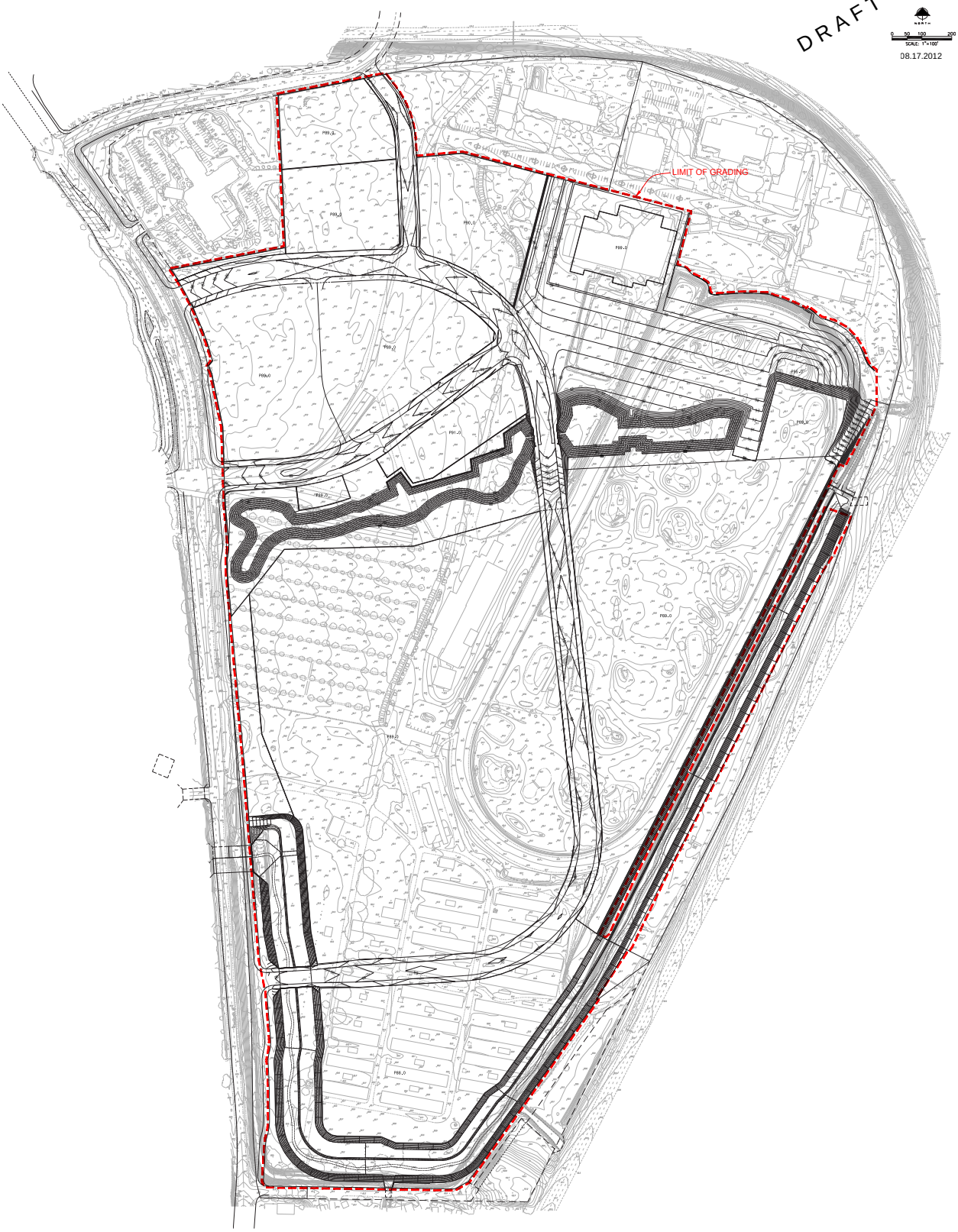
APPENDIX A: Conceptual Grading Plan

August 2012



APPENDIX B: Solano360 Public Facilities Financing Plan Executive Summary

Goodwin Consulting Group, November 2012

EXECUTIVE SUMMARY

PURPOSE AND SCOPE OF REPORT

This public facilities financing plan (PFFP) has been prepared to evaluate the ability of land uses proposed in the Solano360 Specific Plan (Specific Plan) to fund required public facilities, and to identify appropriate financing tools and align them with those public facility needs. The Specific Plan envisions a project consisting of a public-private program of uses that will integrate a new "Fair of the Future" with private mixed-use development (Project).

The PFFP is a long-term look at the financial impacts associated with providing infrastructure to the Project, which includes three major phases of development with Phase 1 divided into two sub-phases (i.e., Phase 1a and Phase 1b). This PFFP will serve as a blueprint for Project financing, to guide subsequent individual development applications and to ensure that future development conforms to the financial strategies outlined in this plan. In addition to quantifying the Project's infrastructure burdens, this analysis provides private developers, the County of Solano (County), the Solano County Fair Association (Fair), and the City of Vallejo (City) with analyses that can be factored into an estimate of residual land values and potential returns from development proposals.

It must be recognized that the PFFP is only a *test* of overall financial feasibility. As development progresses, the timing and mix of costs and funding sources may change. The assumptions and results presented in this report are estimates, and actual results may vary. Furthermore, neither the County (including the Fair) nor the City are obligated or committed to execute the financing strategy presented in the PFFP. However, regardless of the extent to which proposed financing mechanisms are used or other financing mechanisms are introduced later as the Project develops, the feasibility of the overall infrastructure burden has been evaluated in this PFFP.

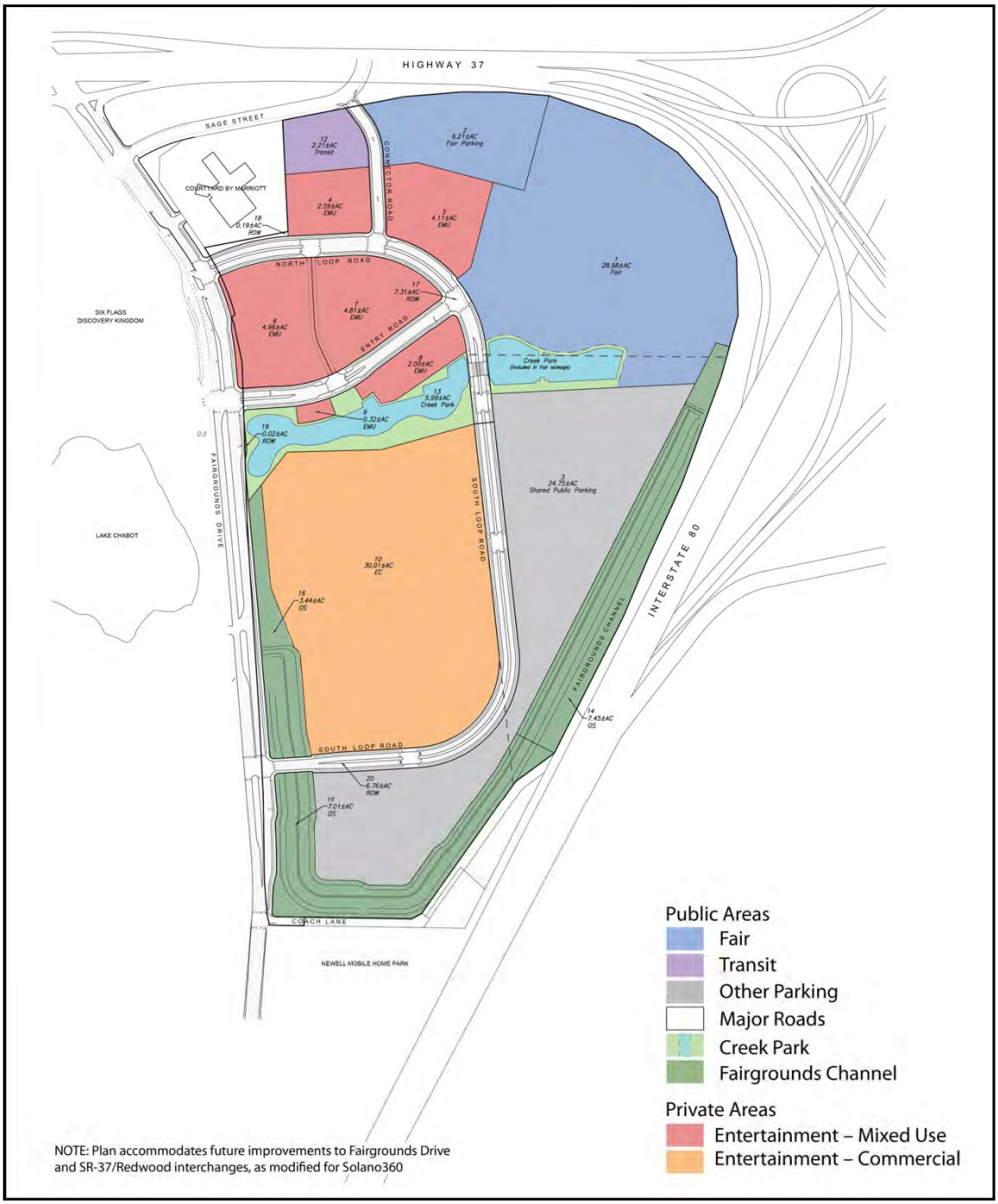
PROJECT DESCRIPTION

The Project is located within the City limits on the current site of the Solano County Fair, adjacent to Six Flags Discovery Kingdom. Located at the crossroads of Highway 37 and Interstate 80, the Project consists of a mix of public and private land uses on 149.1 acres. A local vicinity map and preliminary land use plan are shown below.

Local Vicinity Map

Source: Solano360 Specific Plan, dated November 9, 2012

Preliminary Land Use Plan



Source: Solano360 Specific Plan, dated November 9, 2012

Private development areas include 18.8 acres of Entertainment Mixed Use (EMU) and 30 acres of Entertainment Commercial (EC). The EMU portion of the Project includes approximately 328,000 square feet of non-residential development, which is comprised of approximately 213,000 square feet of EMU retail development and 115,000 square feet of EMU restaurant development, and up to 50 residential units. Public development areas include 149,500 square feet of Fairgrounds development on 35.2 acres, a 2.2-acre Transit center and parking structure, a 24.7-acre public parking lot and structure shared by the Fairgrounds site and entertainment venues, and 38.2 acres of other public land uses such as parks and roads.

ONE-TIME COST BURDENS

The Project requires significant amounts of public infrastructure to accommodate the proposed development. Project-specific backbone infrastructure (e.g., streets, sewer, drainage, and water) is estimated to cost approximately $37.0 million. Costs associated with demolition of certain existing Fair buildings total $4.5 million and costs associated with rehabilitation and upgrade of other existing Fair buildings and construction of a new Exposition Hall and other Fair facilities are projected to be $49.4 million, for a total of $53.9 million. Offsite regional facilities are estimated to cost approximately $4.9 million, making the total gross cost of the Project approximately $95.8 million. However, the Project will receive various minor reimbursements and contributions for the onsite water feature and offsite regional improvements, thus reducing the total net cost to $93.5 million. All costs included in this report are shown in 2012 dollars.

Table ES-1 on the next page presents the one-time cost burdens that result after the costs of net project-specific and regional facilities are allocated to the proposed land uses. Based on selected benefit criteria, a fair share cost is identified for each type of land use in the Project, before accounting for any debt financing or other sources of funding. In addition to the project-specific and regional burdens, the Project will be subject to certain impact fees – including City development impact and connection fees, County Public Facilities Fees (PFF), and Vallejo Unified School District (VUSD) fees – throughout the course of the development process. These amounts are added to the project-specific and regional one-time burdens to determine the total gross one-time burdens on each land use (presented in the far right column). Note that EMU retail and restaurant burdens and Fairgrounds burdens are presented on a per-building square foot (BSF) basis, burdens on the EC parcel are displayed on a per-acre basis, and residential burdens are presented on a per-unit basis. Furthermore, burdens on the parking uses are presented on a per-stall basis.

The total gross one-time burdens are reduced to net one-time burdens after applying the various financing tools discussed in the Financing Strategy section starting on the following page. Only development impact fees contribute to the net one-time burdens, which are generally paid at the time a building permit is issued. However, no impact fees are expected to be implemented to fund project-specific and regional fee obligations, so only the existing City, County, and VUSD fees produce net one-time burdens to be borne by new private development within the Project.

Table ES-1
Project-Specific and Regional, Other, and Total Gross One-Time Burdens

Land Use	Project-Specific and Regional One-Time Burdens	Other One-Time Burdens	Total Gross One-Time Burdens *
Private Development Areas			
EMU – Retail	$35 per BSF	$10 per BSF	$45 per BSF
EMU – Restaurant	$39 per BSF	$15 per BSF	$53 per BSF
EC	$409,100 per Acre	$89,200 per Acre	$498,300 per Acre
Residential	$19,700 per Unit	$31,700 per Unit	$51,400 per Unit
Fairgrounds			
Fairgrounds	$449 per BSF	$17 per BSF	$466 per BSF
Parking			
EMU Parking	$708 per Stall	$44 per Stall	$752 per Stall
Transit Parking Structure	$732 per Stall	$45 per Stall	$778 per Stall
Shared Public Surface Parking	$716 per Stall	$44 per Stall	$760 per Stall
Shared Public Parking Structure	$506 per Stall	$31 per Stall	$537 per Stall

** Totals may not sum due to rounding.*

FINANCING STRATEGY

Two of the principal purposes of any financing plan are to identify how infrastructure will be funded and to make a preliminary assessment of the financial feasibility of a proposed project. Financial feasibility is defined here in terms of the estimated annual and net one-time burdens, both as a percentage of developed value, for each of the proposed private land use categories.

Development projects of this nature and extent typically make use of a land-secured debt financing technique to fund infrastructure improvements required before development can begin. By accessing capital to meet the substantial and front-loaded cash outflows, and by spreading costs over the repayment term of the debt, the Project can increase its potential for successful implementation. Funding mechanisms, besides impact fees, are typically needed to close funding gaps that occur because impact fee revenues do not accrue in a manner sufficient to finance large amounts of infrastructure. To ensure that funding keeps pace with infrastructure needs, formation of a Mello-Roos district and the use of a number of other financing vehicles are typically necessary.

This PFFP has determined that a project-specific impact fee program is not necessary because debt issued through a Mello-Roos Community Facilities District (CFD) can cover all project-specific costs. If a regional fee program for certain offsite roadway improvements is implemented, then the Project would likely participate in that program; however, this analysis assumes that the Project's private development fair share of regional facilities is covered through the CFD. CFD special taxes will be collected annually from the private development component of the Project as well as EMU structured parking and shared public surface and structured parking uses to repay the bonds issued through the CFD. Excess special tax revenue related to debt service coverage may be used to fund infrastructure directly on an annual basis and to reimburse developers and the County for infrastructure that they funded.

In addition, it is anticipated that the County will issue Certificates of Participation (COPs) to fund all of the Fair's share of project-specific and required regional mitigation infrastructure costs as well as all Fair development costs in Phases 1 through 3. Furthermore, the analysis assumes that the County issues Capital Appreciation Bonds (CABs) to fund all initial project-specific and regional mitigation infrastructure that it is required to oversize (i.e., not all of the Phase 1 and Phase 2 infrastructure relates to the Fair's obligation) due to lack of other available funding sources. The County is assumed to issue additional COPs to retire CABs. While the County will initially fund infrastructure in Phases 1 and 2 that is oversized through the issuance of CABs since it is expected to initiate development before a significant amount of private development begins, private development sources of funding will substantially reimburse the County for its Phase 1 and Phase 2 oversizing in Phase 3 when a considerable amount of private development is expected to occur and certain financing tools can be utilized for that purpose.

The table below summarizes the proposed financial obligations of the various parties involved in the Project's financing.

Table ES-2
Proposed Financial Obligations Related to the County, City, and Private Development [1]

Financial Obligation [1]	Purpose	Timing	Net Amount Funded	Source of Funds
COUNTY [1]				
Certificates of Participation (COPs) – 4 bond issues [2]	Fair Exposition Hall; Fair's Public Infrastructure Obligation	Project Year (PY): 1, 9, 12, & 16	$64.6 M	Debt service repaid from Fairgrounds, net Project fiscal impact revenue, and ground lease revenue
Capital Appreciation Bonds (CABs) – 3 bond issues [3]	Public Infrastructure Oversizing	PY: 1, 4, & 6	$0	New COPs issuances
COPs – 3 bond issues [2]	Retire CABs	PY: 11, 14, & 16	$12.7 M	Debt service repaid from Fairgrounds, net Project fiscal impact revenue, and ground lease revenue
CITY [1]				
Community Facilities District (CFD) Bonds – 4 bond issues	Public Infrastructure	PY: 6, 19, 22, & 25	$25.4 M	Debt service repaid from annual special taxes levied on private development
PRIVATE DEVELOPMENT [1]				
Development Impact Fees	Public Infrastructure; Regional Fee Obligation	Building Permit Issuance	---	Not required
Annual CFD Special Taxes per Unit/BSF/Acre/Stall	Public Infrastructure	Annually, beginning PY 6	See CFD above	Building owners / leasehold interests
Excess Annual CFD Special Taxes	Public Infrastructure	Annually, beginning PY 3	$3.2 M	Building owners / leasehold interests
Developer Equity	Public Infrastructure	As Needed	---	Developers

[1] The PFFP is a planning document that includes a **proposed** financing strategy for the Project. It does not commit the City, County, or Fair to a specific financial obligation. Note that the PFFP does not account for: (i) repayment of the County loan to fund the Specific Plan process; and (ii) City and County General Fund operating revenues and expenses (i.e., net fiscal impacts).

[2] A total of six COPs issues are anticipated. The last COPs issuance funds (i) Fair costs in Phase 3, (ii) the Fair's share of infrastructure costs related to the second half of the Exposition Hall, and (iii) the maturity value of the last series of CABs.

[3] The net amount funded by CABs equals $0 because it is considered an interim funding source. All costs funded through CABS are eventually funded by another source of revenue by the time the Project builds out.

A matrix that compares, in general terms, interest rates and bond terms for COPs, CABs, and CFD bonds is presented in the table below. The table also shows the amount of bonds issued and net bond proceeds available for infrastructure costs, as well as average and maximum annual debt service and related debt service statistics for COPs and CFD bonds.

Table ES-3
Comparison of Financing Tools
COPs, CABs, and CFD Bonds

	COPs	CABs	CFD Bonds
Bond Term (Years)	30	10	30
Bond Interest Rate	5.5%	5.0%	6.5%
Bond Amount [1]	$79.2 M	$19.5 M	$29.5 M
Costs of Issuance	$1.9 M	$0.4 M	$1.2 M
Reserve Fund	$0.0 M	$0.0 M	$2.9 M
Capitalized Interest	$0.0 M	$0.0 M	$0.0 M
Net Proceeds Available for Infrastructure [1]	$77.3 M	$19.1 M	$25.4 M
Average Annual Debt Service	$4.1 M	--	$1.5 M
Maximum Annual Debt Service	$6.3 M	--	$2.8 M
Debt Service Coverage	100%	100%	110%
Annual Debt Service Escalation	2.0%	--	2.0%

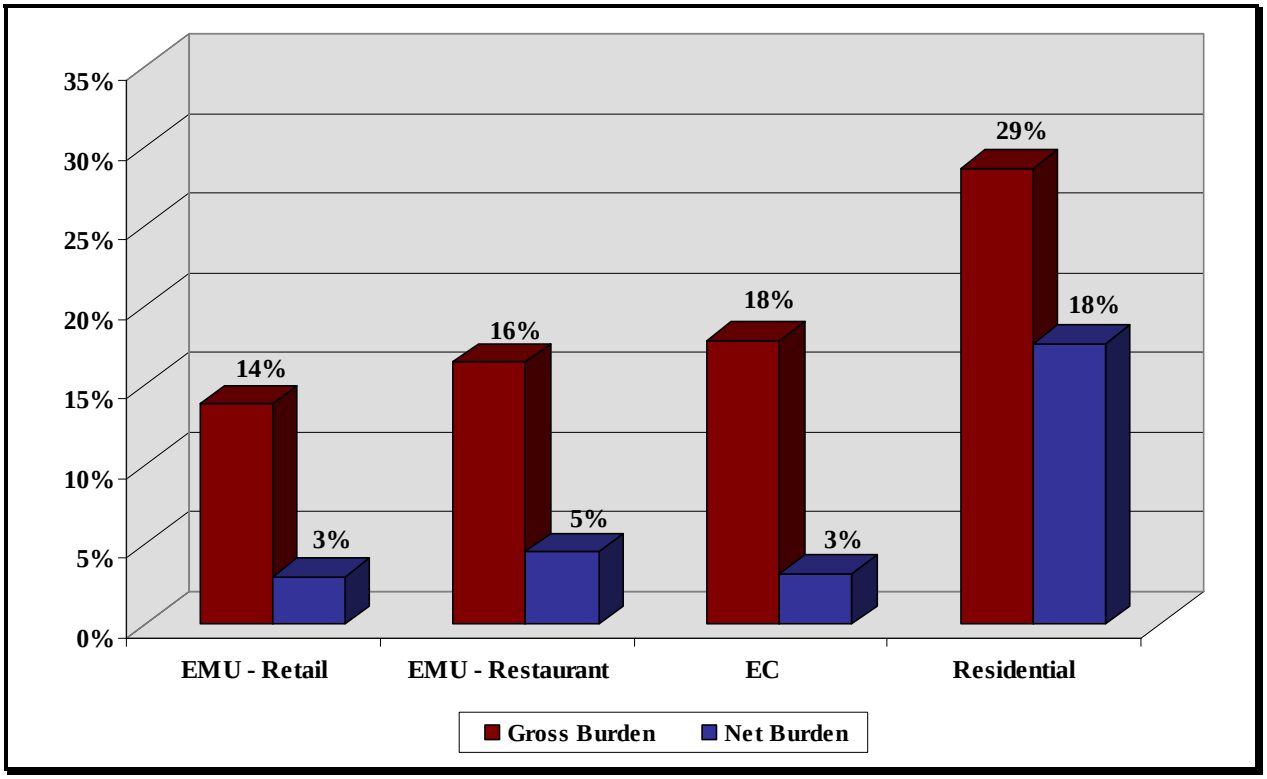
[1] The COPs bond amount and net proceeds available for infrastructure reflect a series of private development reimbursements in Phase 3 and the refunding of CABs as described above. CABs are an interim funding source only.

PROJECT FEASIBILITY

Both the gross and net burdens on private development parcels lie at the heart of the one-time feasibility analysis. While the gross one-time burden represents a sort of *all-in* cost, the net one-time burden accounts for the impacts that various financing mechanisms have on each land use. Implementation of CFD bonds and other debt financing options effectively reduces the upfront project-specific infrastructure burden from the developer's perspective, and increases the feasibility of the Project with net burdens that are below, and in most cases well below, 20% of value. In fact, the debt financing sources basically fund all project-specific costs, meaning the net burden is simply equal to the existing development impact fees.

When divided by the applicable estimated value, total costs are translated into a burden percentage. This is the percentage that presents a meaningful and easily studied comparison. Typically, in this area of California, and based on general industry guidelines and Goodwin Consulting Group's experience, one-time burden-to-value ratios up to approximately 20% of developed value are considered feasible. The bar graphs below compare the gross and net one-time burden-to-value ratios for all of the land use categories in the private development area of the Project.

Gross and Net One-Time Burden-to-Value Ratios
Private Development Areas



The total gross one-time burdens range from 14% to 29% of value for the private development areas. However, after applying the various funding mechanisms as an offset to the total gross one-time burdens, the resulting net one-time burdens range from 3% to 18% of value. Implementing these other financing sources results in net one-time burden-to-value ratios that are significantly lower than the gross ratios. While not shown in the chart above, the total gross one-time burdens range from 3% to 4% of value for non-transit parking structure uses, and 35% for the shared public surface parking. However, after applying the various funding mechanisms as an offset to the total gross one-time burdens, the resulting net one-time burdens range from 0.2% to 2% of value.

PHASED PUBLIC FACILITIES AND FINANCING CASH FLOW

With the Project expected to develop in three major phases, the relationship between the timing of infrastructure improvements and absorption of land uses becomes a critical cash flow issue. Often, initial phases need to support a disproportionate amount of the overall infrastructure requirements as certain large scale, and expensive, capital facility items must be built before development can proceed. The chart on the next page presents the total net costs by phase, including sub-phases 1a and 1b, for Fair, offsite regional, and onsite project-specific infrastructure improvements. As the chart illustrates, approximately 82% of all costs are required during Phase 1 and Phase 2. In fact, the vast majority of these costs are expected to be incurred at the beginning of each phase. More specifically, two-thirds of all expenses are slated to be incurred through the first year of Phase 2, yet only approximately 40% of the total EMU and Exposition Hall building square footage will have been constructed by that point in time.

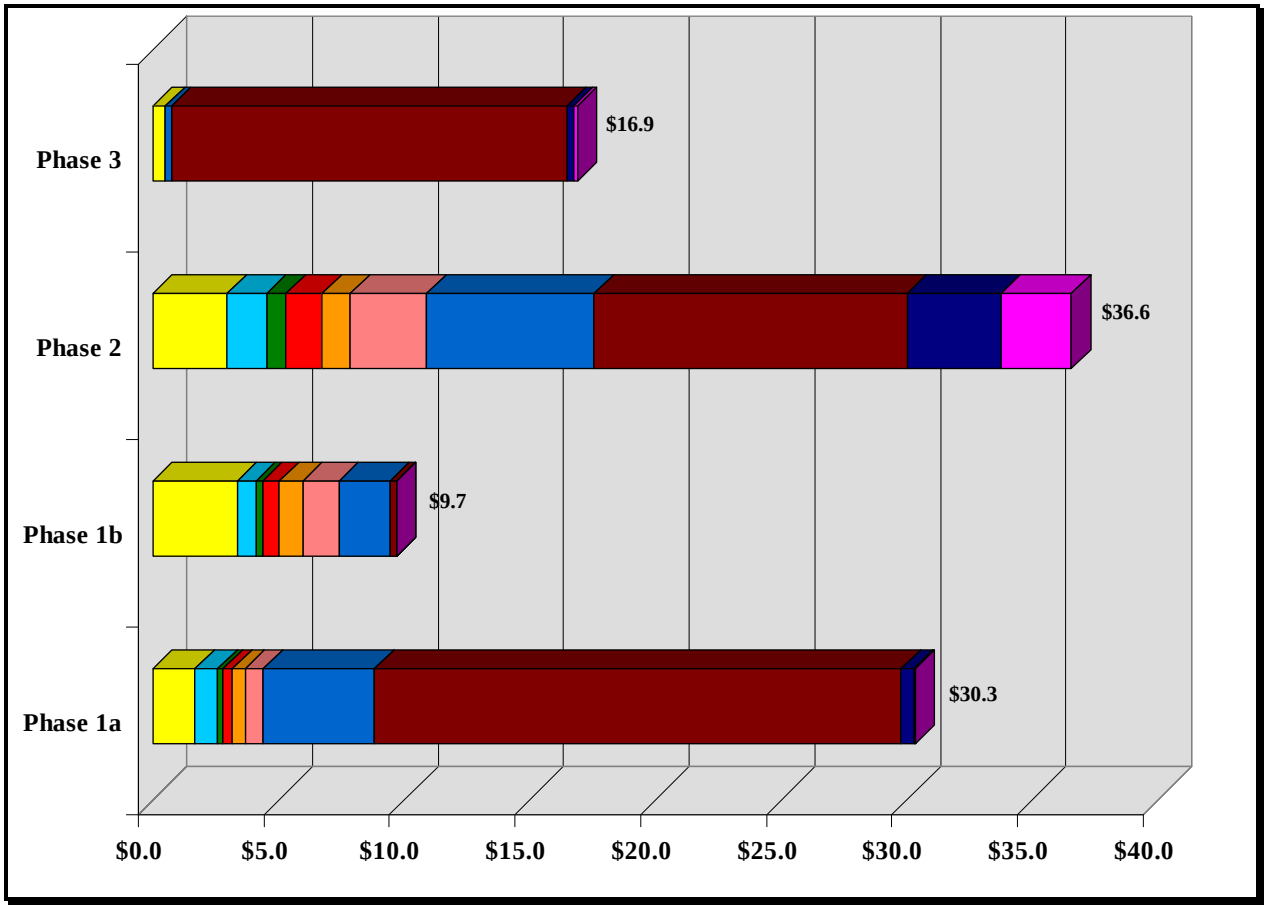
Consequently, even though proposed CFD bond proceeds, special tax revenues, and COPs bond proceeds are expected to fully fund all required infrastructure costs (together with a very small amount of state/federal grants expected to fund the transit center parking structure's infrastructure obligation), the front-loaded nature of the public facilities results in significant cash flow requirements in the early years of Project development. CABs proceeds are anticipated to provide gap funding in the early years of development and fund infrastructure oversizing. Table ES-4, which follows the chart below, summarizes the funding shortfalls and surpluses that result on a phase-by-phase basis, including sub-phases 1a and 1b, under the proposed financing strategy.

As shown in Table ES-4, development of Phase 1 will require approximately $40.0 million in project-specific infrastructure, demolition, and Fair improvement costs ($30.3 million in Phase 1a and $9.7 million in Phase 1b), and $55,000 in required offsite regional mitigation costs, for a total of approximately $40.1 million. Anticipated sources of funding in Phase 1a and Phase 1b include COPs proceeds, CABs proceeds, and revenue from special taxes, which total approximately $40.2 million. Comparing costs against available revenue results in a surplus of approximately $0.1 million, which is anticipated to be available to reimburse developers and the County in the next phase. However, the County is anticipated to fund approximately $12.7 million in oversizing through issuance of CABs by the end of Phase 1.

During Phase 2, $45.0 million in infrastructure costs and CABs interest is incurred, but $37.4 million must be County financed because the CFD bond proceeds, together with a small amount of private development equity and other funding, cannot fund all of the Phase 2 costs. Less than half of the costs financed by the County in Phase 2 relates to Fair costs; the remainder is needed to fund infrastructure oversizing. The small amount of private development equity utilized at the beginning of Phase 2 is assumed to be reimbursed by the middle of Phase 2, keeping the burden on developers as low as possible and for as short a timeframe as possible.

The County contribution of $37.4 million during Phase 2 pushes the County oversizing up to $19.2 million. The amount of County oversizing increases slightly to $20.1 million at the beginning of Phase 3, but it drops rapidly over the next three years down to $5.7 million. Total net revenues during Phase 3 available to reimburse the County, including the proceeds of three CFD bond issues, bring the net oversizing down to zero before the end of Phase 3.

Net Project-Specific and Offsite Regional Costs by Phase
(In Millions)



Improvements	Phase 1a	Phase 1b	Phase 2	Phase 3
Offsite Regional	$0.1	$0.0	$2.8	$0.2
Fair Demo	$0.5	$0.0	$3.7	$0.2
Fair Improvements	$21.0	$0.3	$12.4	$15.7
Other [1]	$4.4	$2.0	$6.7	$0.3
Landscaping	$0.7	$1.5	$3.0	$0.0
Dry Utility	$0.5	$0.9	$1.1	$0.0
Water	$0.4	$0.7	$1.4	$0.0
Sewer	$0.2	$0.3	$0.8	$0.0
Drainage	$0.9	$0.7	$1.6	$0.0
Major Road	$1.7	$3.4	$3.0	$0.5
Total	**$30.3**	**$9.7**	**$36.6**	**$16.9**

[1] Other includes Water Feature, Pedestrian Bridge, Habitat, and Miscellaneous Improvements.

Table ES-4
Cash Flow by Phase
(In Millions)

	Phase 1a	Phase 1b	Phase 2	Phase 3	Total
Phased Costs					
Project-Specific Costs	$30.3	$9.7	$33.8	$16.7	$90.5
Regional Costs	$0.1	$0.0	$2.8	$0.2	$3.0
CABs Interest Carry	$0.0	$0.0	$8.4	$4.3	$12.7
Total	$30.3	$9.7	$45.0	$21.2	$106.2
Revenues					
CFD Bond Proceeds/Special Tax Revenue	$0.1	$0.4	$13.4	$14.8	$28.6
County COPs (Non-Oversizing)	$27.1	$0.0	$16.2	$21.3	$64.6
County COPs (Retire CABs/Reimbursement)	$0.0	$0.0	$21.2	($8.5)	$12.7
County CABs (Oversizing)	$3.2	$9.4	($6.2)	($6.4)	$0.0
Other Public Funding	$0.0	$0.0	$0.3	$0.0	$0.3
Total	$30.4	$9.8	$44.8	$21.2	$106.2
Developer Equity/Financing	$0.0	$0.1	$0.6	$0.0	$0.7
Developer Reimbursement	($0.1)	($0.2)	($0.4)	$0.0	($0.7)
Total Revenues	$30.3	$9.7	$45.0	$21.2	$106.2
Cumulative Developer Oversizing	**($0.1)**	**($0.2)**	**$0.0**	**$0.0**	
County – Fair Costs & Infra. Obligation					
Fair Improvements	$21.0	$0.3	$12.4	$15.7	$49.4
Fair Demo	$0.5	$0.0	$3.7	$0.2	$4.5
Project Specific Infra. Obligation	$5.2	$0.0	$0.0	$5.2	$10.4
Offsite Mitigation Infra. Obligation	$0.1	$0.0	$0.0	$0.1	$0.3
Total Cost & Infra. Obligation	$26.8	$0.3	$16.2	$21.3	$64.6
County Financing (COPs)	$27.1	$0.0	$37.4	$12.8	$77.3
County Financing (CABs)	$3.2	$9.4	($6.2)	($6.4)	$0.0
CABs Interest Carry Funded by COPs	$0.0	$0.0	($8.4)	($4.3)	($12.7)
Subtotal County Financing	$30.3	$9.4	$22.7	$2.1	$64.6
County Oversizing	$3.5	$9.2	$6.5	($19.2)	$0.0
Cumulative County Oversizing	**$3.5**	**$12.7**	**$19.2**	**$0.0**	

** Totals may not sum due to rounding.*

SUMMARY OF COUNTY/FAIR IMPACTS

As discussed in more detail above and as illustrated in Table ES-4 above, total Fair improvements are expected to cost $49.4 million. Demolition of existing Fair structures, the fair share of project-specific infrastructure that is the Fair's obligation, and the fair share of regional offsite mitigation improvements that is the Fair's obligation, total another $15.2 million. The total County cost associated with the public portion of the Project – a new Exposition Hall, other improvements to the Fair, and infrastructure and other costs related to the Fair – is estimated to be $64.6 million. This cost is spread out over all three phases of the Project.

Also discussed above, it is anticipated that the County will cover these Fair-related costs through the issuance of COPs. Due to timing issues associated with when infrastructure is required compared to when private development might occur, the County will also need to fund more than its fair share of project-specific infrastructure and/or regional improvements until it can be reimbursed in later Project phases. It is expected that the County will utilize CABs to fund the oversizing. The CABs will ultimately be refunded with COPs and the County will be reimbursed for its oversizing, but interest and issuance costs associated with the CABs is estimated to cost $12.7 million. As a result, the County is expected to issue a net amount of approximately $77.3 million in COPs during the life of the Project, which equals the County's $64.6 million Fair-related cost plus $12.7 million in carrying costs on the CABs.

Debt service on outstanding COPs is projected to run approximately $1.6 million annually for the first eight years (2014 through 2021). Debt service will increase to approximately $6.1 million per year by 2032 as more COPs are issued to cover costs and refund CABs. During the next 11 years (to 2043), debt service on the COPs remains fairly level, as reimbursements for oversizing compensate for the escalating structure of the COPs debt service. Then, as COPs bond issues reach maturity, annual debt service decreases to $4.2 million in 2044, to $3.4 million in 2055, and down to $2.2 million in 2057; the final year of debt service is 2058. Average net annual debt service is approximately $4.1 million, the maximum debt service of $6.3 million is reached in 2043, and total debt service over the course of 45 years is $183.0 million.

Note that annual net fiscal impacts to the County produced by the Project are estimated in a separate, companion study to the PFFP – the *Fiscal Impact Analysis* – also dated November 9, 2012.

APPENDIX C: Solano360 Fiscal Impact Analysis Executive Summary

Goodwin Consulting Group, November 2012

PURPOSE AND SCOPE OF REPORT

This report summarizes the analysis of the potential recurring fiscal impacts to the City of Vallejo (City) and County of Solano (County) from potential development of the Solano360 Project (Project). Brief analyses of the fiscal impacts to the Greater Vallejo Recreation District (GVRD) and Vallejo Sanitation and Flood Control District (VSFCD) are also incorporated into this analysis.

This fiscal impact analysis compares the estimated annual costs of providing public services against the estimated annual revenues that will be generated by new development to determine the net fiscal impact. This report details the annual fiscal impacts to the City's General Fund and the County's General Fund. Furthermore, the revenues and expenses associated with the Project for GVRD and VSFCD are analyzed in this report. Other funds that are supported by development fees and user charges (e.g., enterprise funds), state resources (e.g., school districts), or a specific allocation of property taxes (e.g., school districts, mosquito abatement districts) are not included in this analysis.

PROJECT DESCRIPTION

The Project is located within the City limits on the current site of the Solano County Fair, adjacent to Six Flags Discovery Kingdom. Located at the crossroads of State Highway 37 and Interstate 80, the Project consists of a mix of public and private land uses on 149.1 acres. With approximately 328,000 square feet of Entertainment Mixed Use (EMU) including restaurant and retail uses, 30.0 acres of Entertainment Commercial (EC), and 149,500 square feet of fairgrounds uses, the Project is anticipated to generate approximately 4,600 jobs and visitor employee equivalents (VEE's). Furthermore, the Project may include up to 50 residential units that will be home to approximately 86 residents.

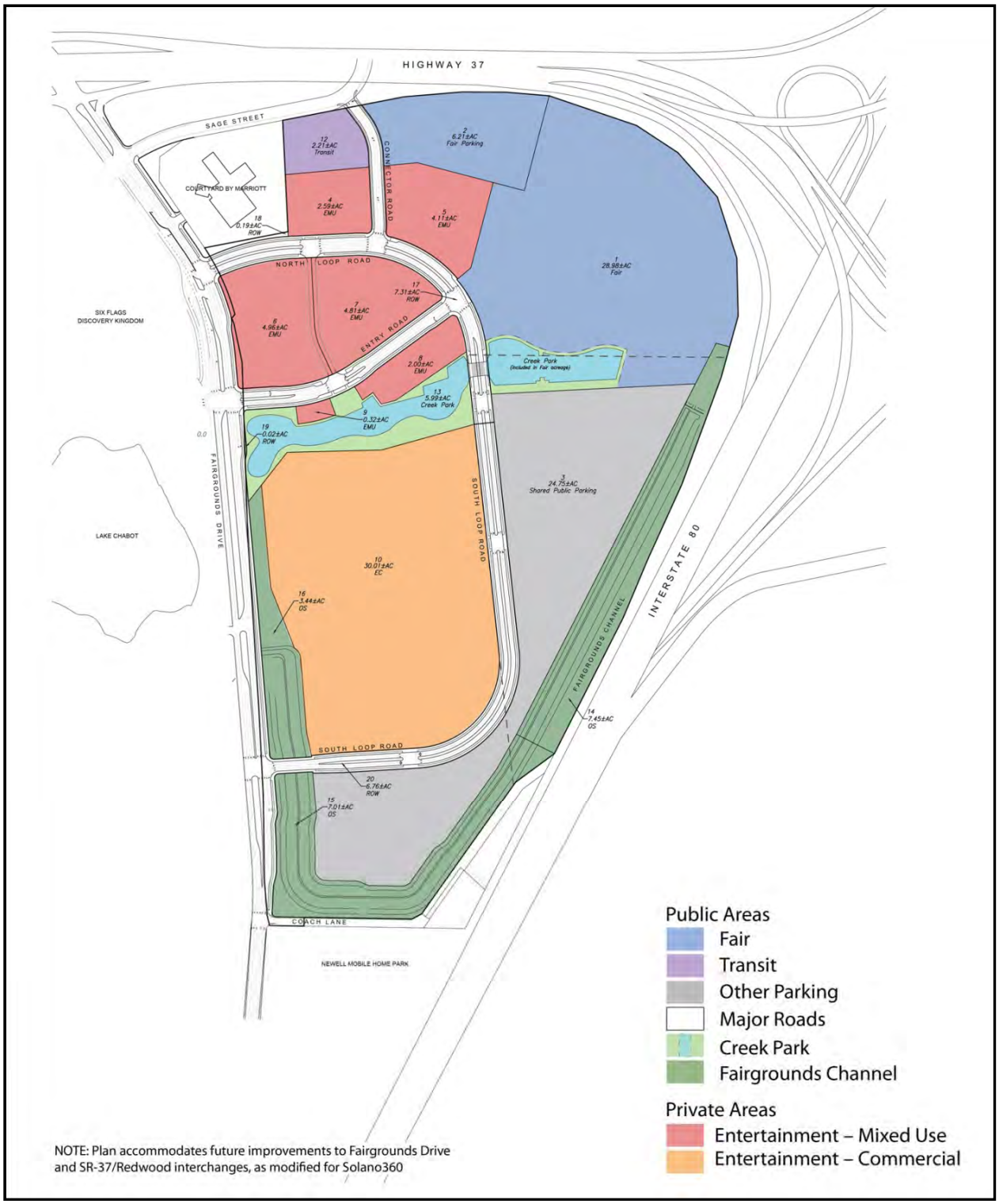
It appears that the number of visitors to the EC and Fair developments, rather than the number of jobs at those sites, is a better indicator of fiscal impacts from these land uses. Therefore, EC and Fair seasonal visitor estimates are translated into an equivalent number of annual employees, and are combined with employment at EMU sites, to determine certain fiscal impacts.

Development of the Project is anticipated to span a 25-year horizon. During this timeframe, it is expected that development will occur in three major phases. Phase 1 is further divided into two sub-phases (i.e., Phase 1a and Phase 1b). Phase 1 is anticipated to develop over a 5-year period (i.e., approximately three years for Phase 1a and two years for Phase 1b), and Phases 2 and 3 are anticipated to develop over sequential 10-year periods.

Local Vicinity Map

Source: Solano360 Specific Plan, dated November 9, 2012

Preliminary Land Use Plan



Source: Solano360 Specific Plan, dated November 9, 2012

METHODOLOGY

Fiscal impacts arising from land development can be categorized broadly as either one-time impacts or recurring impacts, both of which involve a revenue and expense component. For example, a project may create the need for an onsite fire station, and the one-time construction cost of the station may be offset by a development impact fee. The annual expenses associated with staffing and maintaining the fire station will be offset by annual property taxes and other revenues generated by new development. The fiscal impacts compared in this study are the annual, or recurring, revenues and expenses that affect the City, County, GVRD, and VSFCD as a result of development associated with the Project.

Two methodologies are employed in estimating recurring fiscal impacts. First, the case study method is used to estimate recurring revenues and expenses by applying defined service standards, existing tax and fee rates, and suggested operating and maintenance costs to the various land uses and services proposed in the Project. The second methodology used is the multiplier method, which assumes that fiscal impacts will result from proposed development at forecasted rates per resident, employee and VEE, or person served based on the fiscal year 2011-12 budgets for the City and County.

KEY ASSUMPTIONS

Generally, property taxes and property-related taxes comprise a majority of revenue generated by a new development project. As such, property tax allocations play a pivotal role in determining whether a development project will generate a fiscal surplus or deficit to a public agency. The Project was previously included within the Flosden Acres Redevelopment Plan area; however, with the passage of the fiscal year 2011-12 State budget, legislative bills ABX1 26 and ABX1 27, as well as the California Supreme Court decision permitting the State to proceed with its plans to eliminate redevelopment agencies within the State, the analysis assumes that all property tax revenue reverts back to the pre-redevelopment agency distributions specified by the applicable tax rate areas.

Other important assumptions that drive the results of the fiscal analysis include the following:

1. The County will likely solicit proposals from master developers and enter into a long-term ground lease and agreement with a master developer to implement the buildout of the private development component of the Project, including the shared public parking structure and surface lot anticipated to serve the Fair and other entertainment venues. Therefore, the market or assessed value assumptions in the fiscal study include land and construction values, both of which will be taxed as possessory interests.

2. The County will be developing this Project, either directly or indirectly through an agreement with a master developer, and will need a point person to handle Project management, administrative, financial, legal, and other matters as the Project builds out. The fiscal analysis includes the cost of a County project manager for that purpose. Since the Project is located within the City, the fiscal analysis also includes the cost of

approximately a half-time City project manager to mitigate various administrative and other related costs incurred by the City as a result of the Project.

3. The City currently collects an entertainment tax from Six Flags Discovery Kingdom equal to 2.5% of gate revenues. It is assumed that the EC parcel will function in a similar manner to Six Flags Discovery Kingdom – operating an amusement park, theme park, or combination of such uses – and that the County, most likely through a development agreement, will also collect an entertainment tax on EC parcel entrance fees at the same 2.5% rate.

4. The Project will generate additional sales tax revenue to the City based on the recently approved Measure B one-cent sales tax for City general fund purposes. Measure B sunsets in less than 10 years, and sales tax revenue accounted for in the fiscal analysis related to Measure B is assumed to expire at that time.

5. Net Fair revenue is anticipated to grow considerably as the exposition hall expands, the quality of the Fair experience improves, and attendance increases, while certain fixed costs remain the same and other costs are contained. An analysis of Fair profit centers suggests that net rental income and use of the exposition hall will escalate proportionally based on the increase in exposition hall net square footage from 20,000 to 100,000. Net income associated with other profit centers is assumed to remain constant, except that net income related to golf and track operations terminates as these two operations are eliminated. Administration, overhead, and other indirect Fair costs are assumed to increase by two times at full buildout of the new Fair.

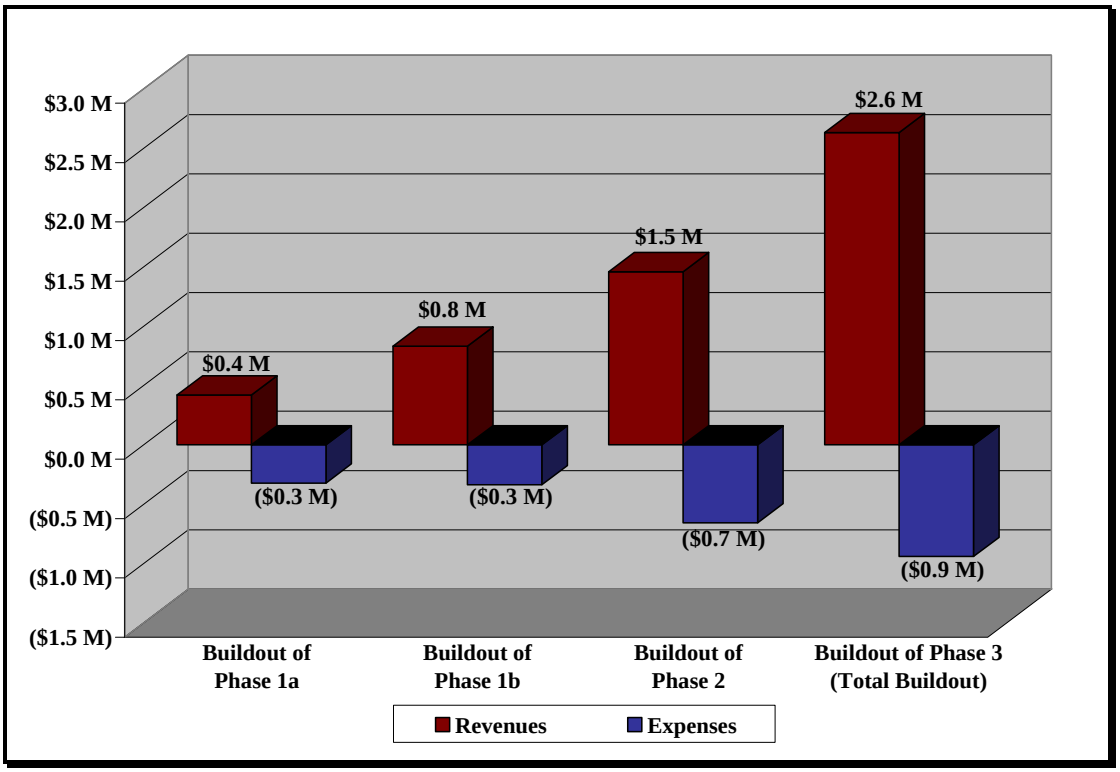
6. The fiscal analysis utilizes higher City building, grounds, and road maintenance costs than shown in the City budget so that existing maintenance service level deficiencies are not exacerbated. Similarly, City public safety departments are currently understaffed, so the fiscal analysis utilizes a higher, more desirable level of service commensurate with average, rather than depressed, economic conditions.

CONCLUSIONS

Annual Net Fiscal Impacts to the City

The Project is expected to generate net fiscal surpluses at buildout of each of the three phases, including sub-phase 1a. The graph on the next page shows that projected revenues exceed expenses at buildout of each phase of development. At final buildout, the Project is anticipated to produce an annual surplus of more than $1.7 million to the City. On an annual basis, the Project is anticipated to generate a modest net fiscal deficit during the first year of development only because costs for maintenance and a City project manager are anticipated to occur concurrent with development, while revenues do not start accruing to the City until development has occurred. The Project is then forecasted to generate annual fiscal surpluses for all remaining years of the 50-year analysis period.

Summary of Annual Revenues and Expenses to the City

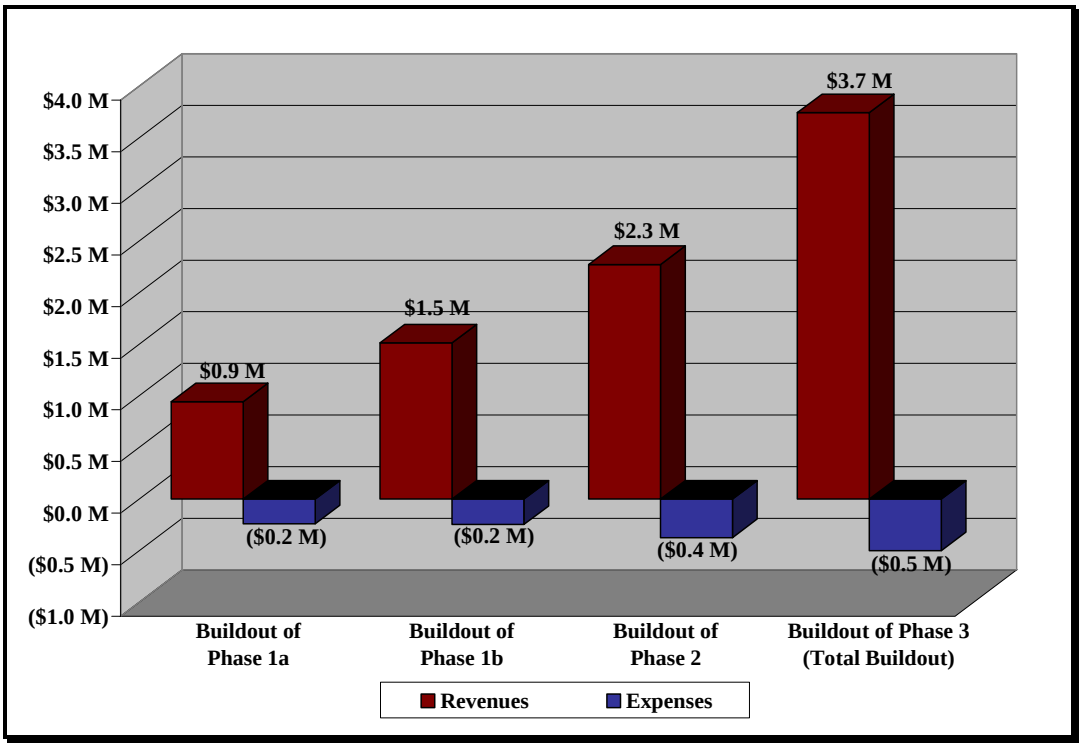


Annual Net Fiscal Impacts to the County and Fair

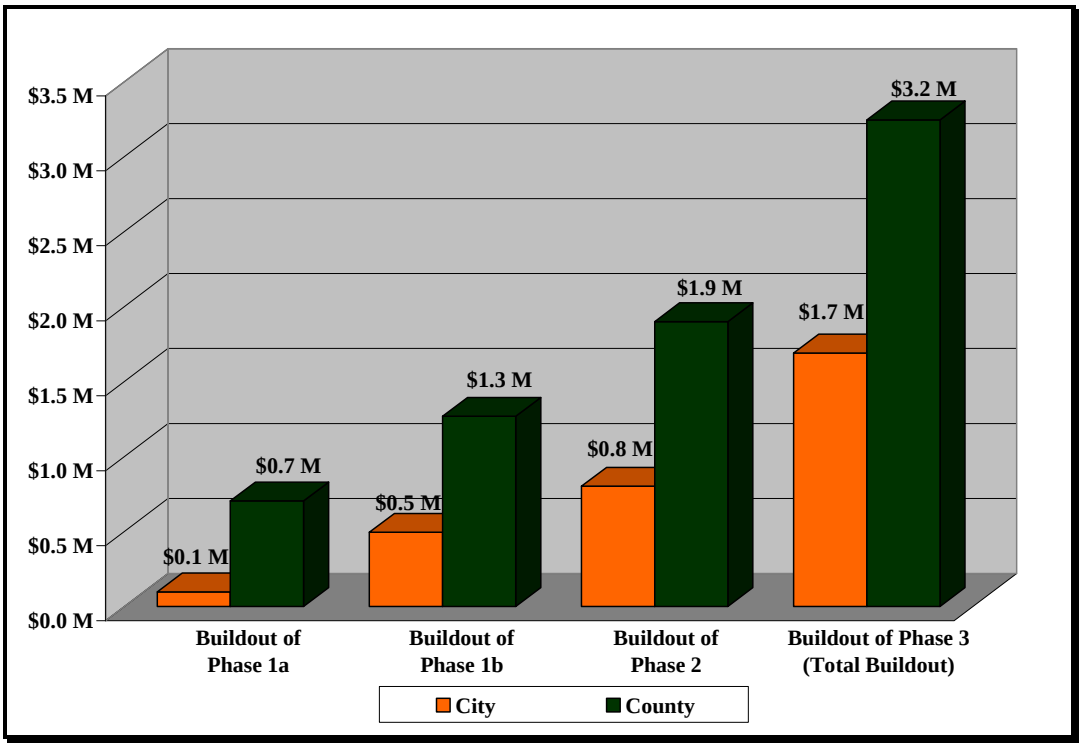
Net fiscal impacts to the County and Fair are very similar to those of the City – a fiscal surplus is anticipated at buildout of each phase. However, unlike the City impacts, it is not anticipated that the County will experience a deficit in the early years of the Project when net impacts to the Fair are included in the County impacts.

The Project is expected to generate approximately $3.7 million in annual revenues to the County and Fair, and is expected to create approximately $0.5 million in annual expenses at buildout. This results in an annual surplus of approximately $3.2 million to the County and Fair. A summary of the net County/Fair revenues and expenses anticipated at buildout of each phase is presented in the graph below. A summary of the net fiscal impacts to the City and County/Fair is also presented below.

Summary of Annual Revenues and Expenses to the County and Fair



Comparison of Annual Net Fiscal Impacts to the City and County/Fair



Annual Net Fiscal Impacts to the GVRD and VSFCD

In addition to the impacts on the City and County, the Project is expected to generate annual revenues and expenses for GVRD and VSFCD. Annual expenses associated with the Project for GVRD and VSFCD are assumed to be covered by annual revenues generated from the Project; therefore, no net fiscal impacts from the Project are anticipated to GVRD or VSFCD.

Table 1
Solano360 Specific Plan
Fiscal Impact Analysis
Summary of Fiscal Impacts

Project Year	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Fiscal Year	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*2020-21*	*2021-22*	*2022-23*	*2023-24*	*2024-25*
Phase	*Entitle.*	*1a*	*1a*	*1a*	*1b*	*1b*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
City													
Revenues	$0	$0	$0	$419,899	$796,056	$831,224	$1,104,361	$1,166,031	$1,777,167	$1,843,308	$1,293,422	$1,333,894	$1,326,636
Expenses	$0	$0	($121,361)	($323,102)	($336,340)	($336,340)	($389,942)	($389,942)	($593,272)	($603,862)	($603,862)	($631,285)	($631,814)
Net Fiscal Impact	$0	$0	($121,361)	$96,797	$459,717	$494,885	$714,418	$776,089	$1,183,895	$1,239,446	$689,560	$702,610	$694,822
County & Fair													
County Revenues	$0	$0	$0	$129,576	$238,776	$236,069	$325,287	$346,311	$906,275	$913,001	$907,242	$932,174	$929,008
Fair Revenues	$0	$0	$190,000	$813,750	$1,277,500	$1,277,500	$1,277,500	$1,277,500	$1,277,500	$1,277,500	$1,277,500	$1,277,500	$1,277,500
Total County and Fair Revenues	$0	$0	$190,000	$943,326	$1,516,276	$1,513,569	$1,602,787	$1,623,811	$2,183,775	$2,190,501	$2,184,742	$2,209,674	$2,206,508
Expenses	$0	$0	($150,000)	($239,076)	($244,921)	($244,921)	($249,597)	($249,597)	($339,375)	($344,051)	($344,051)	($359,579)	($359,813)
Net Fiscal Impact	$0	$0	$40,000	$704,249	$1,271,355	$1,268,648	$1,353,190	$1,374,214	$1,844,400	$1,846,450	$1,840,691	$1,850,095	$1,846,695
Total City Plus County & Fair	**$0**	**$0**	**($81,361)**	**$801,046**	**$1,731,071**	**$1,763,533**	**$2,067,608**	**$2,150,303**	**$3,028,296**	**$3,085,896**	**$2,530,252**	**$2,552,705**	**$2,541,517**

Source: Goodwin Consulting Group, Inc.

Table 1
Solano360 Specific Plan
Fiscal Impact Analysis
Summary of Fiscal Impacts

Project Year	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*
Fiscal Year	*2025-26*	*2026-27*	*2027-28*	*2028-29*	*2029-30*	*2030-31*	*2031-32*	*2032-33*	*2033-34*	*2034-35*	*2035-36*	*2036-37*	*2037-38*
Phase	*2*	*2*	*2*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
City													
Revenues	$1,352,928	$1,337,697	$1,458,958	$1,452,806	$1,895,369	$1,757,790	$1,997,172	$2,218,477	$2,372,700	$2,506,561	$2,509,035	$2,504,861	$2,631,069
Expenses	($650,096)	($650,096)	($656,980)	($656,980)	($656,980)	($846,013)	($859,250)	($871,959)	($922,791)	($933,381)	($933,911)	($933,911)	($940,794)
Net Fiscal Impact	$702,832	$687,601	$801,978	$795,827	$1,238,390	$911,778	$1,137,922	$1,346,519	$1,449,909	$1,573,180	$1,575,125	$1,570,951	$1,690,275
County & Fair													
County Revenues	$944,838	$937,151	$995,847	$990,936	$1,294,613	$1,229,128	$1,346,585	$1,454,982	$1,599,587	$1,672,532	$1,671,371	$1,667,117	$1,728,984
Fair Revenues	$1,277,500	$1,277,500	$1,277,500	$1,087,500	$1,087,500	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000
Total County and Fair Revenues	$2,222,338	$2,214,651	$2,273,347	$2,078,436	$2,382,113	$3,244,128	$3,361,585	$3,469,982	$3,614,587	$3,687,532	$3,686,371	$3,682,117	$3,743,984
Expenses	($370,165)	($370,165)	($373,204)	($373,204)	($373,204)	($456,669)	($462,514)	($468,125)	($490,570)	($495,245)	($495,479)	($495,479)	($498,519)
Net Fiscal Impact	$1,852,173	$1,844,486	$1,900,143	$1,705,232	$2,008,909	$2,787,458	$2,899,071	$3,001,857	$3,124,017	$3,192,286	$3,190,891	$3,186,638	$3,245,466
Total City Plus County & Fair	**$2,555,005**	**$2,532,087**	**$2,702,121**	**$2,501,058**	**$3,247,299**	**$3,699,236**	**$4,036,993**	**$4,348,376**	**$4,573,927**	**$4,765,466**	**$4,766,016**	**$4,757,589**	**$4,935,741**

Source: Goodwin Consulting Group, Inc.

11/09/2012

Table 1
Solano360 Specific Plan
Fiscal Impact Analysis
Summary of Fiscal Impacts

Project Year	*26*	*27*	*28*	*29*	*30*	*31*	*32*	*33*	*34*	*35*	*36*	*37*	*38*
Fiscal Year	*2038-39*	*2039-40*	*2040-41*	*2041-42*	*2042-43*	*2043-44*	*2044-45*	*2045-46*	*2046-47*	*2047-48*	*2048-49*	*2049-50*	*2050-51*
Phase	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*
City													
Revenues	$2,622,035	$2,619,487	$2,617,328	$2,615,540	$2,614,105	$2,613,008	$2,612,234	$2,611,768	$2,611,597	$2,611,709	$2,612,091	$2,612,733	$2,613,625
Expenses	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)
Net Fiscal Impact	$1,681,241	$1,678,693	$1,676,534	$1,674,746	$1,673,311	$1,672,214	$1,671,440	$1,670,974	$1,670,803	$1,670,915	$1,671,297	$1,671,939	$1,672,831
County & Fair													
County Revenues	$1,722,662	$1,719,746	$1,717,236	$1,715,112	$1,713,355	$1,711,950	$1,710,880	$1,710,130	$1,709,687	$1,709,537	$1,709,669	$1,710,069	$1,710,729
Fair Revenues	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000
Total County and Fair Revenues	$3,737,662	$3,734,746	$3,732,236	$3,730,112	$3,728,355	$3,726,950	$3,725,880	$3,725,130	$3,724,687	$3,724,537	$3,724,669	$3,725,069	$3,725,729
Expenses	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)
Net Fiscal Impact	$3,239,143	$3,236,228	$3,233,717	$3,231,593	$3,229,837	$3,228,431	$3,227,361	$3,226,612	$3,226,169	$3,226,019	$3,226,150	$3,226,551	$3,227,210
Total City Plus County & Fair	**$4,920,384**	**$4,914,920**	**$4,910,251**	**$4,906,339**	**$4,903,148**	**$4,900,646**	**$4,898,801**	**$4,897,586**	**$4,896,972**	**$4,896,934**	**$4,897,447**	**$4,898,490**	**$4,900,041**

Source: Goodwin Consulting Group, Inc.

11/09/2012

Table 1
Solano360 Specific Plan
Fiscal Impact Analysis
Summary of Fiscal Impacts

Project Year	*39*	*40*	*41*	*42*	*43*	*44*	*45*	*46*	*47*	*48*	*49*	*50*
Fiscal Year	*2051-52*	*2052-53*	*2053-54*	*2054-55*	*2055-56*	*2056-57*	*2057-58*	*2058-59*	*2059-60*	*2060-61*	*2061-62*	*2062-63*
Phase	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*	*Buildout*
City												
Revenues	$2,614,756	$2,616,119	$2,617,703	$2,619,501	$2,621,506	$2,623,711	$2,626,109	$2,628,693	$2,631,459	$2,634,401	$2,637,513	$2,640,791
Expenses	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)	($940,794)
Net Fiscal Impact	$1,673,962	$1,675,325	$1,676,909	$1,678,707	$1,680,712	$1,682,917	$1,685,315	$1,687,899	$1,690,665	$1,693,607	$1,696,719	$1,699,997
County & Fair												
County Revenues	$1,711,637	$1,712,783	$1,714,160	$1,715,758	$1,717,570	$1,719,588	$1,721,805	$1,724,216	$1,726,813	$1,729,591	$1,732,545	$1,735,671
Fair Revenues	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000	$2,015,000
Total County and Fair Revenues	$3,726,637	$3,727,783	$3,729,160	$3,730,758	$3,732,570	$3,734,588	$3,736,805	$3,739,216	$3,741,813	$3,744,591	$3,747,545	$3,750,671
Expenses	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)	($498,519)
Net Fiscal Impact	$3,228,118	$3,229,265	$3,230,641	$3,232,239	$3,234,051	$3,236,069	$3,238,287	$3,240,697	$3,243,294	$3,246,073	$3,249,027	$3,252,152
Total City Plus County & Fair	**$4,902,080**	**$4,904,589**	**$4,907,550**	**$4,910,947**	**$4,914,763**	**$4,918,986**	**$4,923,601**	**$4,928,596**	**$4,933,959**	**$4,939,679**	**$4,945,746**	**$4,952,149**

Source: Goodwin Consulting Group, Inc.

11/09/2012

APPENDIX D: Solano360 General Plan Amendments

SOLANO360 GENERAL PLAN AMENDMENTS
December 7, 2011

The following represents amendments to the City of Vallejo General Plan.

I. Scope and Use of the Plan

Page I-1, amend fourth paragraph to recognize Solano360 Specific Plan Area. Text to read:

The existing Solano County Fairgrounds will be redeveloped as the Solano360 Specific Plan Area. References to the Solano360 Specific Plan Area in this document include both the public land uses specific to the Solano Fair of the Future and private land uses targeted for market development. Fair parcels are subject to the City of Vallejo General Plan but are owned and operated by Solano County and Solano County Fair Association.

Part II – Summary of Goals and Objectives

Page II-1, amend Urban Design Goal 1, by adding Urban Design Policy 7 to recognize the Solano360 Specific Plan. Text to read:

7. *Use a specific plan as the guide for re-use and development of the Solano County Fairgrounds. The Solano360 Specific Plan shall address and promote the development of mixed-use entertainment, mixed-use commercial and fair uses to create a thematic entertainment district that caters to specialty activities not found within the City of Vallejo or the greater region.*

Page II-2, amend Urban Design Goal 3, by adding Urban Design Policy 6. Text to read:

6. *The Solano360 Specific Plan Area will serve as a specialty entertainment and retail district, compatible with Six Flags Discovery Kingdom and the Solano County Fair. Amenities located in the Plan Area will include unique and specialty options not found within the region.*

Page II-7: Commercial Development Goals; delete Commercial Development Goal 3, policy 2 and add new policy 2:

~~*2. Consider the feasibility of tying in the office center with a convention center on the Fairgrounds property.*~~

2. Consider the feasibility of developing complimentary commercial uses in the Northeast Quadrant with the Solano360 Specific Plan Area.

Page II-8, Commercial Development Goals; add new Commercial Development Goal 8 and associated policies:

Commercial Development Goal 8: To promote the use of the Solano360 Specific Plan that encourages a mix of commercial entertainment related uses that will become unique commercial assets for the City of Vallejo.

Policies

1. *Use the Solano360 Specific Plan to guide new commercial development in the private parcels of the Solano360 Specific Plan Area in a manner that emphasizes specialty and thematic entertainment land uses.*

Page II-11, Transit Goal: To have a transit system that results in a significant increase in transit usage especially among commuters and better service for transit dependent residents; add new policy 7

7. *The City shall promote the use of the Solano360 Transit Center as a viable option for regional commuter transit use.*

Page II-12, Non-Motorized Transportation Goal: To have facilities that encourages greater use of bicycles for recreation, commuting and shopping; add new policy 7

7. *The City shall integrate the existing Vallejo Bicycle Route Plan with the Solano360 bicycle route system and parking facilities as a viable option for Plan Area access.*

Part III – Land Use Element

Page III-5: B. Urban Design, add fourth bullet: 4. Solano360 Specific Plan Area and associated language.

- The Solano360 Specific Plan Area will create a unique place with an unmistakable identity that serves as a destination for visitors as well as a pedestrian-friendly, community gathering places. The Solano360 Specific Plan Are will combine a mix of complementary land uses, including retail, commercial, hospitality, recreational, residential, family and youth oriented, educational and civic uses that seamlessly integrate with the "Fair of the Future". The Specific Plan Area will generate revenues for Solano County and the City of Vallejo, creating jobs and ensure long-term economic sustainability.

Page III-6: Urban Design Goal 1: To establish a strong city identity; add new policy 6

6. *Use the Solano360 Specific Plan to evaluate projects proposed within this area.*

Page III-6: Urban Design Goal 3: To have attractive, exciting shopping areas; add new policy 8

8. *The Solano360 Plan Area is designed as a destination entertainment center for specialty retail, restaurant and thematic entertainment uses.*

Page III-15, F. Commercial Development: 1. Major Commercial Areas; edit introductory paragraph; add Solano360 Specific Plan Area definition.

There are ~~six~~ seven major commercial sites on the Plan Map: 1) Downtown; 2) Northeast Quadrant along I-80 between Columbus and Redwood Parkways; 3) Vallejo Plaza area; 4) Tennessee Street between Mare Island Way and Tuolumne Street intersection; 5) Springs Road between I-80 and Columbus Parkway; 6) Mare Island and 7) Solano360 Specific Plan Area.

It is proposed that the ~~six~~ seven major commercial areas described above be delineated as follows:

SOLANO360 SPECIFIC PLAN AREA: The existing Solano County Fairgrounds will be redeveloped to include uses for the "Fair of the Future" and parcels intended for Entertainment Mixed-Use and Entertainment Commercial uses providing specialty retail and shopping experiences. These commercial uses will also be compatible with the existing Fair and Six Flags Discovery Kingdom.

Page III-19, Commercial Development Goals; edit existing Commercial Development Goal 3 policy 2:

~~2. Consider the feasibility of tying in the office center with a convention center on the Fairgrounds property.~~

2 Consider the feasibility of developing complimentary commercial uses in the Northeast Quadrant with the Solano360 Specific Plan Area.

Page III-20, Commercial Development Goals; add new Commercial Development Goal 8 and associated policies:

Commercial Development Goal 8: To promote the use of the Entertainment Mixed-Use and Entertainment Commercial Parcels in the Solano360 Specific Plan Area as unique commercial assets for the City of Vallejo.

Policies

1. *Use the Solano360 Specific Plan to guide new commercial development in the Solano360 Specific Plan Area in a manner that emphasizes specialty and thematic entertainment land uses.*

2. *Utilize the unique entertainment and thematic land use patterns adjacent to and within the Solano360 Specific Plan Area in evaluating new commercial development.*

3. *Develop development standards and flexible land use guidelines for commercial development in the Solano360 Specific Plan Area*

Page III-27: add a Commercial Recreation designation for the Solano360 Specific Plan Area including the land use designations and standards:

Amend the General Plan Land Use Map replacing the Open Space – Community Park designation with Commercial

Recreation (see Exhibit A).

Solano360 Land Use Designations:

The following land use designations apply to the Solano360 Specific Plan Area:

Commercial Recreation

The purpose of the Commercial Recreation designation for the Solano360 Specific Plan Area is to create and establish regulations for a mixed use district in which recreational land uses such as the fair, as well as entertainment, commercial and/or office uses are developed as an integral unit. All uses shall complement and enhance each other and their diversity shall be unified by an overall design concept. The intent of this district is to implement the policies of the Vallejo General Plan that call for the establishment of specific areas where flexibility of design and development of diverse land use is appropriate for the benefit of the city as a whole.

IV. Circulation and Transportation Element

Page IV-9, Transit Goal: To have a transit system that results in a significant increase in transit usage especially among commuters and better service for transit dependent residents; add policy 7

7. The City shall promote the Solano360 Transit Center as a viable alternative for park and ride commuter transit and as alternative transit access for visiting the Solano360 Plan Area and Six Flags Discovery Kingdom.

XII. Action Program

Page XII-1, Action Program, B. Specific Area Plans and Special Studies; amend language as follows:

Beside the five area plans completed in the late 1970's, specific plans have been prepared for Sky Valley, Northgate, White Slough, Downtown, Mare Island, and the Solano360 Specific Plan Area.

XIII. Economic Element

Page 10, Citywide Goals and Policies, Goal 4: Increase Workforce Preparedness of Vallejo Residents, amend last paragraph to include text specific to Solano360.

Create Citywide First Source Hiring Program Building Upon Mare Island Program: Creation of a First Source Hiring program to prioritize and assist in hiring Vallejo citizens was called for in the Economic Vision. Developers and tenants on Mare Island are already obligated to target Vallejo residents for job openings. The City could support diverse First Source hiring programs and other programs targeting geographic, linguistic, and culturally diverse populations or create a centralized City-sponsored program that could be implemented citywide. *The City shall promote financial incentives for prospective developers of the Solano360 Specific Plan Area that support First Source hiring programs of Vallejo citizens.* Some cities have initiated this type of effort by tying it to receipt of City financial subsidies, with great success.

Page 11, Citywide Goals and Policies, Goal 5: Expand Visitor Attractions and Services, add new Policy 9.

Policy 9: *Support development of recreation, specialty entertainment retail, commercial and restaurant uses in the Solano360 Specific Plan Area.*

Page 12, Citywide Goals and Policies, Goal 5: Expand Visitor Attractions and Services, add new language to Implementation Strategies.

Increase Physical and Transportation Links between Key Sites, add new last sentence: *Promote public transit and bicycle access routes to the Solano360 Specific Plan Area.*

Provide Vallejo Specific Visitors Guide - Create a visitors guide that provides for one-day and multiple day tours of historic features, waterfront, and local museums (including emerging attractions on Mare Island *and in the Solano360 Specific Plan Area*). Police and visitor docents can distribute these, as well as shops display them.

Page 23, Goals and Policies for Focused Economic Activity Areas, Goal 10: **Develop North Vallejo as a Premier Visitor and Resident Gateway**, edit Policy 2 to include language specific to Solano360 Plan Area.

Policy 2: Encourage and support year-round utilization of the ~~fairgrounds property~~ *Solano360 Specific Plan Area* to enhance visitor attraction, support a gateway image, and provide highest economic return to Vallejo.

Page 23, Goals and Policies for Focused Economic Activity Areas, Goal 10: **Develop North Vallejo as a Premier Visitor and Resident Gateway**, edit language in third paragraph under Background section.

The Solano County Fairgrounds ~~is moving forward with the preparation of a master plan for~~ *will be redeveloped as part of the Solano360 Specific Plan Area* ~~reuse and economic self-sufficiency, with a preferred alternative being developed~~. *The existing Fairgrounds will undergo a phased renovation and development of new facilities and structures to achieve economic self-sufficiency.* The City, through its land use jurisdiction over the site, ~~has communicated its preference for maximizing economic return to Vallejo and its residents~~ *will collaborate with Solano County to assist in the phased redevelopment of private portions of the Fairgrounds site in efforts to maximize the economic return to Vallejo and it residents.* .

Page 24, Goals and Policies for Focused Economic Activity Areas, Goal 10: **Develop North Vallejo as a Premier Visitor and Resident Gateway**, edit first bullet under Potential Implementation Strategies section.

Potential Implementation Strategies

The City has key roles to play in directing development in North Vallejo, including:

- Active partnership with *Solano County and the* Solano County Fair Board and private developers to ~~reuse~~ *redevelop* the fairgrounds *as the Solano360 Specific Pan.*

APPENDIX E: Solano360 Plant Palette

Trees

Scientific Name	Common Name	Suggested Use	Characteristics	Source
Acer rubrum 'Autumn Flame'	Flame Red Maple	Street tree	To 60' tall and 40' wide	City of Vallejo
Acer rubrum 'October Glory'	October Glory Maple	Street tree	To 60' tall and 40' wide	City of Vallejo
Aesculus californica	California Buckeye	Accent Tree	Native, drought-tolerant, to 20' tall and 30' wide	City of Vallejo, EBMUD
Arbutis menziesii	Madrone	Shade tree, accent tree or large shrub	Native, drought-tolerant, 20'-100' tall	EBMUD
Arbutus unedo	Strawberry Tree	Accent Tree	Drought tolerant, to 35' tall	City of Vallejo, EBMUD
Carpinus betulis fastigiata	Upright European Hornbeam	Street tree	To 40' tall	City of Vallejo
Celtis australis	European Hackberry	Street tree	40'-80' tall, 30'-35' wide	City of Vallejo
Cercis canadensis	Eastern Redbud	Street tree	25'-35' tall and wide	EBMUD
Cercis occidentalis	Western Redbud	Accent tree or large shrub	Native, drought-tolerant, 10'-18' tall and wide	City of Vallejo
Citrus sinensis 'Valencia'	Valencia Orange	Agricultural, accent	Evergreen, 20'-25' tall	Sunset Western Garden Book
Citrus x limon 'Lisbon'	Lisbon Lemon	Agricultural, accent	Evergreen, 20'-25' tall	Sunset Western Garden Book
Eriobotrya deflexa	Bronze Loquat	Accent tree	15'-30' tall, drought-tolerant	EBMUD
Ficus carica 'Black Mission'	Black Mission fig	Agricultural, accent	15'-30' tall	Sunset Western Garden Book
Fraxinus oxycarpa	Raywood / Ash Flame	Street tree	To 40', drought-tolerant	EBMUD
Gingko biloba 'Autumn Gold'	Gingko (male)	Street tree	30'-50' tall, drought tolerant	EBMUD, City of Vallejo
Juglans regia	Walnut	Agricultural, accent	To 60' tall and wide	Sunset Western Garden Book
Koelreuteria bipinnata	Chinese Flame Tree	Accent tree	20'-40' tall and wide, drought-tolerant	EBMUD
Koelreuteria paniculata	Goldenrain Tree	Accent tree	20'-30' tall, 25'-40' wide, drought-tolerant	EBMUD
Laurus nobilis 'Saratoga'	Sweet Bay	Accent tree	12'-40' tall and wide, drought-tolerant	EBMUD
Olea europaea	Olive	Agricultural, accent, street tree	Drought-tolerant, 25'-30' tall	EBMUD, Sunset
Pistacia chinensis	Chinese Pistache	Street tree	30'-60' tall and wide	City of Vallejo, EBMUD
Platanus x acerifolia 'Bloodgood'	London Plane Tree	Street tree	40'-80' tall, 30'-40' wide	EBMUD, City of Vallejo
Platanus racemosa	California Sycamore	Riparian or shade tree	Native, 30-80' tall, 20'-50' wide	EBMUD
Prunus dulcis	Almond	Agricultural, accent	20-30' tall	Sunset Western Garden Book
Prunus sargentii	Columnar Flowering Cherry	Accent Tree	40'-60' tall and wide	Sunset Western Garden Book
Prunus 'French Prune'	Prune	Agricultural, accent	30' tall, 25' wide	Sunset Western Garden Book
Pyrus calleryana 'Aristocrat'	Aristocrat Pear	Street tree	50' tall and wide	City of Vallejo
Quercus agrifolia	Coast Live Oak	Street or shade tree	Native, drought-tolerant, 20'-70' tall, evergreen	EBMUD
Quercus coccines	Scarlet Oak	Street tree	60'-80' tall, 40'-60' wide	City of Vallejo
Quercus douglasii	Blue Oak	Shade tree	Native, drought-tolerant, 30'-50' tall, 40'-70' wide	City of Vallejo
Quercus kelloggii	California Black Oak	Shade tree	Native, drought-tolerant, 30'-80' tall and wide	EBMUD
Quercus rubra	Red Oak	Street tree	60'-75 tall, 50' wide	City of Vallejo
Quercus suber	Cork Oak	Street tree	Drought-tolerant, 30'-60' tall and wide, evergreen	City of Vallejo
Tilia cordata	Linden	Shade or street tree	30'-50' tall, 15'-30' wide	City of Vallejo
Tristania laurina	Laurina Box	Accent Tree	To 45' tall, 30' wide	City of Vallejo
Umbelluraria californica	California bay	Shade or accent tree	Native, 20'-25' tall and wide, drought-tolerant	EBMUD

Shrubs / Groundcovers / Perennials

Scientific Name	Common Name	Characteristics	Source
Arbutus unedo	Strawberry Tree	Drought tolerant, to 35' tall	City of Vallejo, EBMUD
Arctostaphylos spp.	Manzanita species	Native, drought-tolerant	Sunset Western Garden Book
Arctostaphylos densiflora 'Howard McMinn'	Howard McMinn Manzanita	Native, drought-tolerant, 5'-6' tall	Sunset Western Garden Book
Baccharis pilularis 'Twin Peaks No. 2'	Dwarf Coyote Brush	Native, drought-tolerant, 8"-24" tall	Sunset Western Garden Book
Ceanothus spp.	California lilac	Native, drought-tolerant	City of Vallejo
Cynara scolymus	Artichoke	Drought-tolerant, ornamental flower	Sunset Western Garden Book
Echinacea purpurea	Purple Cone Flower	Perennial, drought-tolerant, 4' tall	City of Vallejo
Epilobium canum	California Fuchsia	Native, drought-tolerant, 1'-2' tall	City of Vallejo, EBMUD
Eriogonum crocatum	Saffron Buckwheat	Drought-tolerant, 18" tall	EBMUD
Escallonia 'Frades'	Frades Escallonia	Drought-tolerant, 5'-6' tall	EBMUD
Eschscholzia californica	California poppy	Native, drought-tolerant, 6"-12" tall	EBMUD
Garrya elliptica	Silktassel	Native, drought-tolerant, 10'-20' tall	EBMUD

Juniperus spp.	Prostate Juniper	Drought-tolerant	Sunset Western Garden Book
Lavandula spp.	Lavender	Drought-tolerant	City of Vallejo
Lupinus arboreus	Lupine	Native, drought-tolerant. 5'-8' tall	City of Vallejo, EBMUD
Myrica californica	Pacific Wax Myrtle	Native, drought-tolerant, 10'-30' tall	Sunset Western Garden Book
Penstemon spp.	Penstemon	Native, drought-tolerant	City of Vallejo, EBMUD
Pittosporum tobira 'Wheelers Dwarf'	Wheelers Dwarf Pittosporum	Drought-tolerant, 2'-3' tall	EBMUD
Polystichum munitum	Western Sword Fern	Native, drought-tolerant, 2'-4' tall	City of Vallejo
Punica granatum'Wonderful'	Pomegranate	Drought-tolerant, 15'-20' tall and wide	EBMUD
Rhamnus california 'Eve Case'	Coffeeberry	Native, drought-tolerant, 3'-15' tall	EBMUD
Rhaphiolepis indica	Indian Hawthorn	Drought-tolerant, 4'-5' tall	EBMUD
Rosa californica	California wild rose	Native, drought-tolerant, 3' tall	EBMUD
Rosmarinus officialis	Rosemary	Drought-tolerant, 1'-5' tall depending on variety	City of Vallejo
Salvia spp.	Sage	Drought-tolerant, 2'-5' tall	City of Vallejo
Solidago californica	Goldenrod	Native, drought-tolerant, 1'-4' tall	EBMUD

Vines

Scientific Name	Common Name	Characteristics	Source
Bougainvillea cultivars	Bougainvillea	Drought-tolerant	EBMUD
Clematis armandii	Evergreen Clematis	Drought-tolerant	EBMUD
Hardenbergia violacea	Lilac vine	Drought-tolerant	EBMUD
Jasminum polyanthum	Pink jasmine	Drought-tolerant	EBMUD
Vitis californicus	California grape	Native, drought-tolerant	City of Vallejo
Vitis vinifera	Grape	Important agricultural staple of Solano County	EBMUD
Wisteria sinesis	Chinese Wisteria	Drought-tolerant	EBMUD, City of Vallejo

Native Grasses

Scientific Name	Common Name	Characteristics	Source
Festuca californica	California Fescue	Native, drought-tolerant, 1'-2' tall	EBMUD
Festuca idahoensis	Idaho Fescue	Native, drought-tolerant, 1'-2' tall	EBMUD
Melica spp.	Melic	Native, drought-tolerant, 1'-2' tall	EBMUD
Muhlenbergia rigens	Deer Grass	Native, drought-tolerant, 3' tall	EBMUD

Lawn

Scientific Name	Common Name	Characteristics	Source
City or County Standard Sod Blend			

Alternative Lawn Plants

Scientific Name	Common Name	Characteristics	Source
Achillea tomentosa	Woody Yarrow	Drought-tolerant, forms flat, spreading mat	Sunset Western Garden Book
Chamaemelum nobilis	Chamomile	3"-12" tall spreading mat	Sunset Western Garden Book
Thymus sp.	Creeping Thyme	Drought-tolerant	City of Vallejo

Plants for the Water Feature Area, Fairgrounds Channel, and Bioswales

Scientific Name	Common Name	Characteristics	Source
Artemisia douglasiana	Mugwort	Native	First Carbon Solutions
Anemopsis californicus	Yerba Mansa	Native, 1' tall, white flowers	PACE Water Engineering
Carex elata 'Aurea'	Sedge	2.5' tall, will grow in standing water	Sunset Western Garden Book
Carex praegracilis	Clustered Field Sedge	Native, 2.5' tall	PACE Water Engineering
Cyperus eragrostis	Tall Flatsedge	Native	First Carbon Solutions
Distichlis spicata	Salt Grass	Native	First Carbon Solutions
Eleocharis palustris	Spike Rush	Native, 3' tall	SWA Group
Elymus triticoides	Beardless Wild Rye	Native	First Carbon Solutions
Iris brevicaulus	Iris	To 1' tall, for water edge	Sunset Western Garden Book
Iris giganticaerulea	Iris	4' tall, for water edge	Sunset Western Garden Book
Iris laevigata	Japanese Iris	3"-4" water depth	SWA Group
Juncus acutus	Spiny Rush	Native	First Carbon Solutions
Juncus balticus	Baltic Rush	Native, 3' tall	PACE Water Engineering
Juncus bufonius	Toad Rush	Native	First Carbon Solutions
Juncus effusus	Soft Rush	Native, for water edge, 3' tall	PACE Water Engineering
Juncus patens	California Grey Rush	Native, 2' tall, shallow water	Sunset Western Garden Book
Lobelia cardinalis	Cardinal Flower	Native, 4' tall, tall flower spikes	PACE Water Engineering
Sagittaria latifolia	Broadleaf Arrowhead	Native, water-loving, 1'-4' tall	SWA Group
Salix spp.	Willow	A variety of natives should be selected	EBMUD
Satureja mimuloides	Orange Savory	Native, 2' tall, Orange flowers	PACE Water Engineering
Scirpus californica	California Bulrush	Native, water-loving, to 6' tall	SWA Group
Scirpus maritimus	Alkalai Rush	Native, 3' tall, tolerates salty conditions	PACE Water Engineering
Stachys chamissonis	Magenta Butterfly Flower	water	PACE Water Engineering
Stipa pulchra	Purple Needle Grass	Native	First Carbon Solutions

Suggested Agriculture Plant Species for Demonstration Farm and around the Fair

Trees:

Almond, Walnut, Cherry, Olive, Fig, Apple, Prune, Orange, Lemon, Pomegranate, Persimmon

Ground crops:

Grapes, tomatoes, sunflowers, artichokes, beans, squash, melons, corn, brussels sprouts, cucumbers, potatoes, strawberries, pumpkins, and other edibles.

APPENDIX F: Technical Memo on Manmade Lake

Pace Engineering, August 2012

Technical Memorandum

Date: August 23, 2012

To: Chris Ragan/MacKay & Somps

From: Sonny O. Sim, PE
Ron Rovansek, PE

Re: Evaluation of a 5.4-Acre Manmade Lake System "Solano 360" – Solano, CA # 9366E

Introduction

The purpose of this technical memorandum is to provide an overview of how the proposed lake will function and issues associated with building a manmade lake.

Table 1 – Summary of Manmade Lake Properties	
Operating Volume	10.4 Million Gallons
Depth	8 feet
Perimeter	4,500 feet
Lake Bottom Slope	4:1
Surface Area	5.4 acres
Liner	Soil liner or Geomembrane

Impacts of Urban Runoff on Receiving Waters

Urban developments such as the proposed project are known to create increased runoff with increased loads of pollutants compared to undeveloped or natural conditions. The current conditions of the fairground are similar in nature to the proposed conditions; both have paved parking lots, and maintained lawns (i.e. the golf course). Therefore, we anticipate no significant increases in pollutants loads associated with runoff. In the proposed condition, all runoff from the site will be routed through the proposed onsite manmade lake, which will serve as a stormwater treatment BMP for the runoff. BMP's described in this memo are to maintain the water quality within the lake (i.e. aeration, biofilters, etc.). One water quality concept that the lake will provide for the project that is consistent with the Municipal Regional Permit (MRP) is the ability to harvest and reuse stormwater runoff. The design of the lake is intended to provide good water quality at all times to the maximum extent practicable so that any excess runoff to the lake will result in the discharge of relatively clean lake water to the receiving water downstream. Thus we anticipate a decrease in urban runoff pollutants discharged to the receiving water as a result of the proposed project.

Impact to Stream Flow and/or Groundwater

Rindler Creek enters the project site and will be routed around the proposed onsite lake via an existing channel that will be improved, to discharge into Lake Chabot. Therefore the proposed lake will not have an impact on stream flow in Rindler Creek. We anticipate no significant impact to groundwater caused by the onsite lake or by the project. The lake has the potential to impact groundwater levels by either discharging to the groundwater or becoming a point of groundwater discharge to the surface. Because of this, an impermeable or very low permeability liner is planned for the lake bottom. This will minimize water

17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 F: (714) 481-7299 | www.pacewater.com

SOLANO 360

OVERALL LAKE SYSTEM EXHIBIT 1 08/21/12

LEGEND

	LAKE EDGE		AERATION VALVE BOX
	RECIRCULATION LINES		AERATION BUBBLE DIFFUSER
	EQUALIZER LINE		BIOFILTER
	SUCTION LINE		WETLAND PLANTER
	AERATION LINE		BIOFILTER FLOW
	AERATION TUBING		

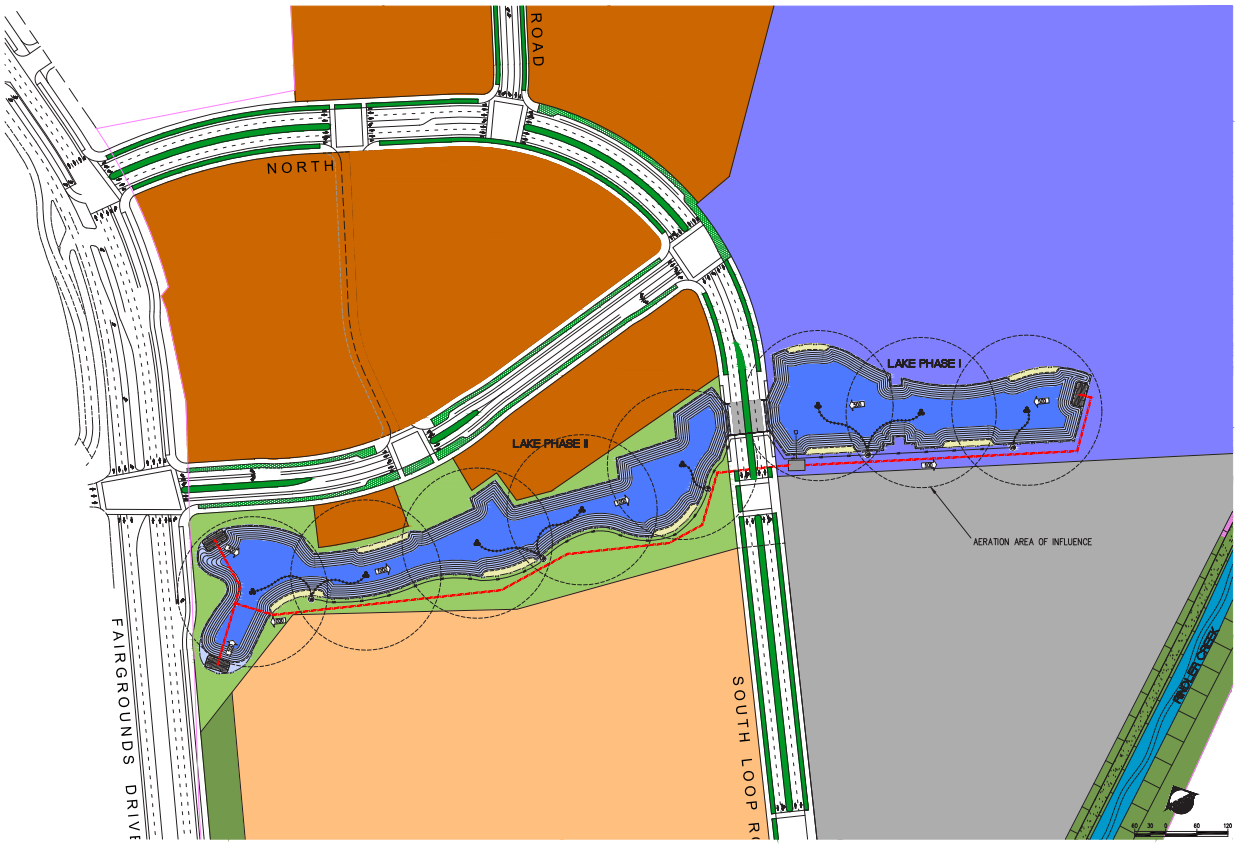
LAKE DATA

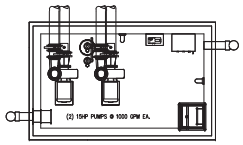
LAKE	1	2	TOTAL
VOLUME (ACRE FEET)	19.0	12.9	31.9
SURFACE AREA (ACRE)	3.26	2.12	5.38
LENGTH OF SHORELINE (FEET)	2,965	1,635	4,500
PLANTER LENGTH (FEET)	417	363	780

AERATION	
AVERAGE LAKE DEPTH (FEET)	4'
NUMBER OF TURNOVERS (PER DAY)	4
CFM REQUIRED	11
TOTAL NUMBER OF AERATION PODS	8

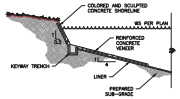
BIOFILTRATION	
VOLUME (GALLONS OF GALLONS)	9,700,000
BIOFILTER FLOW TURN OVER (HOURS)	107
TOTAL BIOFILTER FLOW RATE (GPM)	1,500
TOTAL BIOFILTER AREA (SF)	3,000
BIOFILTER BACKWASH METHOD	GRAVITY

NOTE: LAKE DATA IS PRELIMINARY.

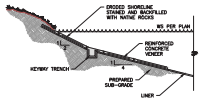




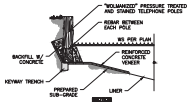
PUMP STATION - PLAN VIEW
DETAIL A



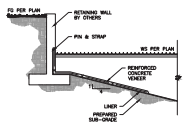
ERODED CONCRETE SHORELINE
DETAIL B



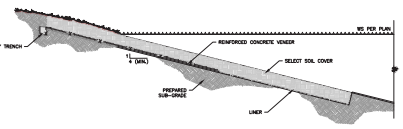
NATURAL SHORELINE
DETAIL C



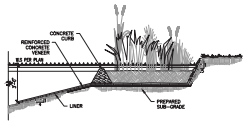
BOLLARD SHORELINE
DETAIL D



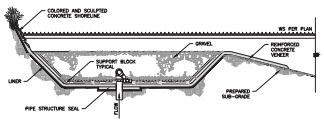
BULKHEAD SHORELINE
DETAIL E



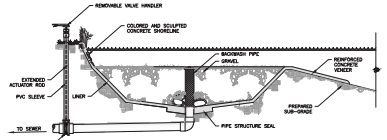
GRASS SHORELINE
DETAIL F



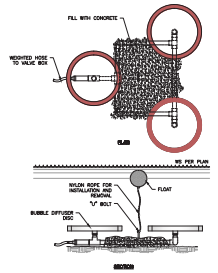
PLANTER SHELF SHORELINE SECTION
DETAIL G



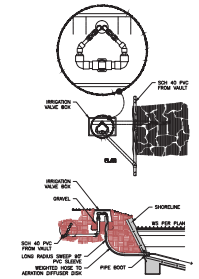
BIOFILTER AT ERODED CONCRETE SHORELINE
DETAIL H



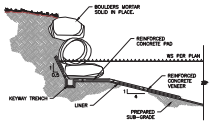
BIOFILTER WITH BACKWASH PIPING
DETAIL J



AERATION BUBBLE DIFFUSER
DETAIL M



AERATION VALVE BOX
DETAIL L



BOULDER WALL
DETAIL K

loss to the soil and thus reduce the need for fill water while minimizing impacts on groundwater to the maximum extent practicable. No significant interaction between the lake and groundwater is expected. In addition, there is a large existing reservoir nearby, and any impacts of the proposed lake would be similar but much smaller than the impacts of the existing reservoir.

Mosquitoes in Manmade Lakes and Water Features

The lake will be constructed with several design features specifically designed to limit the available habitat for mosquito breeding. Mosquito production is a concern for any body of water. There are many species of mosquito in California, but typically only a few create most of the problems in developed areas. These problem mosquitoes breed in stagnant, polluted waters which lack fish or other predators that prey on the defenseless aquatic mosquito larvae. Typical mosquito breeding locations include small pools of water in tires, un-maintained bird baths, trash such as paper cups or cans, or areas where leaking or poorly adjusted irrigation systems create persistent pools of water. Large, clean bodies of water such as well maintained lakes do not typically support significant mosquito populations. The lake at the Solano County Fairgrounds will be constructed with hardened edges, deep water in emergent wetlands, and water quality systems, all of which eliminate mosquito breeding habitat. The edges of the lake will consist of different engineered concrete shorelines and bulkheads. Some of these shorelines will be constructed with roughened surfaces and include natural rock to mimic the appearance of a natural shoreline. In contrast to many natural shorelines, however, the hardened shoreline will provide little extremely shallow water less than a few inches deep that could allow mosquito larvae to survive while excluding fish and other larval predators. Similarly, emergent wetlands within the lake will be designed with a minimum of approximately 6 inches of water. This will allow fish and other predators of mosquito larva access to the wetlands where they will effectively eliminate mosquito larvae. Another feature of the lake that will minimize mosquito production is the excellent water quality. Clean water not only supports fish and other predators but also renders the lake unattractive to many of the most troublesome species of mosquitoes. Finally, the large open water surface will result in ripples and waves that will make survival difficult for mosquito larvae. Overall the lake will provide very little suitable habitat for mosquito larvae and will support healthy populations of mosquito predators, and very few mosquitoes will successfully breed in the lake.

Other Vectors and Nuisance Animals

In the same way that mosquitoes spend part of their lives in and out of aquatic environments, other insects have a similar life history and can inhabit manmade ponds or water features. Some of these insects can occur in numbers that can create a nuisance; however, none of them bites humans, transmits disease, or is attracted to humans the way mosquitoes are.

Midges are small flying insects that begin life in the waters and sediments of ponds, lakes and rivers. Upon reaching adulthood, midges emerge from the water and embark on courtship flights, typically over or near the water in which they were born. These courtship flights take the form of groups of midges flying in masses that hover in a location and often occur near dusk. These flights generally happen near the water, and in some cases occur over trails frequented by people. These masses of midges are not attracted to people, but when a person happens to walk into the mass of midges it is easy to mistake the courtship flight for an organized attack; a midge looks very much like a mosquito. It is interesting to note that reports of thick swarms of mosquitoes are often due to flights of midges.

Midges occur in clean waters, and abundant midges are an indication of a healthy lake. Although midges represent an important part of the aquatic food chain, in many cases predators do not easily control their numbers, and chemical control of midges with pesticides is generally not feasible or desirable, making the control of midges difficult.

Midges are attracted to lights, so careful design of lighting near the pond may offer the best hope for controlling the interaction between people and midges. Elevated lights along lakeside paths should not be placed directly above path intersections. It is not possible to predict exactly where midges will choose to

gather in relationship to lights, but by offsetting the lights slightly from paths the chances that midges will gather directly over paths can be reduced. Alternate lighting designs such as lights placed near ground level may help reduce nuisance created by midges.

Offensive Odors

Offensive or unpleasant odors will not be present at the lake because the lake will have excellent water quality at all times and will be well aerated throughout the lake. Odors associated with lakes are typically released under conditions of low dissolved oxygen in the water and are associated with large blooms of algae, especially blue-green algae, or anaerobic lake-bottom sediments. The lake will be equipped with several water quality maintenance systems such as wetlands, aquatic vegetation, and control of inflows, to prevent large algae blooms by limiting the amount of available nutrients in the water. In addition, the lake will be constantly aerated by a mechanical aeration system that will eliminate stratification and maintain the dissolved oxygen near the saturation point throughout the water column. This will prevent the discharge of unpleasant odors from lake bottom sediments and prevent drops in dissolved oxygen content caused by the growth or die-off of algae in the lake. Many similarly designed lakes have been operated for years without offensive odor problems.

Make-up Water

Source
The "make-up" water to maintain the normal operating lake water level will be pumped primarily from the existing non-potable supply from Lake Chabot. If Lake Chabot water levels cannot support the new lake for make-up water, then a potable water supply connection to the lake will be used to maintain the new lake water level.

An analysis of the water quality of Lake Chabot as it relates to make-up water has not been completed at this time. This issue will need to be evaluated with future stages of the project. If it proves to be infeasible to use Lake Chabot water the specific plan also references that make-up water could come from other sources (i.e. the raw water pipe that delivers North Bay Aqueduct water to Blue Rock Springs, groundwater or potable water from the City).

Water Balance
We conducted a preliminary water balance analysis taking into account water inflow and outflow to and from the lake. Table 2 summarizes the results. The inputs of water to the lake include direct precipitation, non irrigated runoff, and irrigated runoff. Approximately 8 acre feet of water is anticipated as direct precipitation onto the lake surface area. Non irrigated areas include buildings, parking lots, roads, etc. that does not require water for irrigation. The area of non irrigated runoff is approximately 104 acres and is expected to produce 48 AF and is routed to the lake. 45 acres of the site will be irrigated and the runoff expected to be conveyed to the lake is approximately 7 AF annually. We did not take into account drought conditions for this water balance analysis. The total annual input is 64 AF.

Water leaving the lake (output) includes lake evaporation and irrigation water taken from the lake. Based on the results displayed in Table 2, July is the peak make-up water demand month. Assuming average monthly precipitation conditions for July and no nuisance flow into the lake, the lake average monthly evaporation rate is approximately 3.0 AF, and the irrigation demand is 25.4 AF. The net make-up water necessary to sustain lake level taking into account all inputs and outputs is 28.4 AF for the peak demand month of July. This equates to approximately 207 gpm (Minimum water supply rate), assuming continuous pumping at a duration of 24-hours per day. Typical lake level makeup is usually accomplished in a much shorter time instead of a 24 hour fill period. Normally a fill of between 4 and 8 hours is required. This is done to avoid any draw down of the lake due to low inflow rate (fill) compared to outflow due to irrigation. However, a 207 gpm fill rate over 24 hour period with a 600 gpm irrigation rate would only result in a 1.29" draw down of the lake water level. See Table 3. This is due to the large surface area of the lake. Further analysis is required in later phases of the design.

Table 2: Water Balance Table

NO NUISANCE			INPUTS				OUTPUT	IRRIGATION		NET DEMANDS				
			Direct Precipitation	Non Irrigated Runoff	Irrigated Runoff	Total Input per Month	Lake Evaporation	Turf Irrigation	Plant Irrigation	Lake	Turf Irrigation	Plant Irrigation	Demand per Month	Overflow per Month
			(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)	(Ac-ft)
	(1)	(2)	(3)	(4a)	(4b)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Runoff Coefficient		1	0.3	0.1	-	-	-	-	-	-	-	-	-
	Irrigation Efficiency		-	-	-	-	-	0.7	0.9	-	-	-	-	-
	Plant Factor		-	-	-	-	-	0.7	0.8	-	-	-	-	-
	Area (Ac)		5	104	45	-	5	45	0	-	-	-	-	-
MONTH	PREC (in)	ET (in)												
JAN.	3.20	1.28	1.4	8.3	1.2	11.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.0**	10.4
FEB.	2.85	1.72	1.3	7.4	1.1	9.8	0.8	0.0	0.0	0.0	0.0	0.0	**0.0**	9.0
MARCH	2.60	3.27	1.2	6.8	1.0	8.9	1.5	2.5	0.0	0.0	0.0	0.0	**0.0**	4.9
APRIL	1.37	4.48	0.6	3.6	0.5	4.7	2.0	11.7	0.0	0.0	9.0	0.0	**9.0**	0.0
MAY	0.66	5.58	0.3	1.7	0.2	2.3	2.5	18.5	0.0	0.3	18.5	0.0	**18.7**	0.0
JUNE	0.04	6.38	0.0	0.1	0.0	0.1	2.9	23.8	0.0	2.7	23.8	0.0	**26.5**	0.0
JULY	0.00	6.77	0.0	0.0	0.0	0.0	3.0	25.4	0.0	3.0	25.4	0.0	**28.4**	0.0
AUGUST	0.00	5.82	0.0	0.0	0.0	0.0	2.6	21.8	0.0	2.6	21.8	0.0	**24.4**	0.0
SEPT.	0.01	4.50	0.0	0.0	0.0	0.0	2.0	16.8	0.0	2.0	16.8	0.0	**18.8**	0.0
OCT.	1.56	3.09	0.7	4.1	0.6	5.3	1.4	5.7	0.0	0.0	1.8	0.0	**1.8**	0.0
NOV.	1.93	1.63	0.9	5.0	0.7	6.6	0.7	0.0	0.0	0.0	0.0	0.0	**0.0**	5.9
DEC.	4.42	1.01	2.0	11.5	1.7	15.1	0.5	0.0	0.0	0.0	0.0	0.0	**0.0**	14.7
SUM	**18.64**	**45.53**	**8**	**48**	**7**	**64**	**20**	**126**	**0**	**11**	**117**	**0**	**128**	**45**

(1) Average Monthly Precipitation in inches over a 5-yr span (2005-2010) in Napa CA. (NOTE: Napa Ca, is 8.75 mi north of Solana Fairgrounds. Data taken from Station #109 CIMIS)

(2) Average Evapotranspiration Rate in inches over a 5-yr span (2000-2004) in Napa CA. (NOTE: Napa Ca, is 8.75 mi north of Solana Fairgrounds. Data taken from Station #109 CIMIS)

(3) Direct Precipitation equals the area of the lakes multiplied by Precipitation (1)

(4a) Non Irrigated (Storm) Runoff equals the sum of all the non irrigated land use areas of the project (not including the lakes) multiplied by the Precipitation (1) and the runoff coefficient.

(4b) Irrigated (Storm) Runoff equals the sum of all the irrigated land use areas of the project (not including the lakes) multiplied by the Precipitation (1) and the runoff coefficient.

(6) Total Input per month equals the sum of (3), (4a), and (4b)

(7) Direct Evaporation equals the monthly Evapotranspiration Rate (2) multiplied by the area of the lakes.

(8) Total irrigation volume demand for turf land use = (ET - Precipitation) x (plant factor / irrigation efficiency) x irrigation turf area divide by 12 to get AC-ft.

(9) Total irrigation volume demand for plant land use = (ET - Precipitation) x (plant factor / irrigation efficiency) x irrigation turf area divide by 12 to get AC-ft.

(10) Lake Demand is the difference in Lake Inputs (6) and Outputs (7), equal to zero if Inputs exceed Outputs.

(11) Turf irrigation demand (8) minus excess water supply available from the lakes.

(12) Plant irrigation demand (9) minus excess water supply available from the Lakes after turf irrigation use (8).

(13) Sum of the direct evap. (10) and the irrigation demands (11), (12)

(14) Sum of the total input per month (6) minus the sum of the Direct Evap. (7) and the irrigation demands (8), (9). If the sum of (7), (8), (9) is greater than (6), the cell reads zero, if not ((6) - (the sum of (7), (8), (9)) is entered.

Table 3: Draw Down Table

Lake Draw Down Calculations

Version 2.0 (Revised 04-26-05) by Eric Grau

PROJECT NAME:	Solano 360
JOB NUMBER:	9366E
PROJECT LOCATION:	Vallejo, CA
PREPARED BY:	rjo
DATE:	8/21/2012

1. DATA:

Lake Surface Area:	234352	SF.	Normal Water Surface Elevation:	83.0	Feet
Irrigation Demand Rate:	600	GPM	No. of Hours of Irrigation:	8.0	Hours
Water Supply Flow Rate:	207	GPM	Irrigation Starting Time:	12:00 AM	

2.CALCULATION - HOURLY DRAW DOWN TABLE:

Time	W.S. Elev. (FT)	W.S. Drop (IN)	Change in Volume (Gallons)
12:00 AM	83.00	0.00	-
1:00 AM	82.99	0.16	23580
2:00 AM	82.97	0.32	47160
3:00 AM	82.96	0.48	70740
4:00 AM	82.95	0.65	94320
5:00 AM	82.93	0.81	117900
6:00 AM	82.92	0.97	141480
7:00 AM	82.91	1.13	165060
8:00 AM	82.89	1.29	188640
9:00 AM	82.90	1.21	176220
10:00 AM	82.91	1.12	163800
11:00 AM	82.91	1.04	151380
12:00 PM	82.92	0.95	138960
1:00 PM	82.93	0.87	126540
2:00 PM	82.93	0.78	114120
3:00 PM	82.94	0.70	101700
4:00 PM	82.95	0.61	89280
5:00 PM	82.96	0.53	76860
6:00 PM	82.96	0.44	64440
7:00 PM	82.97	0.36	52020
8:00 PM	82.98	0.27	39600
9:00 PM	82.98	0.19	27180
10:00 PM	82.99	0.10	14760
11:00 PM	83.00	0.02	2340
The delivery is insufficient			

SUMMARY:

System:	Proposed Lake	
Maximum Draw Down:	1.29	Inches
Time to Fill:	23	Hours/Day
Total Water Consumption:	288,000	Gallons/Day

NOTES:

1. Assumes completely vertical edge.
2. Irrigation demand to be verified prior to constr.
3. Supply rate to be verified prior to construction.

PACE

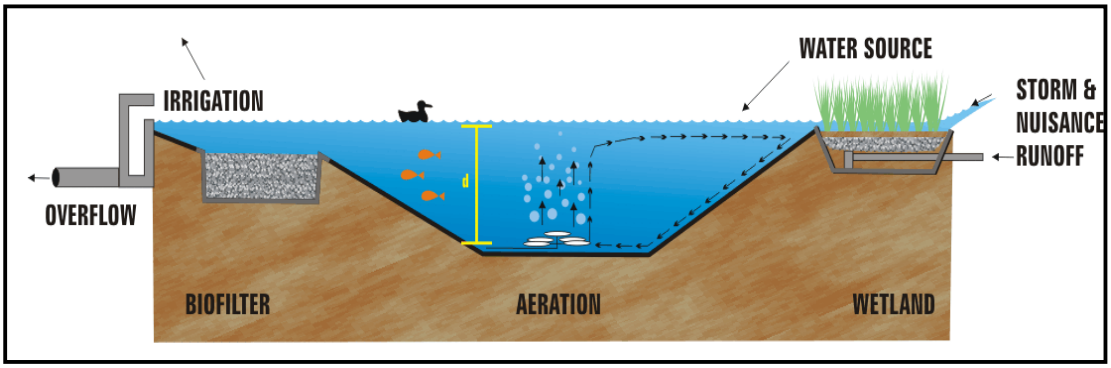
Water Quality Improvement

The new lake will have a stormwater treatment function that can utilize biologic processes for treatment of urban pollutants in runoff as well as maintaining the normal health of the aquascape system. The water quality treatment features incorporated into the new lake system includes: aeration, lake biofilters, wetland planters, and vegetated pretreatment basins or wetland filters. These features function together as an effective system to manage the urban storm runoff quality and the health of the new lake to ensure that any discharges to the adjacent Lake Chabot have an improved quality.

Treatment of runoff and management of water quality relies on re-creation of the natural chemical and biological processes within the lake system resulting from a unique combination of different layers of treatment and is schematically illustrated on (*Figure 1)*. The general treatment processes for the different target pollutants include:

1. Filtering suspended solids in pretreatment wetlands.
2. Reduced concentration of dissolved pollutants, nutrients, and salts through flushing of the lake water volume by utilizing the lake as the irrigation supply source.
3. Reduction of nutrient concentrations from inflows, Nitrogen and Phosphorous, and prevention of algal blooms by using constructed gravel biofilters bed that relies on "biological filtration."
4. Maintaining oxygen levels through aeration promoting oxygen exchange to prevent anaerobic conditions which allows natural process to occur such as denitrification for removal of nitrogen.
5. Removal of BOD and heavy metals through wetland planters.
6. Collection of large sediments and floating debris at centralized outfall boxes to the lake system with debris collection facilities and sediment traps.
7. Pretreatment and primary control through wetland water quality filters designed as attached-growth biological reactors.

Figure 1: Stormwater Treatment and Water Quality Management Systems



a. *Water Quality Pre & Post Development*
The water quality elements work either through management of urban storm water runoff or through lake water quality maintenance to ensure that the water within the lake and any discharge from the Solano 360 development is of the same or better quality than that discharged prior to development.

b. *Aeration*
Aeration for the new lake is provided via a fine bubble diffusion system placed at the bottom of the lake. *Exhibit 1*. As air temperatures warm in the spring and summer, the upper layer(s) of the lake become warmer than the ambient lake temperature. The warmed upper layers become temporarily separated from the cooler lower layers due to density differences. Sediment and lake

oxygen demand on the lower layers deplete oxygen, which has no means of replenishment as it is separated from the atmosphere until the following autumn.

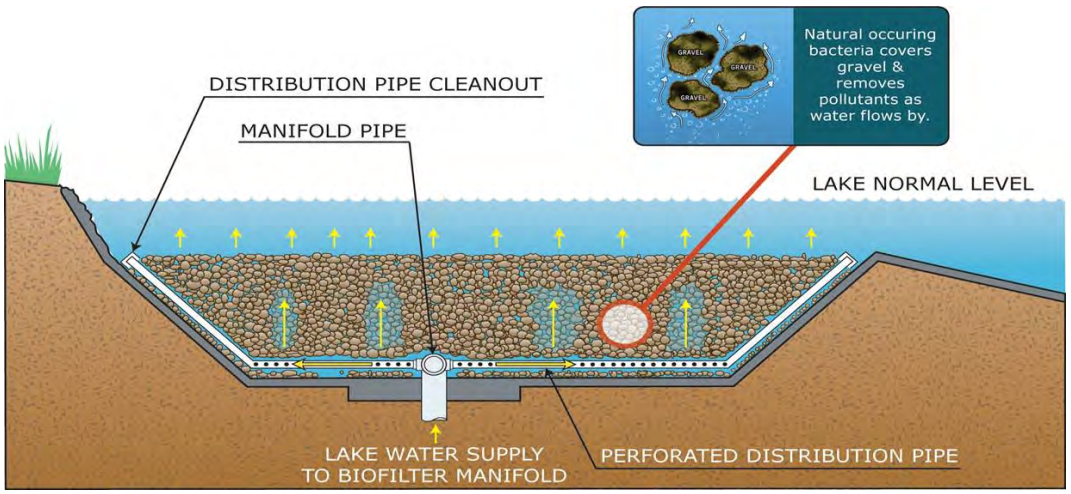
Providing compressed air to the bottom of the lake provides multiple means of the replenishing depleted oxygen. Introducing oxygen in the form of air at the bottom of the lake is achieved via 1) direct oxygen transfer from aeration-pod diffusers and 2) destratification of top and bottom liquid layers. The top of the lake (epilimnion) is exposed to the atmosphere where oxygen is transferred into solution; destratification mixes water from the epilimnion with the typically lower-oxygen hypolimnion layer. In addition to the obvious lake benefits of enhanced conditions for lake biology, specific metals are less toxic and less bio-available when oxidized. Limiting nutrient phosphorus tends to remain in its solid state in lake sediment and does not dissolve efficiently under the presence of oxygen.

Oxidized conditions within the lake column are important for aesthetic reasons. In aerobic conditions odorous compounds such as gaseous sulfur and methane will be reduced. Sulfur typically remains in a precipitated state in lake sediment under the presence of oxygen. Methane may be produced by biological fermentation under anaerobic (reduced or non-oxidized) conditions. In addition, the solubility of iron and manganese, dark colored compounds present in northern California waters, is significantly reduced under oxidized conditions. This will function to enhance water clarity and color.

c. *Biofilter*

The biofilter ponds are typically 3 to 4 feet deep, *(Figure 2)* filled with gravel media and submerged 18 to 24 inches below the lake water surface. The media provides attachment sites for activated biomass used for nutrient removal. A perforated herringbone piping network will be located beneath the media for distributed water flow upward through the media for biological treatment and physical filtration. Water will be pumped through the piping network from the recirculation system pumps *(Exhibit 1)*. Similar to a wastewater treatment nutrient removal filter, the custom gravel media biofilter is capable of high rate biological organic carbon consumption and denitrification (nitrogen conversion and removal) as compared to wetlands. Combined areas of aerobic and anoxic conditions in the biofilter, particularly on the biological flocs, provide an ideal environment for aerobic BOD reduction and nitrification and anoxic nitrate reduction. In addition, phosphorus removal via physical filtration and biological uptake has been shown in the biofilter. Coliform, an indicator of pathogens, may be effectively removed by biological predation in the media biofilters.

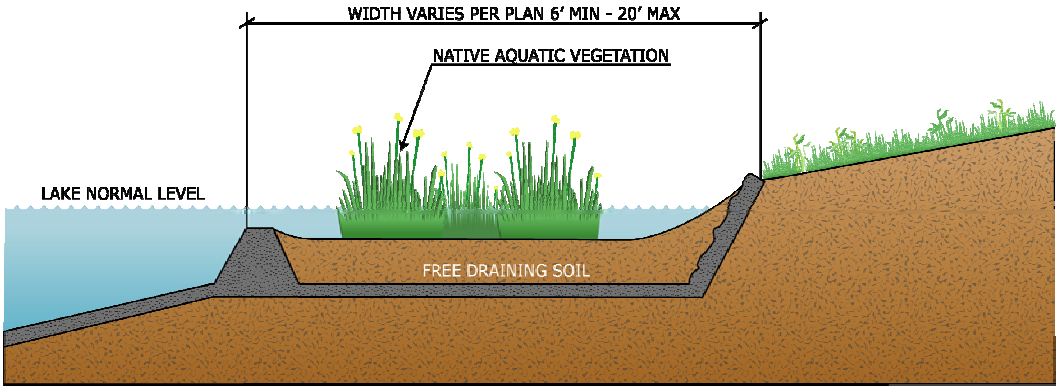
Figure 2: Biofilter System



d. *Wetlands*

Lake water quality is further enhanced and supported by submerged wetland planter areas placed along the lake edge. This water quality enhancement measures is unique and desirable in that they promote and enhance water quality through naturally occurring biological processes, as opposed to costly and potentially environmentally harmful chemical treatment systems. (*Figure 3*)

Figure 3: Planter

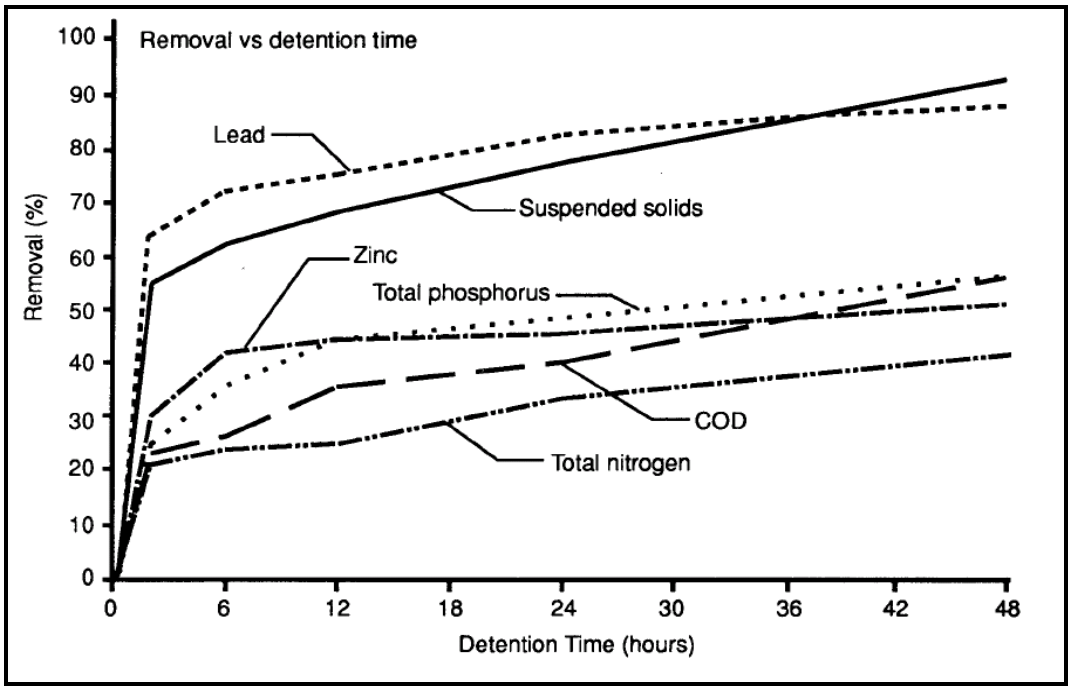


Section at Aquatic Planter or Wetland

e. *Pre-treatment of Stormwater*

The first line of stormwater treatment will occur in the wetland water quality filters situated at the outfall from each drainage area. The filters will consist of organic-rich sediment with beneficial submergent and emergent macrophytes. Adequate detention in the filters will provide primary treatment of first flush storm and nuisance flow. (*Figure 4)* provides empirical data of an extended dry detention basin from the State of Minnesota BMP Handbook. Detention time exceeding 6 hours is minimal and time of 24 hours is preferable. The outfalls from the drainage areas will discharge to water quality filter basins (extended detention basin BMPs) for a quantity of time exceeding 24 hours.

Figure 4: Detention Data



f. *Circulation*

In addition to the biofilter pumping system, additional pumps will circulate the lake water at various points of the lake geometry that might lend itself to stagnation. The circulation pumps will also assist in attaining the required flow rates that would be required for any aesthetic waterfalls or geysers that may be within the lake.

g. *Water Replacement*

Due to the continual and daily nutrient loading occurring in lakes (from various sources including birds, landscaping, urban runoff, etc.) and the subsequent difficulty in maintaining low concentrations of nutrients which contribute to poor water quality, irrigation water will be taken out of the lakes to be replaced with makeup water with higher water quality. It is proposed that this will be done through the use of lake water for irrigation.

Lining System

For a typical manmade lake, either synthetic membrane liner such as a geomembrane liner or soil liner using chemically treated soil or clay is used in lake design.

a. *Soil Liner*

A soil liner is a layer of low permeability soil installed in the bottom of a lake to reduce water infiltration. Typically a clay-rich soil is selected. It has not been determined if a suitable local soil is available. Refer to Preliminary Geotechnical Report by ENGEO for additional details. Soil liner will require certain soil properties with low permeability. The soil will be tested to determine the amount of soil sealant that will be required at this site. The soil sealant is then mixed in pre-measured quantities with the soil using conventional earth moving equipment. The treated soil is then compacted in two consecutive six inch layers. Typically the lake or pond shall be over excavated by the specified liner thickness with side slopes no steeper than 3:1.

b. *Geomembrane Liner*
The lake will could also be lined with a geomembrane liner and will have a constructed lake edge system. A proposed submerged concrete lining to a depth of 18-inches below the water level would be installed around the perimeter that extended out six-feet from the edge to address the safety concerns and provide protection for the geomembrane liner in the shallow areas. The lining beyond the concrete ledge will be covered with a 12-inch protective soil cover.

Lake Geometry

The total project area is 149.1 acres including the 5.4 acre lake. The site is relatively flat, and by creating a lake, excess earth will be generated. This earth can be spread within the project site to raise the lots. The pad elevations will need to be designed to optimize the site drainage system.

A critical aspect of a water feature design affecting operating characteristics and water quality is the horizontal layout and geometry or lake cross section. The proposed lake system is proposed to be situated as part of the plan formulation process to be aligned within the backbone of the project so that it would serve as the primary stormwater conveyance system.

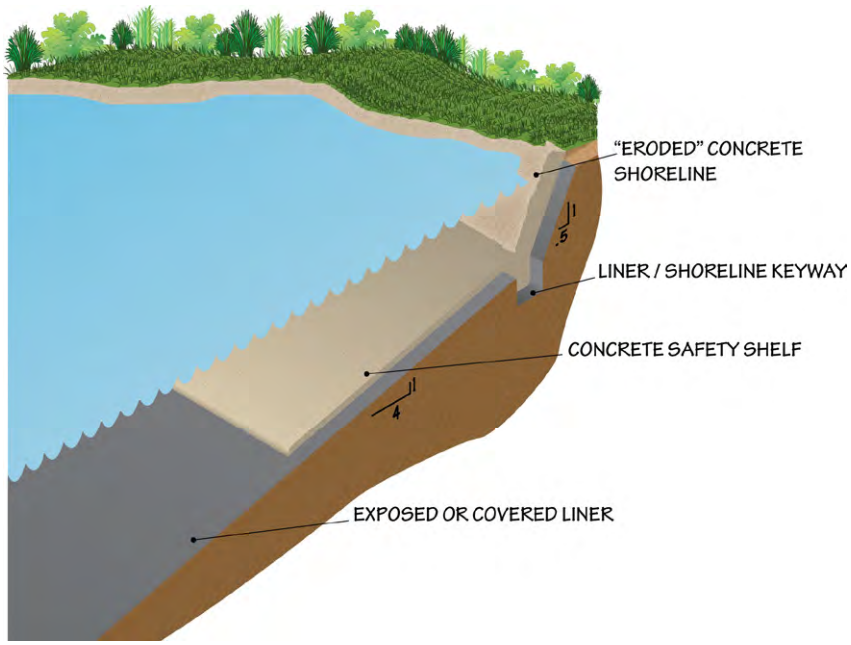
The other important characteristic of the geometry influencing lake quality is the average operating water depth, since this determines the effects of temperature and biological reaction time increases with temperature. An average operating depth of eight feet will eliminate light penetration, maintain lower average temperature, allow temperature stratification, and minimize evaporation. In addition, safety issues are a critical item that had to be addressed in the lake section since there are commonly regulations limiting public accessibility to open water bodies. A proposed submerged concrete lining to depth of 18-inches below the water level would be installed around the perimeter that extended out ten-feet from the edge to address the safety concerns and provide protection for the geomembrane liner in the shallow areas. The steepened shoreline edge treatment extends six-inches above the normal operating water surface elevation to provide a lined freeboard. The remainder of the lake bottom section would be constructed at a 4:1 slope.

Lake Edges

There are several shoreline types that will be incorporated into this project.

a. *Eroded Concrete*
This shoreline is comprised of a 3 inch thick 24 inch high reinforced vertical concrete veneer with keyway at 0.5 to 1 slope, including 6 inch free board, and a 2 inch thick 8 feet to10 feet wide concrete shelf. *(Figure 5)*The concrete shelf has a slope of 4:1. To match the overall landscape, the shoreline is naturally stained concrete with a natural erosion effect. Turf or grasses will be planted directly adjacent to the lake edge. The 6 inch lined freeboard will accommodate lake water surface variation. This is a cost effective option and it will use less landscape space at the shoreline. It also requires the least amount of maintenance compared to other shorelines. Water surface fluctuation within +4 and -12 inches will not affect integrity of the lake edge. The erosion potential is minimized with an eroded concrete shoreline. The negative side of the eroded concrete shoreline is the exposed concrete; even though it is stained and eroded, the vertical edge is not aesthetically pleasing especially when the water surface is lower than normal.

Figure 5: Eroded Concrete Shoreline

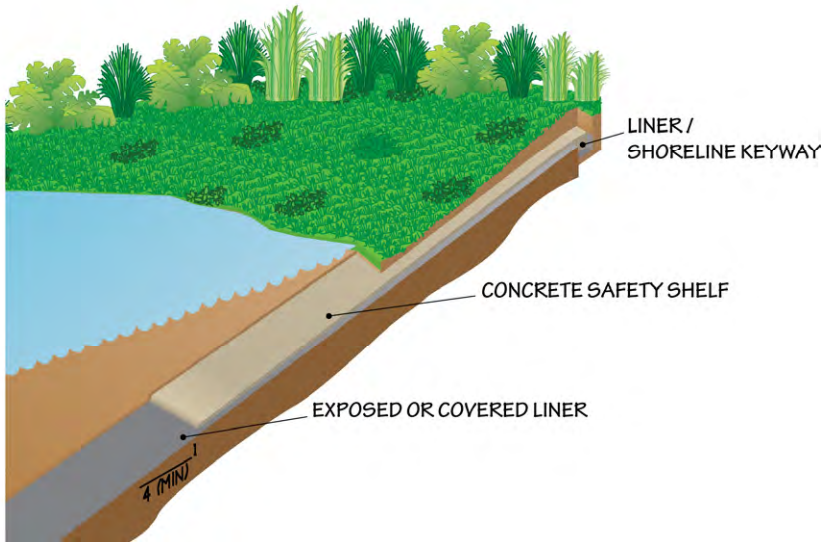


b. *Natural Grass*

This shoreline is another option ideally for golf course environment. Grass will be planted over 12 inch select soil above the liner. Due to water surface wave action caused by wind, soil erosion is a concern for this option. If geomembrane liner is used, an intense maintenance program is required to keep the lake geomembrane liner covered and protected from U.V. light at all times.

To prevent the geomembrane liner from exposure to sun light due to soil erosion, a 2 inch thick concrete veneer with keyway can be installed below the 12" soil cover. The concrete veneer will be exposed instead of the geomembrane liner where soil erosion occurs, until the soil and grass are restored. *(Figure 6)*

Figure 6: Grass Shoreline



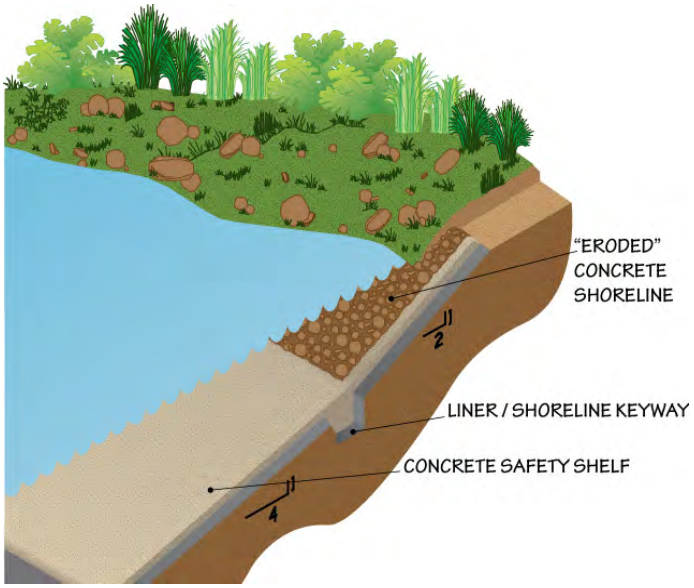
The construction cost of the grass shoreline without concrete veneer will be less than that of eroded concrete shoreline. However, the maintenance cost will be high. Maintenance activities for the grass shoreline include routine checking and inspection, replacing eroded soil and replanting grass, repairing geomembrane liner if it is damaged by UV light, and removing the eroded soil from lake. The addition of concrete veneer will increase the construction cost, higher than the eroded concrete veneer option. To avoid the appearance of concrete at lake shoreline, replacing eroded soil and replanting the grass are still necessary.

Grass shoreline should not be used where lake water will overflow out of the lake or where storm water will flow into the lake over shoreline. A special cut off wall shoreline detail shall be applicable.

c. *Natural Shoreline*

This shoreline lake edge consists of a reinforced concrete veneer with keyway to stabilize the underlying geomembrane liner if a geomembrane liner is used. At the shoreline is a concrete lake edge consisting of concrete and embedded cobbles. *(Figure 7)* A natural soil groundcover is overlain on top of the concrete/cobble surface above the normal water level elevation. Dense native grasses will be planted directly above the sloping natural groundcover to provide stabilization of the overlying soil and provide water quality enhancement of overland flows. Six inches of lined freeboard will be designed above the normal water surface elevation. Wind action promoting waves in Westside Lake may erode specific areas of natural soil cover down to the concrete/cobble shoreline; however, as the soil erodes, the stained concrete and cobble is exposed and appears natural. This is a better alternative than soil erosion than exposes the liner below. The operating water surface shall vary slightly (<2") during non-storm events for prolonged periods of time during lake fill using make-up water. During major winter storm events when the level temporarily increases, the vegetation above the shoreline embankment will be temporarily submerged for a period of days. The lake will return to normal elevation once the storm water recedes. This shall not impact the vegetation negatively. The natural shoreline option can be blended with surrounding landscape smoothly. The cost is higher than eroded concrete shoreline and also requires little maintenance.

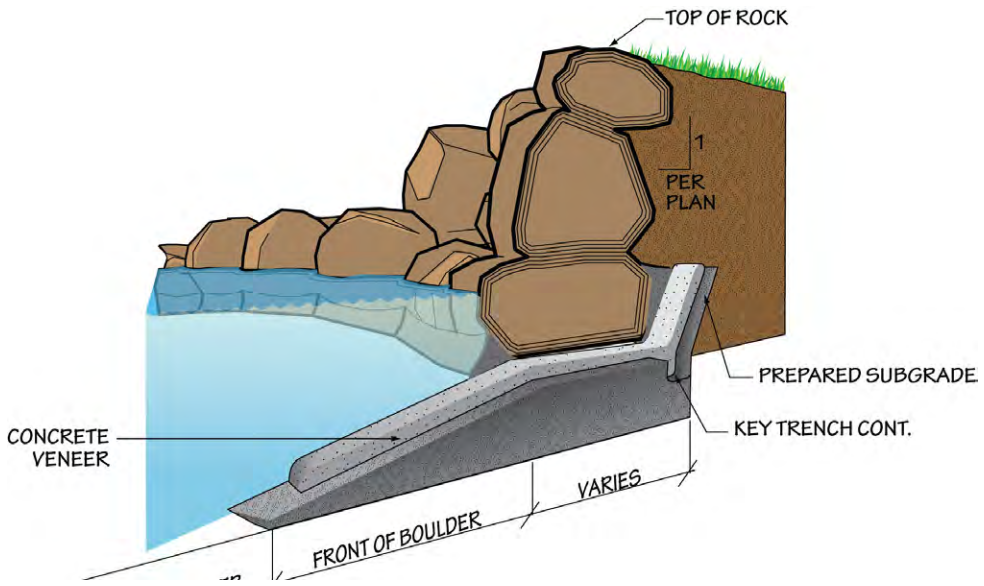
Figure 7: Natural Shoreline



d. *Boulder Shoreline*

This shoreline is comprised of a 6 inch thick 24 inch high reinforced vertical concrete veneer with keyway at 0.5 to 1 slope, including 6 inch free board, and a 6 inch thick 8 feet to10 feet wide concrete shelf. *(Figure 8)* The concrete shelf has a slope of 4:1. To match the overall landscape, the shoreline has boulders placed along the edge. Turf or grasses will be planted directly adjacent to the lake edge. Water surface fluctuation within +4 and -12 inches will not affect integrity of the lake edge.

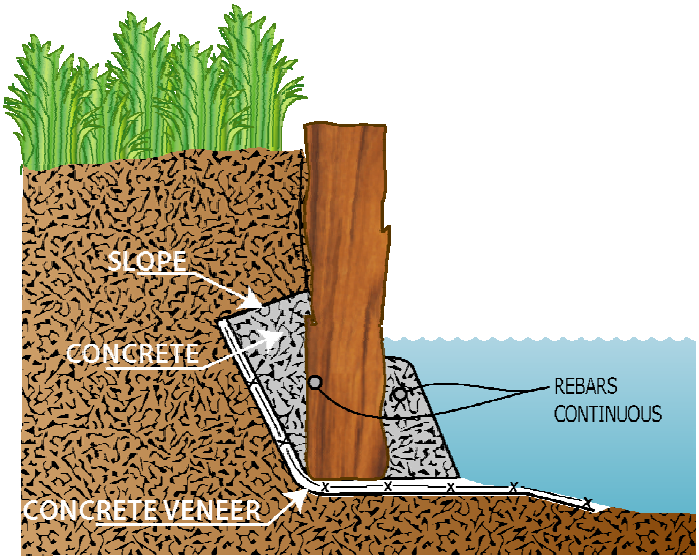
Figure 8: Boulder Shoreline



e. *Bollard Shoreline*

The Bollard shoreline is similar to the boulder shoreline except that the edge is comprised of recycled timber up to 24 inches in diameter. The concrete shelf has a slope of 4:1 to match the overall landscape. *(Figure 9)*

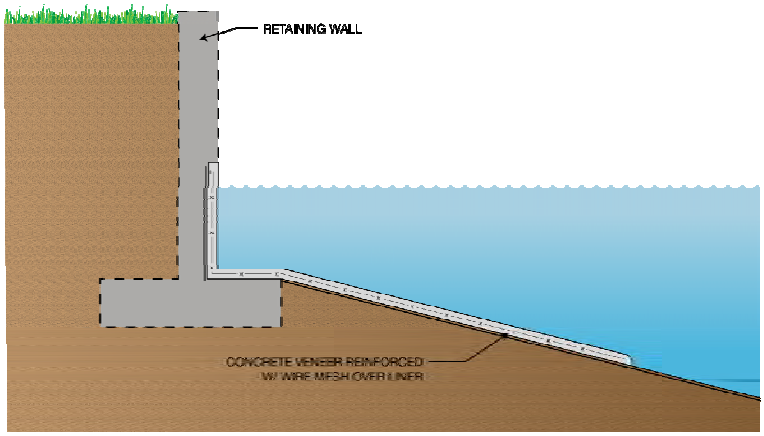
Figure 9: Bollard Shoreline



f. *Bulkhead Shoreline*

The bulkhead shoreline is similar to a retaining wall shoreline. The shoreline consists of a 2 inch thick concrete veneer reinforced with an octagonal wire mesh over geomembrane liner which is attached by a pin and strap. The bulkhead shoreline also consists of a retaining wall having class II backfill for support. This type of shoreline does not require a lot of space and has relatively low maintenance cost. *(Figure 10)*

Figure 10: Bulkhead Shoreline



Shoreline Safety

The safety of the public is a primary concern of lake designers, and the lake will be designed to provide a safe shoreline environment. The shoreline will be constructed with a maximum water depth of 18 inches at the edge, bordered by a gently sloping submerged concrete shelf that extends to a depth of approximately 4 feet creating a "safety ledge." The shallow edge allows anyone who might accidentally fall into the lake to easily exit the lake. The engineered shoreline for this project will generally consist of two types, either a vertical concrete bulkhead or an eroded concrete sloping shoreline. The primary function an engineered shoreline is to prevent erosion from wind waves. The eroded concrete shoreline will have a slope at the immediate water edge will be no steeper than 1:1 and the roughened concrete and rock provide secure footing for anyone who needs to get out of the lake. The engineered shoreline will extend above the normal operating level of the lake an addition 24" to 30" in order to provide sufficient freeboard for surcharge storage of stormwater within the lake. Beyond the immediate face of the submerged shoreline, a submerged concrete safety ledge (roughened to resemble soil or rock) will gradually lead to deeper water. This gentle slope of approximately 4:1 (horizontal:vertical) is steep enough that anyone wading into the lake will be aware that the water is getting deeper toward the middle, but flat enough that the wader can easily retreat from the lake. Beyond the four foot depth a liner system on the bottom over the soil will extend at a slope that may be up to a maximum 3.5:1 (H:V), but 4:1 preferred. The overall effect of the safety edge is to provide a situation in which nobody can accidentally find themselves in deep water. There are no specific safety regulations or public health/building codes, which require fencing of open water bodies. Fencing is required by California Health and Safety Codes for swimming pools which are defined as water bodies with surface area less than 20,000 square feet. The lake has a surface area that exceeds this definition so fencing is not required. Safety liability is limited to duty of care through posting warning signs.