December 18, 2012

Lisa Gibson
U.S. Army Corps of Engineers
1325 J Street, Room 1350
Sacramento, CA 95814

Re: Updated Folsom South Section 404(b)(1) Alternatives Analysis (SPK 2006-00035)

Dear Ms. Gibson:

Please find enclosed a revised version of the Section 404(b)(1) Alternatives Analysis Report prepared for the Folsom South Project (SPK 2006-00035). In addition, below we have prepared responses to your August 20, 2012 comments on the previous (June 29, 2012) version of the Alternatives Analysis Report.

A. Overall Comments: These are common issues I saw throughout the document that need to be addressed.

1. *The City of Folsom is requiring the 30% open space for the entire SPA. For the alternative drainages in which we requested information on why they cannot be avoided, this would add additional open space to the City's 30%. Therefore, I think that I would like information on whether it is possible to retain the amount of open space currently under the Proposed Project, while avoiding some of the other features. This may be done by potentially reducing the buffer widths along some of the other drainages currently proposed to be preserved. Currently, within the SPA, the buffer from Alder Creek is a minimum of 100' on either side. Within the other "secondary" drainages, the buffer is 75', which includes a 25' "preserve" and 50' of open space, which would also include trails. You should look at some of these other, smaller drainages, and see if there are areas where the buffer widths can be reduced from 75' to 25' or 50'. This would provide you with additional areas for development, while still meeting the 30% requirement.*

The potential reduction of buffer widths has been examined in light of the Proposed Project. Within areas not otherwise constrained by slopes, a potential gross land use area acreage gain of approximately eight acres would be possible with incorporation of reduced buffers.

In addition, the portion of the land plan in the Folsom South wetland permit located just east of Scott Road along the north property line has been revised to incorporate and preserve Native American bedrock mortar sites. Specifically, two sites were found and the easternmost site enlarges the open space area and the westernmost site will bifurcate Parcel 130. The result to the land plan is greater open space in these areas and less multi-family low density land to develop.

As summarized below in **Table 1**, MLD, MMD, MHD, and SFHD land use acreages would be increased, while CC, PQP, and P land use acreage gains would be negligible.

Table 1 — Reduced Buffer Land Use Summary

Land Use	FPA Approved Lot Area (acres)	Area Gained Due to Reduced Setback (acres)
Single-Family High Density (SFHD)	184.72	1.36
Multi-Family Low Density (MLD)	92.65	3.66
Multi-Family Medium Density (MMD)	13.62	1.32
Multi-Family High Density (MHD)	9.11	1.27
Community Commercial (CC)	0.72	0.09
Public/Quasi-Public (PQP)	79.63	0.06
Parks- Neighborhood (P)	37.82	0.90
Total	**418.27**	**8.66**

The resulting findings, as presented in the summary of the revised Alternatives Analysis Report, conclude that the "Reduced Buffer Alternative" would consist of a land use configuration modified to incorporate a reduction in buffers along select drainage segments throughout the Folsom Plan Area Specific Plan (FPASP), resulting in an approximate gain of eight acres of developable land. As shown in **Table 2** and **Table 3**, this gain in land use potential is partially balanced by the incorporation of additional preserved areas of open space within Lots 150 through 154 relevant to cultural resource preservation, as well as an additional loss of 2.42 acres of SFHD and 0.94 acre of P for preservation of the additional drainage segment within the northwest corner of Lot 111 (**Table 3**).

Table 2 — Cultural Resource Site(s) Preservation Land Use Summary

Lot Number	Land Use	FPA Approved Lot Area (acres)	Revised Development Area due to Cultural Resources Preservation (acres)	Net Area Changes Due to Cultural Resources Preservation (acres)
150, 153, 154	Multi-Family Low Density (MLD)	27.38	26.41	-0.97
151	Multi-Family High Density (MHD)	5.70	6.17	0.47
152	Mixed Use (MU)	6.52	6.77	0.25
	R/W	3.78	1.88	-1.90
	Total	**43.38**	**41.23**	**-2.15**

Table 3 — Lot 111 Drainage Segment Preservation Land Use Summary

Lot Number	Land Use	FPA Approved Lot Area (acres)	Revised Development Area Due to Preservation of Lot 111 Drainage Segment (acres)	Net Development Area Changes due to Preservation of Lot 111 Drainage Segment (acres)
134, 142	Single-Family High Density (SFHD)	79.10	76.68	-2.42 (41 lots)
135	Public/Quasi-Public (PQP)	9.89	10.00	0.11
136	Parks- Neighborhood (P)	11.70	10.76	-0.94
	Total	**100.69**	**97.44**	**-3.25**

The land use summaries quantifying estimated changes in land use areas are based on best available current project-specific preliminary engineering design data and are approximate. Final design may ultimately modify net acreages by land use. However, the resulting land use configuration will be subject to the FPASP cap for total residential units. In summary, as shown in **Table 4**, the net developable land use area gained by the reduced setbacks along select drainage segments within the FPASP totals approximately three acres.

Table 4 — Net Estimated Developable Land Use Potential Gains and Reductions Summary

Description	Affected Land Use Area Changes (acres)
Developable Land Use Potential Gained By The Reduced Setback	8.66
Developable Land Use Potential Lost By the Cultural Resource Preservation Site(s)	-2.15
Developable Land Use Potential Lost By Preservation of The Lot 111 Drainage Segment	-3.25
Net Developable Land Use Potential Gained	**3.26**

2. *Provide more specifics on what the alternative would be, what would the size of the additional preserve areas be (using 25' buffers)? How much area would be lost for each particular land use (in acreage as well as # of residences if housing and sq. footage of commercial).*

Please refer to **Table 1**, **Table 2**, and **Table 3** above for a summary of land use changes resulting from reduced buffers within the project area, as well as additional cultural resource preservation, and preservation of the drainage segment crossing Lot 111. The resulting wetland preserve would encompass approximately 82 acres, including 17.285 acres of jurisdictional aquatic features, with an additional 290 acres of surrounding open space. The Reduced Buffer Alternative (LEDPA) would include trenching and culverted crossings, except in two locations where the backbone infrastructure footprint crosses Alder Creek (these impacts are analyzed by the 404 application for the backbone infrastructure), where bridge crossings would be constructed and bore and jack would be utilized for utility crossings.

Development of the Reduced Buffer Alternative would result in the fill of 7.74 acres of jurisdictional aquatic features, and incorporate an additional 0.68 acre fill required east of Placerville Payen Road, as well as project specific engineering design for proposed utility trenching and culvert crossings, ultimately resulting in a 0.12 acre increase in impacts to jurisdictional waters from that analyzed for the Proposed Project. The additional area of fill (approximately 0.68 acre) located east of Placerville Payen Road was evaluated in the Folsom South of U.S. 50 Specific Plan Project DEIR/DEIS (SCH# 2008092051), but not included in previous versions of these project-specific analyses.

Therefore, the Reduced Buffer Alternative incorporates this required additional volume of fill as shown below in **Table 5**.

Table 5 — Reduced Buffer Impacts to Jurisdictional Aquatic Features

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.360	0.126	0.219	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	4.026	1.871	3.781	9.678
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061
Slope Wetlands				
Seasonal Wetland	0.109	0.187	0.188	0.484
Seep	0.468	0.489	4.225	5.182
Other Waters of the U.S.				
Ephemeral Drainage	1.494	0.788	2.927	5.209
Intermittent Drainage	-	0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	**7.74**	**4.13**	**17.29**	**29.16**

As summarized in **Table 6**, impacts associated with proposed culvert crossings will result in a total of 0.357 acre of impacts (0.074 acre temporary and 0.283 permanent).

Table 6 — Impacts by Crossing

WATERS OF THE U.S.		ACREAGES		
Crossing Reference Number	**Classification**	**Temporary Impacts (acres)**	**Permanent Impacts (acres)**	**Total Impact by Crossing (acres)**
1-A	Ephemeral Drainage	0.006	0.013	0.019
	Riverine Seasonal Wetland	0.004	0.006	0.010
1-B	Ephemeral Drainage	0.008	0.029	0.037
2-A	Ephemeral Drainage	0.002	0.009	0.011
2-B	Ephemeral Drainage	0.003	0.024	0.027
3	Ephemeral Drainage	0.006	0.006	0.012
4	Riverine Seasonal Wetland	0.026	0.079	0.105
5	Riverine Seasonal Wetland	0.109	0.117	0.136
TOTAL	**—**	**0.074**	**0.283**	**0.357**

Although impacts to jurisdictional waters are increased within the Reduced Buffer Alternative as a result of additional impacts related to trenching and culvert installation at crossings, this alternative ultimately offers greater environmental conservation through the preservation of the two cultural sites, as well as the 0.10 acre drainage segment crossing Lot 111. A summary of the Reduced Buffer Alternative (LEDPA) is presented within the "Conclusion" section of the revised Alternative Analysis Report.

3. *I'm confused on how the loss of any SFHD area would conflict with planning principles. I don't understand how the loss of a limited amount of SFHD would make the entire project impracticable. Also, for each alternative that would result in the loss of SFHD, why can't some of the other uses be converted to SFHD, in cases where comment A (1) doesn't apply.*

The Folsom Plan Area embodies the "smart" planning principles of Sacramento Area Council of Governments' (SACOG) Blueprint, AB 375 (sustainable development) and AB 32 (California's global warming act). Whereas in the past, local planning was left to the local agencies to determine the appropriate housing mix in a proposed development, these regional and state wide laws now dictate that the housing allocation in new communities shall be a greater share of higher density and multi-family housing. The objective of these laws is to reduce the amount of global warming associated with new development by increasing higher density housing and directing the location of housing to support mass transportation options, i.e., less automobile use by the individual for commuting. These legislations and planning guidelines are fairly recent

and the Folsom Plan Area is one of the first master-planned areas that are required to comply with the laws.

The effect of these laws is that the housing ratio for single-family detached in a planned community has given way to higher density attached housing. By way of example, the Folsom Plan Area is comprised of approximately 45% single-family uses and 55% multi-family uses, whereas, north of U.S. 50 in the existing built areas of Folsom, the ratio is approximately 80% single-family and 20% multi-family. While the trend to higher density development patterns has its benefit by creating more walkable communities, lower priced housing and improved effects to global warming, it makes the financing of large scale developments troublesome.

Since the passage of Proposition 13 in 1978, jurisdictions require local developments to fund the necessary public infrastructure to serve the projects. In the 1980's, the state created Community Facility Districts (CFD's) or so called Mello-Roos districts, which allow a jurisdiction to finance infrastructure by selling bonds secured by the taxes paid by the homeowners that will comprise a community or development project. The bonds are usually scaled to the prices of a home in a community, i.e., higher priced homes can pay more in bond taxes and this in turn yields greater bond proceeds to fund infrastructure. In contrast, lower priced homes can afford less and rental units can usually afford none.

To complicate the financing of a project, the first few phases are always the most expensive because the initial water, wastewater and road improvements must be installed with the first house. For instance, the first house in the Folsom Plan Area will cost upwards of $20 million to fund water, wastewater, and roads. The only practical way to assist in the financing of these first phases is with CFD bonds.

The unintended consequences with the global warming laws is that the infrastructure burden is greater with more compact, higher density developments, yet the ability to pay for the infrastructure is significantly reduced because single-family homes are not available to fund the infrastructure. Higher density developments still require the same level of service for roads, parks, schools, open space, trails, etc.; however, this product type's ability to fund its fair share of the infrastructure is severely limited. The financial burden is shifted to single-family products, yet there is a tax sensitivity in that the buyer will refuse to buy a home if the CFD taxes become too high. The result for cities and land planners in structuring a land financing plan is to preserve as much single-family housing as possible so that it can finance a greater share of the infrastructure.

With respect to the Folsom Plan Area, the larger parcels of single-family, such as Parcel 111, are critical to the feasibility of financing the project's needs. These larger parcels will be the first phases to proceed. The land sales accompanied with the CFD bond financing will fund the infrastructure requirements for the project, which in turn will allow the higher density products to develop without having to front infrastructure improvements since these will be installed by the single-family products.

The size of the parcels for single-family products is key to the success of the builder who builds them. The builder will need parcels large enough to meet their needs. A builder will usually need a minimum of 50 acres, preferably 75-100 acres, in a parcel size to make a subdivision of

four to five models with enough homes to meet the demands of the homebuyer. The needs of the Folsom Plan Area to comply with AB 375, AB 32 and the Blueprint, the City's demands for park sites (as opposed to park in-lieu fees), the need for a comprehensive roadway system that complies with the Memorandum of Agreement between the City and County on how the Folsom Plan Area will develop, and the needs of preserving the more significant biological corridors and oak woodlands, comprise the land plan. The single-family parcels, here the SFHD product, are few and limited and those that remain in the land plan, are required to maintain sufficient size to make the project feasible with respect to marketability to builders, who in turn sell homes that finance the infrastructure necessary for the project.

4. *It would be beneficial to have a table depicting each of the alternatives, including no fill and Proposed Project. This would show the acreage of impacts to waters, the acreage of each of the land uses, the acreage of the open space areas, etc.*

A comparison matrix is presented within **Table 7** below. Please see revised Alternatives Analysis Report for additional updated tables.

5. *It would be useful to show the acreages of each of the land uses on the land use figures, as well as showing all of the waters on the site, not just the ones being preserved, but also the waters being impacted.*

Figures have been updated to show all jurisdictional features. In addition, land use acreages are summarized on updated versions of Figures 4 through Figure 10, and are summarized within updated tables within the revised Alternatives Analysis Report.

6. *I think that for some crossings within avoided areas, it may be possible to install utilities through trenching and restoring the area, and that all of the utility line installation does not have to be directional drilling.*

In addition to the incorporation of reduced buffers, the installation of utilities through trenching, rather than bore and jack installation, has been evaluated throughout the FPASP as presented by the Reduced Buffer Alternative and shown on Figure 10 of the revised Alternatives Analysis Report.

Table 7 — Comparison Matrix Table

	Proposed Project	No Fill/ No Permit Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Reduced Buffer Alternative
Proposed Land Uses (acres)[1]							
Single-Family (SF)	221.9	Undetermined	221.9	221.9	221.9	221.9	221.9
Single-Family High Density (SFHD)	243.0	Undetermined	234.9	218.5	238.7	243.0	240.1
Multi-Family Low Density (MLD)	178.6	Undetermined	175.0	174.2	178.6	178.6	184.9
Multi-Family Medium Density (MMD)	45.3	Undetermined	45.3	45.3	45.3	45.3	46.9
Multi-Family High Density (MHD)	22.5	Undetermined	22.5	20.5	22.5	22.5	22.9
Mixed Use District (MU)	19.6	Undetermined	19.6	20.9	19.6	19.6	19.9
Community Commercial (CC)	21.5	Undetermined	21.5	21.5	18.7	21.5	21.7
Parks- Neighborhood (P)	54.9	Undetermined	54.9	65.5	54.8	54.9	54.9
Wetland Preserve	97.0	260	105.0	104.0	103.0	97.0	82.0
Open Space (OS)	280.0	Undetermined	290.0	289.0	288.0	280.0	290.0
Public/Quasi-Public (PQP)	110.5	Undetermined	104.2	115.0	103.3	110.5	110.7
Major Circulation (RW, ROW, Bridges)	59.7	Undetermined	59.7	58.1	59.5	59.7	58.6
General Commercial (GC)	59.3	Undetermined	59.3	59.2	59.3	59.3	59.3
Total (acres)	**1414**	**1414**	**1414**	**1414**	**1414**	**1414**	**1414**
Developable Acreage Loss (acres)	N/A	Undetermined	29.2	22.9	21.7	1.5	+8
Residential Units & Commercial Square Feet (SF) Losses[2]	N/A	Undetermined	299 Unit	213 Units	214 Units & 30,970 SF CC	15,000 SF CC	44 Units & 870 SF MU
Impacted Jurisdictional Features (acres)[3]	7.62	0	6.28	6.02	7.07	7.62	7.74
Preserved Jurisdictional Features (acres)	17.42	29.16	18.75	19.02	17.96	17.42	17.29

[1] Derived from Current Best Available Land Use GIS Data
[2] Derived from Current Best Available Engineering Design Data and Land Use Standards (MacKay & Somps 2012)
[3] Derived from Verified Wetland Delineation GIS Data for the Folsom South Project Site, Verified February 6, 2009 (SPK-2006-00035)

B. Alternative Specific Comments:

1. Alternative 1:

a. Second Drainage Segment

(1) As we discussed in the April meeting, I do not agree that there needs to be a 75' buffer from the aquatic resource, as the drainage is fairly small and there is no adjacent riparian area. Please evaluate this alternative using a 25' buffer. Please refer to the response to A.1. above addressing buffer reductions throughout the project site.

Please refer to response to A.1. above.

(2) I do not agree that the there has to be a bridge crossing to connect the two parts of Lot 111. Please evaluate this crossing with a culvert crossing. Because the drainage is fairly small, a culvert crossing could likely be done with that is sufficiently sized to minimize direct and indirect impacts to the rest of the feature.

The crossings within Lot 111 and Lot 116 have been re-evaluated with culvert crossings, resulting in a revised Additional In-Tract Construction Cost of $147,250, as summarized in **Table 8**.

Table 8 — Alternative 1 Revised Additional In-Tract Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 109	
Water Quality Basin	$50,000
12-Inch Outfall Structure	$7,250
Lot 111	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 146	
Culvert with Headwalls, 36' X 100'	$40,000
Additional In-Tract Construction Cost Total	**$147,250**

The revised additional In-Tract Construction Cost combined with the development cost due to wetland avoidance equates to a total cost of $7,285,250 to preserve the additional wetlands identified by Alternative 1. However, Alternative 1 would result in the loss of 22 acres of developable land for every additional acre of preserved jurisdictional features. As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure required to incorporate a wetland buffer corridor (**Table 8**), the cost to develop Alternative 1 increases by $7,285,250, as summarized in **Table 9**, resulting in an adjusted total estimated development cost of $58,464,670. Although the overall Alternative 1 development cost would be less than that estimated for the Proposed Project ($65,054,100), the configuration of Alternative 1 would result in the loss of 29.2 acres of developable area and the subsequent loss of 299 residential units available for sale.

Table 9 — Costs to Preserve 1.34 Acres of Waters of the U.S. – Alternative 1

Description	Cost
Additional Development Costs Due to Avoidance of 1.34 Acre of Waters of the U.S.	$7,138,000
Additional Construction Costs Due to Avoidance of 1.34 Acre of Waters of the U.S.	$147,250
Total Increased Cost for Development of Alternative 1	**$7,285,250**

Source: MacKay & Somps, 2012

As revised, the increased development cost of $7,285,250 ($5,436,754 per additional acre of preserved jurisdictional features) coupled with the loss of 29.2 acres of development areas), and the subsequent overall loss of 299 residential units available for sale, adversely affects this development from providing a project with competitive prices. Therefore, even as revised with culvert crossings, Alternative 1 does not meet the Cost criteria.

(3) For this area, I am unsure as to why on Figure 6 it shows the "Alternative 1 Proposed Project Land Use Boundary" as substantially larger than the "Alternative 1 Proposed Preserve & Open Space Expansion." From what I can tell, there are no strange configurations to this feature that would require the development line to be that far from the feature, when the other features proposed to be preserved under the Proposed Project (which have similar configurations) do not show a land use boundary substantially separated from the open space boundary.

Exhibit ALT-1 is enclosed showing a refined land use configuration adjacent to the preserved Drainage Segment 2 proposed within Alternative 1. Under the Proposed Project, 365 SFHD units would be developed. As summarized by **Exhibit ALT-1**, preservation of this drainage segment as proposed by Alternative 1 would result in the loss of 34% of the SFHD units (124 SFHD units). In addition, we have modified the legend for Figure 6, to clarify the area designated by the thin red line to represent the Alternative 1 Focused Study Area analyzed by the Alternatives Analysis Report.

(4) The information provided states that "dividing lot 11 into two smaller neighborhoods would reduce marketability to builders…" I need more information on why this would occur.

Please refer to the discussion addressing the loss of SFHD land uses presented under A.3.

b. Third Drainage Segment

(1) See above comments B(1)(a)(1) and B(1)(a)(3) above, which also apply to this feature.

Please refer to response to A.1. above. Figure 6 for Alternative 1 has been updated.

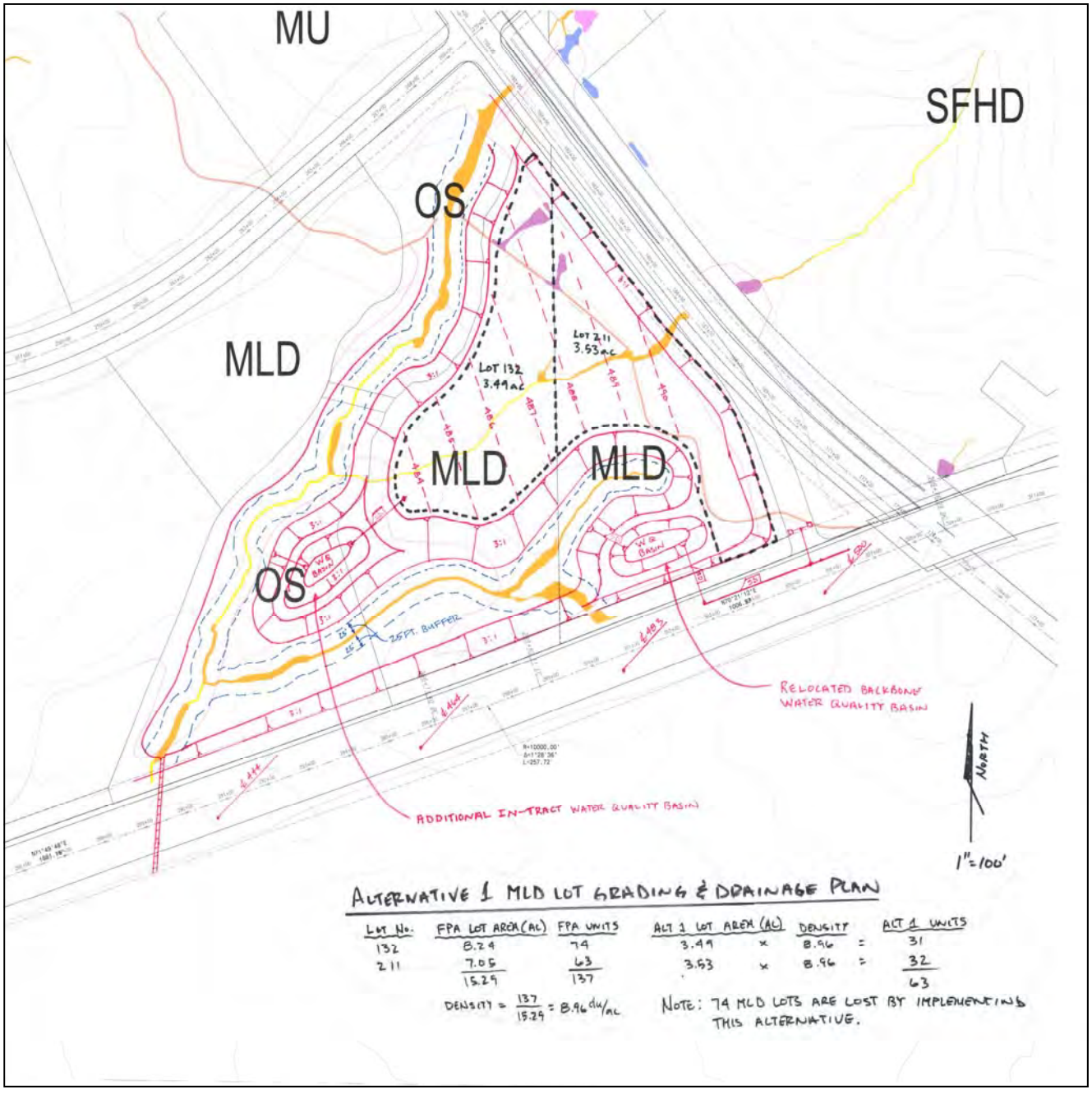
(2) I don't understand why the detention basin would need to be relocated. Currently the Proposed Project has the detention basin within a proposed preserved area. I don't understand why preserving a tributary to that channel would require the detention basin to be relocated. I need more information on this.

As shown on **Exhibit DET-1**, the relocation of Alder Creek Water Quality Detention Basin (ACWQDB) 1 to the southeast corner of Lot 162 would be required to prevent untreated and uncontrolled storm runoff releases from entering the new open space corridor. Due to the topography of Lots 109 and 162, the relocation of ACWQDB 1 would create the need for an additional water quality/detention basin on the north side of the new wetland buffer corridor to control untreated storm runoff to it from the MLD neighborhood, as opposed to the Proposed Project, which, as shown on **Exhibit DET-2** would accommodate storm water within a single basin (ACWQDB 1) and allow development of adjacent MLD land uses.

Grading and base data provided by CTA.

Note: The approved Folsom Plan Area Specific Plan allocates Lot 134 with 365 SFHD units. The preservation of this wetland feature reduces the SFHD yield of Lot 134 by 124 SFHD units.

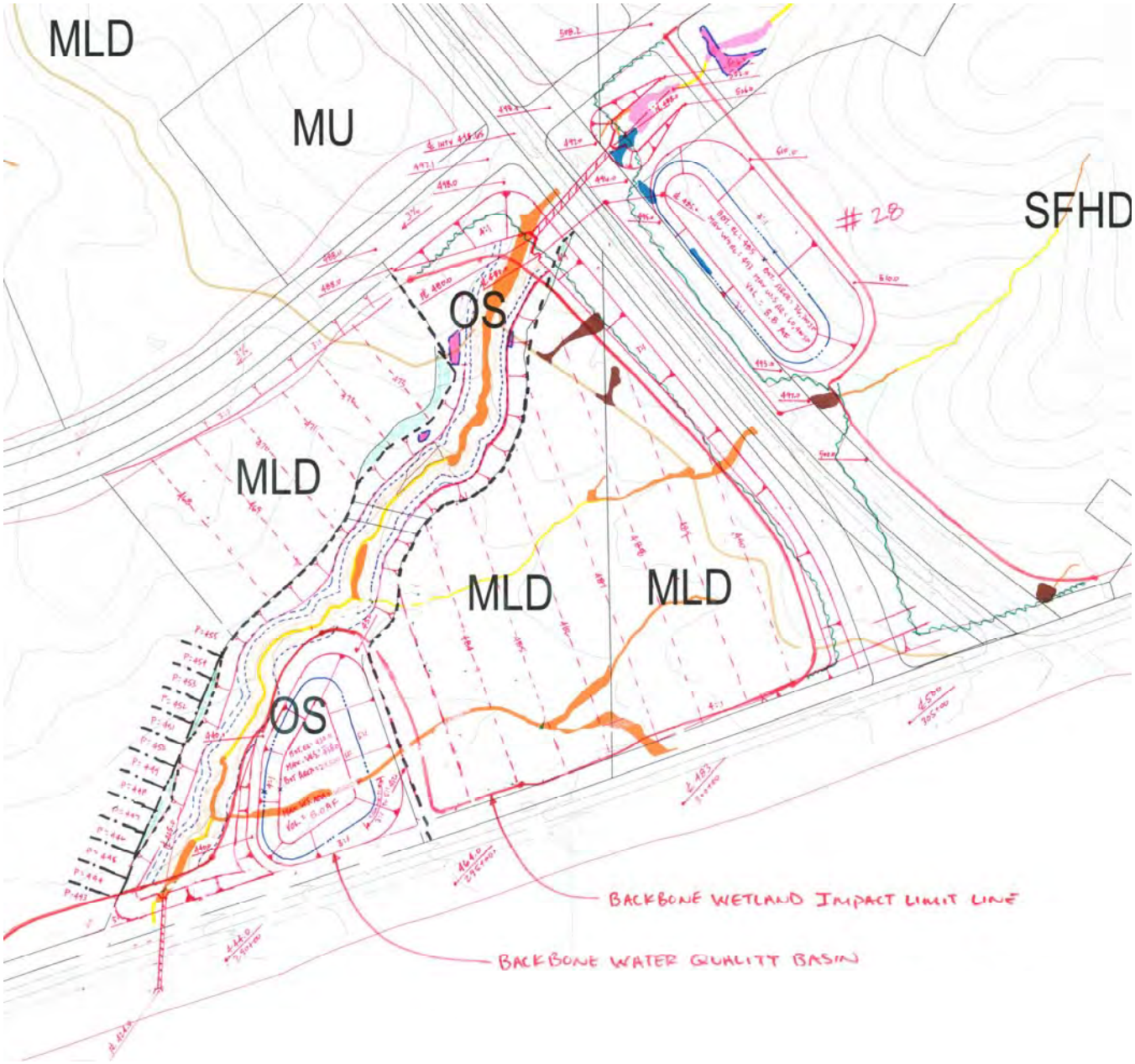
FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE	N	NOT TO SCALE	Revised Lot 134 Wetland Buffer	Layout By: MMB Date: 10/11/12	Exhibit ALT-1



Grading and base data provided by CTA.

Alternative 1 MLD Lot Grading Drainage Plan

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE	N	NOT TO SCALE	Layout By: CTG Date: 10/18/12	EXHIBIT DET-1



Grading and base data provided by CTA.

Proposed Project MLD Lot Grading Drainage Plan

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE	N	NOT TO SCALE	Layout By: MMB Date: 10/11/12	EXHIBIT DET-2

(3) The information provided states that "the reduction in size of the MLD neighborhood, and the resultant irregular lot configuration the preserved wetland features creates, would reduce the viability of the affected MLD neighborhood and may affect the success of the larger TOD site." I need more information on this. How would it affect the viability?

As shown on **Exhibit DET-1** and **Exhibit DET-2**, preservation of this drainage segment would result in a reduction of 8.32 acres of land (54% of the developable land) within the buildable area for a loss of 74 MLD lots. One of the guiding FPASP planning principles is to provide transit oriented development (TOD) multi-family residential sites at appropriate locations along the entire length of the Plan Area transit corridor. The MLD neighborhood affected by Alternative 1 is a vital part of a larger TOD site and insures that a sufficient number of multi-family housing units will be located within walking distance of the proposed transit stop located at the intersection of Street 'A' and Placerville Road.

2. Alternative 2:

a. First Drainage Segment

(1) See above comments B(1)(a)(1) through B(1)(a)(3) above, which also apply to this feature.

Please refer to response to A.1. above. Figure 7 for Alternative 2 has been updated.

The crossings throughout Alternative 2 within Lots 112, 118, 125, 128, and 130 have been re-evaluated with culvert crossings, resulting in a revised Additional In-Tract Construction Cost of $250,000, as summarized in **Table 10**.

Table 10 — Alternative 2 Revised Additional Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 112	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 118	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 125	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 128	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 130	
Culvert with Headwalls, 48' X 100'	$50,000
Additional In-Tract Construction Cost Total	**$250,000**

The revised additional In-Tract Construction Cost combined with the development cost due to wetland avoidance equates to a total cost of $5,785,000 to preserve the additional jurisdictional aquatic features identified by Alternative 2. In addition, the revised Alternative 2 Backbone

Infrastructure Cost of $100,000 includes a culvert crossing at Scott Road, as summarized below in **Table 11**.

Table 11 — Revised Backbone Infrastructure Costs — Alternative 2

Additional Required In-Tract Improvements	Cost
Scott Road	
Culvert with Headwalls, 48' X 200'	$100,000
Additional In-Tract Construction Cost Total	**$100,000**

The configuration of Alternative 2 would result in the loss of 14 acres of developable area for every additional acre of preserved jurisdictional features. As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure required to incorporate a wetland buffer corridor within the Alternative 2 development area (**Table 10**), the cost to develop Alternative 2 increases by $5,785,000, as summarized in **Table 12**, resulting in an adjusted total estimated development cost of $107,894,468. Although the overall Alternative 2 development cost would be less than that estimated for the Proposed Project ($112,188,650), the configuration of Alternative 2 would result in the loss of 23 acres of developable area and the subsequent loss of 213 residential units available for sale.

Table 12 — Costs to Preserve 1.60 Acres of Waters of the U.S. – Alternative 2

Description	Cost
Additional Development Costs Due to Avoidance of 1.60 Acre of Waters of the U.S.	$5,435,000
Additional Construction Costs Due to Avoidance of 1.60 Acre of Waters of the U.S.	$350,000
Total Increased Cost for Development of Alternative 2	**$5,785,000**

Source: MacKay & Somps, 2012

As revised, the increased development cost of $5,785,000 ($3,615,625 per additional acre of preserved jurisdictional features) coupled with the loss of 23 acres of development area (14 acres of developable area for every additional acre of preserved jurisdictional features), and the subsequent overall loss of 213 residential units available for sale, adversely affects this development from providing a project with competitive prices. Therefore, even as revised with culvert crossings, Alternative 2 does not meet the Cost criteria.

(2) Why would the neighborhood park have to be relocated?

The City of Folsom Parks Master Plan defines Neighborhood Parks as follows:

> Neighborhood Parks are areas for intense recreational activities/facilities with field games, court games, playground apparatus, picnic tables, and wading pools. Neighborhood Parks are the essential core park for residential areas, as they provide the most close-at-hand recreational facilities. Neighborhood parks should be easily accessible to the neighborhood population, geographically centered, and within safe walking and/or biking distance, and are often developed in conjunction with an elementary school.

Normally neighborhood parks serve a ¼ to ½ mile radius and serve a population of 2,000 to 5,000 or a standard residential neighborhood. The desirable size is 15 acres.

Neighborhood parks are located adjacent to elementary schools, to meet the recreational needs of neighborhood residents and provide and promote joint use activities with the Folsom Cordova Unified School District. This concept of "Joint Use" is also defined by State standards for school site selection. Therefore, the Neighborhood Park site and Elementary School site must remain adjacent to each other. Preservation of the intermittent drainage segment crossing Lot 112 and Lot 113 would bisect Elementary School 3 (Lot 112) and Neighborhood Park 3 (Lot 113), resulting in substantially reduced lots sizes (5 acres for Lot 112 and 9 acres for Lot 113). City standards for Neighborhood Parks specify 15 acres as the desirable size. Therefore, in order to meet the size criteria for Neighborhood Parks, the Park site would require an additional 6 acres and would be required to be relocated. In addition, wetland swale bifurcating these sites would be incompatible and impracticable for developing the sites for their intended uses not only due to conflicting land uses and nonconformance with existing City standards, but also safety concerns. As specified by General Plan Policy 9.11 "All parks shall be sited and designed with special attention to safety and visibility."

(3) Instead of extending this preserve to the intersection of "A" Street, what if the preserve begins at the southern end of the elementary school site? The school would then not have to be relocated. Would this alternative be practicable, and if not, why?

Preserving the wetland swale through Lots 119, 118, 113 and 112 would render those parcels too small to be economically feasible to develop. Lot 119, a Multi-Family Low Density site, would be bifurcated in two and would have insufficient area for a developer to construct a project. Likewise, with Lot 118, a single-family high density site, would be bifurcated and with insufficient area and access constraints resulting from the preserved swale would render the property undevelopable.

b. Second Drainage Segment

(1) See above comments B(1)(a)(1) through B(1)(a)(3) above, which also apply to this feature.

Please refer to response to A.1. above. Figure 7 for Alternative 2 has been updated.

(2) The document says that "reduction of residential unit count and increases in project infrastructure costs affect overall project feasibility and marketability." How would these effects make the project impracticable.

Please see response to A.3. above. In addition:

The following statement was identified as Objective 1 defined for the Proposed Project:

> "Develop a large-scale mixed-use and mixed-density residential housing development consistent with the City of Folsom's General Plan and the SACOG Smart Growth Principles."

The SFHD neighborhoods are the "Blueprint Smart Growth" alternative to lower density conventional large lot single-family development. Any loss of SFHD area conflicts with FPASP planning principles of compact development with connected and walkable neighborhoods and the defined project objectives relevant to implementing development consistent with "Blueprint Smart Growth" principles and reduces the overall marketability of the project. In addition, the size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, and arterial and collector roadways does not change due to the loss of SFHD area and associated residential units. Therefore, these costs are spread over fewer residential units increasing the proportional share of the backbone infrastructure burden. Alternative 2 therefore fails to meet the defined project purpose, as well as the Logistics and Cost screening criteria, and is therefore considered impracticable.

In addition, the portion of the land plan in the Folsom South wetland permit located just east of Scott Road along the north property line has been revised to incorporate and preserve Native American bedrock mortar sites. Specifically, two sites were found and the easternmost site enlarges the open space area and the westernmost site will bifurcate Parcel 130. The result to the land plan is greater open space in these areas and less multi-family low density land to develop.

By preserving the wetland swale depicted in Alternative 2, Lot 130 would be rendered undevelopable because between the Native American site and the swale, insufficient land and parcel configuration renders this parcel undevelopable. Likewise, the drainage swale encompasses a substantial portion of Lot 127, the multi-family high density site, resulting in an undevelopable parcel.

c. Third Drainage Segment

(1) See above comments B(1)(a)(1) through B(1)(a)(3) above, which also apply to this feature.

Please refer to response to A.1. above. Figure 7 for Alternative 2 has been updated.

(2) For the existing park site. Do you have a figure showing the proposed facilities on this site and a description of what's proposed? How would the site be configured under the Proposed Project? I spoke with the City of Folsom, and they are willing to review a proposal to have a preserve through the community park, provided the community parks within the SPA could provide for their needs.

As shown on **Exhibit CE-1**, Community Park East is envisioned as accommodating a range of active recreation uses including but not limited to adult baseball and softball, Little League baseball and youth softball; adult and youth soccer, youth football; and other outdoor activities such as swimming, basketball, tennis and sand volleyball. Community Park East is planned for Plan Area residents and will include permanent restroom facilities, parking, lighted sports facilities for nighttime use, miscellaneous site furnishings, and a community/aquatic center, inclusive of senior facilities, teen and art facilities, pre-school/day camp facilities, gym, etc. Passive recreational uses may include picnicking, strolling and exercising, since this park is located abutting a planned wetland corridor consisting of passive and preserve wetland areas.

Conceptual grading plans have been prepared to demonstrate the required extent of grading and cut/fill slopes, and the resulting "Super Pads" that would be required to preserve the drainage segment crossing the Community Park East site. As shown on **Exhibit CP-1,** the usable acreage would be confined to "islands" surrounded by cut slopes and retaining walls posing safety hazards and reducing the usable acreage from 26 acres to less than 16 acres, ultimately conflicting with the City's standards for Community Parks encompassing a minimum size of 20 acres and lacking the site's ability to support the intended uses. The City has confirmed that the preservation of this drainage segment would preclude this site from accommodating a Community Park meeting City standards (**Attachment 1**).

DOG PARK
(~3 ACRES)

PARKING
(~210 SPACES)

PLAY AREA

PICNIC AREA

TOT LOT

RESTROOM

LITTLE LEAGUE FIELD

LIGHTED BASKETBALL COURT

PICNIC AREA

BEACH VOLLEYBALL COURTS

LIGHTED TENNIS COURTS

GYM

COMMUNITY AND AQUATIC CENTER COMPLEX

SPRAY PARK

COMPETITION POOL

SYNTHETIC TURF SOCCER/ FOOTBALL FIELD

25' BUFFER, TYP.

EXISTING WETLAND

PARK BOUNDARY

OPEN SPACE

ALTERNATIVE:
SECOND SOCCER/ FOOTBALL FIELD OR ADULT SOFTBALL/ BASEBALL FIELD

Base data provided by CTA.

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

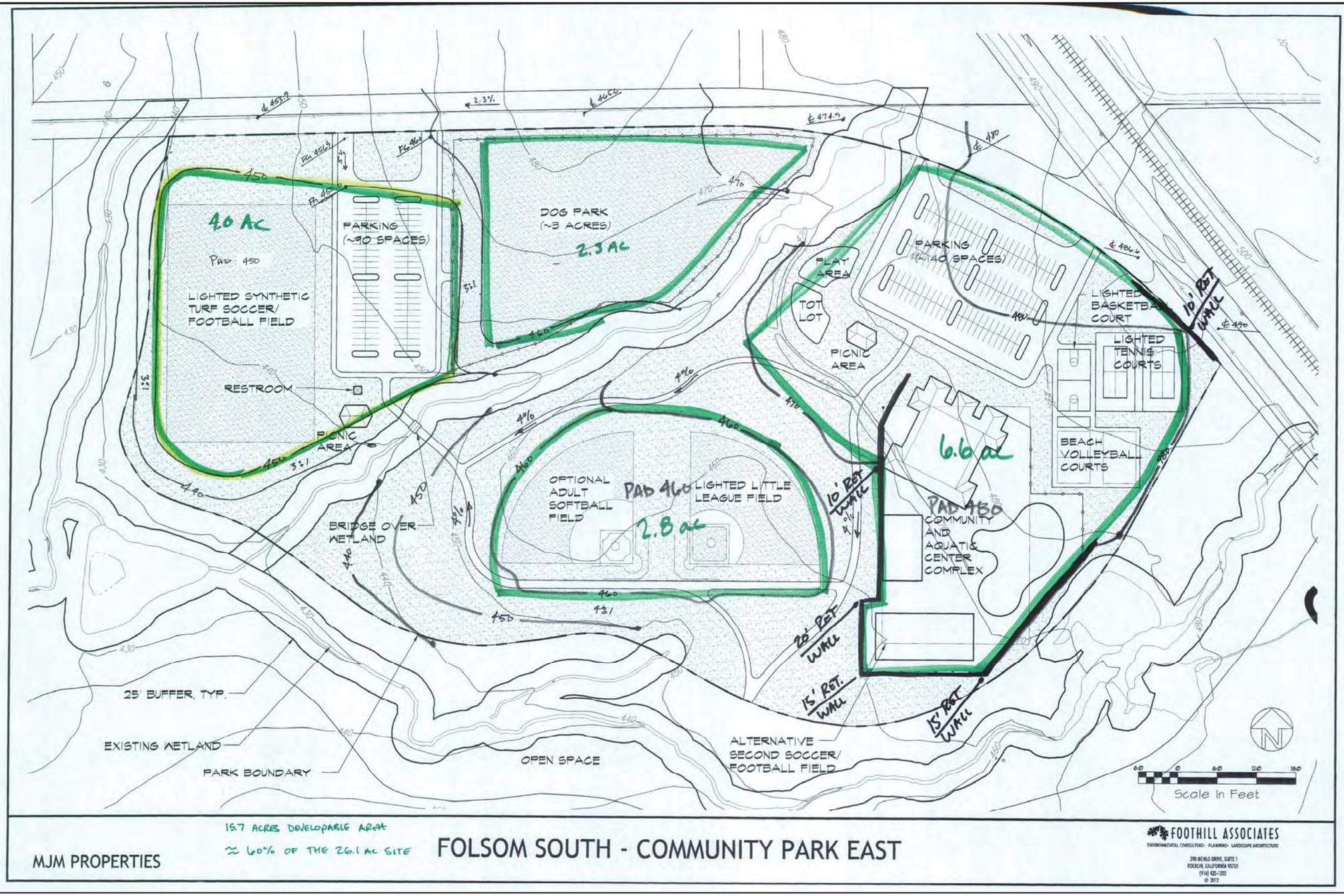
N

NOT TO SCALE

Community Park East Concept Plan

Layout By: MMB
Date: 10/11/12

Exhibit CE-1



COMMUNITY PARK EAST ALTERNATE DEVELOPABLE AREA

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE		N	NOT TO SCALE	Drawn By: DSD Date: 10/11/12	EXHIBIT CP-1

(3) If it's not practicable to avoid this feature with it extending to the northern property boundary, is it practicable to avoid a portion of the feature?

Any reduction in the size of the Community Park site would result in increased difficulty to include the facilities necessitated by the FPASP and required by City Park Standards. Preserving any portion of the drainage segment crossing the Community Park East site would involve major grading and the subsequent loss of developable land area due to slope constraints, compromising the ability of the site to accommodate necessary recreational facilities.

3. Alternative 3

a. Second Drainage Segment

(1) See above comments B(1)(a)(1) through B(1)(a)(3) above, which also apply to this feature.

Please see response to A.1 above and Figure 8 for Alternative 3 has been updated.

The crossings throughout Alternative 3 within Lots 111 and 116 have been re-evaluated to include culvert crossings resulting in a revised Additional In-Tract Construction Cost of $100,000, as summarized in **Table 13**.

Table 13 — Alternative 3 Revised Additional Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 111	
Culvert with Headwalls, 48' X 100'	$50,000
Lot 116	
Culvert with Headwalls, 48' X 100'	$50,000
Additional In-Tract Construction Cost Total	**$100,000**

The revised additional In-Tract Construction Cost combined with the development cost due to wetland avoidance equates to a total cost of $7,331,000 to preserve the additional wetlands identified by Alternative 3. However, Alternative 3 would result in the loss of 32 acres of developable land for every additional acre of preserved jurisdictional feature and would lose 214 residential units for sale.

As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure required to incorporate a wetland buffer corridor (**Table 13**), the cost to develop Alternative 3 increases by $7,431,000, as shown in **Table 14** , resulting in an adjusted total estimated development cost of $63,372,704. Although the overall Alternative 3 development cost would be less than that estimated for the Proposed Project ($66,281,400), the configuration of Alternative 3 would result in the loss of 22 acres of developable area (32 acres of developable land for every additional acre of preserved jurisdictional feature) and the subsequent loss of 214 residential units available for sale.

Table 14 — Costs to Preserve Additional 0.69 Acre of Waters of the U.S. – Alternative 3

Description	Cost
Additional Development Costs Due to Avoidance of 0.69 Acre of Waters of the U.S.	$7,331,000
Additional Construction Costs Due to Avoidance of 0.69 Acre of Waters of the U.S.	$100,000
Total Increased Cost for Development of Alternative 3	**$7,431,000**

Source: MacKay & Somps, 2012

As revised, the increased development cost of $7,431,000 ($10,769,565 per additional acre of preserved jurisdictional feature) coupled with the loss of 22 acres of development area, and the subsequent overall loss of 214 residential units available for sale, adversely affects this development from providing a project with competitive prices. Therefore, even as revised with culvert crossings, Alternative 3 does not meet the Cost criteria.

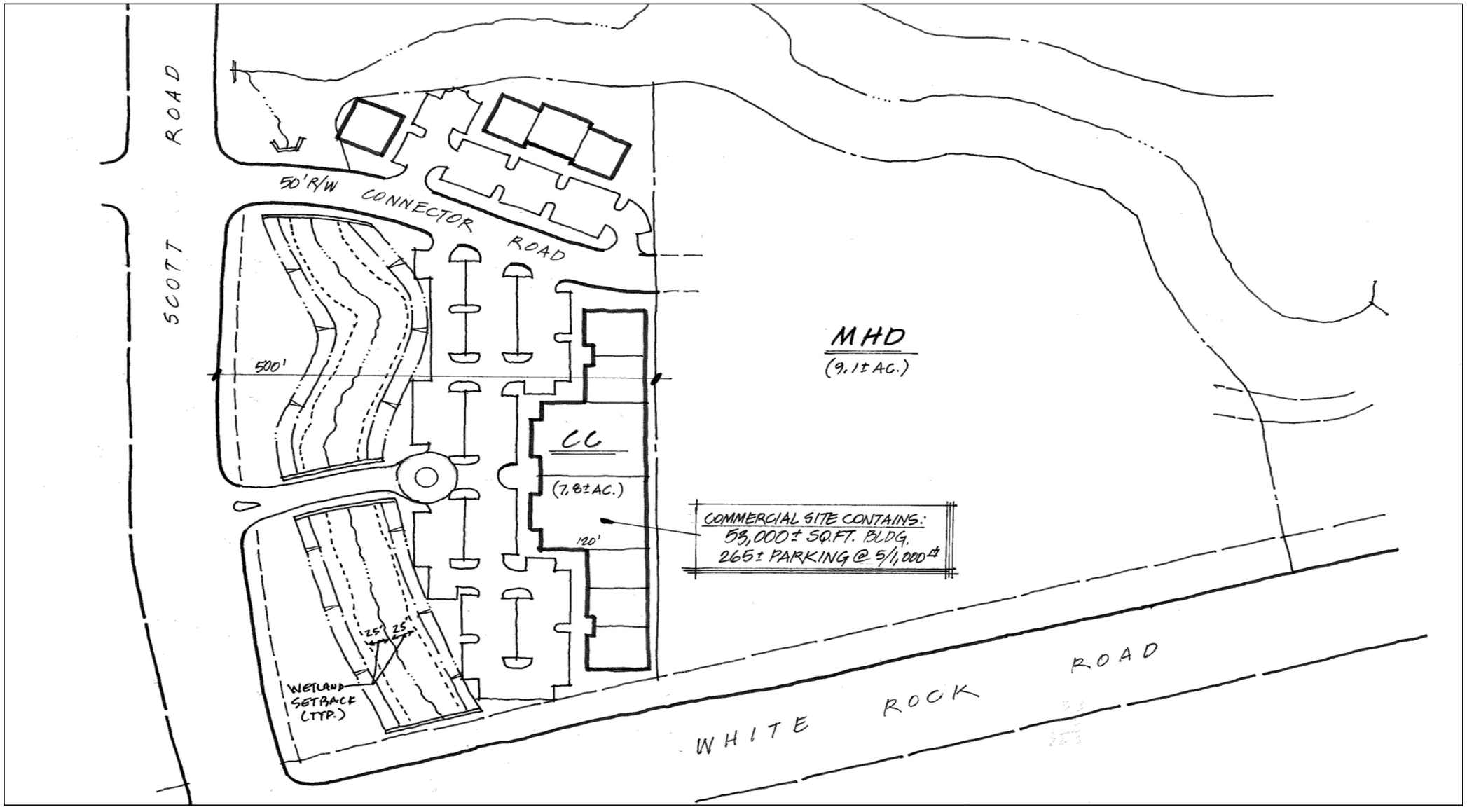
(2) *I'm unclear as to why the western portion of the community commercial site would only be useful as inclusion in the open space. Also, with smaller buffers the size of the area on the western side would be larger. Also, what if, instead of the feature that goes through the center, you avoided the feature to the southeast, which cuts through the south west corner of the MHD site?*

As shown on **Exhibit CC-1**, the preservation of this drainage segment would result in the decrease of approximately half of the Community Commercial (CC) area on this parcel, as well as the creation of a "sliver" or remainder, of land adjacent to the western border of the preserved feature, extending along the eastern edge of Scott Road. Development standards specified by the City's zoning ordinance would preclude development within the remainder, due to setback requirements, access requirements, etc., resulting in the creation of an area of land that could only be designated as open space.

In addition, the lot configuration resulting from preservation of this drainage segment would result in the need for an additional crossing, resulting in further increased development costs, and the lot will not meet the market demand for CC (This site was slated for +85,000. This layout only provides for 53,000 square feet.). The enclosed site layout shown on **Exhibit CC-1** utilizes the entire lot in order to achieve the parking and the maximum building square footage. However, delivery and fire access behind the building will more than likely be required. Thus the 53,000 square feet will be reduced even more.

(3) Although not labeled, so I'm not entirely sure, but it looks as though the majority of the northern portion of this site is a detention basin. To the east, you are proposing that the preserve include a portion of a detention basin within the avoided drainage. Why can't that occur here, where waters are not being filled for a detention basin?

The shaded area within the CC Lot represents the extent of grading required to construct proposed improvements associated with the backbone infrastructure. No detention basin is proposed here. Figure 8 has been updated to reflect the current extent of the backbone infrastructure improvements.



FOLSOM SOUTH ALTERNATIVE 1 — COMMUNITY COMMERCIAL SITE

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE		N	NO SCALE	Layout By: CTG Date: 10/11/12	EXHIBIT CC - 1

b. Third Drainage Segment

(1) See above comments B(1)(a)(1) through B(1)(a)(3) above, which also apply to this feature.

Please see response to A.1 above. Figure 8 for Alternative 3 has been updated.

(2) For this alternative, why can't you shift the elementary school to the east, to border on the preserve boundary, and shift the park to the east, to encompass portions of the drainage preserve? Then you can expand the SFHD located west of the elementary school. This would then result in the removal very little of the SFHD, which may be able to be made up through reduction in some of the buffer widths in the Proposed Project site.

Upon further review of this third drainage segment we are proposing to preserve a portion of this segment. This additional loss of SFHD was reflected in our response to your comment A1 above.

The resulting land use configuration incorporating reduced buffers along select drainage segments, incorporating additional areas of cultural resource preservation and open space, and preserving this drainage segment has been analyzed and is presented in an updated graphic enclosed within the revised Alternatives Analysis Report as Figure 10. In addition, we have included text addressing the suggested reconfiguration as part of the LEDPA presented within the revised Alternatives Analysis Report.

4. Alternative 5:

a. I think that this was created to address my original comments about having a less than 75 foot buffer. However, this was supposed to apply to changing the buffer widths for all of the alternatives, not just this alternative. Also, I'm confused as to how you would have to reduce buffer widths for all drainages except Alder Creek on the site from 75-feet to 10-feet in order to make up enough SFHD for the loss of approximately 1.4 acres on lot 111 (1,200 ft wide X 50' wide). I don't understand how you'd have to reduce the overall open space by 66 acres to account for less than 2 acres.

Alternative 5 has been eliminated from the Alternatives Analysis Report.

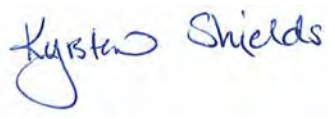
b. I don't necessarily think that this is a necessary alternative. From our previous meeting, I was more anticipating that there would be changes made to the four alternatives discussed, to reduce the buffer sizes of those, and potentially find some areas where it makes sense to reduce buffer widths on other drainages while still allowing for the 30% overall open space required by the City.

Alternative 5 has been eliminated from the Alternatives Analysis Report.

If you have any questions or need additional information about the project, please contact me at your earliest convenience at (916) 435-1202 or email kshields@foothill.com.

Once again, thank you for your continuing efforts on this project.

Sincerely,



Kyrsten Shields
Environmental Planner/ Regulatory Specialist

Enclosures:
Exhibit ALT – 1 — Revised Lot 134 Wetland Buffer
Exhibit DET – 1 — Alternative 1 MLD Lot Grading Drainage Plan
Exhibit DET – 2 — Proposed Project MLD Lot Grading Drainage Plan
Exhibit CE – 1 — Community Park East Concept Plan
Exhibit CP – 1 — Community Park East Alternate Developable Area
Exhibit CC – 1 — Folsom South Alternative 1 – Community Commercial Site
Attachment 1 — Folsom Specific Plan Area – Community Park East Design

cc: Mike McDougall, MJM Properties, LLC

Attachment 1 — Folsom Specific Plan Area – Community Park East Design

CITY OF
FOLSOM
DISTINCTIVE BY NATURE

November 21, 2012

Lisa M. Gibson
Regulatory Project Manager
USACE
1325 J Street
Sacramento, CA 95814

SUBJECT: **FOLSOM SPECIFIC PLAN AREA – COMMUNITY PARK EAST DESIGN**

Dear Ms. Gibson:

At your request, the City of Folsom has analyzed the topographical conditions of the Community Park East site in the Folsom Plan Area to determine if the creek corridor in this area could be incorporated into the park design. As part of this analysis, Foothill Design was hired to review the site topography and park facilities that are anticipated to be provided in this park. Foothill Design concluded that given the setbacks that would be required from the creek to the proposed park facilities, along with the site's 10% slope, substantial retaining walls (in some areas up to 16 feet in height) would need to be constructed. The necessity for retaining walls would result in a sizeable increase in the costs associated with the park development. In addition, the grades needed to construct the park facilities, such as playfields, would require filling of the creek areas.

We agree that incorporating the creek into the park design would be an amenity to the park. Unfortunately, it would result in a compromised park design, which does not meet the City's needs, and a significant increase in cost. If you have any questions or need additional information, please feel free to contact me at 916-355-7224.

Sincerely,

David E. Miller

David E. Miller, AICP
Public Works and Community Development Director

DEM:la

c: Mike McDougal
Robert Goss

Clean Water Act §404 (b)(1) Alternatives Analysis

Folsom South (SPK 2006-00035)

Sacramento County, California

Prepared for:

U.S. Army Corps of Engineers

On behalf of:

MJM Properties, LLC

Date:

January 6, 2011

Revised February 23, 2012

Revised June 29, 2012

Revised November 14, 2012

Final December 18, 2012

Submitted by:

FOOTHILL ASSOCIATES

Table of Contents

List of Tables

List of Figures

Appendices

1.0 BACKGROUND

This Alternatives Analysis is prepared pursuant to Section 404, subdivision (b)(1) of the Clean Water Act (33 U.S.C. § 1251 *et seq*.) and the Guidelines adopted by the Environmental Protection Agency (EPA) that implement section (40 C.F.R. Part 230). The Guidelines provide that:

> [N]o discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 C.F.R. § 230.10, subd. (a).)

Additionally, the Guidelines presume that a project that is not water-dependent (*i.e.*, does not require access or proximity to, or sitting within, a wetland) will have practicable alternatives, unless clearly demonstrated otherwise. (40 C.F.R. § 230.10, subd. (a)(3).)

The Guidelines define "practicable" as follows:

> "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."
>
> (40 C.F.R. § 230.10, subd. (a)(2); see also 40 C.F.R. § 230.3, subd. (q).)

Consistent with that definition, courts have held that the U.S. Army Corps of Engineers (Corps) has a duty to consider the applicant's statement of the project purpose when determining whether practicable alternatives exist. Additionally, courts have held that the Corps may legitimately consider economic feasibility in determining whether an alternative is practicable.

More recently, the Corps issued Regulatory Guidance Letter 93-2, which presents a Memorandum to the Field by the Corps and the EPA "to clarify the appropriate level of analysis required for evaluating compliance with the Clean Water Act Section 404(b)(1) Guidelines (Guidelines) requirements for consideration of alternatives." In that memorandum, the Corps and the EPA observed:

> *The Guidelines are, as noted above, binding regulations. It is important to recognize, however, that this regulatory status does not limit the inherent flexibility provided in the Guidelines for implementing these provisions. The preamble to the Guidelines is very clear in this regard:*
>
> > *Of course, as the regulation itself makes clear, a certain amount of flexibility is still intended. For example, while the ultimate conditions of compliance are "regulatory", the Guidelines allow some room for judgment in determining what must be done to arrive at a conclusion that those conditions have or have not been met.*

(Guidelines preamble, "Regulation versus Guidelines", 45 FR 85336 (December 24, 1980).)

After discussion of the flexibility of the Guidelines to adjust the level of analysis to take into account the relative extent of the environmental impacts and the scope and cost of the Proposed Project, the Corps and the EPA closed with this general guidance:

> *A reasonable, common sense approach in applying the requirements of the Guidelines' alternatives analysis is fully consistent with sound environmental protection. The Guidelines clearly contemplate that reasonable discretion should be applied based on the nature of the aquatic resource and potential impacts of a proposed activity in determining compliance with the alternatives test. Such an approach encourages effective decision-making and fosters a better understanding and enhanced confidence in the Section 404 program.*
>
> (U.S. Army Corps of Engineers, Guidance on Flexibility of the 404(b)(1) Guidelines and Mitigation Banking, Regulatory Guidance Letter 93-02 [Aug. 23, 1993]).

The ultimate decision regarding what is a practicable alternative must also take into account the degree of wetlands impacts at stake. As emphasized in the pertinent federal regulations, "[t]he level of documentation should reflect the significance and complexity of the discharge activity." (40 C.F.R. § 230.6(b).) Indeed, as the Corps has noted, "the level of scrutiny required by the Guidelines is commensurate with the severity of the environmental impact (as determined by the functions of the aquatic resource and the nature of the proposed activity) and the scope/cost of the project." (U.S. Army Corps of Engineers, Guidance on Flexibility of the 404(b)(1) Guidelines and Mitigation Banking, Regulatory Guidance Letter 93-02 [Aug. 23, 1993]).

A decision under the Guidelines should also avoid substantial impacts to non-aquatic environmental values. Under the Code of Federal Regulations, "[e]ven where a practicable alternative exists that would have less adverse impact on the aquatic ecosystem, the Guidelines allow it to be rejected if it would have 'other significant adverse environmental consequences.'" [40 C.F.R. § 230.10(a)] As explained in the preamble to the Federal Register notice issuing the 404(b)(1) Guidelines, this allows for consideration of "evidence of damages to other ecosystems in deciding whether there is a 'better' alternative." Hence, in applying the alternatives analysis required by the Guidelines, *it is not appropriate to select an alternative where minor impacts on the aquatic environment are avoided at the cost of substantial impacts to other natural environmental values*." (U.S. Army Corps of Engineers, Guidance on Flexibility of the 404(b)(1) Guidelines and Mitigation Banking, Regulatory Guidance Letter 93-02 (Aug. 23, 1993) [emphasis added]).

The Corps' charge to render a determination under the "alternatives analysis" must also avoid unreasonably expensive alternatives. "If an alleged alternative is unreasonably expensive to the applicant, the alternative is not 'practicable.'" (45 Fed. Reg. 85336, 85343; see also U.S. Army Corps of Engineers, Guidance on Flexibility of the 404(b)(1)

Guidelines and Mitigation Banking, Regulatory Guidance Letter 93-02 (Aug. 23, 1993).) In establishing that the definition of "practicable" depends on "cost" factors EPA stated that "[o]ur intent is to consider those alternatives which are reasonable in terms of the overall scope/cost of the proposed project." (45 Fed. Reg. 85336, 85339.)

Finally, case law also reflects several other factors that are relevant to the alternatives analysis under the 404(b)(1) Guidelines. For example, in Northwest Environmental Defense Center v. Wood (D.Or. 1996) 947 F.Supp. 1371, the court considered several factors in determining whether an alternative was "practicable" under 40 C.F.R. § 230.10(a)(2). In addressing one site the court considered the fact that "80 of the…site's 122 acres had been designated for protection under [a distinct wetlands plan]." (947 F.Supp. at p. 1378.) Moreover, the court considered relevant the fact that use of a particular alternative site would entail a more complicated acquisition process. (947 F.Supp. at p. 1378.) Finally, the court considered relevant the fact that rezoning of other sites would not be practicable. (*Ibid.*; see also Fund for Animals v. Rice (11th Cir. 1996) 85 F.3d 535, 543-544 (in evaluating environmental advantages of an alternative site, relevant factors include that (1) the county had zoned approximately 2,971 acres on the site as a conservation area, and (2) the conservation area adjoined other preserve areas off site).

2.0 INTRODUCTION

2.1 Project Location

The project site is located south of U.S. 50, within a portion of Sections 9, 10, 15, 16, 17, 20, 21, and 22, Township 9 North, Range 8 East, Latitude 38° 37' 59.11" North and Longitude 121° 6' 11.17" West, within the Lower Sacramento, Lower American (Hydrologic Unit 18020111) and San Joaquin Upper Cosumnes (Hydrologic Unit 18040013) watersheds, Sacramento County, California, and can be located on the *Folsom*, *Folsom SE*, *Clarksville* and *Buffalo Creek* USGS 7.5-minute series topographic quadrangles (**Figure 1**).

2.2 Project Setting

The Proposed Project site is currently undeveloped. The majority of the site is currently utilized for livestock grazing. In the past, portions of the western portion of the site were mined for gold and other minerals. The former Southern Pacific railroad tracks (currently the Sacramento-Placerville Transportation Corridor), are located at the base of the eastern section of the site adjacent to Placerville Road. White Rock Road defines the southern limits of the site and Scott Road divides the lowland portion of the site into roughly two halves. The western limits of the Proposed Project site lie just beyond Alder Creek and U.S. 50 defines the northern boundary of the eastern section of the site.

Surrounding land uses include undeveloped grasslands south of White Rock Road; undeveloped El Dorado County property to the east; residential, retail, and commercial land uses north of U.S. 50, adjacent to the eastern section of the site; and undeveloped properties along the northern and western boundaries of the lowland portion of the site.

The project site is included in the City of Folsom's Sphere of Influence Area (SOIA) and the city has annexed the entire SOIA, including the project site. The project site is also included in the Folsom Plan Area Specific Plan (FPASP), a comprehensively planned community that proposes new development patterns based on the principles of "Smart Growth" and Transit Oriented Development (TOD). The FPASP "*encompasses a mix of residential, commercial, employment and public use complemented by recreation amenities including a significant system of park and open space, all within close proximity to one another.*"

2.3 Topography

The topography of the eastern portion of the site is dominated by a series of more or less parallel hilltops and intervening valleys between 400 and 550 feet above mean sea level (MSL). Rolling topography and moderate to steep slopes typify the lower, western portions of the site and the surrounding area. The elevations in the western portion of the site range from approximately 330 to 400 feet above MSL.

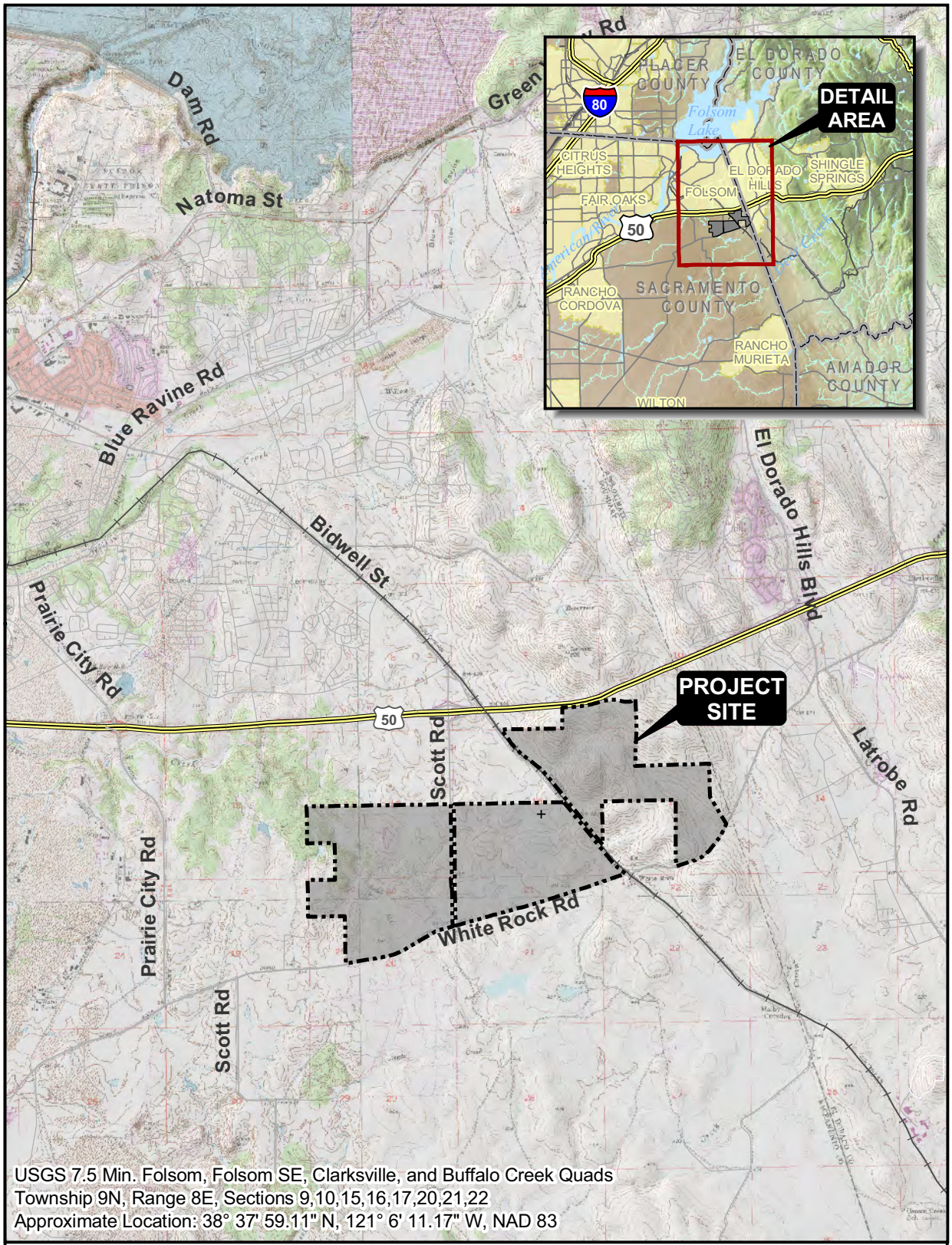
2.4 Site-Specific Hydrology

The hydrologic regime on the site is predominantly seasonal storm water runoff and direct precipitation, which primarily falls between November and March. Annual average precipitation is approximately 15 to 20 inches. The majority of seasonal surface runoff is conveyed throughout the site via ephemeral drainages and riverine seasonal wetlands tributary to Alder Creek, which is the largest drainage on the site. Alder Creek flows off site to the northwest and is tributary to the American River.

Additionally, the southeastern corner of the site is located within a small sub basin of the Carson Creek Watershed, which is tributary to the Cosumnes River.

Several stock ponds have been built on the site by the construction of dams on ephemeral drainages. The dams of many of these ponds have been breached and the structures no longer hold water. Irrigation ditches were also constructed in decades past, and these structures are also typically in disrepair.

Seeps on the site are fed by shallow groundwater discharge, and are primarily located on the eastern portion of the site, which is the base of the foothills. Some of these seeps contribute runoff to the ephemeral drainages.



USGS 7.5 Min. Folsom, Folsom SE, Clarksville, and Buffalo Creek Quads
Township 9N, Range 8E, Sections 9,10,15,16,17,20,21,22
Approximate Location: 38° 37' 59.11" N, 121° 6' 11.17" W, NAD 83

FOLSOM SOUTH SITE AND VICINITY

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 0.5 1
SCALE IN MILES

Drawn By: MJ. MMB
Date: 07/15/10

FIGURE 1

FOLSOM SOUTH

site_and_vicinity.mxd

2.5 Onsite Aquatic Features

A total of 29.16 acres of waters of the U.S have been mapped on the site, as summarized in **Table 1**. Jurisdictional features delineated on the site by feature classification include 0.38 acre of vernal pool, 0.71 acre of depressional seasonal wetland, 0.44 acre of depressional seep, 9.68 acres of riverine seasonal wetland, 0.86 acre of riverine seep, 0.06 acre of riverine seasonal marsh, 0.48 acre of slope seasonal wetland, 5.18 acres of slope seep, 5.21 acres of ephemeral drainage, 4.46 acres of intermittent drainage, 0.15 acre of ditch/canal, and 1.55 acres of stock pond (**Figure 2**).

Table 1 — Corps Jurisdictional Aquatic Features

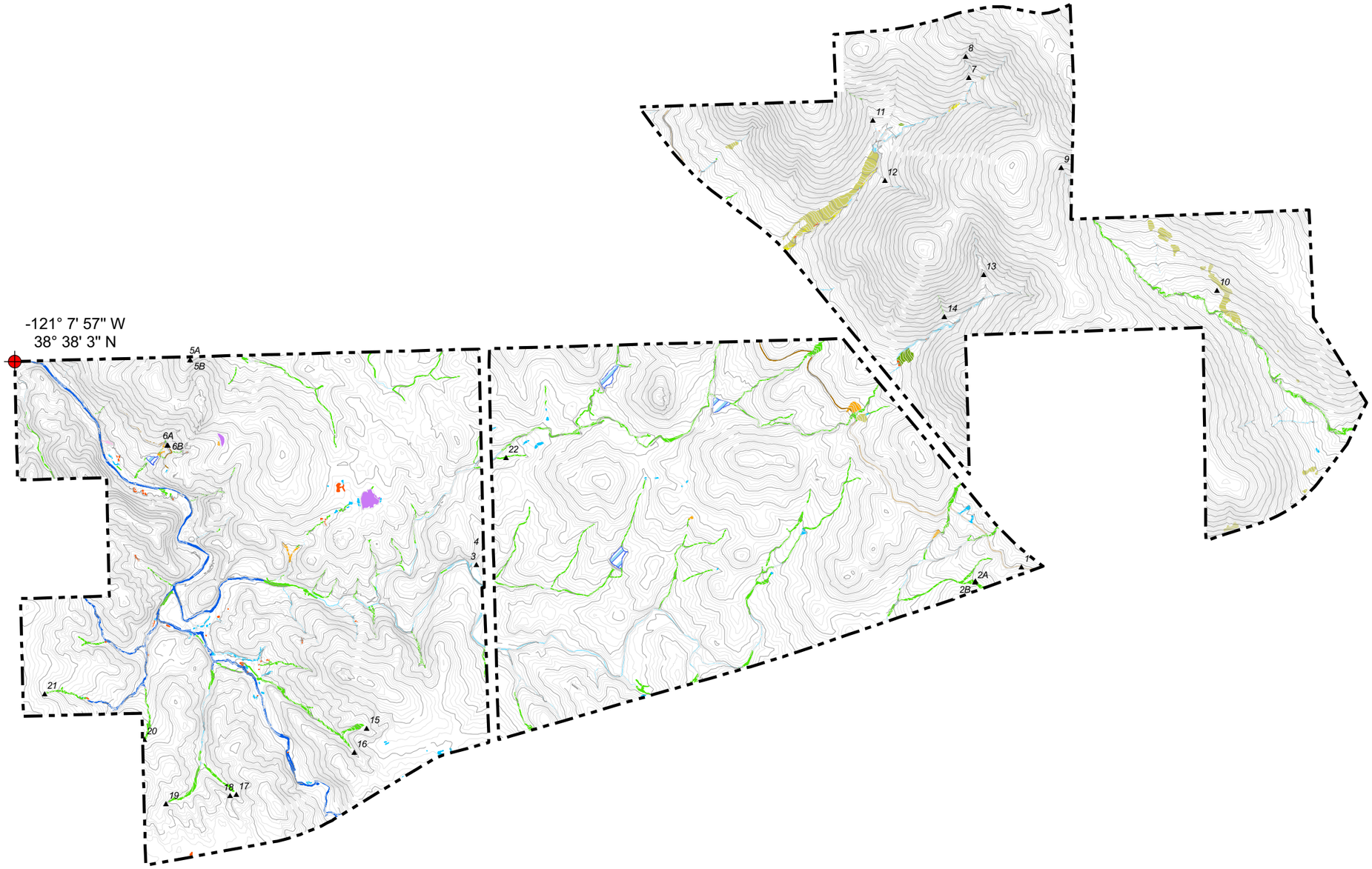
Aquatic Feature Classification	Aquatic Feature Acreage
Vernal Pool	0.38
Depressional Seasonal Wetland	0.71
Depressional Seep	0.44
Riverine Seasonal Wetland	9.68
Riverine Seep	0.86
Riverine Seasonal Marsh	0.06
Slope Seasonal Wetland	0.48
Slope Seep	5.18
Ephemeral Drainage	5.21
Intermittent Drainage	4.46
Ditch/Canal	0.15
Stock Pond	1.55
Total	**29.16**

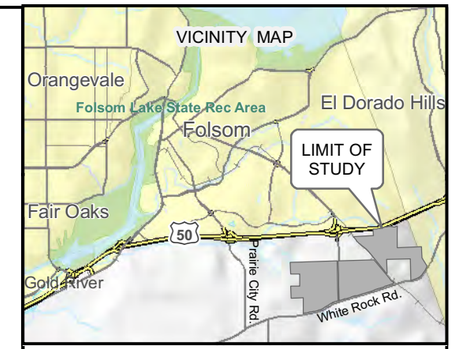
In addition, 1.27 acres of non-jurisdictional features have been mapped on the site, including 0.85 acre of excavated pond and 0.42 acre of ditch/canal, as summarized below in **Table 2**.

Table 2 — Non-Jurisdictional Aquatic Feature

Aquatic Feature Classification	Aquatic Feature Acreage
Excavated Pond	0.85
Ditch/Canal	0.42
Total	**1.27**

-121° 7' 57" W
38° 38' 3" N





WATERS OF THE U.S.

CLASSIFICATION	ACREAGE
DEPRESSIONAL WETLANDS	
Seasonal Wetland	0.71
Vernal Pool	0.38
Seep	0.44
RIVERINE WETLANDS	
Seasonal Wetland	9.68
Seep	0.86
Seasonal Marsh	0.06
SLOPE WETLANDS	
Seasonal Wetland	0.48
Seep	5.18
OTHER WATERS OF THE U.S.	
Ephemeral Drainage	5.21
Intermittent Drainage	4.46
Pond	1.55
Ditch/Canal	0.15
TOTAL	29.16

OTHER FEATURES

- Data Points
- Project Boundary
- Ditch/Canal (Non-Jurisdictional), 0.42 acres
- Pond (Non-Jurisdictional), 0.85 acres

N

0 625 1250

SCALE IN FEET

FIGURE 2

NOTES

- Waters of the U.S. verified by U.S. Army Corps of Engineers 02/06/09, verification #SPK-2006-00035.
- Digital base data provided by Psomas. Contour interval is 2 feet.
- The Hydrologic Unit Code for this site is 18020111 and 18040013.
- This delineation utilizes the Corps' 1987 three-parameter methodology, the Rapanos Guidebook 2007, and the Arid West Supplement to delineate jurisdictional waters of the U.S.
- Waters of the U.S. were mapped using a Trimble Global Positioning System (GPS).

FOLSOM SOUTH

DELINEATED WATERS OF THE U.S.

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING ✦ PLANNING ✦ LANDSCAPE ARCHITECTURE

DATE: 07/21/10
FILE NAME: Wetland Delineation.mxd
DELINEATED BY: DWB, AEW, JCH, ELF
DRAWN BY: RJM

VERIFIED

2.6 Soils

The Natural Resources Conservation Service (NRCS) has mapped four soil units on the site (**Figure 3**): Auburn silt loam, 2 to 30 percent slopes, Argonaut-Auburn complex, 3 to 8 percent slopes; Auburn-Argonaut-rock outcrop complex, 8 to 30 percent slopes; and Whiterock loam, 3 to 30 percent slopes. General characteristics and properties associated with these soils are described below.

- **Auburn silt loam, 2 to 30 percent slopes**: These soils occur on undulating to very steep foothills, typically located between 500 to 1,800 feet above MSL. It formed in material weathered from metasedimentary rocks. Bedrock outcroppings occur on the surface of this soil type at a frequency of less than five percent. The Auburn series consists of well-drained soils underlain by hard metamorphic rocks at a depth of approximately 10 to 26 inches. Permeability is moderate and available water capacity is very low. Auburn soils are primarily used for rangeland and irrigated pasture. Occasionally, crops such as hay or grain are grown. Vegetation typically consists of annual grasses and herbaceous species. Areas of oaks, grey pine (*Pinus sabiniana*), and shrub-dominated vegetation communities also occur.

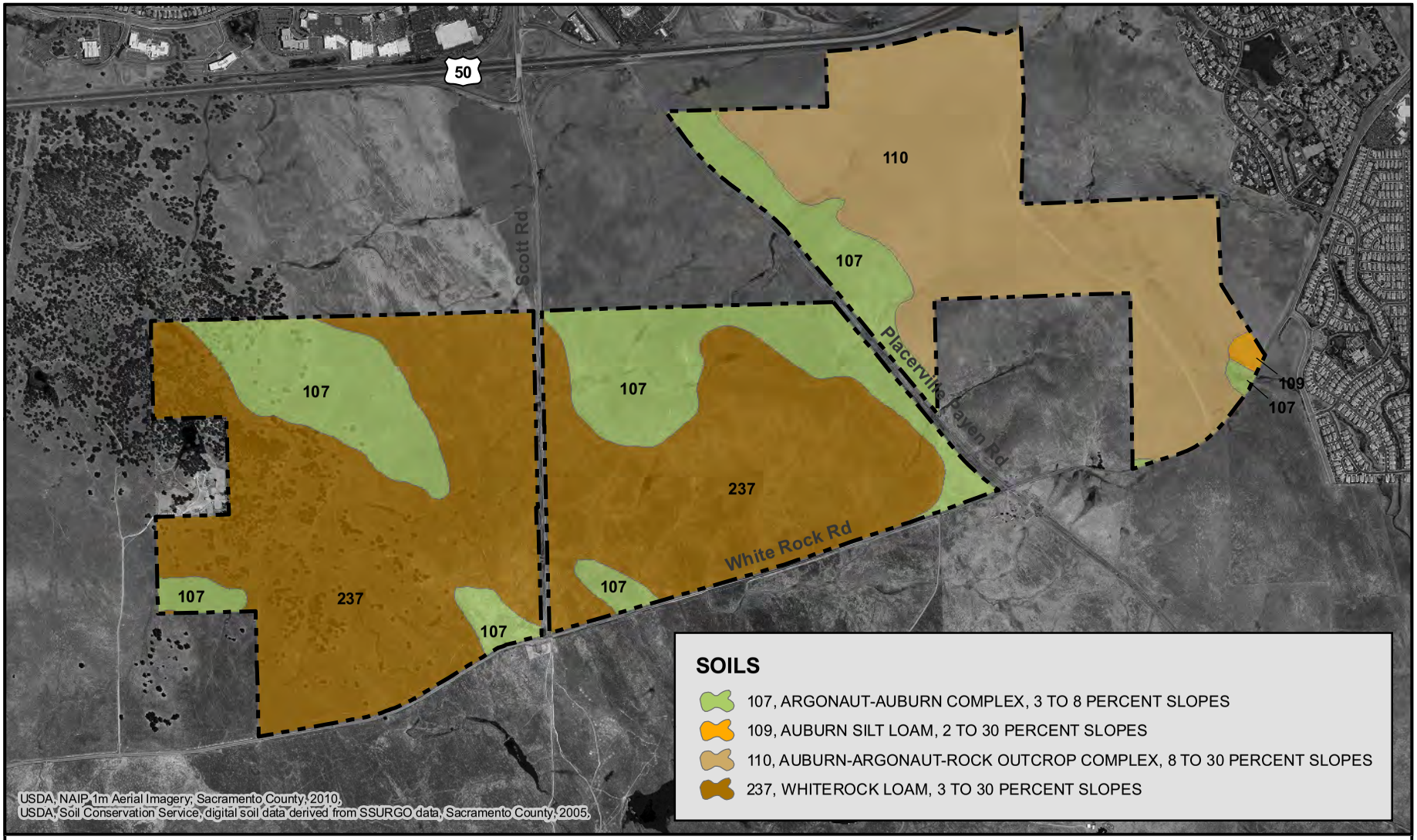
- **Argonaut-Auburn complex, 3 to 8 percent slopes**: This soil unit is composed of approximately 45 percent Argonaut soil and 35 percent Auburn soil. This soil type is found in foothills from 160 to 660 feet above MSL. The native vegetation of this soil type is annual grasses and herbaceous species with a few scattered oaks. The Argonaut soil is moderately deep and well drained. Permeability is very slow. Runoff is medium. It formed in material weathered from metaandesite and metamorphic rocks. The Auburn soil is shallow or moderately deep and well-drained. It formed in material weathered from metabasic and metasedimentary rocks. Permeability is moderate and runoff is medium. The hydric soils list for Sacramento County does not identify any hydric components or inclusions as present within this soil type.

- **Auburn-Argonaut-rock outcrop complex, 8 to 30 percent slopes**: This unit is composed of approximately 40 percent Auburn soil, 35 percent Argonaut soil, and 10 percent rock outcrop. This soil unit is found in foothills from 150 to 830 feet above MSL. Native vegetation on this soil is annual grasses, herbaceous species, and scattered oaks. The Auburn soil is shallow or moderately deep and well-drained. It formed in material weathered from metabasic and metasedimentary rocks. Permeability is moderate and runoff is medium. The Argonaut soil is moderately deep and well drained. Permeability is very slow. Runoff is medium. It formed in material weathered from metaandesite and metmorphic rocks. The hydric soils list for Sacramento County does not identify any hydric components or inclusions as present within this soil type.

- **Whiterock loam, 3 to 30 percent slopes**: This soil is found on foothills from 160 to 530 feet above MSL. It formed in material weathered from vertically

tilted metasedimentary rocks. The native vegetation is composed primarily of annual grasses and herbaceous species. The soil is very shallow and somewhat excessively drained. Permeability is moderate and runoff is medium or rapid. The hydric soils list for Sacramento County does not identify any hydric components or inclusions as present within this soil type.

According to the hydric soils list and soil survey for Sacramento County, there are no hydric components or inclusions identified within these mapped soil units.



NATURAL RESOURCES CONSERVATION SERVICE SOIL TYPES

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 1000 2000 4000
SCALE IN FEET

Drawn By: MJ, MMB
Date: 07/15/10

FIGURE 3

FOLSOM SOUTH

Soils.mxd

2.7 Biological Communities

Two major biological communities occur within the project site: 1) annual grassland and 2) blue oak woodland. These communities provide habitat for a number of common species of wildlife and may provide potentially suitable habitat for special-status species. Additionally, within these communities are various aquatic features which also may provide habitat for common and special status species. Each biological community, including associated common plant and wildlife species observed or expected to occur on the project site are described below. Where possible and unless otherwise noted, the vegetation classifications herein follow the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995).

2.7.1 Annual Grassland

Annual grassland covers the majority of the site; this community is characterized primarily by an assemblage of non-native grasses and forbs. Much of the vegetation in this community is common to the Central Valley. Dominant grass species identified onsite include soft chess (*Bromus hordeaceous*), narrow tarplant (*Holocarpha virgata*), Mediterranean barley (*Hordeum marinum*), and wild oat (*Avena* spp.). Common dominant herbaceous species include yellow star-thistle (*Centaurea solstitialis*), medusahead (*Taeniatherum caput-medusae*), and vinegar weed (*Trichostema lanceolatum*).

Annual grassland habitat supports breeding, foraging, and shelter habitat for several species of wildlife. Wildlife species observed in this habitat during field surveys include horned lark (*Eremophila alpestris*), northern harrier (*Circus cyaneus*), killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), black phoebe (*Sayornis nigricans*), western meadowlark (*Sturnella neglecta*), and coyote (*Canis latrans*).

2.7.2 Blue Oak Woodland

Blue oak woodlands are defined as woodlands with blue oak as the sole or dominating species in the tree canopy along with foothill pine (*Pinus sabiniana*), interior live oak (*Quercus wislizenii*), and valley oak (*Quercus lobata*). Typically, blue oak woodland exhibits a continuous, intermittent, or savanna-like canopy that is one or two-tiered; shrubs are infrequent or common; and ground cover is grassy (Sawyer and Keeler-Wolf 1995).

Oak woodlands provide breeding, foraging, and cover habitat to a variety of wildlife species. Species expected to occur within this habitat type include ash-throated flycatcher (*Myiarchus cinerascens*), acorn woodpecker (*Melanerpes formicivorus*), oak titmouse (*Baeolophus inornatus*), and northern flicker (*Colaptes auratus*).

2.7.3 Aquatic Habitats

Riverine Seasonal Wetland

A total of 9.68 acres of riverine seasonal wetland have been delineated within the site (**Figure 2**). Riverine seasonal wetlands are defined by a hydrologic regime dominated by unidirectional flow of water. Riverine seasonal wetlands typically occur in topographic folds or swales and represent natural drainages that convey sufficient water to support wetland vegetation. Riverine seasonal wetlands typically convey water during and shortly after storm events. Riverine seasonal wetlands have a moderately defined bed and bank and often exhibit sufficient gradient to convey water off of the site. As in depressional seasonal wetlands, plant species found within riverine seasonal wetlands are typically adapted to a hydrologic regime dominated by saturation rather than inundation. Riverine seasonal wetlands often form the headwaters of ephemeral drainages throughout the site. Approximately 0.06 of slope seasonal wetlands delineated on the site are included within the acreage specified above.

Riverine seasonal wetlands occur between slopes and topographic folds within the grassland community. Vegetation associated with riverine seasonal wetlands included pennyroyal (*Mentha pulegium*), Mediterranean barley, and coyote thistle (*Eryngium vaseyi*). During the time field surveys were performed, the lower reaches of most riverine seasonal wetlands conveyed water.

Depressional Seasonal Wetland

A total of 0.71 acre of depressional seasonal wetland has been delineated within the site (**Figure 2**). Depressional seasonal wetlands occur on the margins of riverine features throughout the site. Depressional seasonal wetlands exhibit a hydrologic regime dominated by saturation, rather than inundation. Depressional seasonal wetlands were identified on the site as depressions within the topography with a hydrologic regime dominated by saturation and capable of supporting hydrophytic plant species and hydric soils. Plant species in depressional seasonal wetlands are adapted to withstand short periods of saturation or saturated soils conditions but will not withstand prolonged periods of inundation, as is common in vernal pools.

Riverine Seasonal Marsh

A total of 0.06 acre of riverine seasonal marsh has been delineated within the site (**Figure 2**). Seasonal marshes are those wetlands that are seasonally saturated and/or inundated and saturation/inundation persists for some period into the warm season but generally not beyond. Riverine seasonal marshes are dominated by unidirectional flow of water for some portion of the wet season. Riverine seasonal marsh on the site is represented by areas that receive additional hydrology from nearby perennial features during high flow or flood level events. Within the Central Valley, these features are typically located along the fringes of slow-moving, low-gradient riverine systems or at the lower extents of the downstream terminus of riverine seasonal features.

Seep

A total of 6.48 acres of seep have been delineated within the site (**Figure 2**). Seeps are characterized as areas where groundwater intersects with the soil surface. Typically, flow from seeps continues for some period after the rainy season and may continue all year. Seeps can support isolated wetland vegetation (such as on a hillside) or seeps may form the headwaters of a riverine seasonal wetland or other jurisdictional drainage feature. Vegetation in seeps often consists of plant species associated with seasonal and perennial marsh habitats. When seeps flow for only short periods beyond the rainy season and into the warm season, herbaceous perennial wetland species typically dominate. Seeps that persist for longer periods may support woody, perennial, obligate plant species. Seeps identified within the site include sloped seeps and seeps associated with larger riverine features within scoured depressions.

Vernal Pool

A total of 0.38 acre of vernal pool has been delineated within the site (**Figure 2**). Vernal pools are shallow, seasonally inundated depressional wetlands that form in soils with a subsurface layer that restricts the downward flow of water. These layers include hardpans, claypans or thick clay layers. Vernal pools were identified on the site as depressions within the topography with a hydrologic regime dominated by inundation and capable of supporting hydrophytic plant species and hydric soils. Plant species found within vernal pools are those that require extended periods of inundation and, as such, are commonly associated with these seasonal wetland features.

Vernal pool communities are characterized as shallow depressions underlain by an impermeable layer causing them to inundate with water seasonally and are dominated by annual herbs and grasses adapted to these unique conditions. Dominant plant species found in vernal pools include coyote thistle and annual hairgrass (*Deschampsia danthonioides*). Some of the vernal pools mapped within the site are characterized as scoured, deep-water pools within ephemeral drainages.

Ephemeral Drainage

A total of 5.21 acres of ephemeral drainage have been delineated within the site. Ephemeral drainages are located throughout the site, typically downstream of riverine seasonal wetland features (**Figure 2**). Ephemeral drainages are features that do not meet the three-parameter criteria for vegetation, hydrology and soils but do convey water and exhibit an "ordinary high water mark." Ephemeral drainages are primarily fed by stormwater runoff. These features convey flows during and immediately after storm events but may stop flowing or begin to dry if the interval between storm events is long enough. Typically, these features exhibit a defined bed and bank and often show signs of scouring as a result of rapid flow events. Ephemeral drainages may exhibit vegetation patterns commonly associated with vernal pools or depressional seasonal wetlands. Often these features are lightly vegetated due to seasonal rapid-flow events resulting in a scoured channel.

Intermittent Drainage

A total of 4.46 acres of intermittent drainage have been delineated within the site (**Figure 2**). Intermittent drainages, as in ephemeral drainages, are features that do not meet the three-parameter criteria for vegetation, hydrology and soils but do convey water and exhibit an "ordinary high water mark". Water flows within intermittent drainages are fed primarily by a seasonally perched groundwater table and supplemented by precipitation and storm water run off. After the initial onset of rains these features have persistent flows throughout and past the end of the rainy season. Typically, these features exhibit a defined bed and bank and show signs of scouring as a result of rapid flow events. The bed of intermittent drainages consists of cobble often interrupted with bedrock. Hydrophytic vegetation may occur in association with intermittent drainages.

Ditch/Canal

A total of 0.15 acre of ditch/canal has been delineated within the site (**Figure 2**). Water conveyance features excavated in uplands and constructed for transport and distribution of surface water may be considered jurisdictional features, specifically if they are tributary to known waters of the U.S.

An additional 0.42 acre of ditches/canal was delineated on the site and is not connected to any other water conveyance feature on or off of the site. Non-tributary water conveyance features excavated in uplands and constructed for the transport and distribution of groundwater are not jurisdictional features. At no time was standing or flowing water observed within the interior remnant ditches on the site.

Stock Pond

A total of 1.55 acres of stock pond has been delineated within the site (**Figure 2**) as jurisdictional waters. Stock ponds are typically the result of the deliberate impoundment of water through artificial damming. When stock ponds occur as the result of the construction of artificial impoundment features that restrict or stop the flow of jurisdictional waters of the U.S., the resulting pond becomes jurisdictional to the limits of the ordinary high water mark. Conversely, stock ponds wholly excavated in uplands and supplied by surface run off or groundwater are not jurisdictional features. The stock ponds on the site are re-charged by seasonal precipitation as well as riverine seasonal wetlands that are hydrologically connected.

Excavated Pond

A total 0.85 acre of excavated pond has been delineated within the eastern-central portion of the site (**Figure 2**) as non-jurisdictional waters. Ponds are typically the result of the deliberate impoundment of water through artificial damming. When stock ponds occur as the result of the construction of artificial impoundment features that restrict or stop the flow of jurisdictional waters of the U.S., the resulting pond becomes jurisdictional to the limits of the ordinary high water mark or wetland boundary. Conversely, ponds wholly excavated in uplands and supplied by surface run off or groundwater are not jurisdictional features. Some of the ponds on the site are excavated and are not the result of the impoundment of a natural drainage way. Nor are these excavated ponds tributaries

to or from any waters of the U.S. The hydrology of the ponds is supplied by seasonal precipitation.

2.7.4 Listed and Special-Status Plant Species

Special-status plant species that have the potential to occur within the site include: Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), dwarf downingia (*Downingia pusilla*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* ssp. *myersii*), Sacramento Orcutt grass (*Orcuttia viscida*), slender Orcutt grass (*Orcuttia tenuis*), and Tuolumne button celery (*Eryngium pinnatisectum*).

However, focused surveys for all potentially occurring plant species were conducted on the site in the spring and summer of 2006 (Foothill Associates 2006) and spring and summer of 2009 (Foothill Associates 2009), and no rare plants were found on the site.

2.7.5 Listed and Special-Status Wildlife Species

Species that are known to be present based on field observations are northern harrier (*Circus cyaneus*), western burrowing owl (*Athene cunicularia hypugaea*), as well as other raptor species. Additional species that are considered to have the potential to occur on the site include: Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), ferruginous hawk (*Buteo regalis*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), western pond turtle (*Clemmys marmorata*) and western spadefoot toad (*Spea hammondii*).

Focused surveys for special-status reptiles and amphibians including western pond turtle (*Clemmys marmorata*) and western spadefoot toad (*Spea hammondii*) were conducted on the site in Spring 2006 (Foothill Associates 2006a). No western pond turtles or western spadefoot toads were found on the site.

Northern Harrier

The northern harrier is a large gray or brown raptor species. The female is typically larger than the male. Northern harriers are commonly observed throughout the year within the Central Valley; they are commonly seen flying low over agricultural fields and marshes while foraging for small mammals. Some individuals from other areas will over-winter in California. Harriers are ground nesting raptors that typically inhabit marshes, oak savannahs, wetlands, or grasslands; nests made of grassy vegetation are built on the ground or in low shrubs. There are no CNDDB records for this species within five miles of the site, although this species occurs more frequently in grassland habitat than it is reported in the CNDDB. However, this species was observed foraging within the site during November 2005 field surveys and the site provides suitable nesting and foraging habitat for northern harrier.

Western Burrowing Owl

Western burrowing owl is a small ground-dwelling owl that occurs in western North America from Canada to Mexico, and east to Texas, and Louisiana. Although in certain

areas of its range western burrowing owls are migratory, these owls are predominantly non-migratory in California (Zeiner *et. al.* 1990). The breeding season for western burrowing owls occurs from February to August, peaking in April and May (Zeiner *et. al.* 1990). Western burrowing owls nest in burrows in the ground, often in old ground squirrel burrows. This owl is also known to use artificial burrows including pipes, culverts, and nest boxes. There are no CNDDB records for this species within five miles of the site (CNDDB 2005). However, the annual grassland community within the site is suitable nesting and foraging habitat for this species, and two burrowing owls were observed within the site during field surveys.

3.0 ALTERNATIVES ANALYSIS

The purpose of this Alternatives Analysis is to confirm whether the Project as Proposed will satisfy the Guidelines, criteria and other requirements of Section 404 (b)(1) of the Clean Water Act. Consistent with the Guidelines, an alternative is considered practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."[1] In the case of the proposed Folsom Plan Area Specific Plan project, technological considerations are not relevant to the analyses. Therefore, for the purpose of this Alternative Analysis the determination of practicability will emphasizes cost and logistics relevant to implementation of the Proposed Project and each alternative. Alternatives will also be evaluated based on potential impacts to the aquatic environment, as well as other environments in light of the project's overall purpose and objectives.

Onsite alternatives evaluated consist of the Project as Proposed, No Fill Alternative, and four additional alternative project configurations. For the purposes of this Alternatives Analysis, the "Proposed Project" by which each alternative is compared is defined by a subset (or study area) within the greater Folsom South Specific Plan project area relevant to the project area and corresponding land uses that would be affected by additionally proposed intermittent drainage segment preservation for each individual Alternative. The Jurisdictional Area Avoided acreages presented in the analyses represent total Waters of the U.S. (WOUS) acreages avoided for the entire Folsom South project area.

3.1 Overall Project Purpose

The following overall project purpose defined for the Folsom Plan Area Specific Plan will be utilized to evaluate practicable alternatives under the Section 404(b)(1) Guidelines:

1. Develop a large-scale mixed-use and mixed-density residential housing development consistent with the City of Folsom's General Plan and the SACOG Smart Growth Principles.

2. Expand the City's boundaries based on the ultimate boundaries of development that the City can reasonably control and service, and do so in a manner that would foster orderly urban development and discourage leapfrog development and urban sprawl.

3. Annex those parcels of land adjacent to the City limit and within the City's Sphere of Influence whose development could have significant visual, traffic, public service, and environmental impacts on the City so that the City may influence the ultimate development of those parcels.

[1] 40 CFR 230.3 (q), 230.10 (a) 2

4. Provide a large-scale mixed-use and mixed-density residential housing development within the City of Folsom, south of U.S. 50.

5. Develop several distinct neighborhoods within the project site, connected by a substantial open space area and recreational trail network.

6. Provide neighborhood- and regional-serving retail areas within the project site.

7. Provide a mix of housing types within the project site to diversify the City's housing stock.

8. Provide a combined high school/middle school and the appropriate elementary schools on-site sufficient to meet the needs of the project.

9. Provide the appropriate number and size of on-site community and neighborhood parks sufficient to meet the needs of the project.

10. Generate positive fiscal impacts for the City through development within the project site.

Case law exists at the appellate court level supporting an applicant's description of the overall project purpose and thus upheld the use of the applicant's screening criteria based upon that project purpose.

In ***Sylvester v. U.S. Army Corps of Engineers,*** 882 F.2d 407, (9th Cir. 1989), it was demonstrated that it is proper for the Corps and EPA to defer to the applicant's description of the overall project purpose, even though it may be more narrow than that described by one or both agencies.

3.2 Offsite Alternatives

Pursuant to 40 CFR 230.10 (a) (4) off-site alternatives to the Proposed Project are evaluated in the Folsom South of U.S. 50 Specific Plan Project DEIR/DEIS (SCH# 2008092051) and therefore, an evaluation of off-site alternatives is not included within this analysis.

3.3 Onsite Alternatives

3.3.1 Evaluation Criteria

The project team identified four alternative project designs which could potentially reduce impacts to waters of the United States from the project configuration described in the Section 404 permit application. Each of these alternatives was analyzed under the criteria defined below to identify the least environmentally damaging practicable alternative (LEDPA). Summary tables for all alternatives are included in **Section 4.0**, **Conclusions** (**Table 22** and **Table 23**).

An evaluation of the following alternatives is summarized in this analysis:

1) Proposed Project;
2) No Fill Alternative;
3) Alternative 1;
4) Alternative 2;
5) Alternative 3; and
6) Alternative 4.

The following criteria are used to evaluate on-site alternatives.

Project Purpose

The Alternative must accommodate a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, commercial and other employment-generating uses, and must provide associated supporting infrastructure. In addition, the Alternative must include a combined high school/middle school and the appropriate elementary schools on-site sufficient to meet the needs of the project. Land use configurations must include orderly urban development and discourage leapfrog development and urban sprawl, and must develop several distinct neighborhoods consisting of mixed housing types, connected by a substantial open space area and recreational trail network

Logistics

The Alternative must provide for an efficient land use plan incorporating developable parcels with comparable land use development potential to that of the Proposed Project, as well as on-site backbone infrastructure, schools, parks, an on-site trail system, off-site sewer improvements, off-site roadway improvements. The Alternative must consist of a sufficient range of elements that meet the project purpose that are configured to meet applicable land use standards. Proposed land uses and acreages are presented for all alternatives in **Table 22**.

School Site Planning

California Department of Education (CDE) and Folsom Cordova Unified School District (FCUSD) school site planning criteria recommends a high school service area of approximately 8 to 12 square miles and a minimum spacing of approximately 2.5 miles between high schools. In addition to school spacing criteria, Title 5, of the California Code of Regulations[2] and the current edition of "School Site Analysis and Development"[3] (**Appendix A**), provide standards for school site selection and size. Applicable standards include the following:

[2] Title 5, California Code of Regulations, Division 1, Chapter 13, Subchapter 1: School Facilities Construction.

[3] 2000 Edition, "School Site Analysis and Development" published by the California Department of Education.

1. Net Useable Acreage and Enrollment: The net useable acreage and enrollment for a proposed school site shall be consistent with the number of acres and enrollment established in Tables 1 through 6 of the "School Site Analysis and Development." The FCUSD recommended school enrollment for middle and high schools is 900 and 2,000 students respectively. Based on Tables 4 and 6 of "School Site Analysis and Development" and FCUSD Facility Master Plan Table B-2, the minimum useable site area for the proposed combined Middle/High School is 74.5 acres.

2. Powerlines: The property line of a proposed school site shall be at least the following distance from the edge of power line easements:

    a. 100 feet for 50-133 kV line;

    b. 150 feet for 220-230 kV line; and

    c. 350 feet for 500-550 kV line.

3. Railroad Track Easement: A proposed school site shall not be closer than 1,500 feet of a railroad track easement.

4. Adjacency to a Freeway or Major Highway: A proposed school site shall not be located adjacent to a freeway or major highway that site-related traffic and noise level studies have determined will have a safety problem or noise levels that adversely affect the education program.

5. Active Earthquake Faults or Fault Traces: Pursuant to Education Code Section 17212 and 17212.5, a proposed school site shall not contain an active earthquake fault or fault trace.

6. Floodplain or Dam Flood Inundation: Pursuant to Education Code Section 17212 and 17212.5, a proposed school site shall not be located within an area of flood or dam flood inundation area.

7. Above or Underground Water or Fuel Storage Tanks: A proposed school site shall not be located near an above-ground water or fuel storage tank, or within 1,500 feet of an easement for an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis.

8. Liquefaction or Landslides: A proposed school site shall not be subject to moderate or high liquefaction or landslides.

9. Site Length to Width Ratio: A proposed school site shall have a proportionate length to width ratio (approximately 2 to 1) to accommodate the building layout, parking and playfields of the proposed school.

10. Accessibility from Arterial Streets: A proposed school site shall be accessible from arterial roads.

11. Adjacency to Major Arterial Streets: A proposed school site shall not be located adjacent to a major arterial street with heavy traffic patterns.

12. Zoning: The existing or proposed zoning of the properties surrounding a proposed school site shall be compatible with schools in that the zoning would not pose a potential health or safety risk.

13. Attendance Area: A proposed school site shall be located within the proposed attendance area to encourage student walking and avoid extensive bussing.

14. Joint Use: A proposed school site shall be selected to promote joint use of parks, libraries, museums and other public services.

15. Public Services: A proposed school site shall be conveniently located for public services including but not limited to fire and police protection, public transit and trash disposal.

16. Environmental Factors: In selecting a school site, environmental factors such as light, wind, noise, aesthetics and air pollution shall be considered.

17. Easements: A proposed school site shall not have easements on or adjacent to the site that restricts access or building placement.

18. Cost Considerations: The selection process for a proposed school site shall consider the cost and complications of the following:

    a. Distance and availability of utilities;
    b. Site preparation including grading, drainage, demolition, hazardous cleanup and offsite development costs;
    c. Eminent domain;
    d. Long-term high landscaping and maintenance costs; and
    e. Existence of any wildlife habitat that is on a federal or state protected endangered list.

19. Hazardous Waste: A proposed school site shall not be located closer than 2,000 feet from a significant disposal of hazardous waste site.

20. Airport Runways: A proposed school site shall not be located closer than two nautical miles to an airport runway.

Park Planning

Youth-oriented parks are identified as the priority of park programming for the City of Folsom due to the City's demographics being dominated by families and the City's identity as an ideal location to raise a family. Active park facilities within the City typically consist of adult and youth sport oriented amenities, including sports fields and complexes, playgrounds and community swimming pools and facilities.

City of Folsom Park Planning Objectives and Policies

The Park and Recreation Element of the City of Folsom General Plan identifies the following objectives and policies relevant to park land use within the City:

Objective 9.1: Provide safe, attractive and durable park, and recreational facilities within the Plan Area.

Policies:

Policy 9.1: To promote walking and cycling, community and neighborhood parks shall be connected to the pedestrian and bicycle network.

Policy 9.2: Park designs shall accommodate a variety of active and passive recreational facilities and activities that meet the needs of Plan Area residents of all ages, abilities and special interest groups, including the disabled.

Policy 9.3: Neighborhood parks shall feature active recreational uses as a priority and provide field lighting for nighttime sports uses and other activities as deemed appropriate by the City of Folsom Parks and Recreation Department.

Policy 9.4: The sports facilities listed in Table 9.1 are suggested facilities for inclusion in community, neighborhood and local parks. The City may amend Table 9.1 as City needs change without amending the FPASP.

Policy 9.5: All park master plans shall include a lighting plan and all park lighting fixtures shall be shielded and energy efficient.

Policy 9.6: Parks shall be designed and landscaped to provide shade, easy maintenance, water efficiency, and to accommodate a variety of recreational uses. Park improvements will comply with Folsom Municipal Code Chapter 13.26 Water Conservation and all applicable mitigations measures set forth in the FPASP EIR/EIS.

Policy 9.7: Park furniture and structures shall be selected based on durability, vandal resistance and long term maintenance, as approved by the City.

Policy 9.8: Public art is encouraged in parks where appropriate and feasible in compliance with the City's Arts and Culture Master Plan.

Policy 9.9: Easements and designated open space shall not be credited as parkland acreage. These areas may be used for park activities, but not to satisfy Quimby Park land dedication requirements.

Policy 9.10: Placement of stand alone cell towers or antennae in parks in strongly discouraged. Cell towers or antennae are permitted to be located on sports field lighting poles with a use permit.

Policy 9.11: All parks shall be sited and designed with special attention to safety and visibility. Park designs shall follow the use restrictions as outlined in the Folsom Municipal Code Chapter 9.68: Use of Park Facilities. The Parks and Recreation Commission shall review all park master development plans and make recommendations to the City Council for approval.

Policy 9.12: A Parks Master Plan shall be prepared for the Plan Area.

Policy 9.13: If the existing slope of a park site shown on Figure 9.1 exceeds five percent, the site shall be rough graded by owner/developer/builder dedicating the park land in accordance with grading plans approved by the City of Folsom Parks and Recreation Department. The cost to grade sites may be credited against park impact fees subject to city approval.

Policy 9.14: Park land dedications are net areas in acres and exclude easements, wetlands, public rights-of-way and steep slopes or structures.

Community Park

Community parks provide recreational opportunities for larger scale; community oriented active and passive recreational uses including community centers and sports fields. Community parks typically range in size from 20 to 50 acres and have a service area radius of one mile. Details related to project-specific community park configurations and amenities are described in **Section 3.3.2**.

Cost

The Alternative must have a development cost that is approximately the same or less than that of the Proposed Project. Unit prices used for analysis comparison by alternative are taken from the Preliminary Cost Estimate, Folsom Plan Area Proposed Project Estimate dated and January 30, 2009. Development costs are summarized by alternative for all alternatives in **Table 23**.

Environmental

The Alternative must have significantly less impacts to aquatic ecosystems than the Proposed Project, without having other concomitant significant adverse environmental impacts. Unless otherwise noted by individual alternative within this analysis, backbone infrastructure development within the Folsom South project area would impact an additional 14% (4.13 acres) of jurisdictional aquatic features delineated on the project site. Folsom South of U.S. 50 Specific Plan Project Backbone Infrastructure Alternatives are being evaluated as a separate permit action pursuant to the Federal Clean Water Act Section 404(b)(1) Guidelines independent of the land use development alternatives. Analyses for the Backbone Infrastructure Alternatives are evaluated in a separate document.

The following revised analyses include an area of fill (approximately 0.68 acre) located east of Placerville Payen Road evaluated in the Folsom South of U.S. 50 Specific Plan

Project DEIR/DEIS (SCH# 2008092051), but not included in previous versions of these project-specific analyses.

Overall

An alternative is not considered a practicable alternative unless it meets all of the above criteria.

3.3.2 Proposed Project

For the purposes of Alternatives Analysis, the "Proposed Project" by which each alternative is compared is defined by a subset of the greater Folsom Plan Area Specific Plan project area relevant to the project area and corresponding land uses affected by additionally proposed drainage segment preservation for each Alternative.

Project Purpose

Development of the greater Folsom Plan Area Specific Plan (Proposed Project) would include a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, a regional shopping center, and other employment-generating uses, as well as public facilities and backbone infrastructure and would conserve approximately 27% of the site (377 acres) as open space (**Figure 4**).

A summary of land uses and proposed acreages by land use are shown in **Table 3**. As proposed the Folsom South project would preserve 60% (17.42 acres) of the onsite delineated jurisdictional features.

Table 3 — Folsom South Proposed Land Uses and Acreages

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	243.0
Multi-Family Low Density (MLD)	178.6
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	54.9
Open Space (OS)	376.8
Public/Quasi-Public (PQP)	110.5
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.354	0.126	0.224	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	4.086	1.871	3.724	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	1.453	0.788	2.969	5.209
Intermittent Drainage		0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	7.616	4.128	17.415	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

*Individual acreages reported to 3 significant figures.
Sum of subtotals are reported to 2 significant figures.

Land Use	Acreage
Single-Family (SF)	221.9
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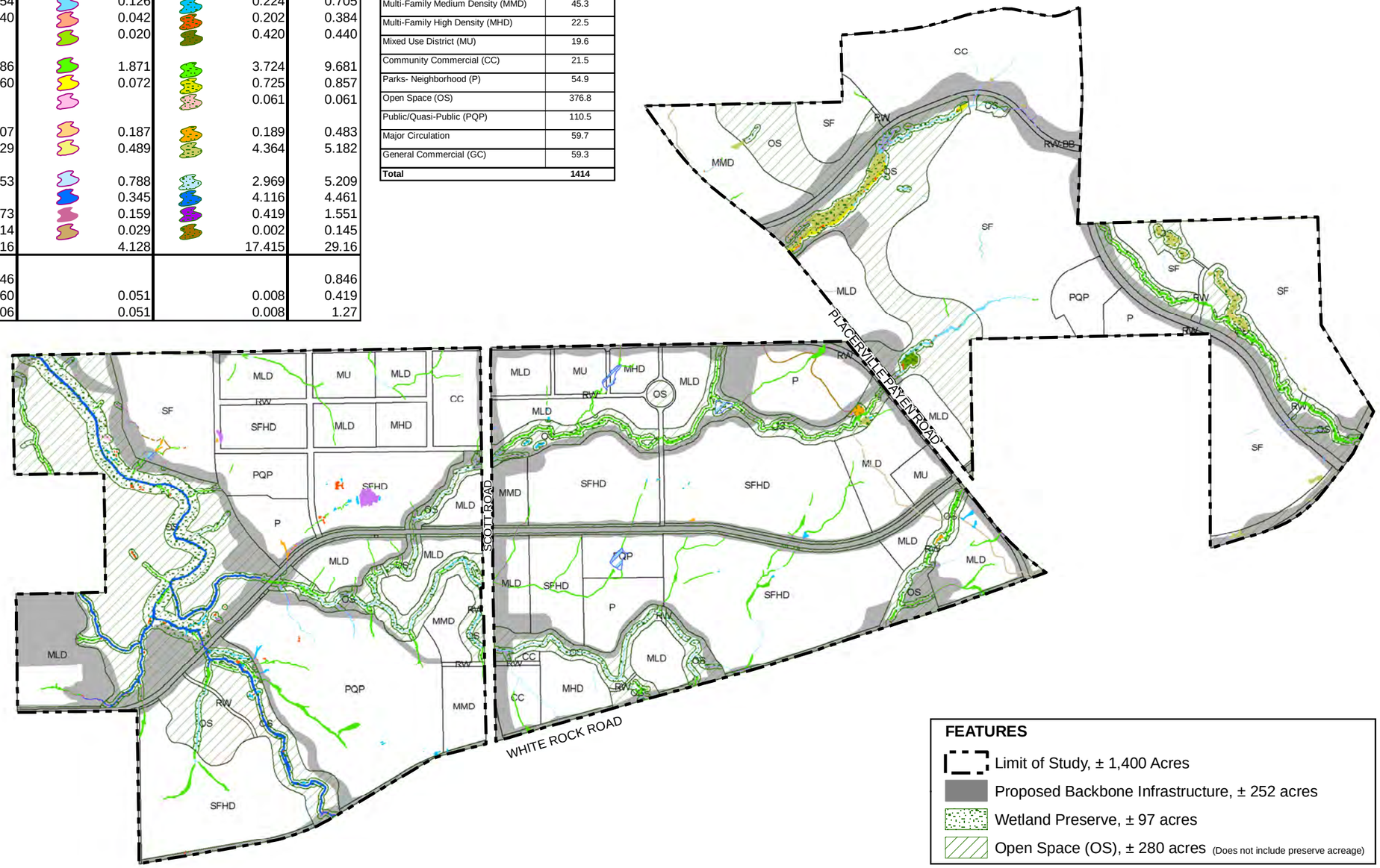
Open Space (OS)	376.8
Public/Quasi-Public (PQP)	110.5
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**



FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S.

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

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SCALE IN FEET

Drawn By: DSD
Date: 11/12/12

FIGURE 4

Proposed_Project_with_widened_crossings_20121112.mxd

Logistics

Development of the Proposed Project would accommodate residential, commercial, and mixed land uses, as well as public facilities, and transportation corridors. The Proposed Project includes backbone infrastructure to support the proposed land uses.

The Proposed Project includes sites for five elementary schools and one combined Middle/High School to provide school facilities for the students generated from build out of the FPASP. The proposed Middle/High School would increase the total number of high schools in the City of Folsom to three. Currently, the existing two high schools in the City of Folsom are Vista del Lago High School and Folsom High School; both schools are located north of U.S. Highway 50 approximately three miles from one another. California Department of Education and FCUSD school site planning criteria recommend a high school service area of approximately 8 to 12 square miles and a minimum spacing of approximately 2.5 miles between high schools.

In addition to meeting the school spacing criteria, the proposed Middle/High School site meets the current standards defined by Title 5, California Code of Regulations and the current edition of "School Site Analysis and Development," for school site selection and size according to the following criteria:

1. Net Useable Acreage and Enrollment: The proposed 79.6-acre Middle/High School site shown in the approved FPASP consists of 74.5 acres of net useable land and 5.1 acres of land considered useable by CDE criteria (land containing cuts and fills, easements, steep hills, gullies, creek beds, large rock outcroppings, wetlands and flood plains). The proposed Middle/High School site is the only site within the Folsom Plan Area Specific Plan that meets the high school spacing criteria and the net useable acreage criteria established by CDE.

2. Powerlines: The proposed Middle/High School site is approximately one mile east of the edge of an existing PGE and SMUD easement that contains 230 kV and 150 kV electric transmission lines.

3. Railroad Track Easement: There are no railroad track easements closer than 1,500 feet of the proposed Middle/High School site.

4. Adjacency to a Freeway or Major Highway: The proposed Middle/High School site is not adjacent to a freeway or major highway.

5. Active Earthquake Faults or Fault Traces: The proposed Middle/High School site does not contain any active earthquake faults or fault traces.

6. Floodplain or Dam Flood Inundation: The proposed Middle/High School site in not located within the 200-year floodplain of Alder Creek or any dam flood inundation area.

7. Above or Underground Water or Fuel Storage Tanks: The proposed Middle/High School site is not located near an above-ground water or fuel storage tank, or within 1,500 of an easement for an above ground or underground pipeline.

8. Liquefaction or Landslides: The proposed Middle/High School site is not subject to liquefaction or landslides.

9. Site Length to Width Ratio: The proposed Middle/High School site has a length to width ratio of approximately 2:1.

10. Accessibility from Arterial Streets: The proposed Middle/High School site is accessible from Scott Road (arterial) and Street A (collector) via local streets and driveways.

11. Adjacency to Major Arterial Streets: The proposed Middle/High School site is not located directly adjacent to Scott Road; however it is located directly adjacent to White Rock Road (a future major arterial street). Access restrictions along White Rock Road will prevent direct access to the proposed Middle/High School site from White Rock Road.

12. Zoning: The approved zoning of the properties surrounding the proposed Middle/High School site are residential and open space, both of which are compatible with schools.

13. Attendance Area: The proposed Middle/High School site is located within the proposed attendance area of the school.

14. Joint Use: The proposed Middle/High School site has been selected to promote joint use of parks, libraries and other public services.

15. Public Services: The proposed Middle/High School site is located nearby to the proposed fire station on Oak Avenue and the proposed local bus transit route on Street A.

16. Environmental Factors: The FPASP Environmental Impact Report/Environmental Impact Statement (EIR/EIS) considered all environmental factors, including existing wetlands, in recommending the location of the proposed middle/high school. The FPASP EIR/EIS analysis determined that the wetlands located on the proposed Middle/High School site are some of the least sensitive wetlands within the FPA. Potential noise and hazardous air emissions from future traffic on White Rock Road were also considered during the FPASP planning process and the conceptual site development plan for the combined Middle/High School locates classrooms and other school facilities approximately 1,000 feet north of White Rock Road.

17. Easements: The proposed Middle/High School site has no existing or proposed easements on or adjacent to the property that would restrict access or building placement.

18. Cost Considerations:

    a. The proposed Middle/High School site will be served by the initial backbone water and wastewater infrastructure.

    b. The proposed Middle/High School site moderately rolling topography; however, it is one of the more level areas within the FPA that does not contain existing mature oak trees. Grading of the site to meet state and FCUSD standards for net useable area and length to width ratio will require the filling of jurisdictional wetlands.

    c. No eminent domain condemnation is required for the proposed Middle/High School site.

    d. No long term high landscaping and maintenance costs are associated with developing the proposed Middle/High School site.

    e. The FPASP EIR/EIS concluded that no wildlife habitat that is on a federal or state protected endangered list is located on the proposed Middle/High School site.

    The FPASP and the FPASP EIR/EIS comprehensive planning process considered all of the criteria outlined in 18a through 18e and concluded that the proposed Middle/High School site was the one site within the FPA that meets all of the criteria.

21. Hazardous Waste: The proposed Middle/High School site is not closer than 2,000 feet to any hazardous waste site.

22. Airport Runways: The proposed Middle/High School site is not within two nautical miles of any airport runway.

Providing community, neighborhood and local parks with a full range of active and passive recreational uses is a FPASP priority. To this end, the FPASP incorporates a number of park planning objectives and related policies intended to guide the development of the Plan Area. Two community parks, serving the needs of multiple neighborhoods as well as the City of Folsom are provided within the Plan Area. Five neighborhood parks are located adjacent to elementary schools, to meet the recreational needs of neighborhood residents and provide and promote joint use activities with the Folsom Cordova Unified School District. Two local parks are located in the Town Center and the Entertainment Zone to serve as public gathering areas.

Additional recreational facilities that do not have needs ratios may be provided and include, but are not limited to: skate parks, BMX bike parks, interactive water features, group picnic areas, outdoor performance amphitheaters, disc golf courses, children's

playgrounds, dog parks, volleyball courts, synthetic turf fields, and lighting for nighttime use as approved by the city council.

Community Park site planning considerations relevant to the FPASP include:

- Provide at least 25 acres of contiguous, useable land with a cross slope of less than 2% to accommodate sport facilities.
- Site the parks abutting major roadways to accommodate community and regional traffic accessibility requirements.
- Provide at least two points of access to major roadways to facilitate ingress and egress during peak park times.
- Siting the parks so that all of the residents of the Plan Area can access the parks from roadways and Class 1 bike trails within an acceptable distance to travel.
    - Site parks abutting the 30% open space area in the Plan Area for the accommodation of passive park uses and bike trails.
    - Site parks nearby, but not adjacent to residential areas due to high intensity of uses planned in the Community Parks. Use open space areas where possible to buffer higher intensity parks from single family residential neighborhoods.

Two community parks totaling 74.0 acres are proposed for the Plan Area. Due to size and location, these parks have the ability to provide Plan Area wide recreational features and to serve multiple neighborhoods, as well as serving the larger needs of the City of Folsom.

Community Park West

The vision for Community Park West is planned for active uses, including, but not limited to youth baseball and softball, adult baseball and softball, soccer fields, basketball and tennis courts and picnic areas. Restrooms and lighted sports facilities will be provided for night time use. Community Park West is located adjacent to Prairie City Road due to the active nature of the facilities.

Community Park East

Located in the eastern portion of the Plan Area, adjacent to Street 'B' and two open space corridors, Community Park East is envisioned as accommodating a range of active recreation uses including but not limited to adult baseball and softball, Little League baseball and youth softball; adult and youth soccer, youth football; and other outdoor activities such as swimming, basketball, tennis and beach volleyball. Community Park East is planned for Plan Area residents and will include permanent restroom facilities, parking, lighted sports facilities for nighttime use, miscellaneous site furnishings, and a community/aquatic center, inclusive of senior facilities, teen and art facilities, pre-

school/day camp facilities, gym, etc. Passive recreational uses may include picnicking, strolling and exercising, since this park is located abutting a planned wetland corridor consisting of passive and preserve wetland areas.

Community Park East meets the City's adopted goals and objectives relevant to parks and recreational facilities, as well as the goals and objectives defined by the FPASP.

- The Community Park East site is the only parcel of sufficient size that meets the criteria of a Community Park which is required to serve the east area of the Plan Area;

- The Community Park East site is located abutting a major collector road and Transportation Corridor, thus providing community and regional access to the site; and

- The Community Park East site abuts the open space area providing biking and hiking access to the site as well as limited passive park uses, which also serves as a buffer to the neighboring single family residential areas.

Cost

The relevant cost information for the Proposed Project is evaluated by individually proposed alternatives, as analyzed relevant to the proposed project area and composition of land uses that would be affected by each alternative.

Environmental

Development of land uses proposed by the Proposed Project would impact 26% (7.62 acres) of the jurisdictional aquatic features delineated on the project site, as shown in **Table 4**. Proposed Open Space would encompass 27% (377 acres) of the project site.

Table 4 — Proposed Project Impacts to Waters of the U.S.

WATERS OF THE U.S.	ACREAGES			
Classification	**Fill (Project)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.354	0.126	0.224	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	4.086	1.871	3.724	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061

Slope Wetlands				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
Other Waters of the U.S.				
Ephemeral Drainage	1.453	0.788	2.969	5.210
Intermittent Drainage	-	0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	**7.62**	**4.13**	**17.42**	**29.16**

Overall

The Proposed Project has been designed to accommodate urban land use development and supporting backbone infrastructure, while preserving 377 acres of open space. The only site in the FPASP meeting the state and school district criteria is the site currently designated for the combined Middle/High School in the FPASP located approximately 2.5 miles from the existing Folsom and Vista del Lago High Schools.

3.3.3 No Fill Alternative

The No Fill Alternative would not result in the fill of waters of the U.S., all onsite jurisdictional features would be preserved, and a Section 404 permit would therefore not be required (**Figure 5**).

Project Purpose

The No Fill Alternative would not result in the development of a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, commercial and other employment-generating uses, and would not provide associated supporting infrastructure. The open space associated with the No Fill Alternative would not result in the specific plan's requirement of conservation of 30% of the site in open space and would require additional ±150 acres to meet that goal.

The No Fill Alternative would not meet the Project Purpose criteria.

Logistics

The No Fill Alternative would not provide on-site backbone infrastructure, schools, parks, an on-site trail system, off-site sewer improvements, off-site roadway improvements or off-site highway interchanges. The No Fill Alternative would therefore not meet the Logistics criteria.

In order to implement development on the site under the No Fill Alternative, parcels would have irregular geometric configurations with reduced land use potentials due to exaggerated edge effects, extreme angles and other geometric design effects that would be required to preserve onsite waters, resulting in undevelopable portions of individual

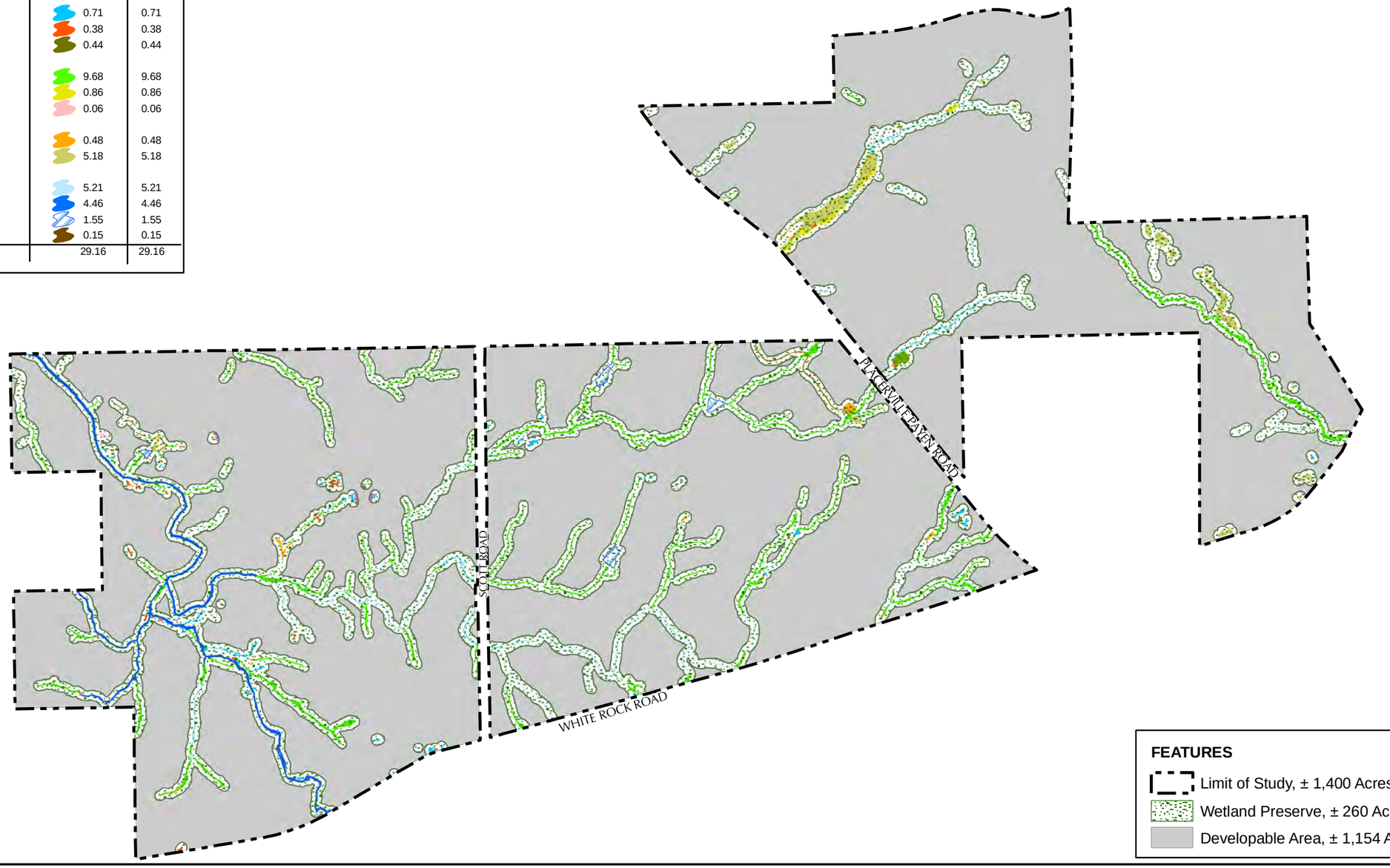
parcels, and thus further reducing the development potential for these individual parcels, as well as this alternative. In addition, in order to develop adequate emergency access and circulation routes for proposed land uses, substantial additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland corridors, and additional required storm drainage water quality/detention basins would be necessary.

Cost

Development could potentially proceed under individually proposed development projects of unknown configurations on the site, provided no fill is placed within jurisdictional aquatic features. Although potential development costs are largely unknown, substantial additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities would be required to implement development without filling any jurisdictional features. The No Fill Alternative would therefore not meet the cost screening criteria.

PRELIMINARY WETLAND IMPACT ASSESSMENT

CLASSIFICATION	PROJECT IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS			
Seasonal Wetland		0.71	0.71
Vernal Pool		0.38	0.38
Seep		0.44	0.44
RIVERINE WETLANDS			
Seasonal Wetland		9.68	9.68
Seep		0.86	0.86
Seasonal Marsh		0.06	0.06
SLOPE WETLANDS			
Seasonal Wetland		0.48	0.48
Seep		5.18	5.18
OTHER WATERS OF THE U.S.			
Ephemeral Drainage		5.21	5.21
Intermittent Drainage		4.46	4.46
Pond		1.55	1.55
Ditch/Canal		0.15	0.15
		29.16	29.16



FEATURES

- Limit of Study, ± 1,400 Acres
- Wetland Preserve, ± 260 Acres
- Developable Area, ± 1,154 Acres

FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S. (NO FILL ALTERNATIVE)

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

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SCALE IN FEET

Drawn By: DSD
Date: 10/30/12

FIGURE 5

Alt_No_Fill.mxd

Environmental

The No Fill Alternative would not result in the immediate fill of any aquatic features. Aquatic features delineated on the site would be conserved within 260 acres of surrounding upland habitats (18% of the project site) per current City of Folsom standards, although onsite upland areas would potentially be subject to the effects of future land use development proposals. The No Fill Alternative would not result in the fill of waters of the U.S.; however, development on the site would result in increased edge effects from adjacent urban land uses potentially affecting preserved onsite aquatic features and habitats, including Blue Oak Woodland, within the network of open space corridors. Preserved aquatic features would not be protected through implementation of a Conservation Easement and the provisions of a long-term Operations and Management Plan covering the open space preserve. Blue Oak Woodland habitat effects would substantially increase due to a reduction in open space conservation and irregular land use configurations, with exaggerated edge effects, resulting in potentially significant additional removal of individual trees, canopy, and habitat.

The No Fill Alternative would meet the environmental screening criteria, but the resulting open space would be subject to greater effects than the Proposed Project.

Overall

The No Fill Alternative would avoid impacts to 29.16 acres of jurisdictional features. The potentially "developable" upland areas would encompass approximately 1,154 acres, and areas of open space would encompass approximately 18% (260 acres) of the site. However, the No Fill Alternative would not permit the development of a large-scale mixed use development and supporting backbone infrastructure, and would therefore not meet the screening criteria for the Proposed Project relevant to the Project Purpose and Logistics. Although potential development costs are largely unknown relevant to the No Fill Alternative, substantial additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities would be required to implement development without filling any jurisdictional features. The No Fill Alternative would therefore not meet the cost screening criteria.

The No Fill Alternative is therefore not considered practicable.

3.3.4 Alternative 1

Alternative 1 was designed to test the practicability of preserving three drainage segments (1.34 acres of waters of the U.S.) that extend into four lots, a High School/Middle School site (Lot 146), a Single Family High Density (SFHD) residential site (Lot 111) and two adjoining Multi-family Low Density (MLD) residential sites (Lots 109 and 162), within the Folsom South development. Alternative 1 would result in a loss of 29.6 developable acres (22 acres of developable land lost for every additional acre of preserved jurisdictional feature).

Project Purpose

A summary of land uses and proposed acreages by land use are shown in **Table 5**. Alternative 1 would preserve 64% (18.75 acres) of the onsite delineated jurisdictional features.

Table 5 — Alternative 1 Land Uses and Acreages

Land Use	Acreage
Single Family (SF)	221.9
Single Family High Density (SFHD)	234.9
Multi-Family Low Density (MLD)	175.0
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	54.9
Open Space (OS)	394.8
Public/Quasi-Public (PQP)	104.2
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

Within the project subarea affected by the additional waters of the U.S. preservation, Alternative 1 would provide for the development of 61.2 acres of land, including 290 SFHD Units, 67 MLD Units, and 18 MHD Units, and public facilities and backbone infrastructure. However, Alternative 1 would result in a reduced area of developable land, and subsequent reductions in the number of dwelling units, including a substantial decrease in the total area "Blueprint Smart Growth" SFHD, as well as elimination of the combined Middle/High School Site (**Figure 6**). Alternative 1 would therefore not meet the Project Purpose criteria.

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.343	0.126	0.236	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	2.889	1.871	4.921	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	1.325	0.788	3.096	5.209
Intermittent Drainage		0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	6.280	4.128	18.751	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

*Individual acreages reported to 3 significant figures.
Sum of subtotals are reported to 2 significant figures.

Land Use	Acreage
Single-Family (SF)	221.9
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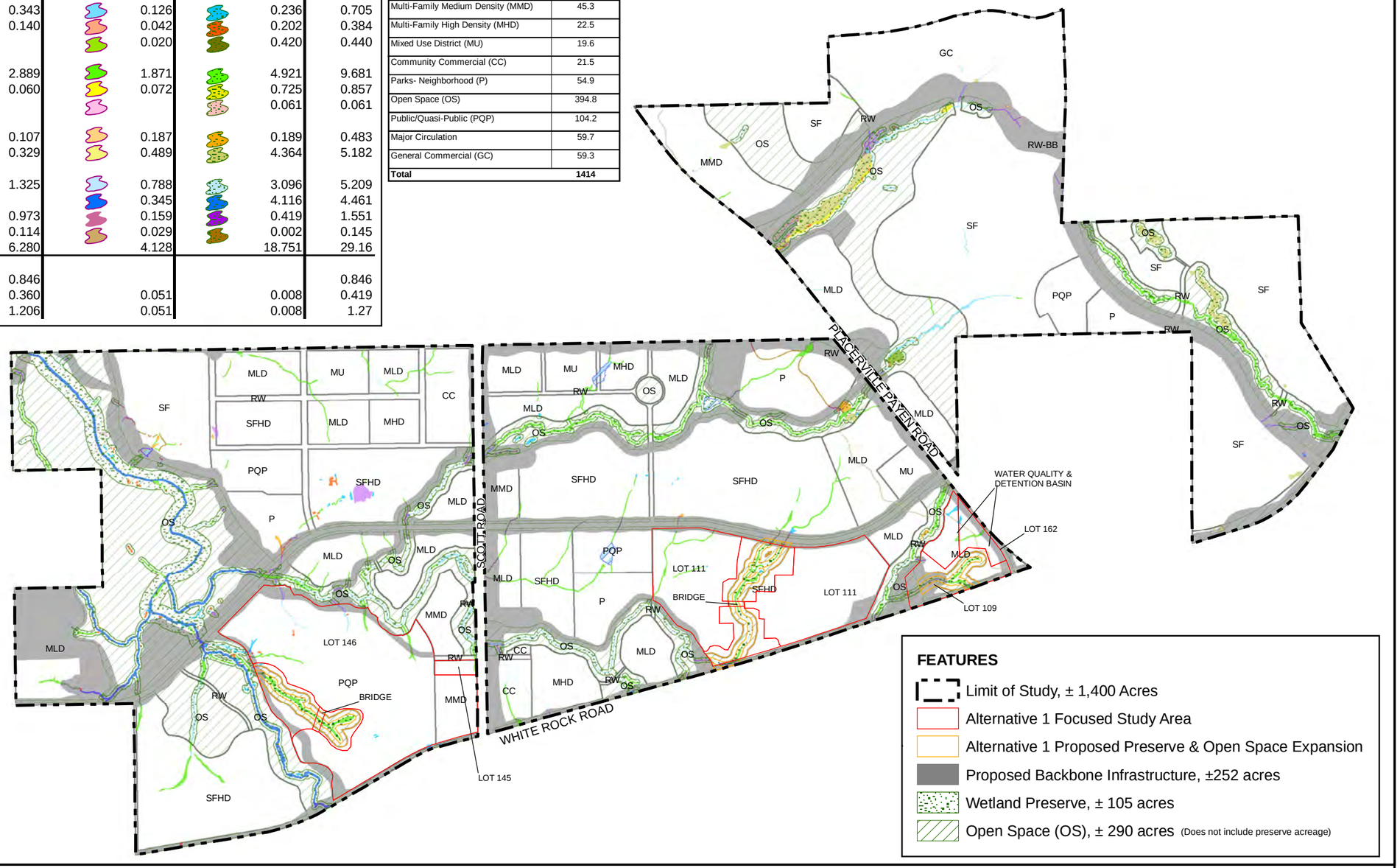
Public/Quasi-Public (PQP)	104.2
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**



FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S. (ALTERNATIVE 1)

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

0 1250 2500
SCALE IN FEET

Drawn By: DSD
Date: 11/13/12

FIGURE 6

Alt1_with_dev_limit_impact_20121112

Logistics

In order to preserve the drainages located within the southwestern half of the project site and provide a minimum distance of 75-feet of buffer from the features, proposed for preservation by Alternative 1 a 150-foot minimum wide wetland buffer corridor will be incorporated into the three identified target areas.

The first drainage segment traversing through the High School/Middle School Site (Lot 146) begins in the middle of the southwest quadrant of Lot 146 and flows to the northwest for approximately 1,200 feet where it enters an Open Space area and connects to Alder Creek. The approximately 200 foot wide wetland buffer corridor through Lot 146 creates a long narrow finger of land that is isolated from the remainder of the Lot and is therefore not suitable for the combined High/Middle School campus. The CDE and FCUSD school site planning criteria recommend a high school service area of approximately 8 to 12 square miles and a minimum spacing of approximately 2.5 miles between high schools. In addition to school spacing criteria, as summarized in **Section 3.3**, Title 5, California Code of Regulations and the current edition of "School Site Analysis and Development," provide standards and criteria for school site selection. According to CDE, suitable sites should generally be rectangular with a length to width ratio of 2 to 1 with no odd shaped protrusions or indentations that would affect the site's ability to accommodate the required school construction program. The wetland corridor proposed by Alternative 1 would remove approximately 8.5 acres of land from Lot 146. In addition, the narrow isolated finger of land would remove approximately an additional 10 acres of land from consideration for school purposes. The deletion of these two features would reduce the effective size of Lot 146 from 79.6 acres to 61.1 acres. The CDE and FCUSD recommended site size for a combined high/middle school is approximately 80 acres. Moreover, FCUSD recommends against including any property for the high/middle school campus with frontage on Scott Road, which effectively eliminates the potential alternative to Lot 46 (Lot 145) from consideration. Additionally, FCUSD desires to maintain an approximate minimum spacing of two to 2.5 miles between district high schools (the distance between Folsom and Vista Del Lago High Schools). In order to avoid grading into jurisdictional wetlands, retaining walls of considerable height would be required on the northern, western and southern boundaries of the site. Tall retaining walls would create safety problems for the school district and increase site preparation costs. Lot 146 is the only lot in the project that meets the spacing and size criteria, as well as CDE and FCUSD site selection standards and criteria. Therefore, the proposed preservation of the drainage segment crossing Lot 146 eliminates the project's ability to construct a combined high/middle school campus.

The second drainage segment proposed for preservation by Alternative 1 connects to an unnamed tributary of Alder Creek. The drainage segment traverses through the middle of a SFHD site (Lot 111) flowing from the north to the south where it connects to a tributary of Alder Creek. In order to preserve this drainage segment, the SFHD neighborhood must be divided into two smaller neighborhoods of approximately 21 and 28 acres resulting in a loss of 93 residential units. The SFHD neighborhoods are the "Blueprint Smart Growth" alternative to lower density conventional large lot single family development. Any loss of SFHD area conflicts with FPASP planning principle of

compact development with connected and walkable neighborhoods. The two smaller SFHD neighborhoods created by the preservation of this drainage segment would only be connected at one point, through the construction of an additionally required access road and bridge that would span the wetland feature and provide two points of ingress and egress for residents and emergency vehicles. Finally, dividing Lot 111 into two smaller neighborhoods would reduce marketability to builders, which in turn has a possible negative impact on the funding of project infrastructure through the sale of Community Facilities District (CFD) bonds.

The third drainage segment proposed for preservation by Alternative 1 traverses through two adjoining MLD residential sites (Lots 109 and 162). The feature flows through the sites from the east to the west along the southern boundary. The Wetland Buffer Corridor connects the drainage segment to a tributary of Alder Creek by flowing through the proposed Alder Creek Water Quality/Detention Basin Number 1 (ACWQDB 1).

In order to preserve this drainage segment, the MLD neighborhood would be reduced to approximately one-half its present size with a corresponding loss of about 68 residential units. Part of this reduction is a result of the required relocation of ACWQDB 1 to the southeast corner of Lot 162 to prevent untreated and uncontrolled storm runoff releases from entering the new open space corridor. Due to the topography of lots 109 and 162, the relocation of ACWQDB 1 would create the need for an additional water quality/detention basin on the north side of the new wetland buffer corridor to control untreated storm runoff to it from the MLD neighborhood.

One of the guiding FPASP planning principles is to provide transit oriented development (TOD) multi-family residential sites at appropriate locations along the entire length of the Plan Area transit corridor. The MLD neighborhood affected by Alternative 1 is a vital part of a larger TOD site and insures that a sufficient number of multi-family housing units will be located within walking distance of the proposed transit stop located at the intersection of Street 'A' and Placerville Road. The reduction in size of the MLD neighborhood, and the resultant irregular lot configuration the preserved wetland features creates, would reduce the viability of the affected MLD neighborhood and may affect the success of the larger TOD site.

Alternative 1 would provide for large scale development of the project site including on-site backbone infrastructure, elementary schools, parks, and an on site trail system. However, Alternative 1 would not provide for a combined high/middle school and, as shown on **Figure 6**, would require additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridors and additional storm drainage water quality/detention basins. Additional relevant details are discussed within the Alternative 1 Cost Analysis.

The development of Alternative 1 would result in the following negative land use factors compared to the Proposed Project:

- Development of a land use plan that is inconsistent with the FPASP principles of compact development and connected and walkable neighborhoods;

- Compromised Consistency with "Blueprint Smart Growth" Principles;
- Elimination of the proposed combined high/middle school;
- Reduction of the viability of a TOD site, affecting the marketability of development parcels; and
- Irregular geometric configurations of those parcels affected by the land use reconfiguration proposed by this alternative in order to preserve the additional 1.34 acres of waters of the U.S. proposed for preservation by this alternative. The land use development potential resulting from these final parcels would be reduced due to exaggerated edge effects, extreme angles and other geometric design elements required to preserve the three drainage segments, resulting in undevelopable portions of individual parcels, and thus further reducing the development potential for these individual parcels, as well as this alternative.

Alternative 1 therefore does not meet the Logistics criteria.

Cost

The estimated development cost for Alternative 1 is $51,179,420, which equates to $13,874,680 less than the estimated $65,054,100 cost to develop the Proposed Project. However, Alternative 1 would result in the loss of 29.2 acres of developable land to accommodate the additional 1.34 acres of preserved waters of the U.S. (22 acres of developable land lost for every additional acre of preserved jurisdictional feature). The decrease in developable land results in fewer residential units, and the subsequent increase in the development cost per acre related to one-time cost burdens associated with infrastructure, and public facilities and services costs. Therefore the development cost for Alternative 1 is increased by $116,640 per acre.

The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways is not reduced due to the loss of some residential units. Therefore, these costs are spread over fewer residential units increasing the proportional share of the backbone infrastructure burden. However, the cost for providing the required public facilities and services does change due to the loss of residential units since the population requiring these types of facilities would be reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. The developable acreage for Alternative 1 is estimated at 61.2 acres. Therefore the total increased development cost associated with preservation of the additional 1.34 acres of waters of the U.S. proposed by Alternative 1 amounts to $7,138,000.

As shown in **Table 6**, additional in-tract improvements would be required to preserve the additional 1.34 acres of waters of the U.S. These improvements include: sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridors and additional storm drainage water quality/detention basins amounting to an additional construction cost of $1,882,250.

Table 6 — Alternative 1 Additional In-Tract Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 109	
Water Quality Basin	$50,000
12-Inch Outfall Structure	$7,250
Lot 111	
Bridge, 50' X 95'	$1,187,500
Bore & Jack Casing (water)	$75,000
Lot 146	
Bridge, 30' X 75'	$562,500
Total	**$1,882,250**

Therefore, although the Alternative 1 development cost would be less than the Proposed Project, Alternative 1 would result in the loss of 22 acres of developable land for every acre of preserved jurisdictional feature and would not result in the construction of an equivalent number of residential units for sale. As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure required to incorporate a wetland buffer corridor (**Table 6**), the cost to develop Alternative 1 increases by $9,020,250, as shown in **Table 7**.

Table 7 — Alternative 1 Costs to Preserve 1.34 Acres of Waters of the U.S.

Description	Cost
Additional Development Costs Due to Avoidance of 1.34 Acres of Waters of the U.S.	$7,138,000
Additional Construction Costs Due to Avoidance of 1.34 Acres of Waters of the U.S.	$1,882,250
Total Increased Cost for Development of Alternative 1	**$9,020,250**

Source: MacKay & Somps, 2012

The increased development cost of $9,020,250 ($6,731,530 per additional acre of preserved jurisdictional feature) coupled with the loss of 29.2 acres of development area, and the subsequent overall loss of residential units available for sale, adversely affects this development from providing a project with competitive prices. Therefore, Alternative 1 does not meet the Cost criteria.

Environmental

Alternative 1 would result in impacts to 22% (6.28 acres) of jurisdictional aquatic features delineated on the project site related to land use development, as shown in **Table 8**. Alternative 1 would conserve 28% (395 acres) of the project site as open space and wetland preserve. This represents an overall reduction of 5% (1.36 acres) in impacts to jurisdictional waters and an 18 acre increase in the open space acreage from that resulting

from development of the Proposed Project. Alternative 1 therefore meets the Environmental screening criteria.

Table 8 — Alternative 1 Impacts to Waters of the U.S.

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.343	0.126	0.236	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	2.889	1.871	4.921	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061
Slope Wetlands				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
Other Waters of the U.S.				
Ephemeral Drainage	1.325	0.788	3.096	5.209
Intermittent Drainage	-	0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	**6.28**	**4.13**	**18.75**	**29.16**

Overall

Alternative 1 meets the Environmental screening criteria. However, the preservation of the three additional drainage segments proposed by Alternative 1 would result in the creation of a land use plan that conflicts with FPASP planning principles, eliminates the proposed combined high/middle school, reduces the viability of a TOD site, and compromises land use development potentials related to infeasible geometric parcel configurations to accommodate the proposed preservation of an additional 1.34 acres of jurisdictional features. The development of Alternative 1 would also result in the need for substantial additional infrastructure improvements, including additional water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basin, equating to an additional construction cost of $1,882,250. This additional construction cost, combined with the increased development cost amounting to

$7,138,000 associated with the preservation of the three drainage segments proposed by Alternative 1 (1.34 acres of waters of the U.S.) equates to an increased development cost of $9,020,250 ($6,731,530 per additional preserved acre of waters of the U.S.). Therefore, Alternative 1 is not considered practicable. Alternative 1 does not meet the Project Purpose screening criteria, and Cost and Logistics are considered impracticable.

3.3.5 Alternative 2

Alternative 2 was designed to test the practicability of preserving three drainage segments (1.60 acres of waters of the U.S.) that extend into eight lots: two MLD residential sites (Lots 119 & 130), a Mixed Use site (Lot 128), a MHD residential site (Lot 127), a SFHD residential site (Lot 118), an Elementary School site (Lot 112) and two Park Sites (Lots 113 and 125), within the Folsom South development footprint (**Figure 7**). Alternative 2 would result in a loss of 22.9 developable acres (14 acres of developable land loss for every additional acre of preserved jurisdictional feature).

Project Purpose

A summary of land uses and proposed acreages by land use are shown in **Table 9**. Alternative 2 would preserve 65% (19.02 acres) of the onsite delineated jurisdictional features.

Table 9 — Alternative 2 Land Uses and Acreages

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	218.5
Multi-Family Low Density (MLD)	174.2
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	20.5
Mixed Use District (MU)	20.9
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	65.5
Open Space (OS)	393.1
Public/Quasi-Public (PQP)	115.0
Major Circulation	58.1
General Commercial (GC)	59.2
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

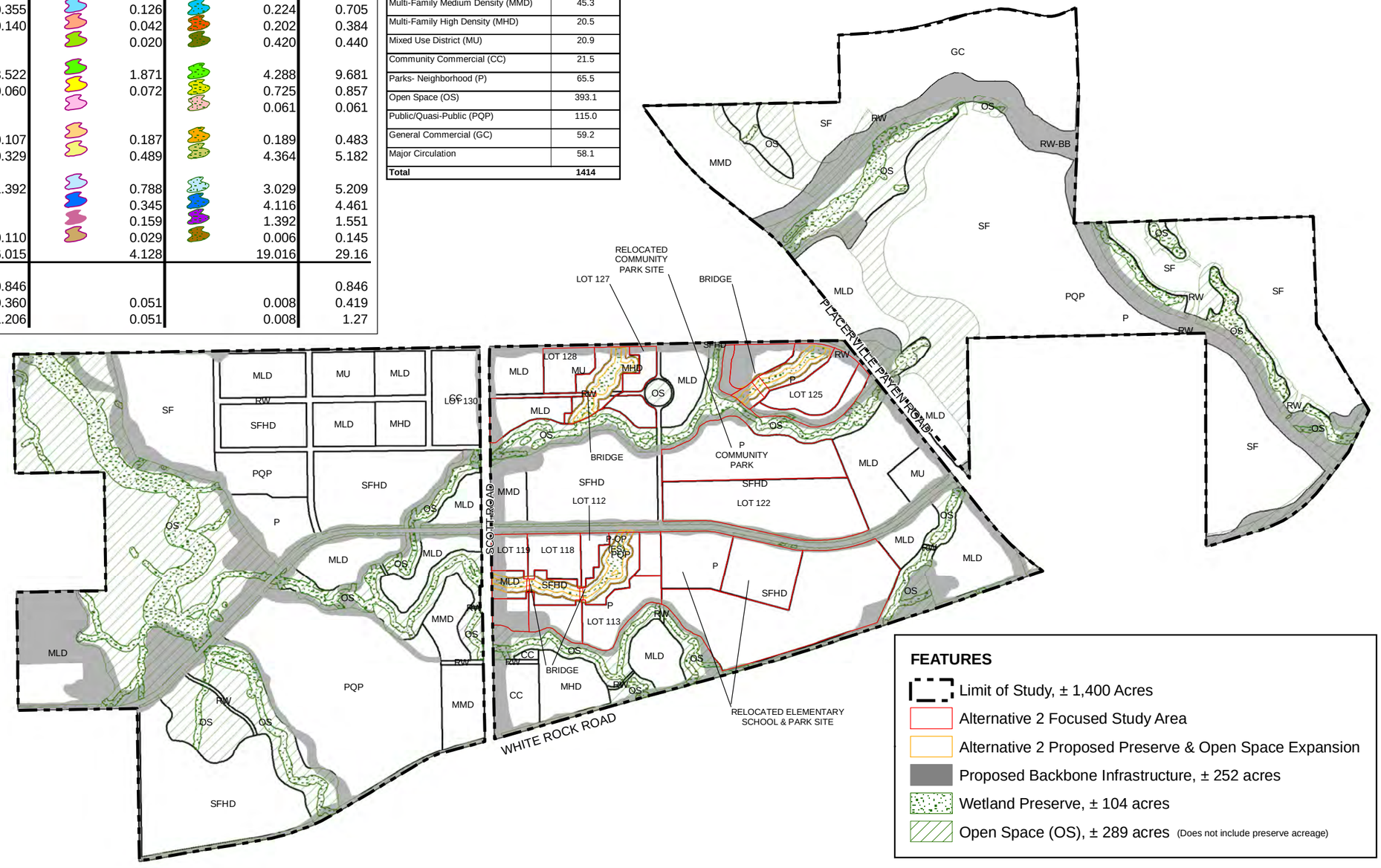
Within the project subarea affected by the preservation of these additional drainage segment, Alternative 2 would provide for the development of 142.7 acres of land, including 645 SFHD Units, 156 MLD Units, 70 MHD Units, and 56 Mixed Use Units, as well as backbone infrastructure and public facilities. Alternative 2 would result in a

Community Park site that does not meet City of Folsom location criteria (**Appendix B**) and a reduction in developable land use area, and subsequent reduction in developable units, including SFHD units. SFHD neighborhoods are the "Blueprint" smart growth alternative to conventional low density large lot single family development. Any loss of SFHD area conflicts with FPASP planning principles and the defined project objectives relevant to implementing development consistent with "Blueprint Smart Growth" principles and reduces the overall marketability of the project. Alternative 2 would therefore not meet the Project Purpose criteria.

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.355	0.126	0.224	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	3.522	1.871	4.288	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	1.392	0.788	3.029	5.209
Intermittent Drainage		0.345	4.116	4.461
Pond		0.159	1.392	1.551
Ditch/Canal	0.110	0.029	0.006	0.145
TOTAL	6.015	4.128	19.016	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

*Individual acreages reported to 3 significant figures.
Sum of subtotals are reported to 2 significant figures.

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	218.5
Multi-Family Low Density (MLD)	174.2
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	20.5
Mixed Use District (MU)	20.9
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	65.5
Open Space (OS)	393.1
Public/Quasi-Public (PQP)	115.0
General Commercial (GC)	59.2
Major Circulation	58.1
Total	**1414**



FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S. (ALTERNATIVE 2)

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

0 1250 2500
SCALE IN FEET

Drawn By: DSD, ETA
Date: 11/13/12

FIGURE 7

Alt2_with_dev_limit_impact_20121113.mxd

Logistics

In order to preserve the drainages located within the center of the project site and provide a minimum distance of 75-feet of buffer from the features, proposed for preservation by Alternative 2 a 150-foot minimum wide wetland buffer corridor would be incorporated into the three identified target drainage segments.

The first drainage segment proposed for perseveration by Alternative 2 is tributary to Alder Creek and begins at Street 'A' and traverses through the Elementary School site (Lot 112), a Park site (Lot 113), a SFHD residential site (Lot 118) then a MLD residential site (Lot 119). The feature flows from Street 'A' at the northern limits of the proposed wetland buffer corridor to the southwest for approximately 1,800 feet where it passes under Scott Road in a small drainage culvert and connects to a tributary to Alder Creek.

Preservation of this drainage segment would bisect a MMD site (Lot 119), a SFHD site (Lot 118), Elementary School 3 (Lot 112) and Neighborhood Park 3 (Lot 113). Under this wetland preservation alternative, the elementary school and the neighborhood park would be relocated east to Lot 111, thus reducing the effective size of this compact and interconnected SFHD residential neighborhood. As noted elsewhere in this document, the SFHD neighborhoods are the "Blueprint" smart growth alternative to conventional low density large lot single family development. Any loss of SFHD area conflicts with FPASP planning principles and the defined project objectives relevant to implementing development consistent with "Blueprint Smart Growth" principles and reduces the overall marketability of the project.

The remaining portion of the vacated Neighborhood Park 3 (Lot 113) site would be combined with the remaining remnants of Lot 112 (elementary school) and the southern portion of Lot 118 to form a new SFHD neighborhood. A new bridge would be constructed between the old boundary of lots 113 and 118 to provide access to the north for residents and emergency vehicles. The remaining portion of the vacated Elementary School 3 site (Lot 112) would be combined with the remnant of Lot 118 to form another SFHD neighborhood. Lot 119 would remain as a divided MMD development with a new bridge at its eastern boundary providing the required ingress and egress for residents and emergency vehicles. Additionally, the drainage culvert under Scott Road connecting the wetland feature to a downstream tributary would be replaced with a bridge.

The result of these land use changes includes:

- Loss of SFHD land use area;
- Loss of MMD land use area;
- Inability of the project to meet SACOG Blueprint density goals;
- Construction of three new bridges;
- Relocation of Elementary School 3 and Neighborhood Park 3 from the preferred locations to less desirable locations in Lot 111;
- Inefficient land utilization in lots 111, 118, 119; and

- Reduced project connectivity.

The second drainage segment proposed for preservation by Alternative 2 is also tributary to Alder Creek. This segment begins at the northern boundary of Lot 127 and flows to the southwest through Lot 128 and the middle of Lot 130 until it connects to a tributary to Alder Creek. The wetland buffer corridor is approximately 900 feet long and varies in width from 180 feet to 300 feet. Preservation of this wetland buffer corridor would result in the following land use changes:

- A reduction in the lot size for MLD Lot 130 (a decrease in multi-family low density residential units);
- A reduction in the lot size for MHD Lot 127 (a decrease in multi-family high density residential units;
- A reduction in the lot size for MU Lot 128 (a decrease in commercial building area and multi-family residential units; and
- Construction of two bridges to restore project connectivity between lots 127, 128 and 130 and access for emergency vehicles.

Preservation of the second drainage segment would result in the loss of residential units and commercial building area, requires the construction of new bridges and infrastructure and reduces overall project residential unit count. Reduction of residential unit count and increases in project infrastructure costs affect overall project feasibility and marketability. Therefore, preservation of the second drainage segment does not meet the Logistics criteria.

The third drainage segment proposed for preservation by Alternative 2 meanders from the northeast towards the southwest through the middle of the proposed Community Park-East site (Lot 125). Community Parks typically:

1) Range in size from 20 to 50 acres;
2) Have a service radius of one mile; and
3) Require good access to the community circulation network.

Community Park East is an integral part of the FPASP network of local, neighborhood and community parks and its original Lot 125 location is the site preferred by the City of Folsom Parks Department based on its topography, geographical location in the overall land use plan and its proximity to both collector and arterial streets as well as the Plan Area transit corridor. Preservation of the third drainage segment will bisect Lot 125 and force the relocation of Community Park East to an alternative site of similar size as required by the City of Folsom Parks Department. Bisecting this 25 acre lot would prohibit the site from accommodating the required sport facilities defined for the FPASP. While the crossing of this drainage segment would facilitate vehicular and non-vehicular circulation, the preserved areas would preclude the site from supporting required sports facilities, as the remaining areas are of insufficient expanse to accommodate the planned sport facilities.

Alternative 2 proposes relocating Community Park East to the northern portion of SFHD Lot 122 and revising the land use designation of the remainder of Lot 125 from P (Park) to SFHD. The proposed revision will result in the following land use changes:

- An increase in project open space;
- A decrease of approximately 50 SFHD residential units;
- Construction of approximately 2,500 feet of new collector road to provide full access, as required by the City of Folsom, to the southern side of the proposed Community Park East site on Lot 122; and
- Construction of one new bridge across the preserved third drainage segment in lot 125 in order to maintain two points of ingress and egress for residences and emergency vehicles in the new SFHD neighborhoods.

The relocation of Community Park East also fails to meet the City's adopted goals and objectives relevant to parks and recreational facilities, as well as goals and objectives for parks defined by FPASP as follows:

- The site is not located abutting a major collector road, thus inhibiting vehicular access.
- The site is not located abutting the Transportation Corridor, thus inhibiting public transportation access to the site.
- The site is located abutting a planned single family neighborhood without any buffers.
- The site's elongated rectangular shape does not conform to the length-width ratio desired for Community Parks, where the design theme is to plan sports facilities around design community centers and restrooms.

Preservation of the third drainage segment would result in a Community Park site that does not meet City of Folsom location criteria, increases the number of collector roads in the project, requires the construction of a new bridge and decreases the number of single family high density residential units.

Alternative 2 would provide for large-scale development of the project site including, on-site backbone infrastructure, schools, parks, and an on-site trail system. However, this alternative includes a reduction in residential units, particularly in the critically important SFHD category; relocates Elementary School 3 and Neighborhood Park 3 from the City-preferred locations, decreases overall project connectivity, and requires the construction of a new collector road to serve the relocated Community Park East. Additional sewer, water, drainage and roadway infrastructure improvements such as a new collector road, bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins will also be required under Alternative 2. As shown on **Figure 7**, additional relevant details are discussed within the Alternative 2 Cost Analysis.

The development of Alternative 2 would result in the reduction of residential units, the relocation of Elementary School 3 and Neighborhood Park 3 to less desirable locations, the relocation of Community Park East to an inferior site lacking adequate access, and reduced project connectivity. Resultant lots will have irregular geometric configurations of those parcels affected by the revised land use plan proposed by this alternative. The land use development potential resulting from these final parcels would be reduced due to exaggerated edge effects, extreme angles and other geometric design elements required to preserve the three additional drainage segments, resulting in undevelopable portions of individual parcels, and thus further reducing the development potential for these individual parcels, as well as this alternative.

Therefore, Alternative 2 does not meet the Logistics criteria.

Cost

The estimated development cost for Alternative 2 is $102,109,468, which equates to $10,079,182 less than the estimated $112,188,650 cost to develop the Proposed Project. However, implementation of Alternative 2 would result in the loss of 22.9 acres of developable land to accommodate an additional 5.0% (1.60 acres) of jurisdictional aquatic features delineated on the project site (14 acres of developable land lost for every additional acre of preserved jurisdictional feature). The decrease in developable land results in fewer residential units, and the subsequent increase in the development cost per acre related to one-time cost burdens associated with infrastructure, and public facilities and services costs. Therefore the development cost for Alternative 2 is increased by $38,086 per acre.

The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, and arterial and collector roadways does not change due to the loss of some residential units. Therefore, these costs are spread over fewer residential units increasing the proportional share of the backbone infrastructure burden. However, the cost for providing the required public facilities and services does change due to the loss of residential units since the population requiring these types of facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Folsom South Specific Plan Area. The developable acreage for Alternative 2 is estimated at 142.7 acres. Therefore the total increased development cost associated with preservation of the additional 1.60 acres of waters of the U.S. proposed by Alternative 2 amounts to $5,435,000.

As shown in **Table 10,** additional in-tract improvements would be required to preserve the additional 1.60 acres of waters of the U.S. These improvements include: sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridors and additional storm drainage water quality/detention basins amounting to an additional construction cost of $10,700,000.

Table 10 — Alternative 2 Additional In-Tract Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 112	
Bridge, 50' X 75'	$937,500
Bore & Jack 18" Casing (water)	$75,000
Bore & Jack 18" Casing (sewer)	$75,000
Lot 118	
Bridge, 50' X 65'	$812,500
Bore & Jack 18" Casing (water)	$75,000
Bore & Jack 18" Casing (sewer)	$75,000
Lot 125	
Bridge, 50' X 100'	$1,250,000
Bore & Jack 18" Casing (water)	$75,000
Bore & Jack 18" Casing (sewer)	$75,000
Lot 128	
Bridge, 50' X 100'	$2,562,500
Bore & Jack 18" Casing (water)	$150,000
Bore & Jack 18" Casing (sewer)	$150,000
Lot 130	
Bridge, 35' X 90'	$787,500
Bore & Jack 18" Casing (water)	$75,000
Bore & Jack 18" Casing (sewer)	$75,000
Total	**$7,250,000**

As shown in **Table 11**, in addition to in-tract construction costs, an additional $3,450,000 would be required for backbone infrastructure improvements related to preservation of the three drainage segments proposed by Alternative 2.

Table 11 — Alternative 2 Additional Backbone Infrastructure Improvements and Costs

Additional Required Backbone Infrastructure Improvements	Cost
Scott Road	
Bridge, 130' X 100'	$3,250,000
Bore & Jack 24" Casing (water)	$100,000
Bore & Jack 24" Casing (water)	$100,000
Total	**$3,450,000**

As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure improvements (**Table 10**), as well as additional backbone infrastructure improvements (**Table 11**) required to incorporate a wetland buffer corridor, the cost to develop Alternative 2 increases by $16,135,000 (**Table 12**), resulting in an adjusted total estimated development cost of $118,244,468 ($6,055,818 over the Proposed Project).

Table 12 — Alternative 2 Costs to Preserve Additional 1.60 Acres of Waters of the U.S.

Description	Cost
Additional Development Costs Due to Avoidance of 1.60 Acres of Waters of the U.S.	$5,435,000
Additional Construction Costs Due to Avoidance of 1.60 Acres of Waters of the U.S.	$10,700,000
Total Increased Cost for Development of Alternative 2	**$16,135,000**

Source: MacKay & Somps, 2012

This increased development cost of $16,135,000 ($10,084,375 per additional acre of preserved jurisdictional feature), coupled with the loss of 29.6 acres of development area, and subsequent overall loss of residential units available for sale, adversely affects the ability of this development scenario to provide a project with competitive prices. Therefore, Alternative 2 does not meet the Cost criteria.

Environmental

Alternative 2 would result in impacts to 21% (6.02 acres) of jurisdictional aquatic features delineated on the project site related to proposed land use development, as shown in **Table 13**. Alternative 2 would conserve 28% (393 acres) of the project site as open space. This represents a 5.0% reduction (1.60 acres) in impacts to jurisdictional waters, and an additional 1.0% (16 acres) of open space. Alternative 2 therefore meets the Environmental criteria.

Table 13 — Alternative 2 Impacts to Waters of the U.S.

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.355	0.126	0.224	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	3.522	1.871	4.288	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061
Slope Wetlands				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
Other Waters of the U.S.				
Ephemeral Drainage	1.392	0.788	3.029	5.209
Intermittent Drainage	-	0.345	4.116	4.461
Pond	-	0.159	1.392	1.551
Ditch/Canal	0.110	0.029	0.006	0.145
TOTAL	**6.02**	**4.13**	**19.02**	**29.16**

Overall

Alternative 2 meets the Environmental screening criteria. However, the preservation of the three drainage segments proposed by Alternative 2 would result in the creation of a land use plan with compromised land use development potentials related to infeasible geometric parcel configurations to accommodate the proposed preservation of an additional five percent (1.60 acres) of jurisdictional features. The development of Alternative 2 would also result in the need for substantial additional infrastructure improvements, including additional sewer, water, drainage and roadway infrastructure improvements such as bridges, and boring and jacking of utilities under the wetland buffer corridor, amounting to additional construction cost of $7,250,000. In addition, $3,450,000 in construction costs would be added to the backbone infrastructure costs for Alternative 2. These additional construction costs, combined with increased development costs amounting to $5,435,000 associated with the preservation of the three drainage segments (1.60 acres of waters of the U.S.) proposed by Alternative 2 equates to a total increased development cost of $16,135,000 ($10,084,375 per additional acre of preserved jurisdictional feature), resulting in an adjusted total estimated development cost of

$118,244,468, exceeding that estimated for the Proposed Project by $6,055,818. Therefore, Alternative 2 is not considered practicable. Alternative 2 does not meet the Project Purpose screening criteria and Cost and Logistics are considered impracticable.

3.3.6 Alternative 3

Alternative 3 was designed to test the practicability of preserving three drainage segments (0.69 acre of waters of the U.S.) that extend into three lots: 1) a High School/Middle School site (Lot 146), 2) a Community Commercial site (Lot 116) and 3) a SFHD residential site (Lot 111) within the south central portion of the Folsom South development footprint. Alternative 3 would result in a loss of 21.7 developable acres (31 acres of developable land lost for every additional acre of preserved jurisdictional feature).

Project Purpose

A summary of land uses and proposed acreages by land use are shown in **Table 14**. Alternative 3 would preserve 62% (17.96 acres) of the onsite delineated jurisdictional features.

Table 14 — Alternative 3 Land Uses and Acreages

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	238.7
Multi-Family Low Density (MLD)	178.6
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	18.7
Parks- Neighborhood (P)	54.8
Open Space (OS)	391.5
Public/Quasi-Public (PQP)	103.3
Major Circulation	59.5
General Commercial (GC)	59.3
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

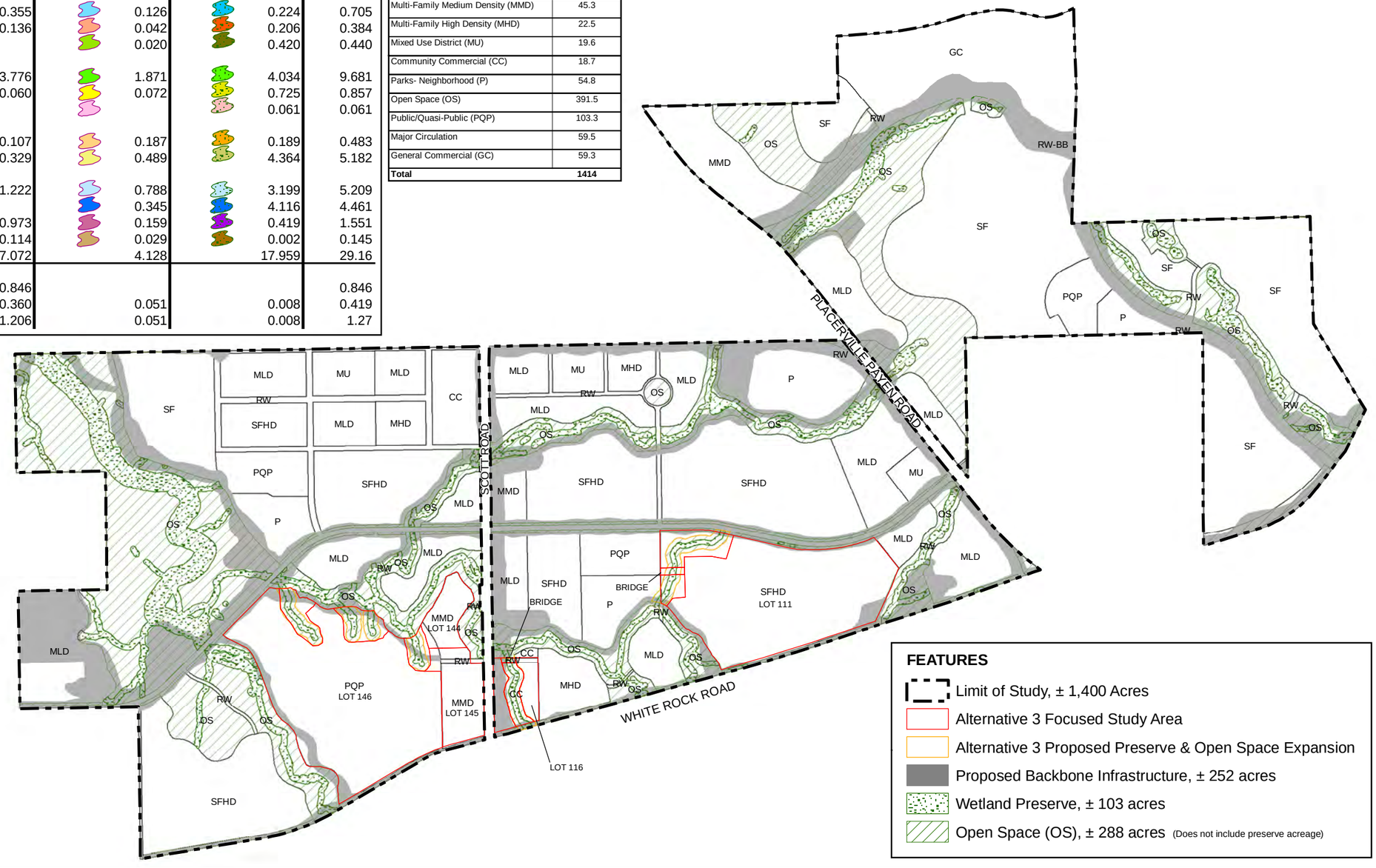
Within the project subarea affected by the preservation of the additional drainage segments, Alternative 3 would provide for the development of 68.7 acres of land, including 322 SFHD Units, 133 MMD Units, and 2.8 acres of Community Commercial land uses, as well as backbone infrastructure and public facilities (**Figure 8**). However, preservation of the drainage segments as proposed by the land use configuration of Alternative 3 would eliminate the potential for development of the combined

Middle/High School and would eliminate the Community Commercial site. Loss of the Community Commercial site would result in an inconsistency with the FPASP planning principles of providing neighborhood centers and connected walkable neighborhoods. Alternative 3 therefore does not meet the Project Purpose criteria.

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.355	0.126	0.224	0.705
Vernal Pool	0.136	0.042	0.206	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	3.776	1.871	4.034	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	1.222	0.788	3.199	5.209
Intermittent Drainage		0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	7.072	4.128	17.959	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

*Individual acreages reported to 3 significant figures.
Sum of subtotals are reported to 2 significant figures.

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	238.7
Multi-Family Low Density (MLD)	178.6
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	18.7
Parks- Neighborhood (P)	54.8
Open Space (OS)	391.5
Public/Quasi-Public (PQP)	103.3
Major Circulation	59.5
General Commercial (GC)	59.3
Total	**1414**



FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S. (ALTERNATIVE 3)

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

0 1250 2500
SCALE IN FEET

Drawn By: DSD, ETA
Date: 11/13/12

FIGURE 8

Alt3_with_dev_impact_limit_impact_20121112.mxd

Logistics

Several individual drainage segments proposed for preservation by Alternative 3 connect to a tributary to Alder Creek, and extend from the northern boundary of Lot 146, the High School/Middle School site, in a southern direction for several hundred feet. The wetland buffer corridors for these segments range in width from 200 feet to 400 feet. Preservation of these segments would encompass approximately 9.4 acres of Lot 146, rendering this site unusable as a High School/Middle School site. Additionally, the three narrow remainder parcels that would be created between the drainage segments could not be used for school site dedication purposes, thus further decreasing the net useable area of Lot 146. As previously addressed in the discussion for Alternative 1, the FCUSD would not consider Lot 145 as an appropriate parcel for addition to the high/middle school site because of its Scott Road frontage. In addition, in order to avoid grading into jurisdictional wetlands, retaining walls of considerable height would be required on the northern, western and southern boundaries of the site. Tall retaining walls would create safety problems for the school district and increase site preparation costs. Lot 146 is the only lot in the FPASP that meets the District's site and spacing criteria for high school sites, as well as CDE and FCUSD school site selection criteria. Therefore, eliminating the high/middle school development potential on Lot 146 effectively eliminates the project's ability to develop this facility.

The second drainage segment proposed for preservation by Alternative 3 also connects to a tributary to Alder Creek. This segment begins at the southern boundary of a Community Commercial site (Lot 116) and flows to the north through the middle of Lot 116 until it connects to a tributary to Alder Creek. The wetland buffer corridor for this segment is approximately 800 feet long and varies in width from 165 feet to 200 feet. The wetland buffer corridor proposed by Alternative 3 for this feature would bisect the Community Commercial parcel into two small parcels: a western site of approximately 1.4 acres and an eastern site of approximately 3.2 acres. The only reasonable use for the western site would be incorporation into the wetland buffer, thus increasing the open space acreage. The eastern site would not be sufficient in size to support community commercial development; therefore this lot would be merged with MHD Lot 115 to create a 13.7 acre MHD residential development. Loss of the Community Commercial site would result in an inconsistency with the FPASP planning principles of providing neighborhood centers and connected walkable neighborhoods. Preservation of this drainage segment would also require the construction of a bridge over the wetland feature in order to provide access to MHD Lot 115.

The third drainage segment proposed for preservation by Alternative 3 meanders from the northeast towards the southwest along the western boundary of a SFHD residential site (Lot 111). The wetland buffer corridor for this feature extends approximately 1,200 feet and varies in width from 180 feet to 380 feet. Preservation of the third drainage segment would decrease the developable area of SFHD Lot 111, reduce the connectivity between the SFHD neighborhood, the elementary school and the neighborhood park and would require the construction of a new bridge over the wetland feature in order to maintain two points of ingress and egress for residences and emergency vehicles. Moreover, as previously stated in Alternative 1, any loss of SFHD development area would reduce the

project's marketability to builders, and would conflict with the FPASP planning principle of compact development and connected and walkable neighborhoods.

Alternative 3 would provide for large-scale development of the project site including, on-site backbone infrastructure, elementary schools, parks, and an on-site trail system. However, Alternative 3 would not provide for a combined high/middle school site, would eliminate the Community Commercial site, reduce project connectivity, conflict with FPASP planning principles, and would require additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridors and additional storm drainage water quality/detention basins (**Figure 8**). Additional relevant details are discussed under the Alternative 3 Cost Analysis.

The development of Alternative 3 would result in the following negative land use factors compared to the Proposed Project:

1) Elimination of the combined high/middle school;
2) Elimination of the community commercial site;
3) Reduced project connectivity;
4) Required construction of additional bridges and other infrastructure;
5) Inconsistency with FPASP planning principles; and
6) Irregular geometric configurations of those parcels affected by the revised land use plan proposed by this alternative.

The land use development potential resulting from these final parcels, as described in detail above for each of the three drainage segment proposals, would be reduced due to exaggerated edge effects, extreme angles and other geometric design elements required to preserve the three drainage segments, resulting in undevelopable portions of individual parcels, and thus further reducing the development potential for these individual parcels, as well as this alternative.

Therefore, Alternative 3 does not meet the Logistics criteria.

Cost

The estimated development cost for Alternative 3 is $55,941,704, which equates to $10,339,696 less than the estimated $66,281,400 cost to develop the Proposed Project. However, implementation of Alternative 3 would result in the loss of 21.7 acres of developable land to accommodate an additional 0.69 acre of preserved waters of the U.S. (31 acres of developable land lost for every additional acre of preserved jurisdictional feature). The decrease in developable land results in fewer residential units, and the subsequent increase in the development cost per acre related to one-time cost burdens associated with infrastructure, and public facilities and services costs. Therefore the development cost for Alternative 3 is increased by $81,088 per acre.

The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some residential units. Therefore, these costs are spread over fewer residential units increasing the proportional share of the backbone infrastructure burden. However, the cost for providing the required public facilities and services would change due to the loss of residential units since the population requiring these types of facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities would be reduced due to the smaller population within the greater Folsom South Specific Plan Area.

As shown in **Table 15**, additional in-tract improvements would be required to preserve the additional 0.69 acre of waters of the U.S. These improvements require additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridors and additional storm drainage water quality/detention basins amounting to an additional construction cost of $2,112,500.

Table 15 — Alternative 3 Additional In-Tract Construction Requirements and Costs

Additional Required In-Tract Improvements	Cost
Lot 111	
Bridge, 50’ X 75’	$937,500
Bore & Jack 24” Casing (water)	$75,000
Bore & Jack 24” Casing (sewer)	$75,000
Lot 116	
Bridge, 50’ X 70’	$875,000
Bore & Jack 24” Casing (water)	$75,000
Bore & Jack 24” Casing (water)	$75,000
Total	**$2,112,500**

Therefore although development costs estimated for Alternative 3 are estimated approximately equal to the Proposed Project, Alternative 3 would result in the loss of 31 acres of developable land for every acre of additionally preserved jurisdictional feature and would not result in the construction of an equivalent number of residential units for sale. As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure improvements (**Table 16**), required to incorporate a wetland buffer corridor, the cost to develop Alternative 3 increases by $9,443,500, resulting in an adjusted total estimated development cost of $65,385,204.

Table 16 — Alternative 3 Costs to Preserve Additional 0.69 Acre of Waters of the U.S.

Description	Cost
Additional Development Costs Due to Avoidance of 0.69 Acre of Waters of the U.S.	$7,331,000
Additional Construction Costs Due to Avoidance of 0.69 Acre of Waters of the U.S.	$2,112,500
Total Increased Cost for Development of Alternative 2	**$9,443,500**

Source: MacKay & Somps, 2012

The increased development cost of $9,443,500 ($13,686,232 per additional acre of preserved jurisdictional feature) related to avoidance of an additional two percent (0.69 acre) of jurisdictional aquatic features, coupled with a 21.7-acre reduction in development area, and the subsequent overall loss of residential units available for sale, adversely affects the ability of this development to provide a project with competitive prices. Therefore, Alternative 3 does not meet the Cost criteria.

Environmental

Alternative 3 would result in impacts to 24% (7.07 acres) of jurisdictional waters related to proposed land use development. Alternative 3 would conserve 28% (391 acres) of the project site as open space. This represents a 2% reduction (0.69 acre) in impacts to jurisdictional waters, and an additional one percent (14 acres) of open space. Alternative 3 therefore meets the Environmental criteria.

Table 17 — Alternative 3 Impacts to Waters of the U.S.

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.355	0.126	0.224	0.705
Vernal Pool	0.136	0.042	0.206	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	3.776	1.871	4.034	9.681
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061
Slope Wetlands				
Seasonal Wetland	0.107	0.187	0.189	0.483
Seep	0.329	0.489	4.364	5.182

Other Waters of the U.S.				
Ephemeral Drainage	1.222	0.788	3.199	5.209
Intermittent Drainage	-	0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	**7.07**	**4.13**	**17.96**	**29.16**

Overall

Alternative 3 meets the Environmental screening criteria. However, the preservation of the individual drainage segments in Lot 146 would eliminate the potential use of that lot for the combined High/Middle School, and no other lots meet school facility siting criteria and CDE and FCUSD school site selection standards. The Community Commercial site would be eliminated by the preservation of the drainage segment in Lot 116. Preservation of the drainage segment in Lot 111 would eliminate SFHD residential units, conflicting with FPASAP planning principles and reducing project connectivity. These land use changes would result in the preservation of an additional two percent (0.69 acre) of jurisdictional features; however, these land use changes would also compromise the feasibility of the proposed land use plan. Therefore Alternative 3 does not meet the Project Purpose.

The development of Alternative 3 would also result in the need for the need for substantial additional infrastructure improvements, including additional sewer, water, drainage and roadway infrastructure improvements such as bridges, and boring and jacking of utilities under the wetland buffer corridor, amounting to an additional cost of $2,112,500. These additional construction cost, combined with the development cost of $7,331,000 associated with the preservation of the additional three drainage segments (0.69 acre of waters of the U.S.) proposed by Alternative 3 equates to a total increased development cost of $9,443,500 ($13,686,232 per additional acre of preserved jurisdictional features). Therefore, Alternative 3 is not considered practicable. Alternative 3 does not meet the Project Purpose screening criteria, and Costs and Logistics are considered impracticable.

3.3.7 Alternative 4

Alternative 4 was designed to test the practicability of preserving an additional 300 feet of drainage tributary to Alder Creek (0.25 acre of waters of the U.S.). Alternative 4 would result in the loss of 1.5 developable acres (6 acres of developable land lost for every additional acre of preserved jurisdictional feature), and would result in the reconfiguration of residential land uses, but no loss in dwelling units, and the potential loss of approximately 15,000 square feet of Community Commercial land use development area.

Alternative 4 was also considered in the Backbone Infrastructure Federal Clean water Act Section 404(b)(1) Guidelines Alternatives Analysis. However, Alternative 4 was made possible by evaluating the practicability of this alternative for the Folsom South project.

Project Purpose

A summary of land uses and proposed acreages by land use are shown in **Table 18**. Alternative 4 would preserve 61% (17.93 acres) of the onsite delineated jurisdictional features.

Table 18 — Alternative 4 Land Uses and Acreages

Land Use	Acreage
Single Family (SF)	221.9
Single Family High Density (SFHD)	243.0
Multi-Family Low Density (MLD)	178.6
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	54.9
Open Space (OS)	376.8
Public/Quasi-Public (PQP)	110.5
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

Within the project subarea affected by preservation of the additional drainage segment, Alternative 4 would preserve an additional 300 feet of an unnamed tributary to Alder Creek, which flows from the east towards the west, crossing under Scott Road, turning to the north and meandering along the western edge of Scott Road, coming within 30 feet of the existing edge of pavement (**Figure 9**). Alternative 4 meets the Project Purpose criteria.

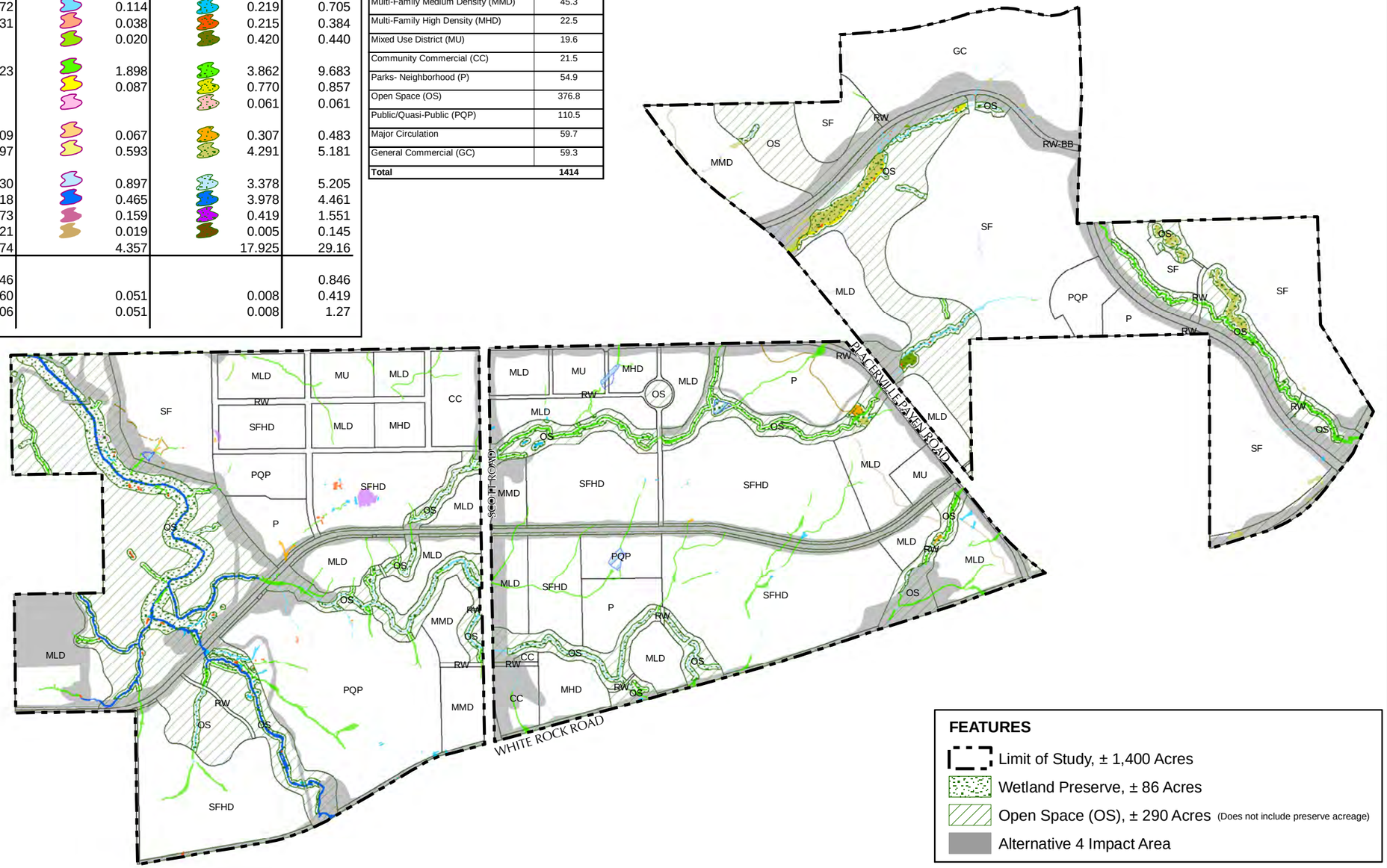
Logistics

In order to preserve this drainage segment, the centerline of Scott Road would be shifted 80-feet to the east so the proposed edge of pavement matches the existing edge of pavement, eliminating the need to realign the 300-foot drainage segment. The proposed revised alignment of Scott Road extends north, from its intersection with White Rock Road, approximately 3,200 feet. The relocation of Scott Road would increase the area of Lots 142, 143 and 145 and decrease the area of Lots 119 and 120. To maintain the same project residential unit count, the target densities of the affected lots would be adjusted

upward or downward as required to maintain the same unit count for each affected parcel. Relocation of Scott Road would also reduce the area of Community Commercial Lot 116 from 8.0 acres to 6.6 acres. In order to maintain the minimum commercial area of 8.0 acres, MHD Lot 115 would be reduced in area from 10.5 acres to 9.1 acres and its target density would increase slightly in order to maintain the same number of residential units.

CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.372	0.114	0.219	0.705
Vernal Pool	0.131	0.038	0.215	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	3.923	1.898	3.862	9.683
Seep		0.087	0.770	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.109	0.067	0.307	0.483
Seep	0.297	0.593	4.291	5.181
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	0.930	0.897	3.378	5.205
Intermittent Drainage	0.018	0.465	3.978	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.121	0.019	0.005	0.145
TOTAL	6.874	4.357	17.925	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	243.0
Multi-Family Low Density (MLD)	178.6
Multi-Family Medium Density (MMD)	45.3
Multi-Family High Density (MHD)	22.5
Mixed Use District (MU)	19.6
Community Commercial (CC)	21.5
Parks- Neighborhood (P)	54.9
Open Space (OS)	376.8
Public/Quasi-Public (PQP)	110.5
Major Circulation	59.7
General Commercial (GC)	59.3
Total	**1414**



FEATURES

- Limit of Study, ± 1,400 Acres
- Wetland Preserve, ± 86 Acres
- Open Space (OS), ± 290 Acres (Does not include preserve acreage)
- Alternative 4 Impact Area

FOLSOM SOUTH PROPOSED LAND USE PLAN AND IMPACTS TO WATERS OF THE U.S. (ALTERNATIVE 4)

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Landuse data provided by MacKay and Somps and ECORP Consulting.

N

0 1250 2500
SCALE IN FEET

Drawn By: DSD
Date: 10/30/12

FIGURE 9

Alt4_Scott_Rd_20121022_V2.mxd

The existing culverts in place under Scott Road are not of sufficient size to accommodate the existing undeveloped 100-year, 24-hour storm runoff flows and Scott Road is overtopped during these events. Therefore, the Proposed Project would be responsible for constructing storm drainage infrastructure to prevent the overtopping of Scott Road. The existing undersized culverts would be replaced with a larger culvert requiring the profile grades for Scott Road to be elevated. Due to the elevated Scott Road profile grades, a large retaining wall would be required to be constructed adjacent to the western edge of pavement to prevent the encroachment of roadway embankment slopes from impacting the adjacent drainage segment. The foundation and retaining wall footings may extend within 20 feet of the preserved drainage segment. Additional relevant details are discussed under the Alternative 4 Cost Analysis.

Development of Alternative 4 would accommodate residential, commercial, and mixed land uses, public facilities, and transportation corridors, as well as backbone infrastructure to support the proposed land uses.

Alternative 4 meets the Logistics criteria.

Cost

The estimated development cost for Alternative 4 is $39,396,138, which equates to $483,462 less than the estimated $39,879,600 cost to develop the Proposed Project. Implementation of Alternative 4 would result in the loss of 1.5 acres of developable land to accommodate the additional 0.25 acre of preserved drainage (6 acres of developable land lost for every additional acre of preserved jurisdictional feature). The decrease in developable land results in reconfigured residential land use and a decrease in the community commercial land use area and the subsequent increase in development cost per acre. The increased development cost for Alternative 4 equates to $18,464 per acre.

As shown in **Table 19**, additional backbone infrastructure and improvements would be required to preserve the additional one percent (0.25 acre) of jurisdictional features delineated on the site, resulting in an additional construction cost of $294,000.

Table 19 — Alternative 4 Additional Required Backbone Infrastructure Improvements and Costs

Additional Required Backbone Infrastructure Improvements	Cost
Scott Road	
Retaining Wall	$294,000
Total	**$294,000**

As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure improvements (**Table 20**), required to develop Alternative 4, the cost burden increases by $1,114,000 ($4,456,000 per additional acre of preserved jurisdictional feature).

Table 20 — Alternative 4 Costs to Preserve Additional 0.25 Acre of Waters of the U.S.

Description	Cost
Additional Development Costs Due to Avoidance of 0.25 Acre of Waters of the U.S.	$820,000
Additional Construction Costs Due to Avoidance of 0.25 Acre of Waters of the U.S.	$294,000
Total Increased Cost for Development of Alternative 2	**$1,114,000**

Source: MacKay & Somps, 2012

However, the reduction in development area for Alternative 4 amounts to a loss of 1.5 acre of development area, and a reconfigured dwelling unit allocation with no loss of dwelling units, although 15,246 square feet of Community Commercial land use development would be lost. Based on the screening criteria, the increased costs associated with the development of Alternative 4 would be approximately equivalent to the cost estimated for the Proposed Project. Alternative 4 therefore meets the Cost criteria.

Environmental

Alternative 4 would result in impacts to 24% (6.87 acres) of jurisdictional waters related to proposed land use development and impacts to 15% (4.36 acres) of onsite jurisdictional waters related to backbone infrastructure development. Alternative 4 would conserve 27% (376 acres) of the project site as open space. These differences represents a 0.03 acre reduction in impacts to jurisdictional waters related to proposed land uses and a 22 acre reduction in impacts related to backbone infrastructure, as well as a one acre reduction in open space. In addition to the reduced impact acreages, Alternative 4 would eliminate the need to realign this drainage segment. Alternative 4 therefore meets the Environmental criteria.

Table 21 — Alternative 4 Impacts to Waters of the U.S.

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.372	0.114	0.219	0.705
Vernal Pool	0.131	0.038	0.215	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	3.923	1.898	3.862	9.683
Seep	-	0.067	0.770	0.857
Seasonal Marsh	-	-	0.061	0.061

Slope Wetlands				
Seasonal Wetland	0.109	0.067	0.307	0.483
Seep	0.297	0.593	4.291	5.181
Other Waters of the U.S.				
Ephemeral Drainage	0.930	0.897	3.378	5.205
Intermittent Drainage	0.018	0.465	3.978	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.121	0.019	0.005	0.145
TOTAL	**6.89**	**4.36**	**17.93**	**29.16**

Overall

Alternative 4 meets the Project Purpose and Environmental screening criteria. Alternative 4 also meets the Logistics screening criteria. As a result of having less development land to spread the backbone infrastructure cost burden over, combined with the cost of additional infrastructure improvements (**Table 20**), required to develop Alternative 4, the cost burden increases by $1,114,000. These additional construction cost, combined with the increased development cost of $820,000 associated with the preservation of the 0.25 acre drainage segment proposed by Alternative 4 equates to a total increased development cost of $1,114,000 ($4,456,000 per additional acre of preserved jurisdictional features), equating to a revised total estimated development cost of $40,510,138 ($630,538 above that estimated for the Proposed Project). Development costs are therefore appreciably the same as those identified for the Proposed Project. Therefore Alternative 4 also meets the Cost screening criteria.

4.0 CONCLUSIONS

The following project purpose(s) have been identified for the Folsom South Specific Plan project:

1. Develop a large-scale mixed-use and mixed-density residential housing development consistent with the City of Folsom's General Plan and SACOG Smart Growth Principles.

2. Expand the City's boundaries based on the ultimate boundaries of development that the City can reasonably control and service, and do so in a manner that would foster orderly urban development and discourage leapfrog development and urban sprawl.

3. Annex those parcels of land adjacent to the City limit and within the City's Sphere of Influence whose development could have significant visual, traffic, public service, and environmental impacts on the City so that the City may influence the ultimate development of those parcels.

4. Provide a large-scale mixed-use and mixed-density residential housing development within the City of Folsom, south of U.S. 50.

5. Develop several distinct neighborhoods within the project site, connected by a substantial open space area and recreational trail network.

6. Provide neighborhood- and regional-serving retail areas within the project site.

7. Provide a mix of housing types within the project site to diversify the City's housing stock.

8. Provide a combined high school/middle school and the appropriate elementary schools on-site sufficient to meet the needs of the project.

9. Provide the appropriate number and size of on-site community and neighborhood parks sufficient to meet the needs of the project.

10. Generate positive fiscal impacts for the City through development within the project site.

The purpose of this analysis is to determine if the evaluated onsite alternatives are capable of being implemented after taking into consideration costs, and logistics in light of overall project purposes. The findings of these analyses are summarized in **Table 22** and **Table 23** below.

Table 22 — On-Site Alternatives Land Use Comparison Matrix

	Proposed Project	No Fill/ No Permit Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Reduced Buffer Alternative
Proposed Land Uses (acres)[4]							
Single-Family (SF)	221.9	Undetermined	221.9	221.9	221.9	221.9	221.9
Single-Family High Density (SFHD)	243.0	Undetermined	234.9	218.5	238.7	243.0	240.1
Multi-Family Low Density (MLD)	178.6	Undetermined	175.0	174.2	178.6	178.6	184.9
Multi-Family Medium Density (MMD)	45.3	Undetermined	45.3	45.3	45.3	45.3	46.9
Multi-Family High Density (MHD)	22.5	Undetermined	22.5	20.5	22.5	22.5	22.9
Mixed Use District (MU)	19.6	Undetermined	19.6	20.9	19.6	19.6	19.9
Community Commercial (CC)	21.5	Undetermined	21.5	21.5	18.7	21.5	21.7
Parks- Neighborhood (P)	54.9	Undetermined	54.9	65.5	54.8	54.9	54.9
Wetland Preserve	97.0	260	105.0	104.0	103.0	97.0	82.0
Open Space (OS)	280.0	Undetermined	290.0	289.0	288.0	280.0	290.0
Public/Quasi-Public (PQP)	110.5	Undetermined	104.2	115.0	103.3	110.5	110.7
Major Circulation (RW, ROW, Bridges)	59.7	Undetermined	59.7	58.1	59.5	59.7	58.6
General Commercial (GC)	59.3	Undetermined	59.3	59.2	59.3	59.3	59.3
Total (acres)	**1414**	**1414**	**1414**	**1414**	**1414**	**1414**	**1414**
Developable Acreage Loss (acres)	N/A	Undetermined	29.2	22.9	21.7	1.5	+8
Residential Units & Commercial Square Feet (SF) Losses[5]	N/A	Undetermined	299 Unit	213 Units	214 Units & 30,970 SF CC	15,000 SF CC	44 Units & 870 SF MU
Impacted Jurisdictional Features (acres)[6]	7.62	0	6.28	6.02	7.07	7.62	7.74
Preserved Jurisdictional Features (acres)	17.42	29.16	18.75	19.02	17.96	17.42	17.29

[4] Derived from Current Best Available Land Use GIS Data

[5] Derived from Current Best Available Engineering Design Data and Land Use Standards (MacKay & Somps 2012)

[6] Derived from Verified Wetland Delineation GIS Data for the Folsom South Project Site, Verified February 6, 2009 (SPK-2006-00035)

Table 23 — On-Site Alternatives Comparison Matrix

	Jurisdictional Area Avoided Acres (Total Waters of the U.S. Acreages for the Folsom South Project Area)	**Net Developable Acres** (Study area subset within the greater Folsom South Specific Plan project area relevant to the project area and corresponding land uses that would be affected by additionally proposed drainage segment preservation for each individual Alternative)	**Total Study Area Development Costs ($)** (Study Area Development Cost and Project Specific One-Time Burdens Cost)	**Increased Construction Costs Resulting from Additionally Preserved Jurisdictional Features ($)** (Increased In-Tract and Backbone Infrastructure Construction Costs Relevant to Additional Avoidance)	**Increased Development Cost Resulting from Additionally Preserved Jurisdictional Features ($)** (Increased Development Cost Relevant to Project Specific One-Time Cost Burdens Related to Backbone Infrastructure Cost, and Public Facilities and Services Costs Projected Over Revised Developable Land Use Area)	**Cost per Additional Acre of Preserved Jurisdictional Features ($)**
Alternative 1						
Proposed Project[7]	17.42 (60% of Jurisdictional Aquatic Features Delineated on the Project Site)	90.4	$65,054,100	N/A	N/A	N/A
Alternative 1	18.75 (64% of Jurisdictional Aquatic Features Delineated on the Project Site)	61.2	$51,179,420	$1,882,250	$7,138,000	$6,731,530
Alternative 2						
Proposed Project[7]	17.42 (60% of Jurisdictional Aquatic Features Delineated on the Project Site)	165.6	$112,188,650	N/A	N/A	N/A
Alternative 2	19.02 (65% of Jurisdictional Aquatic Features Delineated on the Project Site)	142.7	$102,109,468	$10,700,000	$5,435,000	$10,084,375
Alternative 3						
Proposed Project[7]	17.42 (60% of Jurisdictional Aquatic Features Delineated on the Project Site)	90.4	$66,281,400	N/A	N/A	N/A
Alternative 3	17.96 (62% of Jurisdictional Aquatic Features Delineated on the Project Site)	68.7	$55,941,704	$2,112,500	$7,331,000	$13,686,232
Alternative 4						
Proposed Project[7]	17.42 (60% of Jurisdictional Aquatic Features Delineated on the Project Site)	45.9	$39,879,600	N/A	N/A	N/A
Alternative 4	17.42 (60% of Jurisdictional Aquatic Features Delineated on the Project Site)	44.4	$39,396,138	$294,000	$820,000	$4,456,000

[7] "Proposed Project" Development Area and Costs represent subsets of the greater Folsom Plan Area Specific Plan project area relevant to the project area affected by additional proposed intermittent drainage segment preservation for each Alternative. "Jurisdictional Area Avoided" acreages represent total WOUS acreages avoided for the entire Folsom South project area.

Based on the findings of this alternatives analysis, the Proposed Project and Alternative 4 meet the screening criteria. However, as the alternatives analysis for the backbone infrastructure has progressed, the final configuration of the backbone infrastructure footprint has been updated, eliminating the viability of Alternative 4 as proposed for the Folsom South Project.

In response to Corps' comments on the June 29, 2012 version of the Folsom South Clean Water Act §404(b)(1) Alternatives Analysis Report, an additional alternative has been analyzed incorporating reduced buffers along select drainage segments, cultural resource preservation, and the preservation of 0.10 acre of jurisdictional aquatic features. The potential reduction of buffer widths has been examined in light of the Proposed Project. Within areas not otherwise constrained by slopes, a potential gross land use area acreage gain of approximately eight acres would be possible with incorporation of reduced buffers.

In addition, the portion of the land plan in the Folsom South wetland permit located just east of Scott Road along the north property line has been revised to incorporate and preserve Native American bedrock mortar sites. Specifically, two sites were found and the easternmost site enlarges the open space area and the westernmost site will bifurcate Parcel 130. The result to the land plan is greater open space in these areas and less multi-family low density land to develop.

As summarized below in **Table 24**, MLD, MMD, MHD, CC and PQP land use acreages would be increased, while SFHD and P land uses would be subject to slight acreage losses due to the reduced buffer and the resulting reconfigurations of lots.

Table 24 — Reduced Buffer Land Use Summary

Land Use	FPA Approved Lot Area (acres)	Area Gained Due to Reduced Setback (acres)
Single-Family High Density (SFHD)	184.72	1.36
Multi-Family Low Density (MLD)	92.65	3.66
Multi-Family Medium Density (MMD)	13.62	1.32
Multi-Family High Density (MHD)	9.11	1.27
Community Commercial (CC)	0.72	0.09
Public/Quasi-Public (PQP)	79.63	0.06
Parks- Neighborhood (P)	37.82	0.90
Total	**418.27**	**8.66**

As shown in **Table 25** and **Table 26**, the gain in land use potential is partially balanced by the incorporation of additional preserved areas of open space within Lots 150 through 154 relevant to cultural resource preservation, as well as an additional loss of 2.42 acres of SFHD and 0.94 acre of P for preservation of the additional 0.10 acre drainage segment within the northwest corner of Lot 111 (**Table 26**).

Table 25 — Cultural Resource Site(s) Preservation Land Use Summary

Lot Number	Land Use	FPA Approved Lot Area (acres)	Revised Development Area due to Cultural Resources Preservation (acres)	Net Area Changes Due to Cultural Resources Preservation (acres)
150, 153, 154	Multi-Family Low Density (MLD)	27.38	26.41	-0.97
151	Multi-Family High Density (MHD)	5.70	6.17	0.47
152	Mixed Use (MU)	6.52	6.77	0.25
	R/W	3.78	1.88	-1.90
	Total	**43.38**	**41.23**	**-2.15**

Table 26 — Lot 111 Drainage Segment Preservation Land Use Summary

Lot Number	Land Use	FPA Approved Lot Area (acres)	Revised Development Area Due to Preservation of Lot 111 Drainage Segment (acres)	Net Development Area Changes due to Preservation of Lot 111 Drainage Segment (acres)
134, 142	Single-Family High Density (SFHD)	79.10	76.68	-2.42 (41 lots)
135	Public/Quasi-Public (PQP)	9.89	10.00	0.11
136	Parks- Neighborhood (P)	11.70	10.76	-0.94
	Total	**100.69**	**97.44**	**-3.25**

The land use summaries quantifying estimated changes in land use areas are based on best available current project-specific preliminary engineering design data and are approximate. Final design may ultimately modify net acreages by land use. However, the resulting land use configuration will be subject to the FPASP cap for total residential units. In summary, as shown in **Table 27**, the net developable land use area gained by the reduced setbacks along select drainage segments within the FPASP totals approximately three acres.

Table 27 — Net Estimated Developable Land Use Potential Gains and Reductions Summary

Description	Affected Land Use Area Changes (acres)
Developable Land Use Potential Gained By The Reduced Setback	8.66
Developable Land Use Potential Lost By the Cultural Resource Preservation Site(s)	-2.15
Developable Land Use Potential Lost By Preservation of The Lot 111 Drainage Segment	-3.25
Net Developable Land Use Potential Gained	**3.26**

A summary of land uses and resulting proposed acreages by land use are shown in **Table 28** below.

Table 28 — Reduced Buffer Land Uses and Acreages

Land Use	Acreage
Single-Family (SF)	221.9
Single-Family High Density (SFHD)	240.1
Multi-Family Low Density (MLD)	184.9
Multi-Family Medium Density (MMD)	46.9
Multi-Family High Density (MHD)	22.9
Mixed Use District (MU)	19.9
Community Commercial (CC)	21.7
Parks- Neighborhood (P)	54.9
Open Space (OS)	371.8
Public/Quasi-Public (PQP)	110.7
Major Circulation	58.6
General Commercial (GC)	59.3
Total	**1414**

Source: MacKay & Somps and Torrence Planning 2012

As proposed, the Reduced Buffer Alternative would utilize trenching for utility installation and culvert crossings for all crossings except two bridge crossing over Alder Creek within the western end of the project site proposed as part of the backbone infrastructure project. Open space within the Reduced Buffer Alternative would encompass 372 acres.

The Reduced Buffer Alternative would result in impacts to 27% of onsite jurisdictional aquatic features (7.74 acres) and would preserve 59% (17.29 acres) of the onsite delineated jurisdictional features, as show in **Table 29**.

Table 29 — Reduced Buffer Impacts to Jurisdictional Aquatic Features

WATERS OF THE U.S.	ACREAGES			
Classification	**Project Impact Acreage (Fill)**	**Backbone Infrastructure Fill**	**Preserved**	**Total**
Depressional Wetlands				
Seasonal Wetland	0.360	0.126	0.219	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep	-	0.020	0.420	0.440
Riverine Wetlands				
Seasonal Wetland	4.026	1.871	3.781	9.678
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh	-	-	0.061	0.061
Slope Wetlands				
Seasonal Wetland	0.109	0.187	0.188	0.484
Seep	0.468	0.489	4.225	5.182
Other Waters of the U.S.				
Ephemeral Drainage	1.494	0.788	2.927	5.209
Intermittent Drainage	-	0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	**7.74**	**4.13**	**17.29**	**29.16**

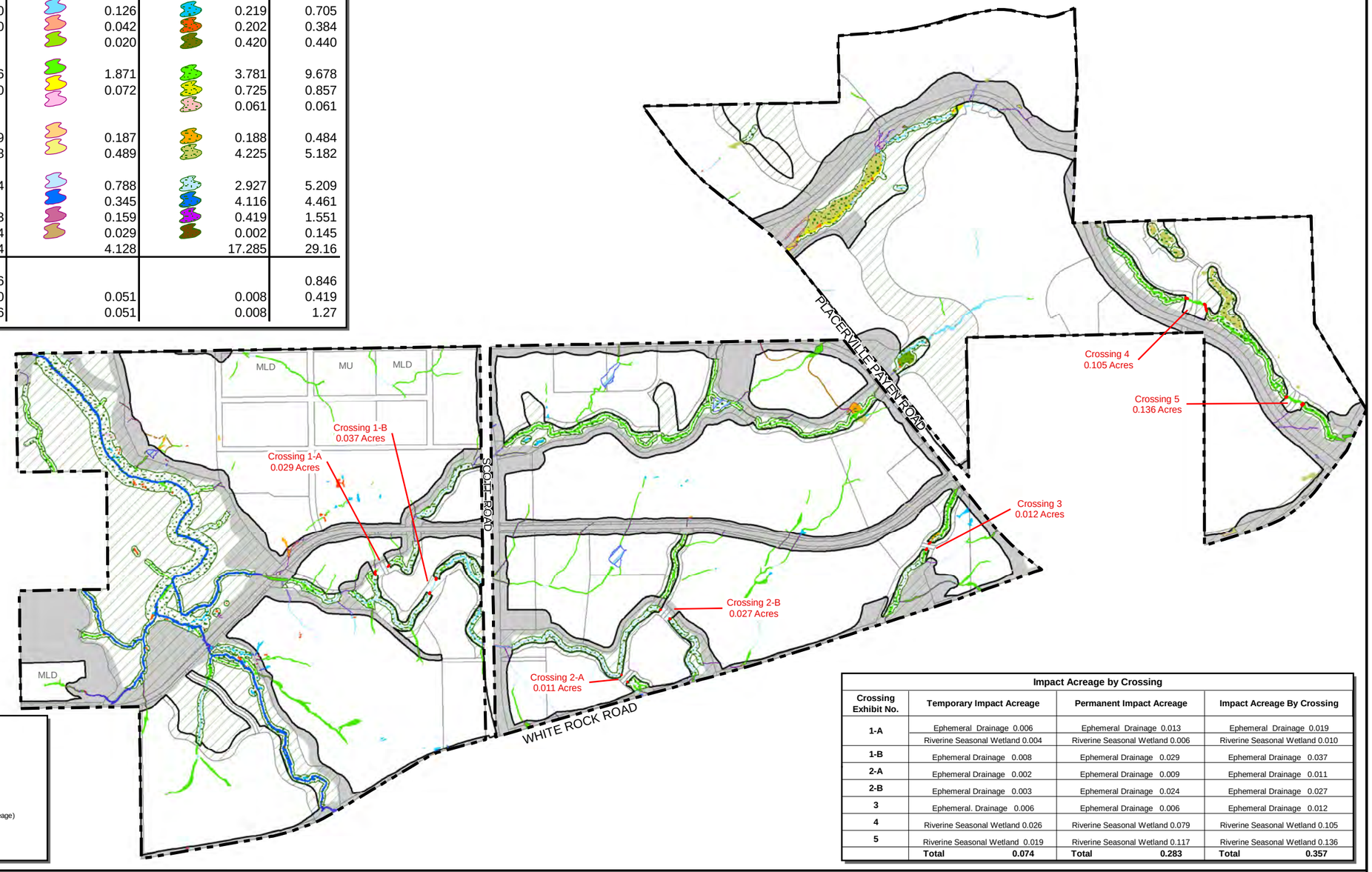
As shown on **Figure 10,** and summarized in **Table 30**, impacts associated with proposed culvert crossings will result in a total of 0.357 acre of impacts (0.074 acre temporary and 0.283 permanent).

Table 30 — Impacts by Crossing

WATERS OF THE U.S.		ACREAGES		
Crossing Reference Number	**Classification**	**Temporary Impacts (acres)**	**Permanent Impacts (acres)**	**Total Impact by Crossing (acres)**
1-A	Ephemeral Drainage	0.006	0.013	0.019
	Riverine Seasonal Wetland	0.004	0.006	0.010
1-B	Ephemeral Drainage	0.008	0.029	0.037
2-A	Ephemeral Drainage	0.002	0.009	0.011
2-B	Ephemeral Drainage	0.003	0.024	0.027
3	Ephemeral Drainage	0.006	0.006	0.012
4	Riverine Seasonal Wetland	0.026	0.079	0.105
5	Riverine Seasonal Wetland	0.019	0.117	0.136
TOTAL	**—**	**0.074**	**0.283**	**0.357**

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.360	0.126	0.219	0.705
Vernal Pool	0.140	0.042	0.202	0.384
Seep		0.020	0.420	0.440
RIVERINE WETLANDS				
Seasonal Wetland	4.026	1.871	3.781	9.678
Seep	0.060	0.072	0.725	0.857
Seasonal Marsh			0.061	0.061
SLOPE WETLANDS				
Seasonal Wetland	0.109	0.187	0.188	0.484
Seep	0.468	0.489	4.225	5.182
OTHER WATERS OF THE U.S.				
Ephemeral Drainage	1.494	0.788	2.927	5.209
Intermittent Drainage		0.345	4.116	4.461
Pond	0.973	0.159	0.419	1.551
Ditch/Canal	0.114	0.029	0.002	0.145
TOTAL	7.744	4.128	17.285	29.16
NON-JURISDICTIONAL FEATURES				
Pond (NJ)	0.846			0.846
Ditch/Canal (NJ)	0.360	0.051	0.008	0.419
TOTAL (NJ)	1.206	0.051	0.008	1.27

* INDIVIDUAL ACREAGES REPORTED TO 3 SIGNIFICANT FIGURES. SUM OF SUBTOTALS ARE REPORTED TO 2 SIGNIFICANT FIGURES.



FEATURES

- Limit of Study, ± 1400 Acres
- Proposed Backbone Infrastructure, ± 252 acres
- Wetland Preserve, ± 82 acres
- Open Space (OS), ± 290 acres (Does not include preserve acreage)
- Reduced buffer, ± 973 acres

Impact Acreage by Crossing			
Crossing Exhibit No.	**Temporary Impact Acreage**	**Permanent Impact Acreage**	**Impact Acreage By Crossing**
1-A	Ephemeral Drainage 0.006 Riverine Seasonal Wetland 0.004	Ephemeral Drainage 0.013 Riverine Seasonal Wetland 0.006	Ephemeral Drainage 0.019 Riverine Seasonal Wetland 0.010
1-B	Ephemeral Drainage 0.008	Ephemeral Drainage 0.029	Ephemeral Drainage 0.037
2-A	Ephemeral Drainage 0.002	Ephemeral Drainage 0.009	Ephemeral Drainage 0.011
2-B	Ephemeral Drainage 0.003	Ephemeral Drainage 0.024	Ephemeral Drainage 0.027
3	Ephemeral. Drainage 0.006	Ephemeral Drainage 0.006	Ephemeral Drainage 0.012
4	Riverine Seasonal Wetland 0.026	Riverine Seasonal Wetland 0.079	Riverine Seasonal Wetland 0.105
5	Riverine Seasonal Wetland 0.019	Riverine Seasonal Wetland 0.117	Riverine Seasonal Wetland 0.136
	Total 0.074	**Total 0.283**	**Total 0.357**

FOLSOM SOUTH IMPACTS BY CROSSING

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

LANDUSE DATA PROVIDED BY MACKAY AND SOMPS AND ECORP CONSULTING.

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DATE: 12/05/12

FIGURE 10

FOLSOM SOUTH

TEMP_IMPACTS_BY_CROSSING.MXD

Consistent with the Proposed Project analyses, the Reduced Buffer analyses incorporate the additional 0.68 acre fill required east of Placerville Payen Road, as well as project specific engineering design for proposed utility trenching and culvert crossings, ultimately resulting in a 0.12 acre increase in impacts to jurisdictional waters from that analyzed for the Proposed Project. Although impacts to jurisdictional waters are increased within the Reduced Buffer Alternative as a result of additional impacts related to trenching and culvert installation at crossings, this alternative ultimately offers greater environmental conservation through the preservation of the two cultural sites, as well as the 0.10 acre drainage segment crossing Lot 111.

The Reduced Buffer Alternative meets the Project Purpose, Logistics, Cost, and Environmental screening criteria, and proposes a land use development plan that would ultimately result in fewer environmental impacts than the Proposed Project. It is therefore, the result of the above findings, derived from the information presented in this analysis, and modified in response to comments received on previous draft(s) of the Folsom South Clean Water Act §404(b)(1) Alternatives Analysis Report that the Reduced Buffer Alternative as described above and presented on **Figure 11** has been demonstrated to represent the least environmentally damaging practical alternative (LEDPA).

PRELIMINARY WETLAND IMPACT ASSESSMENT CLASSIFICATION	PROJECT IMPACT ACREAGE	BACKBONE INFRASTRUCTURE IMPACT ACREAGE	PRESERVATION ACREAGE	TOTAL
DEPRESSIONAL WETLANDS				
Seasonal Wetland	0.360	0.126	0.219	0.705
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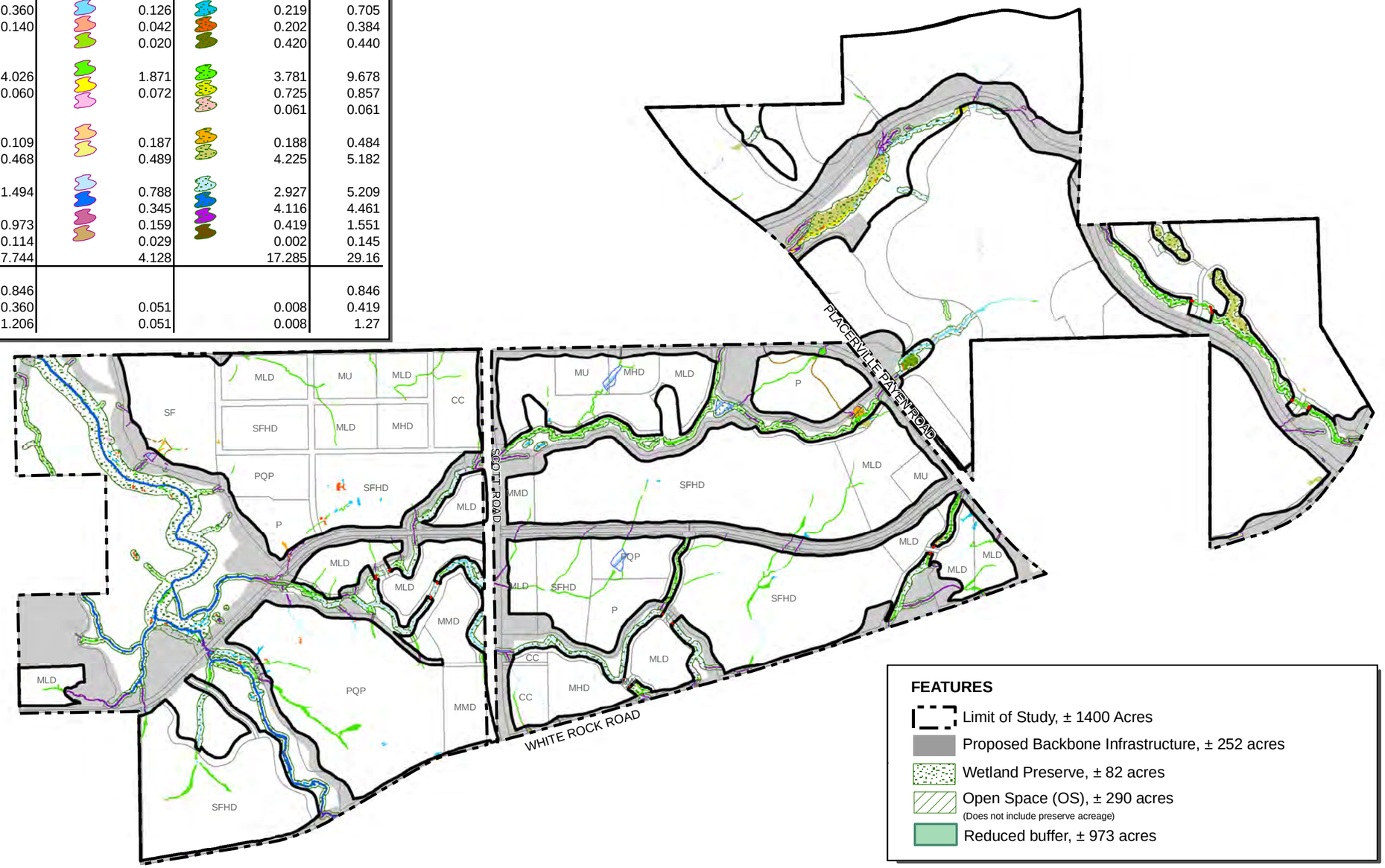
* INDIVIDUAL ACREAGES REPORTED TO 3 SIGNIFICANT FIGURES. SUM OF SUBTOTALS ARE REPORTED TO 2 SIGNIFICANT FIGURES.



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Open Space (OS)	371.8
Public/Quasi-Public (PQP)	110.7
General Commercial (GC)	59.3
Major Circulation	58.6
Total	**1414**

FEATURES

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- Wetland Preserve, ± 82 acres
- Open Space (OS), ± 290 acres
  (Does not include preserve acreage)
- Reduced buffer, ± 973 acres

REDUCED BUFFER ALTERNATIVE

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

LANDUSE DATA PROVIDED BY MACKAY AND SOMPS AND ECORP CONSULTING.

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SCALE IN FEET

DRAWN BY: DSD
DATE: 12/05/12

FIGURE 11

REDUCED_BUFFER_ALTERNATIVE.MXD

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Appendix A — California Department of Education Guide to School Site Analysis and Development — 2000 Edition

California Department of Education (http://www.cde.ca.gov/ls/fa/sf/guideschoolsite.asp)
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Guide to School Site Analysis and Development

2000 Edition

California Department of Education
Sacramento, 2000

Developed in 1999
in compliance with the
Administrative Procedures Act

Prepared by
School Facilities Planning Division
California Department of Education

Contents

List of Tables

List of Figures

Preface

The California Department of Education establishes standards for school sites pursuant to *Education Code* Section 17251 and adopts school site regulations, which are contained in the California *Code of Regulations*, *Title 5*, commencing with Section 14001.

Site size standards were updated in 1999-2000 to reflect significant changes in education, such as class size reduction in kindergarten through grade three, implementation of the (federal) Education Amendments of 1977, Title IX (gender equity), parental and community involvement, and technology.

In addition to the educational reforms noted above, the expanded use of buildings and grounds for community use and agency joint use and legislative changes in the site-selection process regarding environmental, toxic, and other student and staff safety issues made it necessary to update the *Guide to School Site Analysis and Development*.

Local school districts have expressed appreciation for the guide as they carry out their responsibility to provide safe and educationally appropriate facilities for their children and communities.

This document was prepared by Duwayne Brooks, Director, School Facilities Planning Division; Robert Williams, principal writer; Sue Pendleton, Consultant; and other staff of the division.

SUSAN LANGE
Deputy Superintendent
Finance, Technology, and Administration Branch

Introduction

This edition of the *Guide to School Site Analysis and Development* assists school districts in determining the amount of land needed to support their educational programs in accord with their stated goals and in accord with recommendations of the California Department of Education. This edition also updates the guidelines, reflecting the changes in educational programs that have affected school site usage and size requirements. The study conducted by the original committee was so thorough that the methodology for determining acreage remained much the same as that used in the 1966 edition.

Types of Changes

Changes in recommended site acreage are primarily the result of legislation regarding class size reduction (CSR) and gender equity (Education Amendments of 1972, Title IX) issues that have a direct impact on site size. Title IX ensures equal access for female athletes; therefore, the acreage requirements have been increased for physical education in grades nine through twelve to include additional softball/soccer fields. Consequently, the playfield area increases from 1.4 acres to 3.4 acres, depending on the enrollment and the grade level. The area for buildings and grounds has been increased to conform to past increases in the allowable building area that were never reflected in the previous edition of this guide; the area for buildings and grounds and the area for parking and roads have also been increased to

accommodate the increased number of classrooms and teachers due to CSR.

Classroom Size and Class Size Reduction

Although new legislation requires class size to be reduced, the total number of pupils in a given school remains the same; therefore, more classrooms are required. For example, an elementary school with 300 pupils in grades one through three with class sizes of 30 would require ten classrooms for those grades; whereas class sizes of 25 would require 12 classrooms, and class sizes of 20 would require 15 classrooms. A reduction in the number of pupils per classroom does not equal a reduction in the size of the classroom itself. For sound educational reasons the Department of Education maintains its policy of recommending 960 square feet for a standard classroom and 1,350 square feet for kindergarten room.

In a memorandum to school district and county superintendents dated May 1998, the School Facilities Planning Division made the following statement regarding classroom size:

> ...The initial implementation of CSR may have required districts to use classrooms less than the standard 960 square feet (sf); however, the California Department of Education encourages districts to make every effort to maintain the physical size of elementary classrooms at 960 sf and 1,350 sf for kindergarten. In addition, districts should carefully consider support facilities and site size in implementing CSR.

The California Department of Education believes that a classroom of 960 square feet best supports CSR. If the classroom is too small, the full educational value of the lower class size may not be realized. A classroom of less than 960 square feet may not provide sufficient space for pullout programs, small-group work, or computer stations. Adequate area must be provided for furniture and technology, audiovisual equipment, student work areas, and storage. Additionally, classrooms must be large enough to allow movement and circulation, exiting, and access by students with disabilities.

In addition to maintaining the minimum 960-square-footage requirement for instructional reasons, districts should also consider maintaining 960-square-foot classrooms to retain flexibility in scheduling and reassigning classes between the first through third grades and the higher grades in the future. A small classroom (e.g., one that is 600 square feet) does not allow the classroom to be used for 30 students in grades four through six if the needs change at the school site. Smaller classrooms, although intended to be temporary, have a way of becoming permanent. California is already near the bottom of the list of states ranked according to the square footage of building space allowed per pupil.

Building Area per Pupil

Although the Leroy F. Greene School Facilities Act of 1998 does not prescribe allowable building area, the California Department of Education recommends that the size of schools be calculated at 59 square feet (the minimum) per pupil for kindergarten through grade six; at 80 square feet (the minimum) per pupil for grades seven and eight; and at an average of 92 square feet (the minimum) per pupil for grades nine through twelve, based on the former Lease-Purchase program.

Comparison of the 1966 and Current Editions

Table 1 shows a comparison of school site size recommendations between the time of the 1966 edition and the time of this edition of the guide. The rationale and methodology for calculating these changes are presented in this guide.

Back to top

Table(s) 1 - Comparison of School Size Sizes, 1966 and 2000

Elementary School

School Enrollment	Acres according to the 1966 edition without class size reduction	Acres according to the current edition without class size reduction	Percent increase without class size reduction	Acres according to the current edition with class size reduction, K-3	Percent increase over the current edition with class size reduction, K-	Percent increase over the 1966 edition with class size reduction, K-3

450	9.0	9.2	2	9.6	4	6
750	12.7	13.1	3	13.8	5	8
1,200	15.8	16.4	4	17.6	7	11

Middle School

School Enrollment	Acres according to the 1966 edition	Acres according to the current edition	Percent Increase
600	17.4	17.4	0
900	20.8	20.9	0.5
1,.200	22.5	23.1	3

High School

School Enrollment	Acres according to the 1966 edition	Acres according to the current edition	Percent Increase
1,200	31.3	33.5	7
1,800	39.7	44.5	12
2,400	46.5	52.7	13

Site Requirements for Very Large Schools

Another difference between the 1966 edition and the current edition relates to acreage requirements for very large schools (see the appendix). Acreage requirements for schools of optimal size, as defined by the California Department of Education, are included in the guide. Although the Department does not recommend exceedingly large schools, some districts may desire to build schools that exceed the requirements detailed in Tables 3 through 6. Therefore, tables of acreage requirements for expanded sites have been provided in the appendix. Another use for the expanded site tables is to determine whether a site is overcrowded and may qualify for additional grants under California *Code of Regulations*, *Title 2*, sections 1859.73 and 1859.74.1, adopted pursuant to the Leroy F. Greene School Facilities Act of 1998.

Other Changes

Additional changes in this edition include a discussion of the need for a master plan of the site and the functional link between educational specifications and site size. Land scarcity, urban location, excessive cost, and other site size limitations must be recognized; a discussion follows on how these limitations can be managed through good master planning and thorough educational specifications. Unusual and exceptional site conditions are defined, and a description of what constitutes usable acres has been added.

Finally, a new table (Table 7) has been added that provides the site requirements for county community schools, community day schools, and continuation high schools.

Use of Tables in Transition

The California Department of Education calculates the acreage required when the Field Site Review (SFPD Form 4.0) is submitted. School districts that selected sites during the revision period of the guide may find differences in site acreage requirements between the 1966 edition and this edition. If differences are found, the correct acreage will be determined on a case-by-case basis. Final site approval letters issued on or after November 30, 2000 (the date that *Title 5* regulations became effective) will use acreage standards set forth in the 2000 edition.

Section 1. Background

In 1966 the School Facilities Planning Division directed an empirical study of the land area required by California public schools to conduct their educational programs. This guide provides updated information using results of the study so that the educator, the architect, and the school planner can interpret the functions of the school site and determine the amount of land required for those functions.

Historical Perspective

Education has changed rapidly in the twentieth century and will continue to change in the twenty-first century. The way in which sites are developed and the resulting new school buildings will continue to reflect those changes.

Before the 1920s and 1930s, school districts usually bought very small sites because there was little perceived need for outdoor play areas. Then in the late 1920s and 1930s, there was a great surge of interest in physical education, leading to the realization that larger sites were necessary. Before this interest in physical education, many elementary schools with enrollments from 500 to 1,000 were built on one- or two-acre sites, and high schools with enrollments of 2,000 to 3,000 seldom had sites more than ten acres. These sites were so small that it was impossible to provide more than a modicum of playground space or outdoor facilities for physical education, and there was no space to expand the existing plant.

Most of the elementary school buildings used during that period in the cities were two- or three- story block masonry buildings above rather high basement spaces, and they contained eight or more classrooms. The rooms were large to accommodate the very large class sizes so common then. The hazards of fire and evacuation of those schools were very great. Many of the buildings have been demolished because they were unsafe. The outdoor play areas were small and inadequate.

Mission Style

From the period roughly between World War 1 and World War 2, great strides were made in the science of school planning. Following World War 1 the trend in California was toward mission-style architecture: the single-story elementary school, one classroom deep on an arcade or open corridor. During the same period schools were expanding their programs to include health and food service facilities, specialized administrative quarters, auditoriums, and libraries. The program expansion frequently included physical education programs that required outdoor education facilities, often occupying 50 to 80 percent of the site. The combination of single-story design and expanding educational programs resulted in the need for larger school sites.

"Finger" Plan

The mission-style school of the 1920s evolved into the "finger" plan school of the 1930s. This plan is characterized by building wings, usually 30 to 40 feet apart that contain four or five classrooms in line with an open corridor on one side and an "outdoor classroom" on the other side. This architecture made possible the use of bilateral daylighting and cross-ventilation.

The louvers, baffles, and wide overhangs used for controlling daylight make those buildings easily identifiable. Many buildings are graceful plants with sheltered but noninstitutional characteristics. Generally, the buildings are located on ten-acre sites built for about 650 students. Refinements in this "finger" plan concept of elementary schools continued through the 1950s.

Cluster Plan and Open Space Plan

During the 1960s and 1970s, educators and architects questioned the basic configuration of the school and the classroom as a self-contained teaching station. Various patterns of cluster plans were developed that offered great interior flexibility within open space shells; team-teaching and large- and small-group instruction could be accommodated in a variety of patterns.

For various reasons the open space plan did not win wide or lasting acceptance and was soon modified to recapture the visual and sound separation provided by the self-contained classroom. The partial return in the 1980s and 1990s to the self-contained classroom combines the flexibility associated with the cluster and open space plans with the relative isolation of the self-contained classroom. This arrangement is accomplished with the use of movable walls, space-function adjacency design, scheduling innovations, and other creative design features.

Rule-of-Thumb Approach

For many years school districts and school planning agencies used a rule-of-thumb approach for determining school site sizes. It was recommended that elementary schools be provided a minimum site of five acres plus an additional acre for each 100 pupils of predicted ultimate enrollment. For middle schools the basic size was 15 acres, and for high

schools the basic size was 15 to 20 acres plus, in both cases, an additional acre per 100 students of predicted ultimate enrollment. Calculation by the rule of thumb yields the following acreages:

School Site Size

Type of School	Number of Pupils	Site Size
Elementary	500	10 acres
Middle	1,000	25 acres
High	2,000	35-40 acres

The rule-of-thumb approach worked reasonably well in the early and mid-1900s when land was easily available and the cost of a school site was small compared with the cost of the building. However, during the last half of the twentieth century, when available land became scarce in urban areas and prices began to skyrocket, educators began rethinking the rule-of-thumb and started to explore more precise methods of determining the proper size of a school site.

Back to top

Functional Approach

In the mid-1960s, as the importance of educational specifications was being recognized in the total facilities planning process, the California Department of Education developed a functional approach for determining the size of a school site. The approach was based on the amount of area required to support the functions or activities of the proposed educational program. This approach presumes that in order to determine the size of a school site, one must first study the following aspects of the proposed educational program:

- The ultimate predicted enrollment
- The grade levels to be served
- The type, number, size, function, special characteristics, and spatial relationships of instructional areas, administrational areas, and service areas
- The building design (e.g., compact campus style, multistory)
- On-site parking and bus loading/unloading requirements
- Outdoor physical education requirements
- Whether school-community joint-use programs will take place
- Whether child care facilities are needed
- Whether temporary relocatable structures are used

The soundness of the functional approach, expressed in the architectural principle that form follows function, has been proven over time and needs modifications only where availability of land is scarce and real estate prices are exorbitant. In those cases the size of the school site may have to be reduced, but if so, the reduction should be done according to educational program priorities. The functional area requirements in this guide can serve to assist in the program modifications necessary to make the best use of a reduced site size in areas where land is scarce and costly.

Need of Increases in Recommended Site Size

Until now developments in school architecture did not require additional acreage. However, recent legislation has affected the educational program, requiring increased acreage. School design today is being affected not only by technology but also by such programs as class size reduction (CSR) and gender equity laws under the (federal) Education Amendments of 1972, Title IX, governing physical education. The new focus on student achievement and equal access requires specialized spaces and new building configurations and additional playfield areas.

Class Size Reduction

The CSR program has a direct impact on school design and land requirements. A school population of 600 at 20 students per classroom requires ten more classrooms and hence more land than the same population of 600 at 30 students per classroom.

Although multistory buildings and a compact design may reduce the need for a larger building footprint, single-story

buildings and campus-style layouts likely will continue to be the predominant design style for California schools in most communities. Given this situation, the California Department of Education has revised this guide to include an increase in site size to accommodate the added classrooms and/or building size required by CSR. (No increase in playfield area is required because of CSR.) The method of calculating this increase is discussed in the section "Land for a Developed Building Site".

Gender Equity

To ensure compliance with the Education Amendments of 1972, Title IX, the California Department of Education conducted a study of the adequacy of playfield areas that had been planned and constructed in accord with the Department's past guidelines. The results of this study indicated that the size of the site needed to be increased in some instances. This is discussed more fully under the section "Land for Outdoor Physical Education".

Other Program Changes

The demand for more building area is driven by other program changes, such as the emergences of full-scale media centers that replace single classroom-size libraries, large multipurpose buildings, technology centers, career centers, departmental offices, teacher workrooms, and child care centers on campus. In addition, the demand for parking is affected by the increased number of volunteers and teacher aides, the need for a bus loading and unloading zone separate from automobile traffic and student drop-off, and community involvement at the school site.

Section 2. School Site Requirements

This guide offers a valid technique for school administrators and governing boards of school districts to determine more accurately than was previously possible the acreage required for new schools. However, the task continues to be a do-it-yourself project for each school district. The formulas are flexible enough to permit each district to tailor its final answers as it wishes and as necessary to accommodate unusual or exceptional conditions.

The Site Master Plan and Educational Specifications

The School Facilities Planning Division recommends that prior to purchasing a site, the school district planner or its architect prepare a site utilization study based on the formulas in this guide to determine as accurately as possible the amount of land needed. This study should be performed in accord with the district's facility master plan for all existing and proposed sites and its educational specifications, as discussed under "Functional Approach" in Section 1.

The site utilization study should show the layout of the proposed buildings and grounds, parking area and roads, and playfield areas as well as future additions and the expansion necessary to accommodate the site's maximum proposed enrollment. This plan can serve as a decision-making tool in implementing various strategies.

For example, if a governing board buys less land than the recommended amount because of unusual site conditions (e.g., scarcity of land, size restrictions, excessive cost), it can determine from the site master plan and the educational specifications which components of the school program must be altered or eliminated.

Unusual Site Conditions

Unusual or exceptional site conditions are defined in the *California Code of Regulations, Title 5*, Chapter 13 of Division 1, Section 14010(a) and (b) as follows:

a. The net usable acreage and enrollment for a new school site shall be consistent with the numbers of acres and enrollment established in the 2000 Edition, "School Site Analysis and Development" published by the California Department of Education and incorporated into this section by reference, in toto, unless sufficient land is not available or circumstances exist due to any of the following:
    1. Urban or suburban development results in insufficient available land even after considering the option of eminent domain.
    2. Sufficient acreage is available but it would not be economically feasible to mitigate geological or environmental hazards or other site complications which post a threat to the health and/or safety of students and staff.
    3. Sufficient acreage is available but not within the attendance area of the unhoused students or there is an extreme density of population within a given attendance area requiring a school to serve more students on

a single site. Choosing an alternate site would result in extensive long-term busing of students that would cause extreme financial hardship to the district to transport students to the proposed school site.

4. Geographic barriers, traffic congestion or other constraints would cause extreme financial hardship for the district to transport students to the proposed school site.

b. If a school site is less than the recommended acreage required in subsection (a) of this section, the district shall demonstrate how the students will be provided an adequate educational program, including physical education, as described in the district's adopted course of study.

Usable Acres

The tables for determining site requirements are based on net usable acres. Land rendered useless by cuts, easements, steep hills, gullies, creekbeds, large rock outcroppings, wetlands and marshland, and land in flood areas are not considered usable. On sites where such land is present, total gross acres will necessarily exceed net usable acres. An excess of 30 percent of the site in unusable land may be a liability in acquisition costs, site development, and site maintenance except, perhaps, in the foothill and mountain areas where irregular topography is common and usage is adjusted accordingly.

Back to top

Development of the Site Master Plan

The following factors were analyzed to determine the acreage required for the facilities needed on a school site and to permit the development of a workable and desirable layout:

- Outdoor physical education facilities
- Buildings, walkways, and landscaping
- Parking and access roads
- A percentage factor to facilitate the layout of the site master plan

The land required for the items noted above constitutes the total acreage required for the site. These factors and ways to calculate them are discussed below.

Land for Outdoor Physical Education

The physical education program of a school is the most influential factor in the determination of the amount of land necessary for the school program. If a well-planned and adequate physical education program is desired, the area required for its operation must be provided; and if the school site is to be used for community recreation, additional land should be considered. Any reduction in the land provided will require similar reductions of the physical education program or other functions. Community recreation needs can be met most economically by joint use of school sites and facilities and park district sites and facilities. Provisions for activities such as picnicking and outdoor theater presentations may be highly desirable. A few elementary schools and many high schools provide a summer recreational program of aquatics. The facilities used for the aquatics program are also used for the school's physical education program.

This study assumes an outdoor physical education program that complies with, but does not exceed, the legal requirements of the California *Education Code* and the (federal) Education Amendments of 1972, Title IX (gender equity law), and follows good practices that conform to recognized standards of adequacy now existing in California schools.

Elementary schools. The educational program of a school determines the facilities needed; therefore, the outdoor physical education activities conducted by a school must be identified. For elementary school pupils, the activities break down basically into rhythms, games, stunts and tumbling, and those involving the use of apparatus. The program may provide for the following activities:

Rhythms

- Fundamental skills development
- Creative rhythms
- Singing games
- Folk and square dancing

Games

- Tag and running games
- Ball games
- Track and field
- Individual and dual games (hopscotch, foursquare, skipping rope, and the like)

Stunts and tumbling

- Rolling
- Balancing

Activities requiring the use of apparatus

- Climbing
- Swinging
- Balancing
- Pushing and pulling
- Hanging

Most rhythm activities must take place on hard-surface areas, such as asphalt or concrete. Running games and ball games require turfed areas. Activities such as climbing, tumbling, and gymnastics, however, require the use of various apparatus on a soft or padded ground cover.

Good practice and safety require that appropriate instructional areas be constructed for the children of various age groups in schools with more than six classrooms. The general age-group pattern is kindergarten, grades one through three, and grades four through six. Hard-surfaced areas, turfed field areas, and apparatus areas should be provided for each group.

For schools with six classrooms or fewer, outdoor facilities should be combined. Therefore, there would be only one turfed field area, one hard-surface area, and one apparatus area for the entire school.

The California Department of Education conducted studies to determine the facilities and space allocation needed for physical education outdoor teaching stations for schools of various sizes. The analysis of activities and the scheduling for each class throughout the day resulted in a determination of what percentage of time children of various ages would likely spend in various programmed activities.

As a result of those studies, a teaching station was defined as a play area adequate for one class to be taught by one teacher at one time so that pupils waste no time waiting turns because of lack of space and facilities. The tables in this guide are based on this definition and therefore present a breakdown of actual space requirements and equipment for each required teaching station.

High School. To ensure compliance with gender equity laws (Education Amendments of 1972, Title IX), the California Department of Education conducted a study of the adequacy of playfield areas that were planned and constructed under the Department's guidelines until the present. The study involved a sample of high schools throughout the state stratified by size; geographic location: and urban, suburban, and rural areas.

About two-thirds of the school districts surveyed reported that their field areas were inadequate to accommodate women's team sports. Smaller schools were usually able to offer equal access by scheduling and overlapping the use of playfields, but larger schools that scheduled two or three levels of softball (freshmen, junior varsity, and varsity) needed additional playfield space.

As a result of that study, an additional field area for grades nine through twelve has been added in this current edition. The added area includes a combined softball/soccer field (260 feet by 260 feet) and a combined softball/touch football/soccer field (260 feet by 460 feet). Together with the percentage factor for layout, this configuration will add 1.4 to 3.4 acres to playfield areas, depending on the enrollment and the particular grade levels involved.

Land for a Developed Building Site

There are many ways to design a site master plan. School buildings may be spread out into wings, wrapped around courtyards, or blocked together into compact clusters. Many different patterns and forms have been implemented in

California schools.

Land for the developed building site includes not only the land required for the buildings but also the land adjacent to the buildings, which may be developed as paved areas, walkways, lawn area, outdoor classrooms, or courtyards. For the purposes of this guide, such land is designated as the areas required for buildings and grounds. Excluded are the areas for parking, service areas, and outdoor physical education and recreation facilities.

An analysis of prior submitted plans reveals a pattern or ratio of approximately 2 to 1 between the developed grounds area around the buildings and the building areas themselves. Few schools, either elementary or secondary, are designed in such a way that the developed land area is more than twice the building area. In most instances it is slightly less. The School Facilities Planning Division believes that when the grounds exceed this ratio by an appreciable amount, the maintenance costs for landscaping increase beyond the budget of the average school district. In those cases where the developed grounds are extremely limited (e.g., some schools have replaced lawn areas with asphalt paving), the total effect is a depressing and sterile setting. Most districts provide well-kept and well-landscaped grounds even if maintenance costs require that the total grounds area be somewhat restricted.

The tables in this guide were developed on the assumption that the land purchased will permit a ratio of approximately 2 to 1 between the developed grounds and the building area.

Computation of the Area for Buildings and Grounds

In the past the area for the developed building site was computed on the basis of state-aid area allocations. These allocations are no longer in effect since the passage of the Leroy F. Greene School Facilities Act of 1998 (Senate Bill 50). The computations for buildings and grounds in Tables 2 through 6 and in the tables in the appendix are based on building allowances that were in effect up to 1998, exclusive of the extra allowance for portable buildings. These square footages are as follows:

- For kindergarten and grades one through six: 59 square feet per pupil
- For grades seven and eight: 80 square feet per pupil
- For grades nine through twelve: 92 square feet per pupil (Note: Actual area allocation for grades nine through twelve varies from 91.5 square feet per pupil for an enrollment of 2,400 to 127 square feet per pupil for an enrollment of 400. The figure of 92 square feet per pupil applies to high schools with an enrollment of 1,600 to 2,400)

Typical problem A: Assume a kindergarten-through-grade-six school with an anticipated enrollment of 640 pupils. At the 2 to 1 ratio, each pupil will generate 177 square feet (59 feet x 3 feet) for the building plus adjacent grounds. Thus the school would need 113,280 square feet (177 feet x 640 feet), or about 2.6 acres, for the "developed building site" and about 0.3 acre to permit planning concepts that separate kindergarten from the rest of the facilities. As shown in Table 3, a total of 2.9 acres (0.5 acre for kindergarten, 1.2 acres for grades one to three; and 1.2 acres for grades four to six) would be needed.

Typical problem B: Assume a middle school, grades six to eight, with an anticipated enrollment of 750 pupils. At the 2 to 1 ratio, each pupil will generate 240 square feet for the building plus adjacent grounds. Thus the school would need 180,000 square feet, or about 4.1 acres, for the developed building site. (See Table 4 for this example.)

Added acreage for class size reduction. Those school districts planning for CSR will want to take into account the added acreage required for the extra classrooms or buildings necessitated by smaller classes. Table 3 indicates the site requirements for elementary schools with more than six classrooms. The table has been revised to include additional acreages for the developed grounds and building area as well as associated parking and roads at schools where CSR is in effect. Table 2 indicates site requirements for elementary school sites with fewer than seven classrooms. The requirements have not changed; the acreage is based on the number of classrooms. Therefore, any increase in classrooms because of CSR would automatically include increased acreage.

CSR is very limited in effect in grades seven through twelve; acreage increases for CSR in those grades are shown in the appendix. Those computations are subject to future reevaluation.

Determining additional acreage for implementing class size reduction. The following steps are used to determine the additional acreage required for CSR:

1. Determine the number of additional classrooms required.
2. Multiply the number of classrooms by 1,000 square feet (this figure is based on a 960-square-foot classroom; the actual area is slightly more than 1,000 square feet with overhangs and circulation area included).
3. Divide this product by 43,560 square feet to determine the acreage.

Example:

1. Assume that 300 pupils are in grades one through three and that CSR is in effect for a class of 30 pupils per classroom, reducing the size to 20 pupils per classroom. (Note: In practice class loading has varied widely - some classes number more than 30; some, less than 30. Prior to Senate Bill 50, the accepted loading standard for grades one through three was 29 average daily attendance (a.d.a.), where a.d.a. was computed at 97 percent of enrollment. An a.d.a. of 29 equals 29.9 enrollment. Therefore, for practical purposes, an enrollment of 30 pupils is used in this example.)
    a. The regular educational program requires ten classrooms (300 divided by 30).
    b. The CSR program requires 15 classrooms (300 divided by 20).
    Therefore, five additional classrooms are required.
2. Using the 2 to 1 ratio of developed grounds to building area, multiply as follows:
5 times 1,000 square feet times 3 = 15,000 square feet
3. 15,000 square feet divided by 43,560 square feet = 0.34 acre

Table 3 for kindergarten-through-grade-six schools has been revised to include an increase in area due to CSR for buildings and grounds and for parking and roads. No calculation is needed for kindergarten because acreage in that table is already based on the number of classrooms and can easily be added to acreage for grades one through three to determine a total kindergarten-through-grade-three figure.

Example:

Refer to Table 3 and assume 300 students are in grades one through three of a school where CSR is in effect. In the column "151 to 300," 1.2 acres is indicated for the regular educational program on the "Building and grounds" line. On the line "Added acreage for buildings and grounds" for CSR, 0.3 acre is indicated. The added parking and roads acreage under CSR may be found in a similar manner. In this example the total acreage for grades one through three without CSR is in effect 2.8. The total acreage with CSR in effect is 3.2. (CSR has no effect on acreage for physical education.)

Data on schools with CSR in effect for grades six through twelve are shown in Tables 4, 5, and 6.

Land for Parking and Access Roads

Typically, areas for parking and bus loading, access roads, and fire and service roads are required of most schools. The minimum parking provided for a one-classroom school is generally space for five to six cars, or five parking spaces for the public and one space for the teacher. Parking areas for small schools are arranged so that these schools use a combined parking area and bus loading area. The minimum space required for this arrangement is about 0.3 acres plus 380 square feet for each auto stall and access roads.

Parking at elementary and middle schools. When this guide was first published, larger elementary schools and middle schools generally provided one and one-half parking spaces for each teacher and each staff member. Under the former formula, an 18-classroom elementary school would have parking for 18 teachers, one principal, one office support staff member, and ten extra spaces for visitors and teacher aides, or 30 spaces.

In recent years the number of teacher aides and other staff members has increased so that the former formula is outmoded. A more up-to-date formula that better reflects current practice would provide 2.25 parking spaces for each teaching station. This would include space for staff members and visitors. Under this new formula an elementary school of 18 classrooms would have 40 parking spaces. These additional ten spaces are the minimum needed to accommodate the increased number of teacher aides, staff members, and visitors at schools today.

Required area for parking and buses. If the parking and bus loading areas for a school are designed separately, the architect may plan to use about 15,000 square feet for the bus loading areas plus 380 square feet for each parking space and access roads. A kindergarten-through-grade-six school requiring 30 parking spaces would therefore require about 15,000 square feet plus 11,400 square feet, or a total of 26,400 square feet. This total is approximately 0.6 acre. Included in this figure is the land around parking lots, the land between the parking lots, the turn-arounds, drop-off areas, service areas, and the frontal street. The parking acreage requirements developed for kindergarten and grades one through eight in any combination include those elements (see Tables 3, 4, and 5).

Student parking at secondary schools. Secondary schools generally provide additional land for student parking. This provision allows students who drive cars to park on the school site rather than occupy street parking throughout a neighborhood. When student parking areas are located to permit use by the public attending athletic events or community events, more land than is needed for student parking must be provided as determined by the capacity of the gymnasium, stadium, or auditorium. In the past many school districts provided student lots with a minimum parking capacity calculated on 50 percent of the school enrollment. Thus a high school of 2,000 students would provide parking

for 1,000 cars at 380 square feet per car - an area of 380,000 square feet or about 8.7 acres of land - in addition to the space needed for staff and visitor parking. The number of students driving cars differs for each school, but this amount of land is usually adequate for all school purposes.

The recommended total area requirements for secondary school parking include student parking, staff parking, access roads, land around and between parking lots, turnarounds, drop-off areas, service areas, and the frontal street (see Table 6).

Back to top

Percentage Factor for Layout

Usually, it is not possible to lay out required facilities such as playfields, which have critical dimensions and also critical relationships to other elements of the master plan, in such a way that all elements fit together neatly as pieces in a jigsaw puzzle. Even if that were possible, it would not be desirable. Rectangular elements would require a rectangular site of exact dimensions. Any natural attribute of the site, such as trees or knolls, would be sacrificed. There would be no space between various play areas for safety lanes or buffer areas to permit large groups of children to move freely on the site. And every site should have free space for the small, undefined activities that invariably become necessary as the school is used. Outdoor instruction areas and nature study activities are valuable assets. Younger children need garden spaces, digging areas, and other space for imaginative and creative play.

The tables for determining site requirements include a percentage factor that takes into account the various requirements and permits the layout of the programmed facilities. This factor varies from 30 percent for very small schools to 10 percent for large schools. The percentage factor varies because schools tend to grow and because the more elements that are planned on a site, the greater is the efficiency possible in placing these elements within the site boundaries.

How to Use the Tables and Layouts

The tables in Section 3 contain information about the facilities and the amount of land needed to serve a specified number of grade levels and school enrollment. The suggested site acreage is based on the total area required for facilities, including land for buildings, parking, and outdoor physical education spaces. Each of the various outdoor physical education spaces is represented by a letter that is keyed to the layout of the facility. A number before a letter indicates the number of units of the physical education facilities required. Layouts for the various types of physical education facilities are presented with their correct dimensions. Tables are organized according to the number of classrooms or grade levels at a school.

Table 2 contains data for schools with fewer than seven classrooms. Small schools are a necessity in many areas in California that are sparsely populated and isolated. These small schools, however, pose special problems. The site factors, including outdoor physical education facilities and parking, are minimal. The outdoor spaces are compromised by necessity because pupils of various age groups must use the same facilities.

Table 3 contains data for elementary schools with more than six classrooms. The outdoor facilities required for the schools are suited to the grade level of the pupil enrollment. The table is divided to show the outdoor areas required for kindergarten activities; the outdoor facilities for grades one, two, and three; and those required for grades four, five, and six. Adjustments in acreage related to the implementation of CSR are on separate lines.

Table 4 contains data for schools with grades six through eight or solely seven and eight. When grade six is added to a school with grade seven or grades seven and eight to form a middle school, the outdoor facility requirements for grade six enrollment are considered the same as those for grades seven and eight. When grades five and six or grades four through six are placed in combination with upper grades to form groupings commonly referred to as middle schools, the outdoor facility requirements for grades four through six shall be determined by the table for elementary schools. Acreages related to the implementation of CSR are on separate lines.

Table 5 contains data for schools with grades six through nine, including area requirements for football and/or track facilities. When grade nine is included with the upper elementary grades, the requirements for space and facilities increase appreciably because the ninth-grade programs usually introduce some of the physical education activities commonly associated with a high school. Even though a school that includes grade nine does not offer a program requiring facilities such as a track or a baseball field, land should be purchased that would permit those activities to be introduced in the program in the future. Acreages related to the implementation of CSR are on separate lines.

Table 6 contains data for high schools. This table should be used to determine the site requirements for grades nine, ten, eleven, and twelve or any combination of those grades. Acreages related to the implementation of CSR are on

separate lines.

Table 7 contains data for county community schools, community day schools, and continuation high schools. The table includes acreage requirements for those types of schools, but that does not imply that they share the same site. Generally, they cannot (see *Education Code* Section 48661). The data for those schools are combined in one table because the acreage requirements are the same.

Table A.2, A.3, and A.4 in the appendix rely on Tables 3, 4, 5, and 6 and show the acreage requirements for very large schools, grades one through twelve, with CSR in effect.

The tables in this guide are designed so that the same procedure employed in using one table (except for Table 7) may be employed in using all the other tables. This procedure is illustrated through the following hypothetical problem that uses the table for elementary schools with more than six classrooms (Table 3).

Example.

Step 1. Determine the age groups to be served.

For example, assume that the school to be planned will provide for children of kindergarten age and those in grades one through six. The projected enrollment is 600.

Step 2. Determine the projected enrollments in kindergarten; grades one, two, and three; and grades four, five, and six.

Enrollment for kindergarten is 84 (up to 40 pupils may be taught in one classroom in two half-day sessions)
Enrollment for grades, one, two, and three is 258
Enrollment for grades four, five, and six is 258
Total enrollment is 600

Step 3. Refer to the appropriate column to determine the acreage required.

a. In the column titled "Number of Classrooms," find the land requirement for two kindergarten classes: 0.5 acres
   If CSR requires a third kindergarten classroom add 0.3 acres
   (Up to 40 pupils may be taught in one classroom in two half-day sessions.)
b. In the column titled "Enrollment 151 to 300," find the land requirement for grades one, two, and three: 2.8 acres
   If CSR is in effect in grades one, two, and three, add the following acreage for:
   Buildings and grounds: 0.3 acres
   Parking and roads: 0.1 acres
c. In the column titled "Enrollment 151 to 300," find the land requirement for grades four, five, and six: 5.9 acres
   If CSR is in effect in grades four, five, and six, add the following acreage for:
   Buildings and grounds: 0.3 acre
   Parking and roads: 0.1 acre
d. If CSR is in effect for only a portion of any grade-level grouping, look in the appropriate enrollment columns to find the acreages.
   Total (K-6 without CSR): 9.2 acres
   Total (K-6 with CSR): 10.3 acres

Section 3. Layouts of Facilities

For each of the facilities noted by a letter in the tables, illustrations and the dimensions are provided in the layouts later in this document. This information may be useful to architects. For example, if an architect wants to know the hardcourt requirements for up to 300 pupils in grades four, five, and six, he or she should refer to figure 10, which indicates that an area of 32,000 square feet is required for 300 pupils. Basic Unit F (see figure 9) is a space module of 80 feet by 100 feet, and four of these units are required for the hardcourt area. These four modules may be blocked into various geometric patterns or planned as separate units. Therefore, the layout shown in figure 10 should be treated as being only one of many possible layouts.

The illustration shown in figure 10 also suggests that the hardcourt area provide for four basketball courts, six volleyball courts, and an area for miscellaneous games, such as tetherball, hopscotch, foursquare, and shuffleboard. The architect may arrange these areas to solve a particular problem, as necessary, to meet program requirements. He or she may also design a special layout suited to the area if the appropriate number of modules is included, the facilities are identified, and the dimensions are provided.

Table(s) 2 - Site Requirements for Small Schools

Grades one through six site requirements for small schools

Type of Outdoor Facility	One Classroom/ Facilities Required	Two Classrooms/ Facilities Required	Three Classrooms/ Facilities Required	Four Classrooms/ Facilities Required	Five Classrooms/ Facilities Required	Six Classrooms/ Facilities Required
A Field Area 90 feet by 120 feet				1	2	1
B Hardcourt Area 60 feet by 75 feet			1	1	1	1
C Apparatus area 3,200 square feet	1	1	1	1	1	1
D Field area 180 feet by 180 feet	1	1	1	1	1	2
F Hardcourt area 80 feet by 100 feet	0.5	1	1	1	1.5	1.5
Percentage factor for layout	30	30	30	25	25	20

Grades one through six site requirements for small schools (cont)

Area Use	One Classroom Usable Acres Required	Two Classrooms Usable Acres Required	Three Classrooms Usable Acres Required	Four Classrooms Usable Acres Required	Five Classrooms Usable Acres Required	Six Classrooms Usable Acres Required
Physical Education	1.2	1.3	1.4	2.0	2.4	2.7
Buildings and Grounds	0.2	0.3	0.4	0.5	0.6	0.7
Parking and Roads	0.3	0.3	0.4	0.4	0.4	0.4
Total Acres	1.7	1.9	2.2	2.9	3.4	3.8

Grades one through eight site requirements for small schools

Type of Outdoor Facility	One Classroom/ Facilities Required	Two Classrooms/ Facilities Required	Three Classrooms/ Facilities Required	Four Classrooms/ Facilities Required	Five Classrooms/ Facilities Required	Six Classrooms/ Facilities Required
A Field Area 90 feet by 120 feet				1	2	1
B Hardcourt Area 60 feet by 75 feet			1	1	1	1
C Apparatus area 3,200 square feet	1	1	1	1	1	1
D Field area 180 feet by 180 feet	1	1	1	1	1	2
F Hardcourt area 80 feet by 100 feet	0.5	1	1	1	1.5	1.5
G Field area 260 feet by 260 feet	1	1	1	1	1	1
Percentage factor for layout	30	30	30	25	25	20

Grades one through eight site requirements for small schools (cont)

Area Use	One Classrooms Usable Acres Required	Two Classrooms Usable Acres Required	Three Classrooms Usable Acres Required	Four Classrooms Usable Acres Required	Five Classrooms Usable Acres Required	Six Classrooms Usable Acres Required
Physical Education	2.2	2.3	2.5	2.7	2.8	3.0
Buildings and Grounds	0.2	0.3	0.4	0.5	0.6	0.7
Parking and Roads	0.3	0.3	0.4	0.4	0.4	0.4
Total Acres	2.7	2.9	3.3	3.6	3.8	4.1

Note: Small schools are defined as those with fewer than seven classrooms. The information in Table 2 requires no adjustment for class size reduction because it is based on the number of classrooms, not the size of enrollment. Adjustment automatically occurs when the number of classrooms increases.

Table(s) 3 - Site Requirements for Elementary Grades (In Schools with More Than Six Classrooms)

Kindergarten site requirements

Type of Outdoor Facility	One Classrooms/ Facilities Required in square feet	Two Classrooms/ Facilities Required in square feet
Turfed Area	3,000	5,500
Paved Area	2,000	4,000
Apparatus Area	2,000	2,500
Land Required for Buildings and Grounds	2,800	4,000
Total Square Feet Required	9,800	16,000
Percentage factor for layout	20	20
Total Usable Acres Required	0.3	0.5

Note: 1. For CSR in kindergarten, increase the acreage as the number of classrooms increase.
2. If the school includes grades seven and eight or seven through nine, see Tables 4 and 5 for the increased acreage.

Grades one through three site requirements

Type of Outdoor Facility	Enrollment Up to 75/Facilities Required	Enrollment 76 to 150/Facilities Required	Enrollment 151 to 300/Facilities Required	Enrollment 301 to 450/Facilities Required	Enrollment 451 to 600/Facilities Required
A Field Area 90 feet by 120 feet	1	1	2	2	4
B Hardcourt Area 60 feet by 75 feet	1	2	4	6	8
C Apparatus Area 3,200 square feet	1	2	3	4	5
Percentage factor for layout	15	15	10	10	10

Grades one through three site requirements (cont)

Area Use	Enrollment Up to	Enrollment Up to	Enrollment 151	Enrollment 301 to	Enrollment 451

	75/Usable Acres Required	76 to 150/Usable Acres Required	to300/Usable Acres Required	450/Usable Acres Required	to 600/Usable Acres Required
Physical Education	0.5	0.7	1.3	1.9	2.4
Buildings and Grounds	0.3	0.6	1.2	1.8	2.4
Parking and Roads	0.3	0.3	0.3	0.4	0.4
Total Acres Without CSR	1.1	1.6	2.8	4.1	5.2
Added Buildings and Grounds for CSR	0.1	0.2	0.3	0.5	0.7
Added Parking and Roads for CSR	0.1	0.1	0.1	0.2	0.2
Total Acres With CSR	1.3	1.9	3.2	4.8	6.1

Grades four through six site requirements

Type of Outdoor Facility	Enrollment Up to 75/Facilities Required	Enrollment 76 to 150/Facilities Required	Enrollment 151 to 300/Facilities Required	Enrollment 301 to 450/Facilities Required	Enrollment 451 to 600/Facilities Required
C Apparatus Area 3,200 square feet	1	2	3	4	4
D Field area 180 feet by 180 feet	1	2	4	4	4
E Field area 120 feet by 180 feet				2	4
F Hardcourt Area 80 feet by 100 feet	1	2	4	6	8
Percentage factor for layout	20	15	10	10	10

Grades four through six site requirements (cont)

Area Use	Enrollment Up to 75/Usable Acres Required	Enrollment 76 to 150/Usable Acres Required	Enrollment 151 to 300/Usable Acres Required	Enrollment 301 to 450/Usable Acres Required	Enrollment 451 to 600/ Usable Acres Required
Physical Education	1.2	2.4	4.4	6.0	7.4
Buildings and Grounds	0.3	0.6	1.2	1.8	2.4
Parking and Roads	0.3	0.3	0.3	0.4	0.4
Total Acres Without CSR	1.8	3.3	5.9	8.2	10.2
Added Buildings and Grounds for CSR	0.1	0.2	0.3	0.5	0.7
Added Parking and Roads for CSR	0.1	0.1	0.1	0.2	0.2
Total Acres with CSR	2.0	3.6	6.3	8.9	11.1

Back to top

Table(s) 4 - Site Requirements for Grades Six Through Eight

Type of Outdoor Facilities	Enrollment Up to 75 Facilities Required	Enrollment 76 to 150 Facilities Required	Enrollment 151 to 300 Facilities Required	Enrollment 301 to 450 Facilities Required	Enrollment 451 to 600 Facilities Required
G Field Area 260 feet by 260 feet	1	1			
H Field Area 260 feet by 460 feet			1	1	1
I Field Area 240 feet by 300 feet					1
J Hardcourt Area 90 feet by 100 feet	1	2	3	3	4
K Hardcourt Area 100 feet by 120 feet				2	2
P Apparatus Area 1000 square feet	1	2	2	3	3
Percentage factor for layout	30	30	25	25	20

Site requirements for grades six through eight (cont)

Type of Outdoor Facilities	Enrollment 601 to 750 Facilities Required	Enrollment 751 to 900 Facilities Required	Enrollment 901 to 1050 Facilities Required	Enrollment 1051 to 1200 Facilities Required
G Field Area 260 feet by 260 feet				
H Field Area 260 feet by 460 feet	1	2	2	2
I Field Area 240 feet by 300 feet	1			
J Hardcourt Area 90 feet by 100 feet	4	5	5	6
K Hardcourt Area 100 feet by 120 feet	3	3	3	3
P Apparatus Area 1,000 square feet	3	4	4	4
Percentage factor for layout	20	15	15	15

Site requirements for grades six through eight (cont)

Area Use	Enrollment Up to 75 Usable Acres Required	Enrollment 76 to 150 Usable Acres Required	Enrollment 151 to 300 Usable Acres Required	Enrollment 301 to 450 Usable Acres Required	Enrollment 451 to 600 Usable Acres Required
Physical Education	2.3	2.7	4.3	5.0	7.0
Buildings and Grounds	0.6	1.4	2.1	2.7	3.3
Parking and Roads	0.3	0.3	0.3	0.4	0.4
Total Acres without CSR	3.2	4.4	6.7	8.1	10.7

Added Buildings and Grounds for CSR	0.1	0.2	0.3	0.5	0.7
Added Parking and Roads for CSR	0.1	0.1	0.1	0.2	0.2
Total Acres with CSR	3.4	4.7	7.1	8.8	11.6

Site requirements for grades six through eight (cont)

Area Use	Enrollment 601 to 750 Usable Acres Required	Enrollment 751 to 900 Usable Acres Required	Enrollment 901 to 1050 Usable Acres Required	Enrollment 1051 to 1200 Usable Acres Required
Physical Education	7.3	8.5	8.5	10.7
Buildings and Grounds	4.1	4.9	5.8	6.6
Parking and Roads	0.5	0.6	0.7	0.8
Total Acres without CSR	11.9	14.0	15.0	18.1
Added Buildings and Grounds for CSR	0.9	1.0	1.2	1.4
Added Parking and Roads for CSR	0.3	0.3	0.4	0.4
Total Acres with CSR	12.9	15.3	16.6	19.9

Note: These specifications are intended for grades six, seven, and eight or a combination of grades seven and eight. If facilities for football and track are not required, use the specifications on this table; if they are required, see the specifications on Table 5.

Table(s) 5 - Site Requirements for Grades Six Through Nine

Type of Outdoor Facility	Enrollment up to 75 Facilities Required	Enrollment 76 to 150 Facilities Required	Enrollment 151 to 300 Facilities Required	Enrollment 301 to 450 Facilities Required	Enrollment 451 to 600 Facilities Required
G Field Area 260 feet by 260 feet			1		1
H Field Area 260 feet by 460 feet				1	
J Hardcourt Area 90 feet by 100 feet	1	2	3	3	4
K Hardcourt Area 100 ft by 120 ft				2	2
L Field Area 360 feet by 360 feet	1	1	1	1	1
M Field Area 300 ft by 750 ft					1
P Apparatus Area 1000 square ft	1	2	2	3	3
Percentage factor for layout	30	30	25	25	20

Site Requirements for grades six through nine (cont)

Type of Outdoor Facility	Enrollment 601 to 750 Facilities	Enrollment 751 to 900 Facilities	Enrollment 901 to 1050 Facilities	Enrollment 1051 to 1200 Facilities

	Required	Required	Required	Required
G Field Area 260 feet by 260 feet	1			
H Field Area 260 feet by 460 feet		1	1	1
J Hardcourt Area 90 feet by 100 feet	4	5	5	6
K Hardcourt Area 100 feet by 120 feet	3	3	3	3
L Field Area 360 feet by 360 feet	1	1	1	1
M Field Area 300 feet by 750 feet	1	1	1	1
P Apparatus Area 1,000 square feet	3	4	4	4
Percentage factor for layout	20	20	20	20

Site requirements for grades six through nine (cont)

Area Use	Enrollment up to 75 Usable Acres Required	Enrollment 76 to 150 Usable Acres Required	Enrollment 151 to 300 Usable Acres Required	Enrollment 301 to 450 Usable Acres Required	Enrollment 451 to 600 Usable Acres Required	Enrollment 601 to 750 Usable Acres Required	Enrollment 751 to 900 Usable Acres Required	Enrollment 901 to 1050 Usable Acres Required	Enrollment 1051 to 1200 Usable Acres Required
Physical Education	4.2	4.5	6.5	8.7	13.4	13.7	15.4	15.4	15.7
Buildings and Grounds	0.8	1.6	2.3	3.0	3.6	4.2	4.9	5.8	6.6
Parking and Roads	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Total Acres without CSR	5.3	6.4	9.1	12.1	17.4	18.4	20.9	21.9	23.1
Added Buildings and Grounds for CSR	0.1	0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4
Added Parking and Roads for CSR	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
Total Acres with CSR	5.5	6.7	9.5	12.8	18.3	19.6	22.2	23.5	24.9

Site requirements for grades six through nine (cont)

Area Use	Enrollment 601 to	Enrollment 751 to	Enrollment 901 to	Enrollment 1051 to

	750 Usable Acres Required	900 Usable Acres Required	1050 Usable Acres Required	1200 Usable Acres Required
Physical Education	13.7	15.4	15.4	15.7
Buildings and Grounds	4.2	4.9	5.8	6.6
Parking and Roads	0.5	0.6	0.7	0.8
Total Acres without CSR	18.4	20.9	21.9	23.1
Added Buildings and Grounds for CSR	0.9	1.0	1.2	1.4
Added Parking and Roads for CSR	0.3	0.3	0.4	0.4
Total Acres with CSR	19.6	22.2	23.5	24.9

Note: These specifications are intended for any combination of grades six, seven, eight, and nine and include area requirements for football and track.

Table(s) 6 - Site Requirements for Grades Nine Through Twelve

Type of Outdoor Facility	Enrollment up to 400 Facilities Required	Enrollment 401 to 600 Facilities Required	Enrollment 601 to 800 Facilities Required	Enrollment 801 to 1000 Facilities Required	Enrollment 1001 to 1200 Facilities Required
G Field Area 260 feet by 260 feet	1	1		1	1
H Field Area 260 feet by 460 feet			1	1	1
K Hardcourt Area 100 feet by 120 feet	2	2	3	3	3
L Field Area 360 feet by 360 feet	1	1	1	1	1
M Field Area 300 feet by 750 feet	1	1	1	1	1
N Hardcourt Area 100 feet by 110 feet	3	4	5	5	6
O Field Area 200 feet by 360 feet		1	1	1	1
P Apparatus Area 1000 square feet	2	3	3	4	4
Percentage factor for layout	25	20	20	20	20

Site requirements for grades nine through twelve (cont)

Type of Outdoor Facility	Enrollment 1201 to 1400 Facilities Required	Enrollment 1401 to 1600 Facilities Required	Enrollment 1601 to 1800 Facilities Required	Enrollment 1801 to 2000 Facilities Required	Enrollment 2001 to 2200 Facilities Required	Enrollment 2201 to 2400 Facilities Required
G Field Area 260 feet by 260 feet						
H Field Area						

~~260 feet by 460 feet~~ K Hardcourt Area 100 feet by 120 feet	~~2~~ 3	~~2~~ 3	~~3~~ 3	~~3~~ 4	~~3~~ 4	~~3~~ 4
L Field Area 360 feet by 360 feet	1	1	1	1	1	1
M Field Area 300 feet by 750 feet	1	1	1	1	1	1
N Hardcourt Area 100 feet by 110 feet	6	6	7	7	7	8
O Field Area 200 feet by 360 feet	1	1	1	1	2	2
P Apparatus Area 1000 square feet	5	5	6	6	7	7
Percentage factor for layout	15	15	15	15	10	10

Site requirements for grades nine through twelve (cont)

Area Use	Enrollment up to 400 Usable Acres Required	Enrollment 401 to 600 Usable Acres Required	Enrollment 601 to 800 Usable Acres Required	Enrollment 801 to 1000 Usable Acres Required	Enrollment 1001 to 1200 Usable Acres Required
Physical Education	13.8	15.6	17.6	19.5	19.8
Buildings and Grounds	3.3	4.0	5.1	6.3	7.6
Parking and Roads	2.1	3.6	4.4	5.2	6.1
Total acres without CSR	19.2	23.2	27.1	31.0	33.5
Added Buildings and Grounds for CSR	0.4	0.6	0.8	1.0	1.2
Added Parking and Roads for CSR	0.1	0.2	0.2	0.3	0.3
Total acres with CSR	19.7	24.0	28.1	32.3	35.0

Site requirements for grades nine through twelve (cont)

Area Used	Enrollment 1201 to 1400 Usable Acres Required	Enrollment 1401 to 1600 Usable Acres Required	Enrollment 1601 to 1800 Usable Acres Required	Enrollment 1801 to 2000 Usable Acres Required	Enrollment 2001 to 2200 Usable Acres Required	Enrollment 2201 t0 2400 Usable Acres Required
Physical Education	20.4	20.4	23.9	24.2	25.0	25.3
Buildings and Grounds	8.9	10.1	11.4	12.7	13.9	15.2
Parking and Roads	7.1	8.2	9.2	10.2	11.2	12.2
Total acres without CSR	36.4	38.7	44.5	47.1	50.1	52.7
Added Buildings and Grounds for CSR	1.4	1.6	1.8	2.0	2.1	2.3
Added Parking and Roads for CSR	0.4	0.5	0.5	0.6	0.6	0.7
Total acres with CSR	38.2	40.8	46.8	49.7	52.8	55.7

Note: If field area L, Baseball Field, includes bleachers and dugouts, the site should be increased 0.3 acres.
If field area M, Football Field and Track, includes a stadium, the site should be increased by 1.7 acres.
If the school program includes aquatics and requires both swimming and diving pools, the site should be increased 0.6 acres.

Table 7 - Site Requirements for County Community Schools, Community Day Schools, and Continuation High Schools

Area Use	Enrollment 5 to 20 Square Feet and Usable Acres Required	Enrollment 21 to 40 Square Feet and Usable Acres Required	Enrollment 41 to 60 Square Feet and Usable Acres Required	Enrollment 61 to 90 Square Feet and Usable Acres Required	Enrollment 91 to 120 Square Feet and Usable Acres Required	Enrollment 121 to 150 Square Feet and Usable Acres Required	Enrollment Over 150 Square Feet and Usable Acres Required
Buildings and Grounds in Square Feet	5,000	10,000	15,000	20,000	28,000	34,000	34,000 plus 200 square feet per pupils in excess of 150 enrollment
Parking and Roads in Square Feet	8,000	16,000	24,000	36,000	48,000	60,000	400 square feet per pupil for the total number of pupils
Physical Education in Square Feet	16,000	16,000	24,000	36,000	48,000	60,000	400 square feet per pupil for the total number of pupils
Total Square Feet Recommended	29,000	42,000	63,000	92,000	124,000	154,000	
Acres	0.7	1.0	1.5	2.2	2.9	3.6	

Figure 1. Basic Unit A (Illustrated)

Basic Unit A space module is 90 feet by 120 feet. Instructor may mark courts with chalk lines to make one teaching station of end soccer 60 feet by 100 feet or one teaching station of two hand polo courts 40 feet by 60 feet or other field games as desired for grades 1, 2, 3

Back to top

Figure 2. Field Areas for Grades 1, 2, and 3 (Illustrated)

Use one Unit A space module that is 90 feet by 120 feet (10,800 square feet) for an enrollment up to 150.
Use two Unit A space modules (each module 90 feet by 120 feet for a total of 21,600 square feet) for a maximum enrollment of 300. The two units are placed side by side.
Use three Unit A space modules (each module 90 feet by 120 feet for a total of 32,400 square feet) for a maximum enrollment of 450. The three units are placed side by side.
Use four Unit A space modules (each module 90 feet by 120 feet for a total of 43,200 square feet) for a maximum enrollment of 600. The four units could be placed side by side or placed as a square.
The modules may be blocked into various geometrical patterns or planned as separate units. The architect is free to make the site layout as he/she thinks best, provided the appropriate number of modules is included and the facilities are identified and dimensioned.

Figure 3. Basic Unit B (Illustrated)

Basic Unit B space module is 60 feet by 75 feet. The layout of the Basic Unit B module will vary.
A sample of the Basic Unit B space module is illustrated showing some typical activities for 75 children. The activities show an area that is 20 feet by 75 feet for running and relays (four lanes), another area that is 15 feet by 40 feet for hopscotch and shuffleboard (the shuffleboard is 6 feet by 40 feet), and an area that is 20 feet by 40 feet showing four-square court and a tetherball court, and one area that is 40 feet by 40 feet to be used as the instructor sees fit.

Figure 4. Hardcourt Areas for Grades 1, 2, and 3 (Illustrated)

Use one Unit B space module that is 60 feet by 75 feet (4,500 square feet) for an enrollment up to 75.

Use two Unit B space modules (each module 60 feet by 75 feet for a total of 9,000 square feet) for a maximum enrollment of 150. The two units are placed side by side.
Use four Unit B space modules (each module 60 feet by 75 feet for a total of 18,000 square feet) for a maximum enrollment of 300. The four units are placed side by side.
Use six Unit B space modules (each module 60 feet by 75 feet for a total of 27,000 square feet) for a maximum enrollment of 450. Three units could be placed side by side with the three additional units placed beneath.
Use eight Unit B space modules (each module 60 feet by 75 feet for a total of 36,000 square feet) for a maximum enrollment of 600. Four units could be placed side by side with the four additional units placed beneath.
The modules may be blocked into various geometrical patterns or planned as separate units. The architect is free to make the site layout as he/she thinks best, provided the appropriate number of modules is included and the facilities are identified and dimensioned.

Basic Unit C

Basic Unit C, an apparatus area, is a space module of 3,200 square feet. The architect may design the area according to the dimensions of the particular type of apparatus to be installed as long as the total area does not exceed 3,200 square feet. Basic Unit C provides space for up to 75 students in grades one through six. (See Table 3 for additional basic units needed for enrollments beyond 75 in those grades.)

Figure 5. Basic Unit D (Illustrated)

Basic Unit D space module is 180 feet by 180 feet. The module is a combined use for softball or field areas. The softball field would be 180 feet by 180 feet and the turfed field could be 120 feet by 180 feet.

Figure 6. Basic Unit E (Illustrated)

Basic Unit E space module is 120 feet by 180 feet. The module is a turfed field.

Figure 7. Field Areas for Grades 4, 5, and 6. (Illustrated)

Use one Unit D space module that is 180 feet by 180 feet (32,400 square feet) for an enrollment up to 75.
Use two Unit D space modules (each module is 180 feet by 180 feet for a total of 64,800 square feet) for a maximum enrollment of 150. The two units are placed side by side.
Use four Unit D space modules (each module is 180 feet by 180 feet for a total of 129,600 square feet) for a maximum enrollment of 300. The four units could be placed to form a square.
Use four Unit D space modules (each module is 180 feet by 180 feet) and two Unit E space modules (each module is 120 feet by 180 feet) (total 172,800 square feet) for a maximum enrollment of 450. The Unit D space modules could be placed with the Unit E space modules in between.
Use four Unit D space modules (each module is 180 feet by 180 feet) and four Unit E space modules (each module is 120 feet by 180 feet) (total 216,000 square feet) for a maximum enrollment of 600. The Unit D space modules could be placed with the Unit E space modules in between.
The modules may be blocked into various geometrical patterns or planned as separate units. The architect is free to make the site layout as he/she thinks best, provided the appropriate number of modules is included and the facilities are identified and dimensioned.

Figure 8. One-Half Unit F (Illustrated)

One half Unit F space module is 40 feet by 100 feet. The typical game activities could be volleyball court which would be 25 feet by 50 feet, basketball court which would be 38 feet by 60 feet, and an area that is 30 feet by 40 feet that could be marked for hopscotch, tetherball, foursquare, or shuffleboard.

Figure 9. Basic Unit F (Illustrated)

Basic Unit F space module is 80 feet by 100 feet. Each enrollment increment of 75 requires one module of space of 80 feet by 100 feet. Layout of the space will vary.

Figure 10. Hardcourt Areas for Grades 4, 5, and 6. (Illustrated)

Use half of Unit F space module that is 40 feet by 100 feet (4,000 square feet) for an enrollment of 35 (one room school). This layout would be a volleyball court/basketball court and an area for miscellaneous games as discussed in Figure 8.
Use one Unit F space module that is 80 feet by 100 feet (8,000 square feet) for a maximum enrollment of 75. This layout could be two volleyball courts/basketball courts and an area for miscellaneous games as discussed in Figure 8.
Use two Unit F space modules that measures 80 feet by 200 feet (16,000 square feet) for a maximum enrollment of 150. This layout could be two basketball courts and three volleyball courts with an area for miscellaneous games as discussed in Figure 8.
Use four Unit F space modules that measures 160 feet by 200 feet (32,000 square feet) for a maximum enrollment of 300. This layout could be four basketball courts, six volleyball courts, and an area for miscellaneous games as discussed in Figure 8.
Use six Unit F space modules that measures 160 feet by 300 feet (48,000 square feet) for a maximum enrollment of 450. This layout could be six basketball courts, nine volleyball courts, and an area for miscellaneous games as discussed in Figure 8.
Use eight Unit F space modules that measures 160 feet by 400 feet (64,000 square feet) for a maximum enrollment of 600. This layout could be eight basketball courts, twelve volleyball courts, and an area for miscellaneous games as discussed in Figure 8.
The modules may be blocked into various geometrical patterns or planned as separate units. The architect is free to make the site layout as he/she thinks best, provided the appropriate number of modules is included and the facilities are identified and dimensioned.

Figure 11. Field and Hardcourt Areas for Grades 7 through 12 (Illustrated)

Basic Unit G space module that measures 260 feet by 260 feet (67,600 square feet) could be used for one softball or one field area.
Basic Unit H space module that measures 260 feet by 460 feet (119,600 square feet) could be used for two softball or two field areas.

Figure 12. Basic Unit I (Illustrated)

Basic Unit I space module is 240 feet by 300 feet (72,000 square feet). This module could be used as a multiuse field area such as a soccer field that measures 180 feet by 240 feet and a touch football field that measures 120 feet by 240 feet.

Figure 13. Basic Unit J (Illustrated)

Basic Unit J space module is 90 feet by 100 feet (9,000 square feet). This module could be used a basketball courts or volleyball courts.

Figure 14. Field and Hardcourt Areas for Grades 7 through 12 (Illustrated)

Basic Unit K space module measures 100 feet by 120 feet (12,000 square feet). This module could be used for two tennis courts.
Basic Unit L space module measures 360 feet by 360 feet (129,600 square feet). This module could be used for one baseball and one softball field or two field areas.

Figure 15. Basic Unit M (Illustrated)

Basic Unit M space module measures 300 feet by 750 feet (225,000 square feet). This module could be used as a football field and track.

Figure 16. Basic Unit N (Illustrated)

Basic Unit N space module measures 100 feet by 110 feet (11,000 square feet). This module could be used for basketball or volleyball.

Figure 17. Field and Hardcourt Areas for Grades 7 through 12 (Illustrated)

Basic Unit O space module measures 200 feet by 360 feet (72,000 square feet). This module could be used for a soccer field, field hockey field, or touch football field.

Basic Unit P

Basic Unit P, an apparatus area, is a space module of 1,000 square feet. The architect may design the area according to the dimensions of the particular type of apparatus to be installed as long as the total area does not exceed 1000 square feet. Basic Unit P provides space for up to 75 students in grades six through twelve. (See Tables 4, 5, and 6 for additional basic units needed for enrollments beyond 75 in the upper grades.)

Back to top

Section 4. Procedures for Developing a Site Plan

Obtain a topographical survey of the site. The survey of a school site must include the following information:

Step One

1. Title of survey, property, location, certification, and date
2. Scale and compass orientation
3. Tract boundary lines, courses, and distances
4. Names of property owners whose property abuts the site
5. Benchmark with assumed elevation
6. Names and locations of all existing road right-of-ways on or near the tract
7. Location of all existing structures on the site, including buildings, foundations, bridges, wells, cisterns, walls and fences, and rock outcroppings
8. Location, type, size, and flow of all existing storm and sanitary sewers on or continuous to the tract, including top and invert elevations of all manholes, and inlet and invert elevations of other drainage structures.
9. Location of roads, drives, curbs, gutters, steps, walks, paved areas, and the like, indicating types of material or surfacing
10. Location, type, and size of all water and gas mains, meter boxes, hydrants, and other appurtenances
11. Locations of all utility poles, telephone lines, and power lines, with indication of nearest leads either on-site or off-site; pertinent information and ownership of all utilities
12. Location of all swamps, springs, streams, drainage ditches, lakes, and other bodies of water; line of maximum floodplain if applicable
13. Outline of wooded areas; location of trees, identification of trees by type, and identification of trees with trunks over eight inches in diameter at waist height
14. Road elevations for all improved roads on or adjacent to property; improved gutter elevations on property line side at intervals of 50 feet
15. Elevations throughout the site sufficient to develop complete and thorough contour map

Step Two

Make repeated visits to the site to gain a feeling for the character of the site, collect information, and begin a land-use analysis. Usually the architect takes a print of the topographical survey directly to the field. From actual on-the-site observations, she or he notes all pertinent information, such as views, sculptural land forms, the quality of the soil, trees, outcroppings, streams, and all other existing natural attributes, which might influence the site planning. This study allows the architect to visualize the site upon completion of the developed school.

Step Three

Prepare diagrammatic studies based on all collected information and an understanding of the site, the educational program, and the facilities required for the finished school. It is necessary for the architect to prepare many diagrammatic studies to show the various possibilities. They are usually executed in rapid freehand sketches, which are seldom shown to the client; yet these studies are most critical in the planning process because conceptual ideas are developed during this phase.

The architect can benefit by collaboration at this point with the clients, school planning specialists, landscape architects, engineers, and experts in various fields who, in a free interchange of ideas, generally contribute such specific information that the best plan concepts evolve almost spontaneously.

Step 4

Develop a refined site plan. (The architect should not proceed beyond step 3 until the school buildings are planned in considerable detail.)

This page shows a detailed site plan. The playfields and hardcourt areas used in the site plan contain the correct number of facilities at the correct scale as recommended by the site requirement tables. The symbols used correspond to those in the tables. The site plan shows kindergarten, grades 1 and 2, grades3 and 4, grades 5 and 6, multipurpose and administration, parking, bus loading area, kindergarten play yard, expansion, powerline setback, playfields (a) for grades 1, 2, and 3, hardcourts (b) for grades 1, 2, and 3, playfields (d) for grades 4, 5, and 6, and hardcourts (f) for grades 4, 5, and 6.

Appendix. Site Requirements for Very Large Schools

Typically, school districts plan the sizes of schools on the basis of the following maximum enrollments:

Maximum enrollments

Grades	Enrollment
One, two, and three	600
Four, five, and six	600
Seven and eight	1200
Nine through twelve	2400

The maximums have remained unchanged through the years. With some exceptions, most schools have not exceeded those sizes in the initial planning. In the last decade, however, there has been a trend toward larger schools and a consequent need to adjust the site requirement tables beyond the maximum enrollments indicated above.

The trend toward larger schools is most apparent in the areas that can least afford the large size - urban areas where land is the most scarce and costly. In those instances the site requirement tables for large schools may be used in reference to the Leroy F. Greene School Facilities Act of 1998. Under that Act a school district may be deemed qualified for a grant for excessive construction costs due to urban location and security requirements and for designation as an impacted site as defined in Section 1859.74.1 of the *California Code of Regulations*. A similar provision for an additional grant is contained in Section 1859.73, related to multilevel construction on impacted sites.

To determine whether a site is impacted, the school district needs to know the percentage of the site size compared with the size recommended by the California Department of Education for the master planned project. The tables of expanded site sizes may be useful in providing this information. Although the School Facilities Planning Division does not recommend exceedingly large schools, the division recognizes that some districts wish to build very large schools that exceed the requirements detailed in the tables. Therefore, requirements for expanded sites are provided in this appendix.

Determining the size of a new school is an important decision for a school district and deserves serious thought. In an effort to help school districts, the California Department of Education provided information about school size in a publication titled *Schools for the Twenty-first Century* (1990, 15-17).

The issue of the size of a school has been the subject of much research; there are no clear-cut solutions. Researchers arrived at two conclusions:

- The optimal school size is one that supports the kind of education the community wants at a cost it can afford.
- The relationship between teachers and students is a primary concern. The school's structure, no matter what its size, must support that relationship.

Size per se is not the only factor or the most crucial one in determining a school's success. Other factors to be considered are the district's geographical characteristics, its tradition and history, the density and location of its student population, and local politics.

Large school districts, especially urban districts, tend to have larger schools than do small rural districts. What is large to one district may be small or medium-sized to another. School size is relative; however, most researchers, for purposes of analysis, classify the size of a school by the enrollment, as shown in Table A.1.

Back to top

Table A1 - School Size Categories, by Grade Span and Enrollment

School Size	Grade Span/Enrollment	Grade Span/Enrollment	Grade Span/Enrollment
Very Small	K-5 or K-6/1-100	6-8 or 7-8/1-300	9-12/1-600
Small	K-5 or K-6/101-300	6-8 or 7-8/301-700	9-12/601-900
Medium	K-5 or K-6/301-600	6-8 or 7-8/701-1200	9-12/901-1500
Large	K-5 or K-6/601-1000	6-8 or 7-8/1201-1500	9-12/1500-2400
Very Large	K-5 or K-6/1000+	6-8 or 7-8/1500+	9-12/2400+

A school district should be large enough to include an area equivalent to a well-identified community of people who have some degree of interaction and share common interests. Some union high school districts that embrace more than one community have found it desirable to build more schools, each serving a different community of people within the district. If the needs of a community have not been adequately provided for, the community might withdraw from the school district to establish its own high school. If a single high school can meet the needs of several communities, the communities generally have chosen to retain one larger school.

Many educators have learned through experience that the very large school has some disadvantages. One of these is its impersonal character, which makes it difficult for students and staff to know one another well enough to create a sense of belonging. The primary strategy for minimizing this disadvantage is to break the school into various "houses' or schools-within-a-school.

In very large schools many students find it difficult to participate in student government, sports, and other activities. In smaller schools more students participate in activities, and close relationships between students and staff can be more easily achieved.

A close relationship between the school and the home improves the school's efficiency. Very large schools impede close understanding and cooperation between school and home; they also often involve several communities whose characters and educational needs differ.

Furthermore, coordinating an instruction program is more difficult in a very large high school. Instructional departments tend to become more and more self-contained, and the desirable integration among specialized courses occurs less frequently. Both very large schools and very small schools may cost more per student to operate.

Research on the relationship between academic achievement and school size is inconclusive. Some studies have found no relationship; others have found that larger schools - within reasonable size limits - produce better results.

Additional factors to be considered are student's circulation patterns and congestion in areas such as libraries, cafeterias, and hallways. These problems are more difficult to overcome in very large schools, even those with staggered schedules.

Table(s) A2 - Requirements for Expanded Sites, Grades One through Six (Schools with more than six classrooms with class size reduction in effect)

Grades one through three requirements for expanded sites

Type of Outdoor Facility	Enrollment 601 to 750/Facilities Required	Enrollment 751 to 900/Facilities Required	Enrollment 901 to 1050/Facilities Required	Enrollment 1051 to 1200/Facilities Required
A Field Area 90 feet by 120 feet	4	5	5	6

B Hardcourt Area 60 feet by 75 feet	10	12	14	16
C Apparatus Area 3,200 square feet	6	7	8	9
Percentage factor for layout	10	10	10	10

Grades one through three requirements for expanded sites (cont)

Area Use	Enrollment 601 to 750/Usable Acres Required	Enrollment 751 to 900/Usable Acres Required	Enrollment 901 to 1050/Usable Acres Required	Enrollment 1051 to 1200/Usable Acres Required
Physical Education	2.7	3.3	3.6	4.2
Buildings and Grounds	3.0	3.7	4.3	4.9
Parking and Roads	0.5	0.6	0.7	0.8
Total Acres Without CSR	6.2	7.8	8.6	9.9
Added Buildings and Grounds for CSR	1.0	1.1	1.2	1.4
Added Parking and Roads for CSR	0.3	0.3	0.4	0.4
Total Acres with CSR	7.5	9.0	10.2	11.7

Note: For data on kindergarten, see Table 3 in the text.

Grades four, five, and six requirements for expanded sites

Type of Outdoor Facility	Enrollment 601 to 750/Facilities Required	Enrollment 751 to 900/Facilities Required	Enrollment 901 to 1050/Facilities Required	Enrollment 1051 to 1200 Facilities Required
C Apparatus Area 3,200 square feet	4	4	5	5
D Field Area 180 feet by 180 feet	4	4	5	5
E Field Area 120 feet by 180 feet	5	5	6	6
F Hardcourt Area 80 feet by 100 feet	10	12	14	16
Percentage factor for layout	10	10	10	10

Grades four, five, and six requirements for expanded sites (cont)

Area Use	Enrollment 601 to 750/Usable Acres required	Enrollment 751 to 900/Usable Acres Required	Enrollment 901 to 1050/Usable Acres Required	Enrollment 1051 to 1200/Usable Acres Required
Physical Education	8.3	8.7	10.6	11.0
Buildings and Grounds	3.0	3.7	4.3	4.9
Parking and Roads	0.5	0.6	0.7	0.8
Total Acres Without CSR	11.8	13.0	15.6	16.7
Added Buildings and				

Grounds for CSR	1.0	1.1	1.2	1.4
Added Parking and Roads for CSR	0.3	0.3	0.4	0.4
Total Acres with CSR	13.1	14.4	17.2	18.5

Table(s) A.3 - Requirements for Expanded Sites, Grades Six through Nine

Any combination grades six, seven, and eight (without football/track facilities)

Type of Outdoor Facility	Enrollment 1201 to 1400/Facilities Required	Enrollment 1401 to 1600/Facilities Required	Enrollment 1601 to 1800/Facilities Required	Enrollment 1801 to 2000/Facilities Required
G Field Area 260 feet by 260 feet		1	1	1
H Field Area 260 feet by 460 feet	2	2	2	2
I Field Area 240 feet by 300 feet	1	1	1	1
J Hardcourt Area 90 feet by 100 feet	7	8	9	10
K Hardcourt Area 100 feet by 120 feet	4	5	6	7
P Apparatus Area 1,000 square feet	5	6	7	8
Percentage factor for layout	15	10	10	10

Requirements for expanded sites grades six through nine (without football/track facilities) (cont)

Area Use	Enrollment 1201 to 1400/Usable Acres Required	Enrollment 1401 to 1600/Usable Acres Required	Enrollment 1601 to 1800/Usable Acres Required	Enrollment 1801 to 2000/Usable Acres Required
Physical Education	11.3	13.0	13.6	14.2
Buildings and Grounds	7.7	8.8	9.9	11.0
Parking and Roads	0.9	1.0	1.2	1.3
Total Acres Without CSR	19.9	22.8	24.7	26.5
Added Buildings and Grounds for CSR	1.6	1.9	2.1	2.3
Added Parking and Roads for CSR	0.5	0.5	0.6	0.6
Total Acres with CSR	22.0	25.2	27.4	29.4

Any combination of grades, seven, eight, and nine (with football/track facilities)

Type of Outdoor Facilities	Enrollment 1201 to 1400/Facilities Required	Enrollment 1401 to 1600/Facilities Required	Enrollment 1601 to 1800/Facilities Required	Enrollment 1801 to 2000/Facilities Required
G Field Area 260 feet by 260 feet		1		

H Field Area 260 feet by 460 feet	1	1	2	2
J Hardcourt Area 90 feet by 100 feet	7	8	9	10
K Hardcourt Area 100 feet by 120 feet	4	5	6	7
L Field Area 360 feet by 360 feet	1	1	1	1
M Field Area 300 feet by 750 feet	1	1	1	1
P Apparatus Area 1,000 square feet	5	6	7	8
Percentage factor for layout	20	15	15	15

Any combination of grades seven, eight, and nine (with football/track facilities) (cont)

Area Use	Enrollment 1201 to 1400/Usable Acres Required	Enrollment 1401 to 1600/Usable Acres Required	Enrollment 1601 to 1800/Usable Acres Required	Enrollment 1801 to 2000/Usable Acres Required
Physical Education	16.3	17.9	19.9	20.5
Buildings and Grounds	7.7	8.8	9.9	11.0
Parking and Roads	0.9	1.0	1.2	1.3
Total Acres Without CSR	24.9	27.7	31.0	32.8
Added Buildings and Grounds for CSR	1.6	1.9	2.1	2.3
Added Parking and Roads for CSR	0.5	0.5	0.6	0.6
Total Acres with CSR	27.0	30.1	33.7	35.7

Table(s) A4 - Requirements for Expanded Sites, Grades Nine through Twelve

Any combination of grades nine, ten, eleven, and twelve

Type of Outdoor Facility	Enrollment 2401 to 2600/ Facility Required	Enrollment 2601 to 2800/Facility Required	Enrollment 2801 to 3000/Facility Required	Enrollment 3001 to 3200/Facility Required	Enrollment 3201 to 3400/Facility Required	Enrollment 3401 to 3600/Facility Required	Enrollment 3601 to 3800/Facility Required	Enrollment 3801 to 4000/Facility Required
H Field Area 260 feet by 460 feet	3	3	3	3	3	3	3	3
K Hardcourt Area 100 feet by 120 feet	4	5	5	5	5	6	6	6
L Field Area 360 feet by								

360 feet M Field Area 300 feet by 750 feet	2 1	2 1	2 1	2 1	2 1	2 1	2 1	2 1
N Hardcourt Area 100 feet by 110 feet	8	8	9	9	9	10	10	10
O Field Area 260 feet by 360 feet	2	2	2	2	2	2	3	3
P Apparatus Area 1,000 square feet	8	8	9	10	10	11	11	12
Percentage factor for layout	10	10	10	10	10	10	10	10

Requirements for expanded sites, grades nine through twelve (cont)

Area Use	Enrollment 2401 to 2600/Usable Acres Required	Enrollment 2601 to 2800/Usable Acres Required	Enrollment 2801 to 3000/Usable Acres Required	Enrollment 3001 to 3200/Usable Acres Required	Enrollment 3201 to 3400/Usable Acres Required	Enrollment 3401 to 3600/Usable Acres Required	Enrollment 3601 to 3800/Usable Acres Required	Enrollment 3801 to 4000/Usable Acres Required
Physical Education	28.6	28.9	29.2	29.2	29.2	29.8	31.6	31.6
Buildings and Grounds	16.5	17.7	19.0	20.3	21.5	22.8	24.1	25.3
Parking and Roads	13.2	14.2	15.3	16.3	17.3	18.3	19.4	20.3
Total Acres Without CSR	58.3	60.8	63.5	65.8	68.0	70.9	75.1	77.2
Added Buildings and Grounds for CSR	2.5	2.8	3.0	3.2	3.4	3.5	3.7	3.9
Added Parking and Roads for CSR	0.7	0.8	0.8	0.9	1.0	1.0	1.0	1.1
Total Acres with CSR	61.5	64.4	67.3	69.9	72.4	75.4	79.8	82.2

Note: If field area L, Baseball Field, includes bleachers and dugouts, the site must be increased by 0.3 acres.

If field area M, Football Field and Track, includes a stadium, the site must be increased 1.7 acres.
If the school program includes aquatics and requires both swimming and diving pools, the site must be increased 0.6 acres.

Questions: Fred Yeager | fyeager@cde.ca.gov | 916-327-7148

Last Reviewed: Tuesday, September 27, 2011

Appendix B — Folsom Plan Area Specific Plan — Community Park East — City of Folsom Parks and Recreation Department

CITY OF
FOLSOM
DISTINCTIVE BY NATURE

April 26, 2012

Ms. Lisa M. Gibson
Senior Project Manager
Regulatory Division, California Delta Branch
U.S. Army Corps of Engineers
1325 J Street, Room 1350
Sacramento, California 95814-2922

Dear Ms. Gibson,

Subject: Folsom Plan Area Specific Plan – Community Park East

I understand review is underway of an alternative location for what is identified as Community Park East in the Folsom Plan Area Specific Plan. The alternative site is proposed to be generally due south of the specific plan location; would be much more elongated in parcel form; would be bordered on two sides by residential land uses; and, would have reduced access/frontage to primary collector streets. I also understand the purpose of the alternative location is to analyze the opportunity to preserve additional onsite wetlands.

The City of Folsom and the Parks and Recreation Department wholeheartedly support the objective of wetland preservation as evidenced by our current stewardship of over 800 acres of open space inclusive of many acres of jurisdictional wetlands. Unfortunately, our joint objectives of open space stewardship and park development and operations periodically come into conflict. As described by the adopted Parks and Recreation Master Plan, the city's park system includes three general types of parks: mini-parks of less than two acres; neighborhood parks of five to 15 acres; and community parks of 20 acres or more. Community parks are typically the city's most intensely developed recreation sites because of their sheer size, and the community's need for large scale facilities and the infrastructure to support them.

Folsom's community parks include our multi-field turf complexes (soccer/softball/baseball) and our major recreation building facilities and our three-pool aquatic center. These are the same kinds of facilities planned for Community Park East. These lighted field facilities for sports must be planned together for efficient program operation (leagues, tournaments, recreational play), infrastructure installation, and for efficient maintenance operations (irrigation management, turf care, etc.). The fields must be efficiently associated with the recreation buildings that will include a gymnasium, education classrooms, facilities for youth/teens/seniors and aquatics, as well as the support facilities such as restrooms, parking and maintenance yards. The alternative site in its elongated form will not support this relationship.

The alternative site provides only a narrow frontage on a collector street versus the planned transportation corridor. Folsom's community parks attract hundreds and frequently several thousand people at one time, requiring multiple ingress/egress points to significant roadways, not neighborhood streets. For example, our aquatic center hosts as many as 10 major swim meets each year bringing 400 – 700 swimmers and their families to Lembi Community Park. This same park hosts a similar number of both youth and adult softball tournaments, as well as soccer tournaments and bike racing events each bringing hundreds more participants and spectators. The largest event is the annual Eggstravaganza egg hunt before Easter where more than 5,000 people descend on the park. Substantial parking and direct transportation corridor access for this variety of events is crucial. The alternative site does not support this need.

Lastly, the current planned location for Community Park East is very advantageous due to the preserved wetlands that essentially surround the site on three sides. These wetland buffers provide benefits such as increasing the distance from the park's sometimes noisy activities and nighttime use of lighted sports fields, and the neighboring, sensitive residential land uses. The alternative site would create immediate residential neighbors on half of the park's perimeter where there are currently none due to the substantial setback required of the adjacent wetlands. This relationship would in turn require expensive design and construction mitigation to attempt to, but not likely to, appease neighborhood impacts. The alternative site would create several negative neighborhood impacts.

In summary, the City of Folsom Parks and Recreation Department does not support the alternative Community Park East location for the various and important reasons mentioned above. The park site included in the Folsom Plan Area Specific Plan is well planned within the context of the site resources and constraints, as well as within the goals of the land use and community development plan, and specifically within the eastern portion of the plan area.

Sincerely,

Robert Goss, ASLA
Parks and Recreation Director
City of Folsom Parks and Recreation Department

cc: Evert Palmer, City Manager
David Miller, Community Development Director