, Sacramento, CA 95814 (Section 303, California Code of Regulations Title 23.) **Evidence of water rights is required before construction or enlargement can be approved.**

PROJECT PLANNING

- **Regulations – Determine Agencies’ Jurisdiction**
 - Water Rights
 - Environmental Permits
 - Construction Permits
- **Determine Monthly Demand** for frost protection, irrigation and heat control.
- **Determine Maximum Storage Requirement** with monthly pond balance model based on demand, losses, and supply – runoff, diversions, etc. subject to General Conditions
 - 20 AF maximum - Subject to CA-WC Section 1228.1
 - 42,000 GPD maximum diversion rate
- **Evaluate potential pond sites, identify preferred site**
 - Identify constraints and opportunities for each site
 - Estimate potential capacity of preferred site
 - Define diversion points and return flow routes
 - Define impacts on vineyard extent & operations
- **Register Small Irrigation Use with SWRCB**

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Plan your entire path to avoid surprises late in the game when you have a lot of sunk costs.

- 1) Regulations – Determine Agencies’ Jurisdiction & Scope
 - a) Reference Paula Whealen’s presentation re water rights
 - b) Ref Permits slide

- 2) You may already have identified your preferred site or have only one practical site.

- 3) The optimal site will:
 - a) Minimize take on vineyard area
 - b) Provide adequate storage without undue amounts of excavation work.
 - c) Provides adequate storage within the 25 foot height limit for Small Dams.
 - d) Minimize pumping requirements for diversion. Ideally to capture vineyard drains or surface runoff.
 - e) Minimize pumping requirements for use – frost protection, irrigation, heat control.
 - f) Facilitate bypass or return flows in the event they become necessary.

- 4) Register Small Irrigation Use with SWRCB
http://www.waterboards.ca.gov/waterrights/water_issues/programs/registrations/index.shtml

DAM HEIGHT is measured from the downstream toe to the maximum storage elevation/spillway

- <http://www.water.ca.gov/damsafety/jurischart/index.cfm>
- For a complete text of exemptions, please refer to "[Statutes and Regulations Pertaining to Supervision of Dams and Reservoirs](#)", California Water Code, Division 3, Dams and Reservoirs, Part 1, Supervision of Dams and Reservoirs, Chapter 1, Definitions, 6000-6008.
- See Also: http://www.waterboards.ca.gov/water_rights/water_issues/programs/registrations/index.shtml

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STATUTES AND REGULATIONS PERTAINING TO SUPERVISION OF DAMS AND RESERVOIRS

6002. "Dam" means any artificial barrier, together with appurtenant works, which does or may impound or divert water, and which either (a) is or will be 25 feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the department, or from the lowest elevation of the outside limit of the barrier, as determined by the department, if it is not across a stream channel or watercourse, to the maximum possible water storage elevation or (b) has or will have an impounding capacity of 50 acre-feet or more.

6003. Any such barrier which is or will be not in excess of 6 feet in height, regardless of storage capacity, or which has or will have a storage capacity not in excess of 15 acre-feet, regardless of height, shall not be considered a dam.

6004.5. "Reservoir" means any reservoir which contains or will contain the water impounded by a dam.

Subject to maximum 42,000 gallons per day diversion and 20 acre foot per annum storage mandated by SWRCB Division of Water Rights.

http://www.waterboards.ca.gov/waterrights/water_issues/programs/registrations/index.shtml

Small Irrigation Use is defined as: "either of the following: (a) An irrigation use, heat control use, or frost protection use, not to exceed diversion to storage of 20 acre-feet per annum, including impoundment for incidental aesthetic, fire protection, recreational, or fish and wildlife purposes (b) An irrigation use not to exceed direct diversion of 42,000 gallons per day, or up to a maximum of 20 acre-feet per annum." (Wat. Code, § 1228.1, subd. (b)(2).)

SITE SELECTION

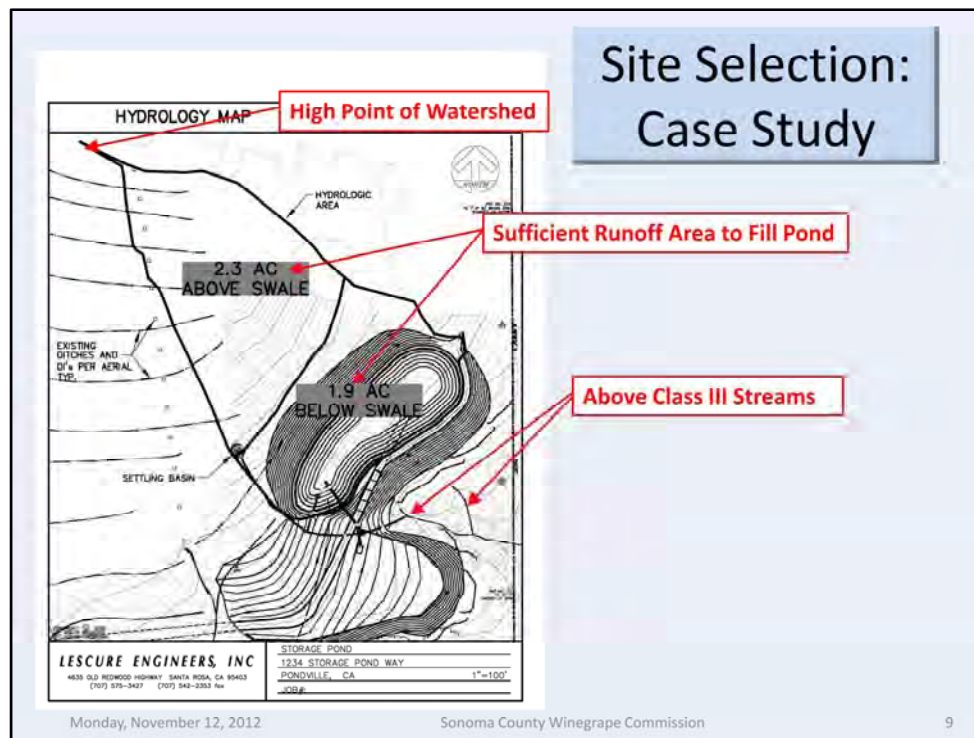
- **Siting a Storage Facility**
 - Do you have a feasible pond site within the identified constraints and opportunities ?
 - Valley lowlands – Maximum earth moving
 - Hillside highlands – Hillside runoff capture
 - Drainage courses – Dry gullies versus live streams
- **Determining Pond Storage Capacity for Demand**
 - What is the lower bound of feasibility?
 - 1 acre foot = 325,000 gallons in tanks = \$325,000.
 - How much pond can you build for \$325,000 ?
 - Demand = 50 GPM / Acre (Sotoyome RCD, "Guide")
 - Demand = 120,000 gallons / 10 acres / 4 hours

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This is a key decision point because the following steps begin to accrue significant time and effort. If the decision is not evident, it would be worthwhile to do some preliminary design depending on the nature of the concerns.

- 1) Siting a storage facility within the identified constraints and opportunities – do you have a suitable pond site?
 - a) Valley lowlands – occupies valuable production land
 - b) Hillside capture and release – restricts reservoir location
 - c) Well source allows more flexibility in reservoir location as opposed to capturing runoff
 - d) Class I & II drainage courses – live streams – will not be permitted – “Policy for Maintaining Instream Flows in Northern California Coastal Streams”
 - i. Class I: Fish are always or seasonally present, either currently or historically; and habitat to sustain fish exists.
 - ii. Class II: Seasonal or year-round habitat exists for aquatic non-fish vertebrates and/or aquatic benthic macroinvertebrates.
 - iii. Class III: An intermittent or ephemeral stream exists that has a defined channel with a defined bank (slope break) that shows evidence of periodic scour and sediment transport.

- 2) Determining the storage volume – demand and supply
 - a) This one worked because it receives 70 inches per year on average.
 - b) How – pond – tanks?
 - c) Where – Define opportunities and constraints?
 - d) <http://www.sonomawinegrape.org/sites/default/files/Grapevine-Frost-Protection.pdf>
 - i. Grapevine Frost Protection
 - ii. Richard L. Snyder
 - iii. UC Coop Extension
 - iv. 36 to 90 GPM per acre
 - v. <http://biomet.ucdavis.edu>



Suitable hydrology is key for capturing adequate surface runoff.

- 1) Successfully avoids need for a Stream Alteration Permit
- 2) Tributary area is the basis of analysis for runoff capture
 - a) Consider surface runoff and vineyard drains
 - b) Hydrologic analysis
 - c) Storm frequency and magnitude = annual precipitation
 - d) Resultant storm flows, runoff capture
 - e) Calculate total annual volume, monthly.
 - f) Determine mandated return flows.
 - g) Storage balance
 - i. to assure monthly volumes available for use
 - ii. run a storage analysis just as we do to assure wastewater ponds are empty by October.
- 3) Total annual rainfall = product of storm frequency and intensity is relevant to capturing the total annual demand. This one works with only 2.3 acres surface runoff due to 70 inches average annual rainfall. This produces 13.4 acre feet where 6 acres is stored.
 - a) Minimum
 - b) Average
 - c) Maximum
- 4) Storm intensity distribution is important for sizing the pipes, ditches and spillway.
 - a) 2 year, 24 hour
 - b) 10 year
 - c) 100 year

SITE EVALUATION

- **Mapping the site and sources** - what are the requirements and process?
 - Topographic Mapping for Design Basis
 - Mapping Property Boundaries
 - Tributary Runoff Area
- **Geotechnical Evaluation**
 - Global Site stability
 - Soil Materials Suitability
 - Permeability, Need for Liner to Limit Losses

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Measuring the site's physical attributes as the basis for our design work.

- 1) Mapping the site and sources - what are the requirements and process?
 - a) Topography is a model of the site we use in CAD to fit the reservoir into the landscape.
 - i. How much storage capacity will the site yield relative to the amount of excavation?
 - ii. Does the topography offer a suitable spillway path?
 - iii. What is a risk downslope or downstream in the event of embankment failure?
 - b) Property boundaries are important for several reasons;
 - i. Keeping your improvements on your property
 - ii. Potential issues of water rights
 - iii. Return flows, spillways

- 2) Geotechnical investigation and evaluation identifies the material types we have to work with, and how they are situated.
 - a) Global Site stability to assure the entire site does not slide out.
 - b) Soil Materials Suitability for Keyway
 - c) Soil Materials Suitability for Embankment
 - d) Permeability, Need for Liner to Limit Losses
 - e) Soil Materials Suitability for Spillway
 - f) Erodability
 - g) Permeability



This is the end result of a large slide repair – approximately 5 acres.

- 1) This was not caused by a pond, but if one had been sited there it would have caused much more damage.
- 2) This slide plane was about 50 feet below the surface.
- 3) Repair required
 - a) Excavating into the slide plane,
 - b) Cutting 3 keyways into bedrock full width, similar to dam construction
 - c) Installing sub-drains in each keyway
 - d) Surface drains
 - e) Re-compacting the entire site

ENGINEERING DESIGN

- Set key elevations - Select dam crest location and elevation at less than 25 feet height
- Specify freeboard and spillway elevation and location
- Identify constraints which determine pond grading limits
- Specify embankment cross section – consult geotech report for parameters
- Plot storage volume curve & iterate as needed.
- Prepare spillway design and capacity of other conveyance features.

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Designing storage reservoir on the selected site – what is required and how do I get it done?

- 1) Select dam crest location and elevation at less than 25 feet height
- 2) Specify freeboard and spillway elevation and location
- 3) Determine pond grading limits
- 4) Specify embankment cross section – consult geotech report
 - a) Key geometry
 - b) Core material
 - c) Toe slope
 - d) Heel slope
 - e) Toe filter drain
 - f) Locate embankment toe
 - g) Locate embankment heel
- 5) Plot storage volume curve
 - a) Evaluate whether it provides the desired capacity
 - b) Adjust as needed.
- 6) Prepare spillway design
 - a) Select alignment
 - b) Select type; pipe, open channel, native or concrete
 - c) Size for design flow = 100 year storm
 - d) Specify cross section, plot performance curve.
- 7) Design other conveyances
 - a) Runoff capture swale
 - b) Sediment trap
 - c) Downpipe
 - d) Diversion structure
 - e) Irrigation draw-off and drain line

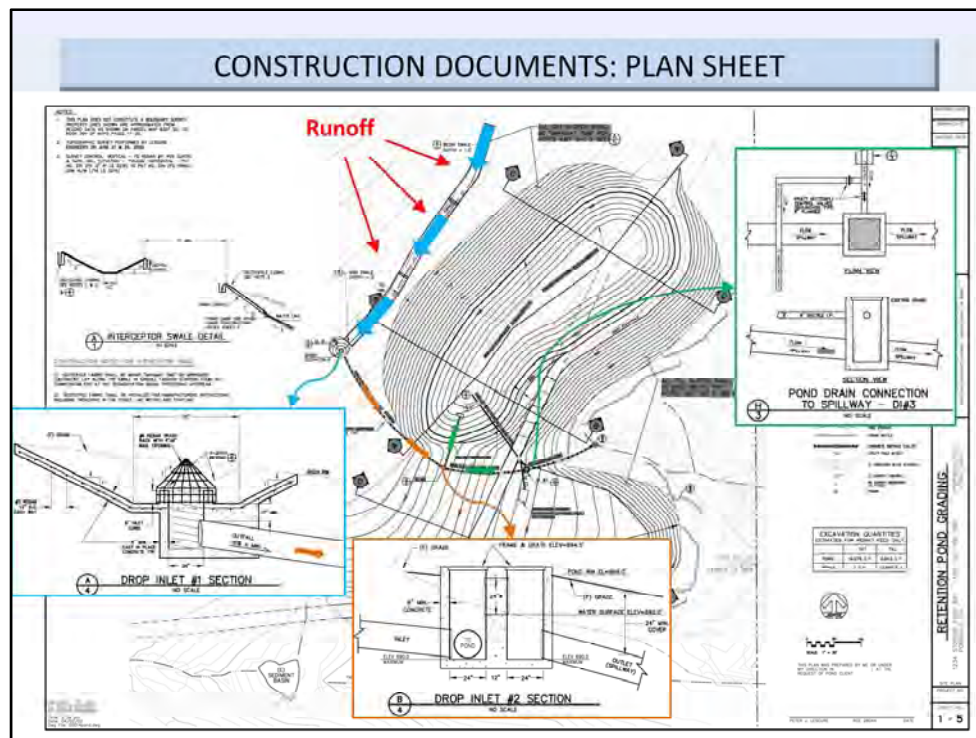
CONSTRUCTION DOCUMENTS

- **Plan Documents**
 - Plan
 - Embankment sections, longitudinal section
 - Spillway cross section and profile
 - Details
- **Specifications**
 - Keyway excavation
 - Embankment materials & construction
 - Pond sealing
 - Spillway
 - Drain valve and line

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Construction documents not only describe the finished works for the contractor to build, but also provide the basis for contractor bids and permitting review. Good idea to provide preliminary documents to environmental permitting agencies prior to investing in full documents.

- 1) Plan Documents
 - a) Site Plan
 - b) Grading Plan
 - c) Embankment sections, longitudinal section
 - d) Details
 - i. Keyway profile
 - ii. Embankment sections
 - iii. Spillway cross section and profile
 - iv. Runoff interceptor swale and sedimentation basin
 - v. Inlet trash rack
 - vi. Down drain line
 - vii. Irrigation draw-off and drain line
 - viii. Pipeline cutoffs
 - ix. Erosion control, rip-rap
 - x. Area-Capacity curve
 - xi. Spillway rating curve
 - xii. Hydrology map
 - xiii. Vicinity and location maps
 - e) Construction notes
- 2) Specifications or drawing notes
 - a) Keyway excavation
 - b) Embankment materials and compaction
 - c) Pond sealing, clay or synthetic
 - d) Spillway
 - e) Irrigation and drain line, valve



This pond is perched on a hillside above a Class 3 stream headwater as shown on the earlier Hydrology slide.

- 1) Surface runoff is the water source. (click 1)

- 2) Runoff capture swale above the pond brow to achieve a number of objectives:(click 2)
 - a) Prevent runoff from scouring the pond slopes
 - b) Prevent pond sedimentation
 - c) Sedimentation basin to prevent sediment from entering the system(click 3)
 - d) Provide trash rack to prevent entry of debris and critters
 - e) Capture flows to control diversions
 - f) Capture flows to control returns to watershed

- 3) Runoff is routed to Diversion Structure (click 4)

- 4) Diversion Structure: (click 5)
 - a) Routes flow into pond (click 6)
 - b) Controls maximum pond elevation
 - c) Controls return of excess flow to watershed

- 5) Irrigation draw-off and drain structure (click 7)
 - a) Provides water to the irrigation system
 - b) Allows pond to be drained down

ENGINEERING FEES	
▪ Planning	\$5,000
▪ Boundary Surveying & Monumentation	\$3,000
▪ Topographic Mapping	\$1,000
▪ Geotechnical Investigation & Evaluation (estimated)	\$2,500
▪ Stormwater PP Plan	\$1,500
▪ Design & Construction Documents	\$7,500
▪ Permit Processing	\$4,000
▪ Construction Staking	\$1,000
▪ Construction Observation	\$1,000
▪ Geotechnical Field Testing (estimated)	\$2,500

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These are the fees for a recent pond development project by Lescure Engineers

- 1) A recent (2008) pond development project which required parcel boundary survey and setting additional survey monuments on the line.
- 2) Annual rainfall of 12 inches fills the pond through surface runoff and vineyard drains.
- 3) The pond has capacity of 21 acre feet
 - a) 18 feet deep
 - b) 1.66 acres surface full
- 4) Grading required.
 - a) 30,500 cubic yards of excavation
 - b) 7,600 cubic yards of embankment fill
 - c) 8,400 cubic yards of native clay liner

PERMITTING

- **Environmental Permits**
 - Stream Alteration- CA- DFW
 - Endangered Species Act – CA-DFW
 - Water Quality – North Coast RWQCB Stormwater Control / Erosion Prevention
 - CEQA not required for ministerial permits – Sonoma Co. PRMD
- **Construction Permits**
 - CA Division of Dam Safety
 - Sonoma Co. PRMD - Grading

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Permitting the design for construction – what are the process requirements and timing?

Environmental Permits

CA-DFW Environmental Review and Permitting

California's fish and wildlife resources depend upon the quality and quantity of habitat including lands, waters, and other environmental factors necessary for survival.

The Environmental Review and Permitting Programs are responsible to fulfill the mission of the State to encourage the preservation, conservation and maintenance of wildlife resources under the jurisdiction and influence of the State, including the conservation, protection and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species.

[California Endangered Species Act Permitting \(CESA\)](http://www.dfg.ca.gov/habcon/envirRevPermit/) <http://www.dfg.ca.gov/habcon/envirRevPermit/>

The California Endangered Species Act (CESA) allows the Department to authorize project proponents to take state-listed threatened, endangered, or candidate species if certain conditions are met. The permitting program administers the incidental take provisions of CESA to ensure regulatory compliance and statewide consistency.

[California Environmental Quality Act Review \(CEQA\)](#)

The Department consults with lead and responsible agencies and provides the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities under the California Environmental Quality Act.

[Lake and Streambed Alteration Program \(LSA\)](http://www.dfg.ca.gov/habcon/envirRevPermit/) <http://www.dfg.ca.gov/habcon/envirRevPermit/>

The Lake and Streambed Alteration Program determines whether an agreement is needed for an activity that will substantially modify a river, stream or lake. If DFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. The Agreement includes reasonable conditions necessary to protect those resources and must comply with the California Environmental Quality Act (CEQA).

North Coast RWQCB Environmental Review and Permitting

Water Quality/Stormwater Control / Erosion Prevention <http://www.waterboards.ca.gov/northcoast/>

National Marine Fisheries Service
US & CA Dept of Forestry

Construction Permits

CA Division of Dam Safety <http://www.water.ca.gov/damsafety/index.cfm>

Sonoma Co. PRMD - Grading <http://www.sonoma-county.org/prmd/>

CA-DFW Lake and Streambed Alteration Program

- **Notification of Lake or Streambed Alteration**
 1. Notification is required by any person, ... that proposes an activity that will:
 - a. substantially divert or obstruct the natural flow of any river, stream or lake;
 - b. substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
 - c. deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.
- **Lake or Streambed Alteration Agreement**
 - ... includes reasonable conditions necessary to protect fish and wildlife resources

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Lake and Streambed Alteration Program

DFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify DFW of any proposed activity that may substantially modify a river, stream, or lake.

Notification of Lake or Streambed Alteration

1. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:
 - a. substantially divert or obstruct the natural flow of any river, stream or lake;
 - b. substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
 - c. deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.
2. The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.
3. If you are planning an activity that requires DFW notification, you will need to provide your [regional DFW office](#) with a completed notification form and the corresponding fee.

Lake or Streambed Alteration Agreement

If DFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. The Agreement includes reasonable conditions necessary to protect those resources and must comply with the California Environmental Quality Act (CEQA). The entity may proceed with the activity in accordance with the final Agreement.

PERMIT FEES

▪ CA Dept of Fish & Wildlife	\$ 24 to \$ 4,500
▪ SWRCB Division of Water Rights	\$1,000 to \$460,281
▪ CA DWR Division of Dam Safety	\$ 300 to \$ 35,000
▪ Sonoma County PRMD	
• Grading	\$ 83 to \$1,044
• Drainage	\$1,120
• SWPPP	\$ 578

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CA Dept of Fish & Wildlife STANDARD AGREEMENT

<http://www.dfg.ca.gov/habcon/1600/qa.html>

Any agreement other than an agreement for gravel, rock, or sand extraction, an agreement for timber harvesting, an agreement for routine maintenance, a master agreement, or a master agreement for timber operations.

Fee: If the term of the agreement is 5 years or less. For each project the agreement covers:

- \$224.00 if the project costs less than \$5,000.
- \$280.25 if the project costs from \$5,000 to less than \$10,000.
- \$560.25 if the project costs from \$10,000 to less than \$25,000.
- \$840.25 if the project costs from \$25,000 to less than \$100,000.
- \$1,233.25 if the project costs from \$100,000 to less than \$200,000.
- \$1,673.00 if the project costs from \$200,000 to less than \$350,000.
- \$2,521.50 if the project costs from \$350,000 to less than \$500,000.
- \$4,482.75 if the project costs \$500,000 or more.

SWRCB Division of Water Rights

http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/docs/fee_schedule_fy1112.pdf

Category

Application[4][5]

Proposed Fiscal Year 2011-12 Fee

\$1,000 plus \$15 per each acre-foot greater than 10 acre feet
based on the total annual amount of diversion sought by the

application or \$460,281, whichever is less.

[4] Total Acre-Foot per Annum will be considered equal to the diversion rate multiplied by the length of the direct diversion season, and the total collection amount for storage, unless otherwise specified. If the application includes both direct diversion and storage, the two amounts will be additive, unless a total annual amount is specified.

[5] This filing fee is inclusive of a non-refundable \$250 fee for an initial review.

PERMIT FEES

▪ CA Dept of Fish & Wildlife	\$ 24 to \$ 4,500
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CA DWR Division of Dam Safety

<http://www.water.ca.gov/damsafety/fees/index.cfm>

Fees for Applications

The filing fee for an application is based upon the estimated cost according to the following schedule:

- (a) For the first three hundred thousand dollars (\$300,000), a fee of three percent of the estimated cost.
- (b) For the next seven hundred thousand dollars (\$700,000), a fee of 2 percent.
- (c) For the next one million dollars (\$1,000,000), a fee of 1½ percent.
- (d) For the next one million dollars (\$1,000,000), a fee of 1¼ percent.
- (e) For the next two million dollars (\$2,000,000), a fee of 1 percent.
- (f) For the next two million dollars (\$2,000,000), a fee of ¾ percent.
- (g) For all in excess of seven million dollars (\$7,000,000), a fee of ½ percent.

In no case however, shall the minimum fee be less than three hundred dollars (\$300).

The estimated cost shall include:

- (a) The cost of all labor and materials entering into the construction of the dam and appurtenant works or reservoir.
- (b) (b) The cost of preliminary investigations and surveys.
- (c) The cost of the construction plant properly chargeable to the cost of the dam or reservoir.
- (d) Any and all other items entering directly into the cost of the dam or reservoir.

The costs of right-of-way, detached powerhouses, electrical generating machinery, and roads and railroads affording access to the dam or reservoir shall not be included among the items used in the determination of cost.

PERMIT FEES

▪ CA Dept of Fish & Wildlife	\$ 24 to \$ 4,500
▪ SWRCB Division of Water Rights	\$1,000 to \$460,281
▪ CA DWR Division of Dam Safety	\$ 300 to \$ 35,000
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Sonoma County PRMD

http://www.sonoma-county.org/prmd/fees/fee_2.pdf

TABLE NO. A-33-A GRADING PLAN CHECK FEES – FY 2012/13*

50 cubic yards or less.....	no fee
51 to 100 cubic yards.....	83.39
101 to 1,000 cubic yards.....	115.36
1,001 to 10,000 cubic yards.....	166.79
10,001 to 100,000 cubic yards - \$166.79 for the first 10,000 cubic yards, plus \$59.36 for each additional 10,000 cubic yards or fraction thereof	
100,001 to 200,000 cubic yards - \$701.03 for the first 100,000 cubic yards, plus \$34.31 for each additional 10,000 cubic yards or fraction thereof	
200,001 cubic yards or more - \$1,044.13 for the first 200,000 cubic yard plus \$22.33 for each additional 10,000 cubic yards or fraction thereof	

DRAINAGE – ENGINEERING REVIEW FEES

0708 Drainage Review – With Calculations	1,120.00
0734 Storm Water Pollution Prevention (NPDES) Drainage Review – With Calculations.....	578.00
0750 SUSMP Program Development Fee.....	29.00