AMAZING FACTS MINISTRY

FIRST ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT

Technical Appendices

Prepared for:

PLACER COUNTY
COMMUNITY DEVELOPMENT RESOURCE
3091 COUNTY CENTER DRIVE
AUBURN, CA 95603

Prepared by:

PMC®

1590 DREW AVENUE, SUITE 120
DAVIS, CA 95618

AUGUST 2009

AMAZING FACTS MINISTRY

FIRST ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT

Technical Appendices

Prepared for:

PLACER COUNTY
COMMUNITY DEVELOPMENT RESOURCE
3091 COUNTY CENTER DRIVE
AUBURN, CA 95603

Prepared by:

PMC
1590 DREW AVENUE, SUITE 120
DAVIS, CA 95618

AUGUST 2009

APPENDIX 6.0

SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PSA

TABLE 1A SPECIAL-STATUS PLANT SPECIES POTENTIALLY OCCURRING WITHIN THE PSA

Scientific Name **Common Name**	**Status**			**Habitat Description[4]**	**Considered in Impact Analysis**	**Rationale**
	Federal[1]	State[2]	CNPS[3]			
Plants						
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	~	~	1B	Found on margins of vernal pools. Blooming period: March-May Elevation: 30-229 meters	Yes	Suitable habitat is present within the PSA.
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	~	~	1B	Foothill woodland and grassland communities. Blooming period: March-June Elevation: 90-1,400 meters	Yes	Suitable habitat is present within the PSA.
Bisbee Peak rush-rose *Helianthemum suffrutescens*	~	~	3	Chaparral, often on serpentinite, gabbroic, or lone soil. Blooming period: April-June Elevation: 45-840 meters	No	Suitable habitat is not present within the PSA.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	~	SE	1B	Vernal pools, receding margins of desiccating stock ponds, lakes, and reservoirs. Blooming period: April – August Elevation: 10-2,375 meters	Yes	Suitable habitat is present within the PSA. There are two recorded occurrences within five miles of the PSA.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	~	~	1B	Chaparral, cismontane woodland (often roadcuts). Threatened by road maintenance, fire suppression, and weed control measures. Possibly threatened by erosion.	Yes	Suitable habitat is present within the PSA.

Scientific Name **Common Name**	**Status**			**Habitat Description[4]**	**Considered in Impact Analysis**	**Rationale**
	Federal[1]	State[2]	CNPS[3]			
				Blooming period: May-July Elevation: 73-915 meters		
Butte County fritillary *Fritillaria eastwoodiae*	~	~	3	This species inhabits chaparral, cismontane woodland, lower montane coniferous forest (openings), and sometimes on serpentinite soils. Blooming period: March-June Elevation: 50-1,500 meters	No	Suitable habitat is present within the PSA; however, List 3 plants are not considered in the analysis.
Dubious pea *Lathyrus sulphureus* var. *argillaceus*	~	~	1B	Cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest. Blooming period: April -May Elevation: 150-305 meters	Yes	Suitable habitat is present within the PSA.
Dwarf downingia *Downingia pusilla*	~	~	2	Vernal lake and pool margins, with a variety of associates. Blooming period: March – May Elevation: 1-445 meters	Yes	Suitable habitat is present within the PSA. There are two recorded occurrences within five miles of the PSA.
El Dorado County mule ears *Wyethia reticulata*	~	~	1B	Chaparral, cismontane woodland, and lower montane coniferous forest on clay or gabbroic soils. Blooming period: April – August Elevation: 185-630 meters	No	PSA is outside the known elevation range of this species.
El Dorado bedstraw *Galium californicum* ssp. *sierrae*	FE	CR	1B	Chaparral, cismontane woodland, and lower montane coniferous forest on gabbroic soils. Blooming period: May – June Elevation: 100-585 meters	No	Gabbroic soils not present within the PSA.
Hartweg's golden sunburst *Pseudobahia bahiifolia*	FE	SE	1B	Adobe clay soils in cismontane woodland, and valley and foothill grassland habitats.	No	Adobe clay soils not present within the PSA.

Scientific Name **Common Name**	**Status**			**Habitat Description[4]**	**Considered in Impact Analysis**	**Rationale**
	Federal[1]	State[2]	CNPS[3]			
				Blooming period: March – April Elevation: 15-150 meters		
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	~	~	2	Meadows and seeps, playas, and valley and foothill grassland on alkaline soils. Blooming period: June – September Elevation: 1-155 meters	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.
Jepson's onion *Allium jepsonii*	~	~	1B	Chaparral, cismontane woodland, and lower montane coniferous forest on serpentinite or volcanic soils. Blooming period: April – August Elevation: 300-1,320 meters	No	PSA is outside the known elevation range of this species.
Layne's ragwort *Packera layneae*	FT	CR	1B	Chaparral and cismontane woodland on serpentinite or gabbroic, rocky soils. Blooming period: April – August Elevation: 200-1,000 meters	No	PSA is outside the known elevation range of this species.
Legenere *Legenere limosa*	~	~	1B	Vernal pools, perennial sloughs, and ponds. Blooming period: April – June Elevation: 1-880	Yes	Suitable habitat is present within the PSA. There is one recorded occurrences within five miles of the PSA.
Oval-leaved viburnum *Viburnum ellipticum*	~	~	2	Chaparral, cismontane woodland, and lower montane coniferous forest. Blooming period: May – June Elevation: 215-1,400	No	PSA is outside the known elevation range of this species.
Pincushion navarretia *Navarettia myersii* ssp. *myersii*	~	~	1B	Moist areas and vernal pools. Blooming period: May Elevation: 20-330	Yes	Suitable habitat is present within the PSA.

Scientific Name **Common Name**	**Status**			**Habitat Description[4]**	**Considered in Impact Analysis**	**Rationale**
	Federal[1]	State[2]	CNPS[3]			
Pine Hill ceanothus *Ceanothus roderickii*	FE	CR	1B	Chaparral and cismontane woodland on serpentinite or gabbroic soils. Blooming period: April – June Elevation: 260-630	No	PSA is outside the known elevation range of this species.
Pine Hill flannelbush *Fremontodendron decumbens*	FE	CR	1B	This species inhabits chaparral, cismontane woodland, among gabbroic, senpentinite or rocky soils. Blooming period: April-July Elevation: 425-760 meters	No	PSA is outside the known elevation range of this species.
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	~	~	1B	Annual herb found on vernally mesic sites within chaparral, valley and foothill grassland, cismontane woodlands. Sometimes on edges of vernal pools. Blooming period: March – May Elevation: 30 - 100 meters	Yes	Suitable habitat is present within the PSA.
Red Hills soaproot *Chlorogalum grandiflorum*	~	~	1B	This species inhabits chaparral, cismontane woodland, lower montane coniferous forest; among serpentinite and gabbroic soils. Blooming period: May-June Elevation: 245-1,170 meters	No	PSA is outside the known elevation range of this species.
Sacramento orcutt grass *Orcuttia viscida*	FE	SE	1B	Vernal pools. Blooming period: April – July Elevation: 30-100 meters	No	Suitable habitat is within the PSA. There are no recorded occurrences within five miles of the PSA.
Sanford's arrowhead *Sagittaria sanfordii*	~	~	1B	Marshes and swamps (assorted shallow freshwater). Blooming period: May – October Elevation: 0-650 meters	Yes	Suitable habitat is present within the PSA. There is one recorded occurrences within five miles of the PSA.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]	CNPS[3]			
Stebbins' morning-glory *Calystegia stebbinsii*	FE	SE	1B	This species inhabits chaparral (openings), cismontane woodland, gabbroic or serpentinite soils. Blooming period: April-July Elevation: 185-730 meters	No	PSA is outside the known elevation range of this species.

CODE DESIGNATIONS

[1]Federal status: 2009 USFWS Listing	[2]State status: 2009 CDFG Listing	[3]CNPS: 2009 CNPS Listing
FE = Listed as endangered under the Endangered Species Act	**SE** = Listed as endangered under the California Endangered Species Act	**1A** = Plants species that presumed extinct in California.
FT = Listed as threatened under the Endangered Species Act	**ST** = Listed as threatened under the California Endangered Species Act	**1B** = Plant species that are rare, threatened, or endangered in California and elsewhere.
	CSC = Species of Concern as identified by CDFG	**List 2** = Plant species that are rare, threatened, or endangered in California, but more common elsewhere.
	CR = Species identified as rare by CDFG	
		List 3 = Plant species about which need more information.
		List 4 = Plant species of limited distribution.
[4]Habitat description: Habitat description information adapted from CNDDB (CDFG 2009), CNPS (2009) and www.natureserve.org		

TABLE 2B SPECIAL-STATUS ANIMAL SPECIES POTENTIALLY OCCURRING WITHIN THE PSA

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
Invertebrates					
Conservancy fairy shrimp *Branchinecta conservatio*	FE	~	Inhabits rather large, cool-water vernal pools with moderately turbid water. They have been collected from early November to early April.	No	Suitable habitat is present within the PSA; however, protocol-level surveys were conducted with negative results. There are no recorded occurrences within five miles of the PSA.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	~	Occurs in association with elderberry shrubs (*Sambucus* spp.).	Yes	Suitable habitat is present within the PSA; one elderberry shrub is located within the southern half of the PSA. There are five recorded occurrences within five miles of the PSA.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	~	Occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands.	No	Suitable habitat is present within the PSA; however, protocol-level surveys were conducted with negative results. There are five recorded occurrences within five miles of the PSA.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	~	Occurs in vernal pools and other seasonal freshwater habitats.	No	Suitable habitat is present within the PSA; however, protocol-level surveys were conducted with negative

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
					results. There are no recorded occurrences within five miles of the PSA.
Fish					
Chinook salmon Central Valley spring-run ESU *Oncorhynchus tshawytscha*	FT	ST	Few wild spawning populations remain in the Sacramento River system, California; extirpated in San Joaquin River drainage. This ESU includes chinook salmon entering the Sacramento River from March to July and spawning from late August through early October. Historically, this ESU was the dominant run in the Sacramento and San Joaquin river basins, but native populations in the San Joaquin River apparently all have been extirpated.	No	Suitable habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.
Chinook salmon Sacramento River winter-run ESU *Oncorhynchus tshawytscha*	FE	SE	Spawns primarily in the mainstem of the Sacramento River immediately downstream of Keswick Dam and below the historic spawning grounds downstream from Shasta Reservoir; most suitable spawning areas are between the Red Bluff Diversion Dam and Keswick Dam. Migrates through the Sacramento River, Delta, and San Pablo and San Francisco bays to nonbreeding habitat in the Pacific Ocean. Some juveniles rear non-natally for brief periods in lower reaches of tributaries.	No	Suitable habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.
Delta smelt *Hypomesus transpacificus*	FT	ST	Located exclusively in the Sacramento-San Joaquin Delta. They have been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River. They extend downstream as far as San Pablo	No	Suitable habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
			Bay. Delta smelt are found in brackish water. They usually inhabit salinity ranges of less than 2 parts per thousand (ppt) and are rarely found at salinities greater than 14ppt.		
Steelhead Central Valley ESU *Oncorhynchus mykiss irideus*	FT	~	Spawns in the Sacramento and San Joaquin rivers and their tributaries; now extirpated from most of historical range; the majority of native, natural production occurs in upper Sacramento River tributaries below Red Bluff Diversion Dam.	No	Suitable habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.
Amphibians					
California red-legged frog *Rana aurora draytonii*	FT	CSC	Lowlands and foothill streams, pool, and marshes in or near permanent or late season sources of deep water with dense, shrubby, riparian, or emergent vegetation (e.g. ponds, perennial drainages, well-developed riparian) below 3,936 ft. in elevation. Breeds late December to early April.	No	Habitat within the PSA is considered extremely limited or not suitable given the presence of predators at the pond. Nearest recorded occurrence is about 7 miles away and is in the Green Valley HSA (American River HU, Foothill Drain HA). There are no recorded occurrences within five miles of the PSA.
California tiger salamander *Ambystoma californiense*	FT	CSC	Typically found in annual grasslands of lower hills and valleys; breeds in temporary and permanent ponds and in streams; uses rodent burrows and other subterranean retreats in surrounding uplands for shelter; appears to be absent in waters containing predatory game fish. The California tiger salamander spends most of its lifecycle estivating underground in adjacent valley oak woodland or grassland habitat,	No	PSA is located outside the known distribution range of this species. CDFG does not consider this species to occur in Placer County; however, habitat that appears suitable for California tiger salamander exists in the PSA (Placer County 2005). There are no recorded

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
			primarily in abandoned rodent burrows. Research has shown that dispersing juveniles can roam up to two miles from their breeding ponds and that a minimum of several hundred acres of uplands habitat is needed surrounding a breeding pond in order for the species to survive over the long term.		occurrences within five miles of the PSA.
Western spadefoot *Spea hammondii*	~	CSC	Partly shaded, shallow streams and riffles with a rocky substrate in various habitats, with adjacent sunny banks or open woodlands. Breeding season begins mid-March to May.	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.
Reptiles					
Giant garter snake *Thamnophis gigas*	FT	ST	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November – mid March).	No	PSA is located outside of the known distribution range of this species. The nearest occurrence is about 9 miles away in both the Lower American and the Pleasant Grove HSAs (Valley-American HU, and Coon-American HA). There are no recorded occurrences within five miles of the PSA.
Northwestern pond turtle *Actinemys marmorata marmorata*	~	CSC	The western pond turtle includes two subspecies, the northwestern pond turtle (*Actinemys marmorata marmorata)* and the southwestern pond turtle (*Actinemys marmorata pallida*). The two subspecies range is interconnected within and around the San Francisco Bay Area.Permanent or nearly permanent water in various habitats	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
			(e.g. ponds, streams, perennial drainages). Requires basking sites particularly in areas vegetated with riparian habitats.		
Birds					
FALCONIFORMES (hawks, falcons)					
Bald eagle *Haliaeetus leucocephalus*	FD	SE	Nesting restricted to the mountainous habitats near permanent water sources in the northernmost counties of California, the Central Coast Region, and on Santa Catalina Island. Winters throughout most of California at lakes, reservoirs, river systems, and coastal wetlands.	No	Suitable nesting habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.
Cooper's hawk *Accipiter cooperii*	~	~	Breeding resident throughout most of the wooded portion of the state. Ranges from sea level to above 2,700 m (0-9,000 ft). Dense stands of live oak, riparian deciduous or other forest habitats near water used most frequently.	Yes	Suitable habitat is present within the PSA. There are no recorded occurrences within five miles of the PSA.
Swainson's hawk *Buteo swainsoni*	~	ST	Nests in isolated trees or riparian woodlands adjacent to suitable foraging habitat (agricultural fields, grasslands, etc.).	Yes	Suitable habitat is present within the PSA. There are no recorded occurrences within five miles of the PSA.
White-tailed kite *Elanus leucurus*	~	CFP	Nests in isolated trees or woodland areas with suitable open foraging habitat.	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.
GRUIFORMES (rails, cranes)					
California black rail *Laterallus jamaicensis coturniculus*	~	ST; CFP	Wetlands, marshes, thickets. Nests with eggs have been documented from March to June. Scattered populations documented from Butte Co. to Placer Co. in the Sierra	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
			foothills.		
PASSERIFORMES (perching birds)					
Bank swallow *Riparia riparia*	~	ST	Primarily riparian and other lowland habitats in California. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils for nesting holes. Breeds early May to July.	No	Suitable nesting habitat is not present within the PSA. There are no recorded occurrences within five miles of the PSA.
Grasshopper sparrow *Ammodramus savannarum*	~	CSC	An uncommon and local, summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest from Mendocino and Trinity cos. south to San Diego Co. Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Breeds from early April to mid-July.	Yes	Suitable habitat is present within the PSA. There are no recorded occurrences within five miles of the PSA.
Purple martin *Progne subis*	~	CSC	An uncommon to rare, local summer resident in a variety of wooded, low-elevation habitats throughout the state; a rare migrant in spring and fall, absent in winter. Uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Also occurs in coniferous habitats, including closed-cone pine-cypress, ponderosa pine, Douglas-fir, and redwood. Nests from April into August.	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.
Tri-colored blackbird *Agelaius tricolor*	~	CSC	Nests in dense blackberry, cattail, tules, willow, or wild rose within emergent wetlands throughout the Central Valley and foothills surrounding the valley.	Yes	Suitable habitat is present within the PSA. There are no recorded occurrences within five miles of the PSA.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
STRIGIFORMES (owls)					
Western burrowing owl *Athene cunicularia hypugea*	~	CSC	Open grasslands and shrublands up to 5,300 ft with low perches and small mammal burrows. Resident year-round. Breeds March through August.	No	Suitable nesting habitat is present within the PSA; however, no owls or burrows were observed within the proposed disturbance area during surveys. There are no recorded occurrences within five miles of the PSA.
Mammals					
Pallid bat *Antrozous pallidus*	~	CSC	Pallid bats roost in rock crevices, tree hollows, mines, caves, and a variety of anthropogenic structures, including vacant and occupied buildings and buildings, mines, and natural caves are utilized as roosts. Occurrence is primarily in arid habitats. Colonies are usually small and may contain 12-100 bats.	Yes	Suitable habitat is present within the PSA. There is one recorded occurrence within five miles of the PSA.
Townsend's big-eared bat *Corynorhinus townsendii*	~	CSC	These bats hibernate in caves or mines where the temperature is 12°C (54°F) or less, but usually above freezing. Hibernation sites in caves often are near entrances in well-ventilated areas. They hibernate in clusters of a few to more than 100 individuals. Maternity colonies usually are located in relatively warm parts of caves. No long-distance migrations are known. Like many other bats, they return year after year to the same roost sites. They are found in western Canada, the western United States to southern Mexico, and a few isolated populations in the eastern United States.	No	Suitable habitat (caves, mines) is not present within the PSA. There are no recorded occurrences within five miles of the PSA.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale
	Federal[1]	State[2]			
Western red bat *Lasiurus blossevillii*	~	CSC	Roosts primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands.	Yes	Suitable habitat is present within the PSA. There are no recorded occurrences within five miles of the PSA.

CODE DESIGNATIONS

[1]Federal status: 2009 USFWS Listing	[2]State status: 2009 CDFG Listing
ESU = Evolutionary Significant Unit (a distinctive population).	**SE** = Listed as endangered under the California Endangered Species Act (CESA).
FE = Listed as endangered under the Federal Endangered Species Act (FESA).	**ST** = Listed as threatened under the CESA.
FT = Listed as threatened under the FESA.	**CSC** = Species of Concern as identified by the CDFG.
FD = Delisted in accordance with the FESA.	**CFP** = Listed as fully protected under CDFG code.
[3]Habitat description: Habitat description information adapted from CNDDB (CDFG 2009) and www.natureserve.org	

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Portrait
Amazing Facts Church CNDDB

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Accipiter cooperii Cooper's hawk	ABNKC12040			G5	S3	
2	Actinemys marmorata western pond turtle	ARAAD02030			G3G4	S3	SC
3	Actinemys marmorata marmorata northwestern pond turtle	ARAAD02031			G3G4T3	S3	SC
4	Agelaius tricolor tricolored blackbird	ABPBXB0020			G2G3	S2	SC
5	Alkali Meadow	CTT45310CA			G3	S2.1	
6	Alkali Seep	CTT45320CA			G3	S2.1	
7	Allium jepsonii Jepson's onion	PMLIL022V0			G1	S1.2	1B.2
8	Ammodramus savannarum grasshopper sparrow	ABPBXA0020			G5	S2	SC
9	Ammonitella yatesii tight coin (=Yates' snail)	IMGASB0010			G1	S1	
10	Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030			G2	S2	
11	Andrena subapasta A vernal pool andrenid bee	IIHYM35050			G1G3	S1S3	
12	Antrozous pallidus pallid bat	AMACC10010			G5	S3	SC
13	Ardea alba great egret	ABNGA04040			G5	S4	
14	Ardea herodias great blue heron	ABNGA04010			G5	S4	
15	Athene cunicularia burrowing owl	ABNSB10010			G4	S2	SC
16	Balsamorhiza macrolepis var. macrolepis big-scale balsamroot	PDAST11061			G3G4T2	S2.2	1B.2
17	Banksula californica Alabaster Cave harvestman	ILARA14020			GH	SH	
18	Banksula galilei Galile's cave harvestman	ILARA14040			G1	S1	
19	Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened		G3	S2S3	
20	Buteo swainsoni Swainson's hawk	ABNKC19070		Threatened	G5	S2	
21	Calystegia stebbinsii Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1.1	1B.1
22	Ceanothus roderickii Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G2	S2.1	1B.2
23	Chlorogalum grandiflorum Red Hills soaproot	PMLIL0G020			G2	S2.2	1B.2
24	Clarkia biloba ssp. brandegeeae Brandegee's clarkia	PDONA05053			G4G5T3	S3	1B.2

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
25	Cordylanthus mollis ssp. hispidus hispid bird's-beak	PDSCR0J0D1			G2T2	S2.1	1B.1
26	Corynorhinus townsendii Townsend's big-eared bat	AMACC08010			G4	S2S3	SC
27	Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened		G3T2	S2	
28	Downingia pusilla dwarf downingia	PDCAM060C0			G3	S3.1	2.2
29	Elanus leucurus white-tailed kite	ABNKC06010			G5	S3	
30	Falco columbarius merlin	ABNKD06030			G5	S3	
31	Fremontodendron decumbens Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1.2	1B.2
32	Fritillaria agrestis stinkbells	PMLIL0V010			G3	S3.2	4.2
33	Fritillaria eastwoodiae Butte County fritillary	PMLIL0V060			G3Q	S3	3.2
34	Galium californicum ssp. sierrae El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1.2	1B.2
35	Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060		Endangered	G3	S3.1	1B.2
36	Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S2	
37	Helianthemum suffrutescens Bisbee Peak rush-rose	PDCIS020F0			G2Q	S2.2	3.2
38	Hydrochara ricksecker i Ricksecker's water scavenger beetle	IICOL5V010			G1G2	S1S2	
39	Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1			G2T1	S1.2	1B.2
40	Juncus leiospermus var. leiospermus Red Bluff dwarf rush	PMJUN011L2			G2T2	S2.2	1B.1
41	Lasionycteris noctivagans silver-haired bat	AMACC02010			G5	S3S4	
42	Laterallus jamaicensis coturniculus California black rail	ABNME03041		Threatened	G4T1	S1	
43	Legenere limosa legenere	PDCAM0C010			G2	S2.2	1B.1
44	Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered		G3	S2S3	
45	Linderiella occidentalis California linderiella	ICBRA06010			G3	S2S3	
46	Navarretia myersii ssp. myersii pincushion navarretia	PDPLM0C0X1			G1T1	S1.1	1B.1
47	Northern Hardpan Vernal Pool	CTT44110CA			G3	S3.1	

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
48	Northern Volcanic Mud Flow Vernal Pool	CTT44132CA			G1	S1.1	
49	Orcuttia viscida Sacramento orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1.1	1B.1
50	Packera layneae Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2.1	1B.2
51	Phalacrocorax auritus double-crested cormorant	ABNFD01020			G5	S3	
52	Progne subis purple martin	ABPAU01010			G5	S3	SC
53	Pseudobahia bahiifolia Hartweg's golden sunburst	PDAST7P010	Endangered	Endangered	G2	S2.1	1B.1
54	Rana draytonii California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
55	Riparia riparia bank swallow	ABPAU08010		Threatened	G5	S2S3	
56	Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0			G3	S3.2	1B.2
57	Spea hammondii western spadefoot	AAABF02020			G3	S3	SC
58	Valley Needlegrass Grassland	CTT42110CA			G1	S3.1	
59	Viburnum ellipticum oval-leaved viburnum	PDCPR07080			G5	S2.3	2.3
60	Wyethia reticulata El Dorado County mule ears	PDAST9X0D0			G2	S2.2	1B.2

APPENDIX 7.0

CULTURAL RESOURCE ASSESSMENT

FOR THE AMAZING FACTS PROJECT,

PLACER COUNTY, CALIFORNIA

Prepared by

Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762
(916) 939-2405

Prepared for

Rod Shearer
Shearer & Associates, Inc.
General Contractor/Development
1404 NE 134th Street, Suite 200
Vancouver, WA 98685

October 2007
(Job # 07-144)

INTRODUCTION

Amazing Facts was incorporated in Baltimore, Maryland, in 1966. In 1995 Amazing Facts moved to Rocklin, California, under the direction of Doug Batchelor who also serves as the senior pastor of the Sacramento Central Seventh Day Adventist church.

Amazing Facts is a multifaceted, Christian media ministry which includes: television, radio, internet, publishing, the Amazing Facts School of evangelism, and training; all of which supports their local and world wide evangelism mission. Amazing Facts is proposing a church facility that would support each of these components and serve the surrounding community.

Due to the growth of this ministry, Amazing Facts is looking to relocate its operations along with a new worship facility to the proposed site located between Night Watch Drive and Ridge Park on the south side of Sierra College Boulevard.

Currently Amazing Facts employs approximately 60 people with an expected growth of 20 employees over the next five years. In addition, Amazing Facts has approximately 20 volunteers who donate their services from time to time.

The proposal will include a three phased project. Phase 1 will include the construction of an approximately 100,000 sq. ft. multi-use worship facility. The main area of this phase will consist of a gym size floor which will have removable chairs and an upper level of fixed stadium seating. This multi–use space can seat up to 1,300 people and will initially be used for Saturday worship services. Upon completion of Phase 2, which includes the main sanctuary, this multi-use space will not be used for main worship in conjunction with services held in the new sanctuary. With an adjoining kitchen, this multi-use space will accommodate social and community events, banquets, athletic activities and all-church meals. There will be a fireside chapel used for smaller community gatherings such as: various seminars on healthful living, family life, financial responsibility, small weddings, funerals, sing-a-longs and cooking schools. Phase 1 will also include Sabbath school classrooms used on Saturday mornings for infants through senior adults. There will be an audio/video production suite used to record and edit ministry services. Within the building, 20,000 sq. ft. will house ministry offices for approximately 80 employees that make up the ministry and support staff. In addition, an 11,000 sq. ft. resource center building is included in Phase 1. This single story building is to support the ministry in housing materials such as CD's, tapes, periodicals, etc.

Phase 2 will add an additional 87,800 sq. ft. to the Phase 1 multi-use building. The primary function of this phase is the main sanctuary capable of seating 2,000 people for Saturday worship. This phase will also include associated Sabbath school classrooms, a central lobby area, a small chapel area, and expanded offices to accommodate and support the increased congregation size.

Phase 3 will add a 10,000 sq. ft. building to include additional offices and classrooms to accommodate anticipated ministry growth.

On site parking will include +/- 1,000 parking stalls as depicted on submitted plans. The proposed parking layout includes provisions for required landscape and traffic flow. The intent is to phase parking according to construction phasing. Applicant is anticipating that office use during the week can utilize/share parking necessary for worship due to time of use. Proposed parking exceeds Placer County's "House of Worship" requirements of 0.33 spaces per seat in the principal worship area

The project area is mapped on the Rocklin 7.5' USGS topographic map and lies in the southwest quarter of section 28, Township 11 North 7 Range East, MDM (Map 1).

Melinda Peak served as principal investigator for the current study, with Ann Peak leading the field survey effort (resumes, Appendix 1).

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource, which is defined as any site which:

(A.) Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and

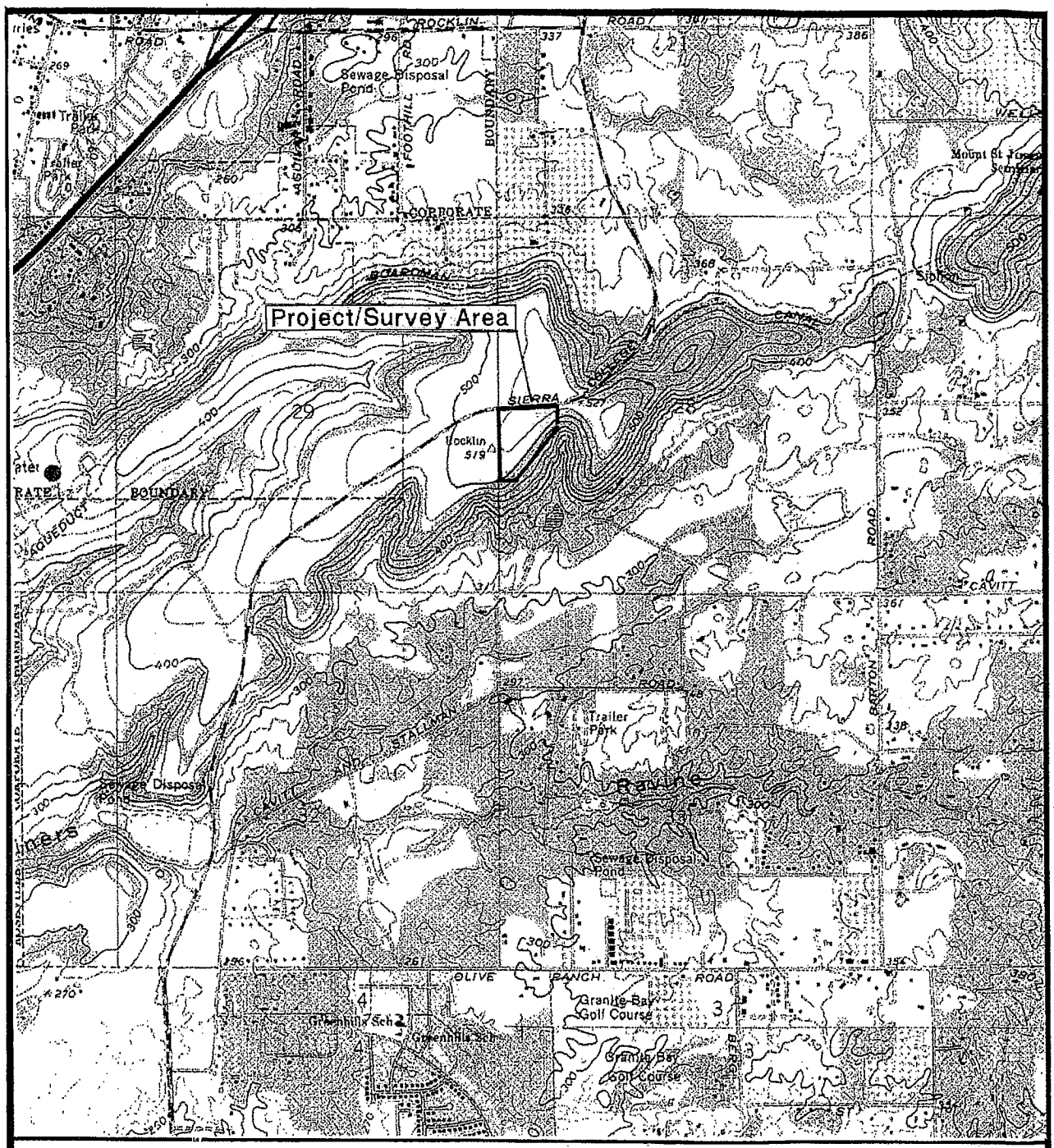
(B) Meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.



ROCKLIN, CALIF. 1967 (1981)
FOLSOM, CALIF 1980 (1980)

SCALE 1:24,000
CONTOUR INTERVAL 20 / 10 Feet
Magnetic Declination 16.5 / 17.0 degrees

Map 1

CULTURAL HISTORY

Prehistory

Until recent years, few archeological studies have been conducted in this region. Early excavations had focused either on the large, rich village sites in the Delta region and along the major waterways in the Central Valley or on the higher elevation sites in proposed reservoir areas, along major Sierran waterways. As a result, chronological sequences have been established for each region, with later work emphasizing refinement of these sequences.

Increasing urbanization in the Sacramento region over the past twenty years has pushed development further from the major drainages and into the margin of the Sacramento Valley and the Sierran foothills. There is no established archeological sequence for the region, but the ties seem to be stronger to the Sierra Nevada.

The project is located in an interesting area for archeological research because it is between three areas with defined archeological sequences: the Oroville locality to the north, the Central Sierra area to the east and the Central Valley/Delta area to the west. These sequences include many similar artifact types and dates for major cultural changes, but there are also significant differences between them. It is an important goal of archeology to determine how these differences relate to different cultural traditions, cultural adaptation to differing environmental conditions or other natural or cultural influences. It is not clear at present which of these sequences best reflects the prehistory of the project vicinity or if a separate local sequence is necessary to adequately describe the area.

An excavation project by Chavez (1982) on sites on Linda Creek and Strap Ravine corroborated the findings of earlier work that indicated that the strong Central Valley association characteristic of the late prehistoric cultures in the foothill area might not extend to earlier cultures. Although there are many similarities with the material culture of the Late Horizon of the Central Valley, there are also significant points of diversion.

In the Linda Creek area, only site CA-PLA-210 produced artifacts from excavation units. There was evidence of two components at the site, although they were not distinctly separated by stratigraphy.

The more recent component, characterized by Desert Side Notched points and emphasis on the use of chert and other silicates, probably dates to Phase II of the Late Horizon -- about A.D. 1500 to the time of European contact. The older component is represented by one Gunther Barbed projectile point and an emphasis on basalt as well as silicates. This component probably dates to Phase I of the Late Horizon, about A.D. 500 to 1500. Chavez (1982:58) cautions that these conclusions are tentative due to the small number of units excavated and the low recovery rate of artifacts within these units.

The Strap Ravine sites appear to have been occupied earlier than the Linda Creek sites, and, although times of occupation overlapped, they were probably abandoned earlier as well. The

excavations at CA-PLA-38 recovered enough obsidian flakes to permit sourcing by X-ray fluorescence and dating by obsidian hydration. This dating technique indicated occupation of the site from about 500 B.C. to A.D. 500. Chavez, on the basis of projectile point types recovered from the site, suggests that occupation continued later than this, through Phase I and possibly into Phase II (Chavez 1982:51). Again, the conclusions must be considered tentative due to the relatively small artifact collection contributing to the analysis.

Artifacts that suggest occupation earlier than A.D. 500--into the transitional period between the Middle and Late Horizons--include a Type C3 *Olivella* shell bead and two slate projectile points bearing distinct morphological similarities to Martis Complex styles. The slate points, both recovered from CA-PLA-87, resemble a Type 4c point as defined at CA-NEV-15 (Elsasser 1960) and a Martis Contracting Stem (Elston et al. 1977) according to Chavez (1982:47). Point types suggesting Phase I occupation were also recovered from Strap Ravine sites.

Chavez (1982), dealing with a limited artifact collection, did not go so far as to suggest occupation of the area by a population bearing the Martis Culture. He noted the position of the project vicinity between three areas of differing cultural sequences (as mentioned above) and suggested that the wide variety of artifact types indicated that the area "...could have served as a culture contact and exchange 'hub'..." (Chavez 1982: 52). A test excavation performed by Peak & Associates (1988) on a very small midden site, CA-PLA-176, on the Linda Creek watershed, also recovered a slate point similar in style to those associated with the Martis Culture.

The presence of Martis-like (Middle Archaic) artifacts was also noted at site CA-PLA-633 (Locus C) and CA-PLA-636 (Davy 1989) located in the Stanford Oaks project area. Of the 27 projectile points recovered during the excavation of the sites within the Stanford Oaks project area, six (22 percent) weighed more than two grams, and "...may or may not have been atlatl...dart points" (Davy 1989:163). The excavation of CA-PLA-663/H has also resulted in the discovery of larger projectile points that may date to this period as well (Wait, personal communication, 1994).

Peak & Associates conducted two large-scale surveys with excavation of several sites on the higher land north of Clover Valley and northwest of the project area. The extensive excavations in the Twelve Bridges Golf Club project area provide a large body of data toward defining the characteristics of the cultures in this area and a better idea of the cultural succession. The survey of Bickford Ranch (Peak & Associates 1995) included a large volcanic plateau that was almost devoid of prehistoric resources, but the margins of the plateau were the scene of considerable prehistoric occupation and use. Almost all of the sites in these project areas were associated with bedrock mortars.

It is clear that the most recent prehistoric cultures of the area reflect, in general, the late cultures of the Central Valley, though there are interesting local variations. Some of the differences clearly result from the greater wealth and population in the valley, but other differences may reflect a technological response to differing ecological settings and resource exploitation techniques.

In the preceding phase of prehistory there is a consistent expression of high Sierra Nevada and Great Basin relationships of some sort. However, the projectile points that reflect this connection

are often produced on material imported from the Coast Ranges, although manufacture on locally available non-obsidian materials is much more common. The reasons for this situation are not clear. This could also be a response to differing ecological settings, but the relationship between foothill sites and the Martis Culture proper is an open question.

Ethnology

At the time of the gold rush, the project vicinity was occupied by the Nisenan Indians, identified by the language they spoke. There have been several general treatments of the Nisenan culture by Beals 1933; Kroeber 1929, 1953; Littlejohn 1928; Wilson and Towne 1978 and Wilson 1982. There are also several more specific articles on various aspects of their culture as reported in the bibliography and elsewhere.

The Nisenan peoples occupied the drainages of the Yuba, Bear, and the American Rivers from the Sacramento River on the west to the summit of the Sierra in the east. The Foothill and Hill Nisenan peoples were distinctive from the Valley Nisenan and were loosely organized into tribelets or districts with large central villages, surrounded by smaller villages. These are often referred to as winter villages by older Indians. These central villages and their leaders seemed to have had power or control over the surrounding smaller villages and camps and specific surrounding territory (Beals 1933; Littlejohn 1928; Wilson and Towne 1978). These districts were oriented to the natural resources and the landforms.

In the foothills and mountains the major drainages became formal or informal boundaries with the land in between forming the district. Thus, the Placerville District is between the Cosumnes River and the Middle Fork of the American River, the Auburn District between the Middle Fork of the American River and the Bear River and the Nevada City District between the Bear River and the Yuba River.

All the Nisenan depended on activities attuned to the seasonal ripening of plant foods and the seasonal movements and migration of the animals and the runs of fish. With the flooding of the valley in the winter and spring a great number of animals such as elk, antelope and bears moved to the natural levees along the rivers and up into the lower foothills. Along the foothill margins they joined the resident and migratory deer herds. Huge flocks of waterfowl visited the flooded areas between the rivers and the foothills, coveys of quail gathered in the fall, and pigeons were common in the fall and spring. Steelhead and salmon ran up most of the major streams including Secret Ravine and Auburn Ravine in the fall, winter and spring. The hunting of these plentiful resources was part of the foothill lifeway.

This same bounty was available to the river-oriented valley peoples out on the valley floor and along the natural levees of the rivers. Major north-south Indian trails along the margin of the foothills were usable year around as well as other trails east and west along the natural levees of the stream courses. There was probably not a great deal of competition for resources at this time except in lean years. Both the valley and foothill peoples lived at the edges of rich ecotones: the rivers and the valley floor, and the valley floor and the foothills.

While the Hill Nisenan to the east in the foothills carried on trade with the valley peoples and shared some of the cultural traits, they lacked the complexity or richness of the Valley Nisenan. The Hill Nisenan had a different resource base to work with which required greater mobility and a more intense use of the available resources (Matson 1972). They developed a local culture that was more oriented to the gathering, storage and year round use of the acorn, continual foraging of resources by everyone in the village group, specialized hunting strategies and availability of different plants to gather and process (Erskian and Ritter 1972). They depended on activities attuned to the seasonal ripening of plant foods and the seasonal migrations and increased populations of animals and insects. The foothill people relied more on foraging for food, for immediate use or short-term storage, rather than gathering for future needs. This meant they had to be much more mobile in their use of the land and its resources. Population densities and the large number of campsites reflect the more limited ability to acquire and utilize the fewer available resources: they had to work harder for less.

This continual movement meant the foothill people did not have large year-round villages. There are no known major villages in the foothills or mountains that can compare with the valley permanent village sites or population densities. However, there are hundreds of small campsites and villages scattered across the foothills and mountains with certain localities as the centers for these hill peoples.

It appears that the hill people were more socially organized around the extended family than to the village and would often camp in informal family groups around the central village. Since they did some foraging and extensive fishing and hunting in the winter they needed to have some access to a resource base at all times. However, due to the ability to store acorns and other dried foods and take advantage of the winter concentrations of game, birds and fish, they could congregate in larger villages in the wintertime. There is some evidence that these winter villages were moved at times if the local resources were too badly depleted. Over a long period of time a center village may have been abandoned and moved and then reoccupied at a later time. Many place names refer to these old or unoccupied sites.

At the central villages there was the need to build and maintain more substantial houses for winter living. Larger family houses, a dance house and acorn granaries were part of these winter quarters. The availability of firewood may also have been a factor in the preference for living up in the oak woodlands of the foothills. Winter was the time of ceremonies, social gatherings and marriages. Shamans had contests, children were trained, and trade items, tools, baskets and equipment were made and repaired.

History

The 1833 malaria epidemic that decimated the Indians in the Central Valley played a major role in defining the post-Contact land use pattern of the Indians of the region, as well as impacting Euro-American economic development. The introduction of malaria to central California *circa* 1831 occurred as a result of expeditions of several fur brigades of the Hudson's Bay Company with

infected individuals. The introduction of the disease led to the tremendous epidemic of 1833 that decimated the Indian population of the region. An estimated three-quarters of the total Indian population of the region died from the disease in that year.

Malaria was epidemic in the mining camps of the Sierran foothill region, and remained endemic, with frequent sharp local outbreaks throughout the Central Valley until about 1880. The Third Biennial Report of the State Board of Health published in 1875, referenced an undated article from *The Placer Press* that reported, "Almost everybody living west of Gold Hill is either down with fever, or chills and fever, or more or less affected by the miasmatic poison generated and floating around in that locale" (Gray and Fontaine 1951:27).

To the north, Secret Ravine was the site of extensive placer mining in the 1850s and 1860s in the vicinity of Newcastle, and also to the south around Stewarts Flat. Pine Grove, later Pino was the center of ravine diggings at that time (Gudde 1975:276). Pino is located at the modern location of the town of Loomis.

Nearby Rocklin became an important transportation center when the Central Pacific reached the townsite, 22 miles from Sacramento, in May 1864. A major locomotive terminal was established here, serving as such until its move to Roseville in 1908. The first shipment from Rocklin consisted of three carloads of granite. Chinese workers were brought in to work on the construction of the railroad after the Central Pacific had completed 40 miles of a track at a point about four miles east of Auburn, at which time federal funding became available for the project (California Department of Parks and Recreation 1990: 149).

Rocklin became the principal granite-producing point in the Sacramento Valley. The first quarry opened in 1863, and the stone was used in construction work on the Central Pacific for culverts. The Rocklin quarries were comparatively close together. The quarries occur in an area less than a mile square; on a gently rolling plain that borders the railroad.

By 1904, there were fifteen quarries in operation and several others idle. Most of the quarries were small, employing from three to ten men. The largest quarry employed 33 men, and at times, as many as 50. Most of the smaller quarries were operated by immigrant Finns, Russians, and Italians. Each of the quarries had a railway spur connecting with the Southern Pacific Railroad at Rocklin (Aubury 1906:38-40).

The Rocklin-Roseville Chinatown is reported to have been situated between the communities of Rocklin and Roseville. On September 16, 1877, the Chinese living in the community were driven out, and all 25 buildings burned to the ground. This action was a result of an incident in which a Chinese individual killed three non-Chinese (McDannold 2000:166).

The commercial fruit industry expanded rapidly in western Placer County in the late 1870s and early 1880s. Chinese laborers were reportedly used because they seemed to endure the malaria, while the white laborers could not or would not. In 1894, Japanese laborers began to move into the region, eventually providing virtually all of the fruit orchard labor.

During the late 1950s and early 1960s, the increased urbanization and expansion of suburban communities from Sacramento to the northeast along the Highway 80 corridor, led to growth of the housing market in western Placer County. Beginning in the 1980s, the lower cost of living and land have drawn high technology firms and other industries to the region, resulting in the subsequent commercial and residential development and expansion of the communities of Roseville, Rocklin and Loomis, and now Lincoln, virtually closing out the era of the large cattle ranches and orchards.

RESEARCH

A review of the files maintained at the North Central Information Center of the California Historical Resources Information System was conducted on September 10, 2007 (NCIC Search Number: PLA-07-85). None of the project area had been covered by previous surveys with reports on file. No prehistoric period or historic period resources have been recorded in the project area.

Several other surveys have been conducted in the project vicinity. There is a recorded prehistoric site near the project area.

FIELD INSPECTION

The project area was completely surveyed on July 11, 2003 for a previous landowner by a team of three qualified archeologists: Ann Peak, Chris Chaloupka and Sue Merritt. The team covered the area in 5- to 10-meter wide transects, carefully checking for evidence of prehistoric or historic resources. Where necessary, small holes were excavated to allow examination of the sediments.

There was no evidence of prehistoric or historic sites within the project area as delineated on Map 1. No historical resources are present in the project area.

RECOMMENDATIONS

For the purposes of CEQA, we conclude that there will be no impact to important historical resources from implementation of the project.

Although no sites were found during the survey, there is a possibility that a site may exist and be totally obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, an archeologist should be consulted for on-the-spot evaluation. If the bone appears to be human, state law requires that the Placer County Coroner be contacted. If the coroner determines that the bone is human and is most likely Native American in origin, he must contact the Native American Heritage Commission.

REFERENCES

Aubury, Lewis E.

1906 *The Structural and Industrial Materials of California.* California State Mining Bureau, San Francisco.

Beals, Ralph L.

1933 Ethnology of the Nisenan. *University of California Publications in American Archaeology and Ethnology* 31(6): 335-413. Berkeley.

California Department of Parks and Recreation

1990 *California Historical Landmarks.* State Printing Office, Sacramento.

Clark, William B.

1970 *Gold Districts of California.* California Division of Mines and Geology Bulletin 193, Sacramento.

Elston, Robert G., Jonathan O. Davis, Alan Leventhal, and Cameron Covington

1977 The Archeology of the Tahoe Reach of the Truckee River: A Report to the Tahoe-Truckee Sanitation Agency. Ms. on file, University of Nevada Northern Division of the Nevada Archaeological Survey, Reno.

Erskian, Malcolm G. and Eric W. Ritter

1972 Nisenan Ethnobotany Notes. In Papers on Nisenan Environment and Subsistence. Edited by Eric W. Ritter and Peter D. Schulz. *Center for Archaeological Research at Davis, Publication Number* 3:28-31. University of California, Davis.

Gudde, Erwin G.

1975 *California Gold Camps.* University of California Press, Berkeley.

Gray, Harold Farnsworth, and Russel E. Fontaine

1951 A History of Malaria in California. *Proceedings of the California Mosquito and Vector Control Association* 25:18-39. Sacramento.

Heizer, Robert F., and Albert B. Elsasser

1953 Some Archaeological Sites and Cultures of the Central Sierra Nevada. *University of California Archaeological Survey Reports* 21:1-42. Berkeley.

Hoover, Mildred, Hero E. Rensch, Ethel G. Rensch and William N. Abeloe

1990 *Historic Spots in California* (Fourth Edition), revised by Douglas E. Kyle. Stanford University Press, Stanford.

Kroeber, Alfred L.

1929 The Valley Nisenan. *University of California Publications in American Archaeology and Ethnology* 24(4):253-290. Berkeley.

1953 *Handbook of the California Indians*. California Book Company, Ltd., Berkeley.

Lardner, W.B. and M.J. Brock

1924 *History of Placer and Nevada Counties*. Historic Record Company, Los Angeles.

Littlejohn, H.W.

1928 Nisenan Geography. Ms. on file, Department of Anthropology Archives, Document 18, Bancroft Library, University of California, Berkeley.

Matson, R. G.

1972 Pollen from the Spring Garden Site (4-Pla-101). In Papers on Nisenan Environment and Subsistence, edited by Eric Ritter and Peter Schulz, pp. 24-27. *Center for Archaeological Research Davis, Publication* 3, Davis.

McDannold, Thomas A.

2000 *California's Chinese Heritage: A Legacy of Places*. Heritage West Books, Stockton.

Peak & Associates, Inc.

1988 Test Excavation of CA-Pla-176 and Boundary Definition of CA-Pla-172. Ms. on file, North Central Information Center.

1995 Cultural Resources Assessment of Bickford Ranch, Placer County, California. Ms. on file, North Central Information Center.

Wilson, Norman L.

n.d. Miscellaneous Unpublished Field Notes, Maps and Files. Ms. in Norman Wilson's possession, Auburn.

1982 *The Nisenan*. Phantom Press, Sacramento.

Wilson, Norman L. and Arlene Towne

1978 Nisenan. In: *Handbook of North American Indians: California*, Volume 8, edited by Robert F. Heizer. William G. Sturtevant, general editor. Smithsonian Institution, Washington, D. C.

APPENDIX 1

Resumes

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

January 2007

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research. She is a registered professional historian and has completed a number of historical research projects.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley

RECENT PROJECTS

In recent months, Ms. Peak has completed several determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, a farmhouse dating to the 1860s, an early roadhouse, and a section of an electric railway line. She also completed an NRHP evaluation of Folsom Dam for the Corps of Engineers.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for the 1997 coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of the published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy.*

PEAK & ASSOCIATES, INC.
RESUME

ANN S. PEAK
Consulting Archeologist

February 2007

PROFESSIONAL EXPERIENCE

Ms. Peak has had over thirty years of extensive experience in both the public and private sectors, in providing professional archeological services. She has completed archeological work in all cultural areas of California, western Great Basin, and southeastern Oregon. Her projects include contracts with federal, state and local agencies and private firms.

She has directed all types of cultural resource-related projects, including field surveys, test excavations, data recovery programs, intensive archival research and cultural resource management.

EDUCATION

M.A. - Anthropology - California State University, Sacramento, 1975
B.A. - Anthropology - California State University, Sacramento, 1972
Studies in public health and microbiology, University of California, Berkeley

RECENT PROJECTS

Ms. Peak most recently served as principal investigator for the data excavations at CA-PLA-592, -613, -618, -619, and -620, prehistoric midden sites in the Sierra foothills. In 1993, she served as the principal investigator for the excavations at CA-PLU-88, a large seasonal camp site with prehistoric rock art in the Plumas National Forest. She also completed the recordation and analysis of the numerous petroglyphs present within a portion of the site

Ms. Peak served as the principal investigator for the various surveys and site testing for the 172-mile-long Pacific Pipeline project proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She has completed a number of smaller surveys throughout northern California and Nevada.

Ms. Peak has extensive experience in Great Basin culture areas, directing a number of large block surveys for proposed new mines or re-operations of historic mine sites throughout Nevada.

She has served as principal or field director and co-author on other large projects completed in recent years, including excavations of two historic sites in Sacramento County and one in El Dorado County, several prehistoric sites within the proposed Haystack Reservoir in Merced County and a prehistoric site within the area of the proposed Susanville Correctional Center expansion.

APPENDIX 2

Record Search

NORTH CENTRAL INFORMATION CENTER

916-278-6217 ncic@csus.edu FAX 916-278-5162

CSU-SACRAMENTO - 6000 J STREET, ADAMS BLDG. SUITE #208 - SACRAMENTO, CA 95819-6100

Amador, El Dorado, Nevada, Placer, Sacramento, and Yuba Counties

September 10, 2007 NCIC File No.: PLA-07-85

Melinda Peak
Peak & Associates, Inc.
3941 Park Drive, Suite 20, #329
El Dorado Hills, CA 95762

Researcher: Sally Torpy

Re: Rapid Records Search for Amazing Facts Project
T11N/R7E Section 28
USGS Rocklin 7.5-minute quad, Placer County

- **Sites Within/Adjacent to Project Area:**
  CA-PLA-1198
- **Cultural Resource Reports Within/Adjacent to Project Area:**
  #2094 (Holman & Associates 1995)
  #3876B (Eleanor Derr 2002)
  #3936 (John W. Foster 1996)
  #3889 (Michael Claytor 1979)
- **OHP Historic Property Data File (2007):** Properties for Rocklin and Roseville vicinity enclosed.
- **NRHP/CRHR listings and DOEs (September 2006):** Nothing listed
- **California Inventory of Historic Resources (1976):** Nothing listed
- **California State Historical Landmarks (1996):** Nothing listed
- **Points of Historic Interest (1992):** Nothing listed
- **CalTrans Historic Bridge Inventory (1987, 2000, 2004):** Nothing listed
- **Historic Maps:** Not requested

Thank you for using our services. A confidentiality agreement is enclosed; please sign and return with your payment. Should you have any questions or would like additional copies of relevant information, please do not hesitate to contact us at 916/278-6217, or ncic@csus.edu.

APPENDIX 9.0

TRAFFIC IMPACT ANALYSIS

FOR

AMAZING FACTS CHURCH

Placer County, California

Prepared For:

Amazing Facts, Inc.
1203 W. Sunset Boulevard
Rocklin, CA 95765

Prepared By:

KD Anderson & Associates, Inc.
3853 Taylor Road, Suite G
Loomis, CA 95650
(916) 660-1555

November 25, 2008

Job No. 4507-001

TRAFFIC IMPACT ANALYSIS FOR
AMAZING FACTS CHURCH
Placer County, CA

TABLE OF CONTENTS

INTRODUCTION **1**
Project Description 1

EXISTING SETTING **4**
Study Area Circulation System - Roads 4
Study Area Circulation System – Intersections 5
Standard of Significance: Levels of Service Methodology 7
Existing Traffic Volumes and Levels of Service 8
Daily Traffic Volumes 11
Transit Facilities 12

PROJECT IMPACTS **13**
Project Characteristics 13
Existing Plus Project Traffic Conditions Levels of Service 15

CUMULATIVE IMPACTS **20**
Short Term Future Traffic Impacts 20
Year 2025 Cumulative Traffic Conditions 26

SAFETY / ACCESS EVALUATION **29**
Evaluation of Key Issues 29
Design Issues 30

MITIGATION REQUIREMENTS **32**
Mitigation for Existing Plus Project Conditions 32
Cumulative Mitigations 32

APPENDIX **33**

November 25, 2008

KDA

TRAFFIC IMPACT ANALYSIS FOR AMAZING FACTS CHURCH

INTRODUCTION

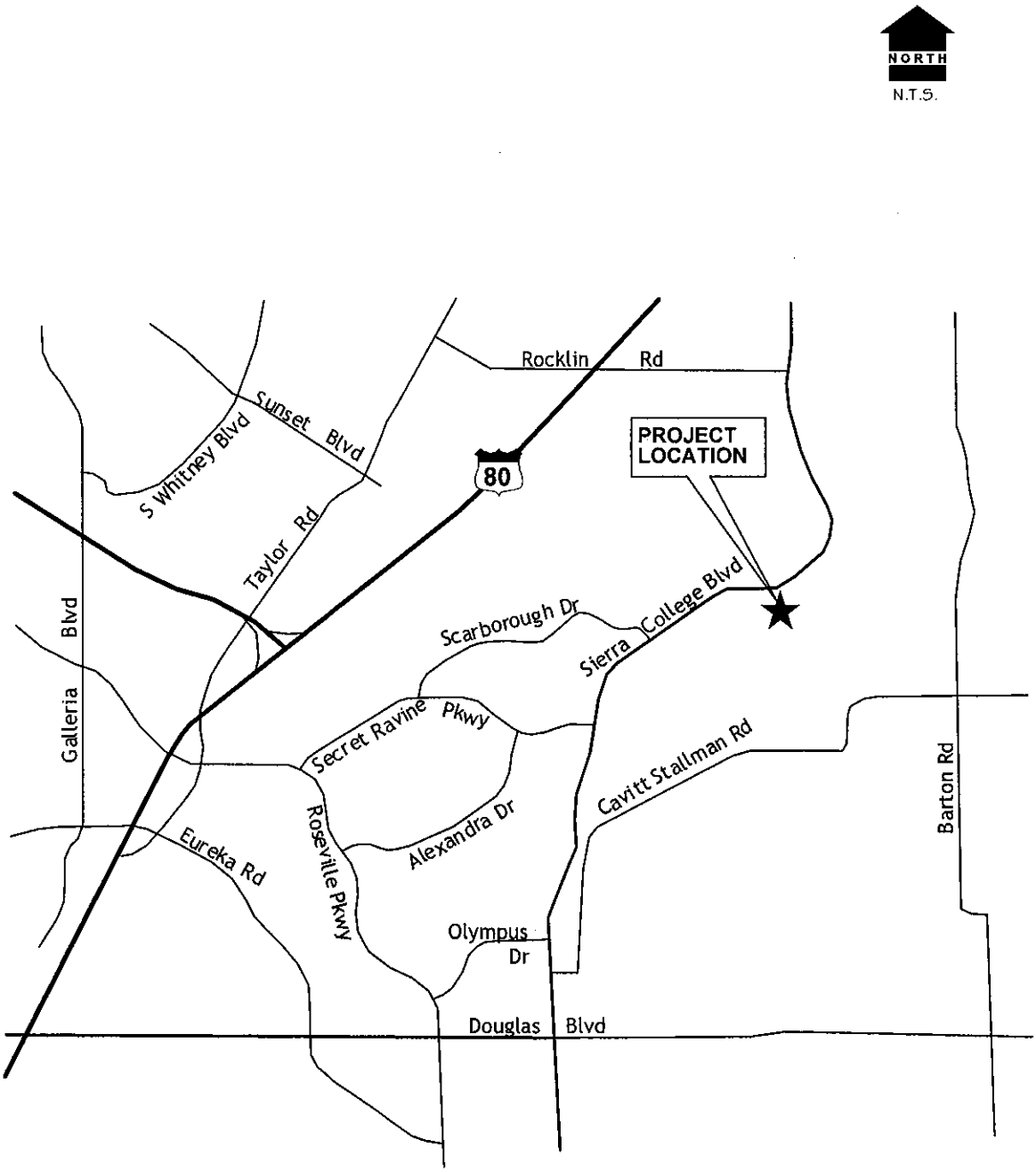
This report documents **KD Anderson & Associates'** assessment of traffic impacts associated with developing the **Amazing Facts Church**. This analysis is intended to quantify the traffic impacts of the project and address circulation and access in the vicinity of the project site within the context of both current and future background conditions. While the proposed project lies within Placer County and will be processed through the County, Sierra College Blvd adjoining the project is under the jurisdiction of the City of Rocklin. However, the portion of the Sierra College Blvd north of the project site abuts the Town of Loomis, and the project lies north of the City of Roseville. Thus, the scope of this study was identified in consultation with the City of Rocklin and the City of Roseville, and standards of significance / evaluation methodologies accepted by these cities and the Town of Loomis have been employed for city streets within the study area.

Project Description

The Amazing Facts Church is proposed on a site along Sierra College Blvd in the unincorporated area of Placer County near the City of Rocklin. The project site is opposite the Sierra College Blvd/ Nightwatch Drive intersection in the area between Rocklin Road and Douglas Blvd, as noted in Figure 1. As shown in the project site plan (Figure 2), the project will include access via the south leg of the Nightwatch Drive intersection and via one right turn only driveway onto Sierra College Blvd. east of Nightwatch Drive.

The project will be developed in two phases, and the seating for Saturday services and the on-site parking supply are commensurate with the growth accommodated in each phase. Phase 1 will provide seating for 1,300 persons on typical Saturdays. Under Phase 2 the seating capacity will increase to 2,000 persons.

The church anticipates continuing the current schedule of operations that exists at the Sacramento Central Church, which is the current home to a portion of the anticipated congregation at Amazing Facts Church. The main Saturday service begins at 10:45 a.m. and ends at 12:30. While normal ancillary activities associated with a church will occur on weekdays, the church does not propose creation of a traditional school or day care center that would add traffic during weekdays.

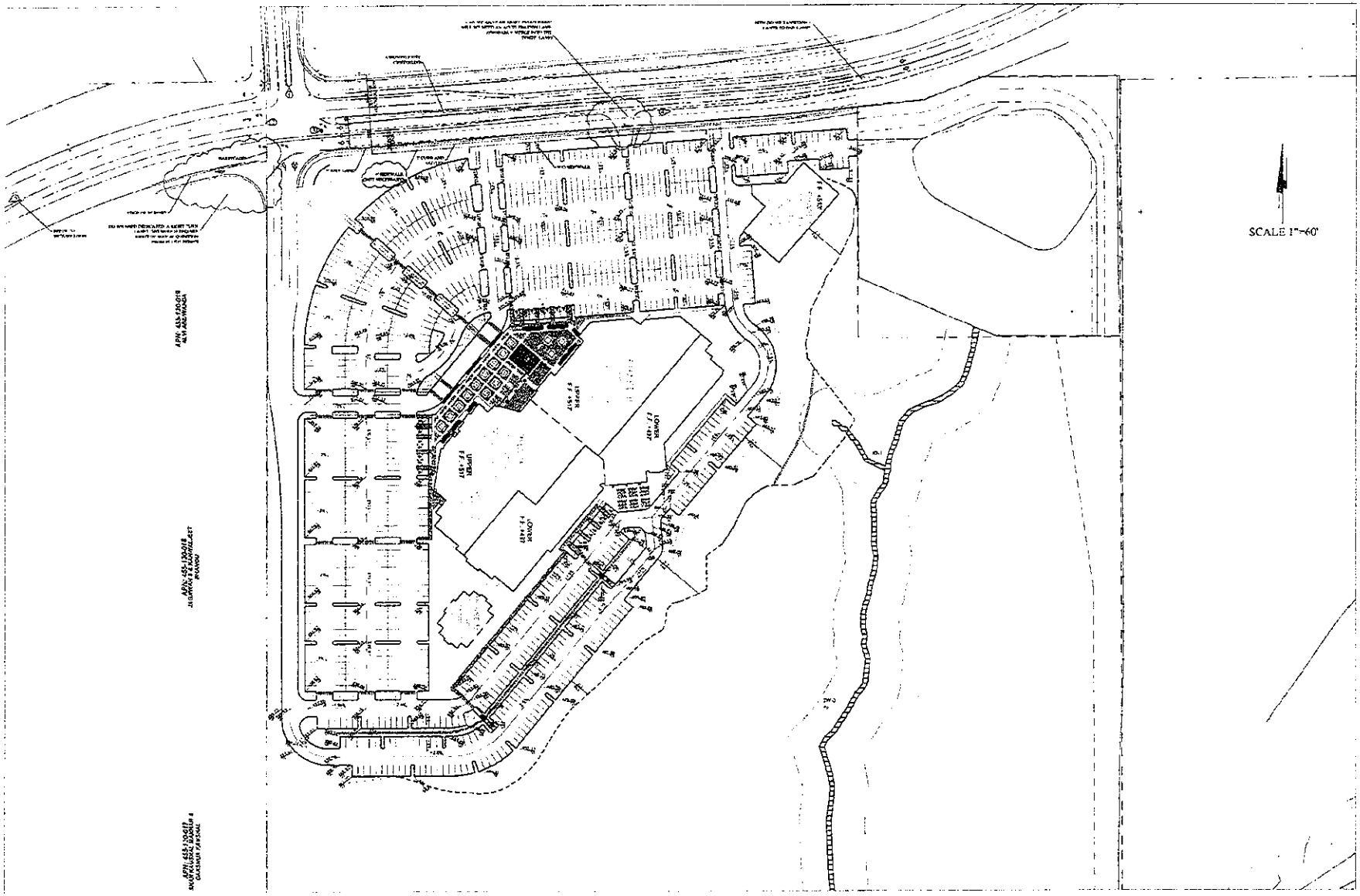


KD Anderson & Associates, Inc.
Transportation Engineers

VICINITY MAP

0457-001 REV.VSD 11/26/2008

figure 1



KD Anderson & Associates, Inc.
Transportation Engineers

SITE PLAN

0457-001 REV.VSD 11/26/2008

figure 2

EXISTING SETTING

Regionally, the site is served primarily by Sierra College Blvd, which links Lincoln and Loomis with Interstate 80 and continues south through Roseville to Sacramento County. Interstate 80 will also provide regional access to the site via the Rocklin Road, Sierra College Blvd, Eureka Road and Douglas Blvd interchanges.

Study Area Circulation System - Roads

Interstate 80 is the primary east-west arterial across Placer County and Northern California. In the vicinity of the proposed project, Interstate 80 is a six lane controlled access freeway. Access for Amazing Facts to the interstate is available at the Rocklin Road and Sierra College Blvd in Rocklin and to a lesser extent, the Eureka Blvd and Douglas Blvd interchanges in Roseville.

The California Department of Transportation (Caltrans) provides annual reports of the volume of traffic on the state highway system. The most recent counts available from Caltrans report an *Annual Average Daily Traffic (AADT - 2007)* volume of 157,000 vehicles per day west of the SR 65 junction, 122,000 AADT between SR 65 and Rocklin Road, 97,000 AADT in the area of Sierra College Blvd and 96,000 AADT between the Sierra College Blvd and Horseshoe Bar Road interchanges.

Sierra College Blvd is a north-south arterial road that connects SR 193 north of Penryn with Interstate 80 and continues southerly through Rocklin and Roseville before becoming Hazel Avenue in Sacramento County. Within that area the road passes through portions of Placer County, the Town of Loomis, the City of Rocklin and the City of Roseville. Near the project the road itself is in the City of Rocklin, but adjoining property is in Placer County, and to the north of the project, the east side of the road abuts the Town of Loomis.

In the area of the proposed project Sierra College Blvd is transitioning from a two lane rural highway to a six lane limited access urban arterial street. South of the project site the road is currently a four lane roadway immediately north of Douglas Blvd, although a six lane section exists in the area of the Douglas Blvd intersection. Development has already occurred at the top of Sierra College Blvd in Rocklin and Roseville, and as a result the west side of the highway has been improved to its ultimate width from Secret Ravine Parkway north past the project site to Rocklin Road. East side improvements have lagged as development has been limited on that side of the road. As a result, a single northbound through lane is available in the area from Nightwatch Drive to the Rocklin Road intersection.

On-street parking is prohibited along Sierra College Blvd in the area of the proposed project. Class II bicycle lanes are striped on the west side of Sierra College Blvd in the locations were ultimate improvements have been made. Meandering sidewalks exist along the portions of Sierra College Blvd that have been improved to their full width, including the area immediately west of the project site and opposite the project.

Traffic counts conducted for this study in July 2007 revealed that Sierra College Blvd carried a Friday volume of 19,150 vehicles per day in the area of the project, with the volume 14,340 vehicles per day on Saturday. While the weekday volume could be higher when Sierra College was in session, the Saturday volume is judged to be representative of "typical" conditions. Traffic counts conducted on a Saturday in November 2008 in Roseville indicated that Sierra College Blvd carried 15,250 vehicles per day between Douglas Blvd and Cavitt Stallman Road and 12,450 vehicles per day in the area between Olympus Drive and Secret Ravine Pkwy.

Rocklin Road is an east-west arterial street that links the eastern and western portions of the City of Rocklin that are otherwise separated by Interstate 80. Rocklin Road also continues easterly beyond Sierra College Blvd through Loomis and provides freeway access to the unincorporated portion of Placer County near Granite Bay. Today Rocklin Road is a 4 lane arterial street between Interstate 80 and Sierra College Blvd. East of Sierra College Blvd the south half of the roadway has been widened as development has occurred in Rocklin, but the road remains a two lane rural road to its terminus at Barton Road.

Daily traffic volume counts on Rocklin Road were taken from available sources. The segment of Rocklin Road between Interstate 80 and Sierra College Blvd carries 13,100 vehicles per day on weekdays, while the volume between Sierra College Blvd and Barton Road is 6,100 vehicles per day.

Nightwatch Drive is a local collector street that provides access into the developed area of Rocklin across from the project site. Nightwatch Drive is a two lane street with a center landscaped median. Sidewalks exist along both sides of Nightwatch Drive

El Don Drive, **Southside Ranch Road** and **Brookfield Circle** are City of Rocklin collector streets that intersect Sierra College Blvd at signalized intersection north of the project site. Each is a two lane street with sidewalks and on-street parking.

Scarborough Drive is a City of Rocklin collector street that intersects Sierra College Blvd west of the project site. Scarborough Drive provides access to the residential area of Rocklin abutting the City of Roseville. Scarborough Drive also links Sierra College Blvd with Secret Ravine Parkway, an arterial street that extends across northern Roseville to East Roseville Parkway. Scarborough Drive is a two lane street with on-street parking.

Study Area Circulation System - Intersections

The quality of traffic flow is often governed by the operation of key intersections. The following intersections have been identified for evaluation in this study in consultation with Placer County, City of Rocklin and City of Roseville staff.

The **Sierra College Blvd / Rocklin Road intersection** is a signalized intersection located north of the project site. The geometric configuration of the intersection is currently in transition as ongoing infrastructure construction has eliminated some auxiliary lanes. The intersection features separate

KDA

left turn lanes on each approach, and a right turn lane is available on the eastbound approach. There are two eastbound and two southbound through lanes, but only single through lanes are currently available on the northbound and westbound approaches. Prior to current construction, the northbound approach included a short auxiliary through lane. Crosswalks exist on all four legs of the intersection.

The Sierra College Blvd / El Don Drive intersection is controlled by a traffic signal. The geometric layout of the intersection includes left turn lanes on each approach, and the southbound approach is configured with three through lanes. The northbound approach includes a through lane and a short auxiliary through lane that terminates just north of the intersection at a creek crossing. Crosswalks exist on all four legs of the intersection.

The Sierra College Blvd / Southside Ranch Road intersection is signalized. The west side of the intersection has been improved to its ultimate with and three southbound through lanes are available. However, while separate left turn lanes exist on the northbound and southbound approaches, only one northbound lane extends through the intersection. The east leg of the intersection is a private access to a rural residential area in Loomis. Crosswalks exist on all four legs of the intersection.

The **Sierra College Blvd / Nightwatch Drive intersection** is signalized. The westbound Sierra College Blvd approach has been widened to its ultimate width and includes three through lanes and a separate right turn lane. The southbound Nightwatch Drive approach is configured to include separate left turn and right turn lanes. While Sierra College Blvd has been widened to the west of the intersection, the area is striped to provide only a left turn lane and a single through lane. Crosswalks do not exist across Sierra College Blvd at this intersection.

The **Sierra College Blvd / Scarborough Drive intersection** is controlled by a traffic signal. This intersection has been improved to its ultimate paced width, however, as with the Nightwatch Drive intersection, the Sierra College Blvd is currently striped to accommodate transition areas in advance of the narrower roadway sections adjoining the intersection. Today the westbound Sierra College Blvd approach offers three through lanes and a separate right turn lane. The eastbound Sierra College Blvd approach is also striped with a separate left turn and right turn lanes, as well as two through lanes. The southbound Scarborough Drive approach is configured with dual left turn lanes and a separate right turn lane. Crosswalks exist on all four legs of the intersection.

The **Sierra College Blvd / Secret Ravine Parkway intersection** is signalized. Both Sierra College Blvd approaches have two through lanes and separate left turn and right turn lanes. The eastbound Secret Ravine Parkway approach has three lanes that are configured as a separate left turn lane, a combined left turn and through lane and a right turn lane. Crosswalks exist across Sierra College Blvd at this intersection.

The **Sierra College Blvd / Olympus Drive intersection** is signalized. Both Sierra College Blvd approaches have two through lanes and separate left turn and right turn lanes. The eastbound Secret Ravine Parkway approach has three lanes that are configured as a separate left turn lane, a

combined left turn and through lane and a right turn lane. The westbound approach leaving Bayside Church has three lanes that are configures as a separate left turn lane, a combined left turn and through lane and a combined through and right turn lane. Crosswalks exist across Sierra College Blvd at this intersection.

The **Sierra College Blvd / Douglas Blvd intersection** is signalized. Both Sierra College Blvd approaches have three through lanes and dual left turn lanes, and there is a separate right turn lane on the northbound approach. Douglas Blvd has three through lanes in each direction plus separate left turn and right turn lanes. Crosswalks exist across all four legs of the intersection.

Standards of Significance: Levels of Service - Methodology

To assess the quality of existing traffic conditions and provide a basis for analyzing project impacts, Levels of Service were calculated at study area intersections and project driveways. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment.

Standards of Significance. The Level of Service policies in City of Rocklin General Plan are assumed to govern the significance of traffic impacts to intersections on Sierra College Blvd in this area of Placer County within the Rocklin City limits. According to the Rocklin General Plan, the minimum Level of Service standard at signalized intersections is LOS C, except for locations within ½ mile of access to an interstate freeway, where LOS D is accepted. Review of the study area indicates that all of the study intersections are more than ½ mile from Interstate 80. At unsignalized intersections LOS C is also the minimum, except at locations which already exceed LOS C. At those locations the satisfaction of peak hour traffic signal warrant is the measure of significance.

City of Roseville standards govern minimum Level of Service at intersections within the Roseville city limits. The City of Roseville has a general minimum standard of LOS C, but has accepted LOS D conditions at designated intersections. The City's minimum Level of Service is LOS C at the Secret Ravine parkway and Olympus Drive intersections on Sierra College Blvd and LOS D at the Douglas Blvd / Sierra College Blvd intersection.

The Town of Loomis strives to maintain LOS C at intersections under its jurisdiction.

Methodology at Signalized Intersections. Various methodologies exist to determine operating Levels of Service at signalized intersection. The available techniques vary with regard to factors such as traffic signal timing, interaction between adjoining signals, etc. The City of Rocklin makes use of the techniques contained in *TRB Circular No. 212,* which is more commonly identified as "critical movement analysis". The City of Roseville makes use of the procedures contained in the *2000 Highway Capacity Manual* for determining operating Level of Service.

Table 1 presents general characteristics associated with each LOS grade.

KDA

Methodology at Unsignalized Intersections. At unsignalized intersections the number of gaps in through traffic, gap acceptance time and corresponding delays for motorists waiting to turn are used for Level of Service analysis. Procedures used for calculating unsignalized intersection Level of Service are as presented the *Highway Capacity Manual, 2000 edition.*

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Volume / capacity (V/C) < 0.60 Ave Delay ≤ 10 seconds per vehicle	Little or no delay. Ave Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. 0.60 ≤ v/c < 0.70 Delay > 10 sec/veh and ≤ 20 sec/veh	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. 0.70 ≤ V/C < 0.80 Delay >20 sec/veh and <35 sec/veh	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed.).80 ≤ V.C < 0.90 Delay > 35 sec/veh and < 55 sec/veh	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). 0.90 ≤ V/C < 1.00 Delay >55 sec and ≤ 80 sec/veh	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. V/C > 1.00 Delay > 80 sec/veh	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: 2000 Highway Capacity Manual, and Transportation Research Board (TRB) Special Report 209.			

Existing Traffic Volumes and Intersection Levels of Service

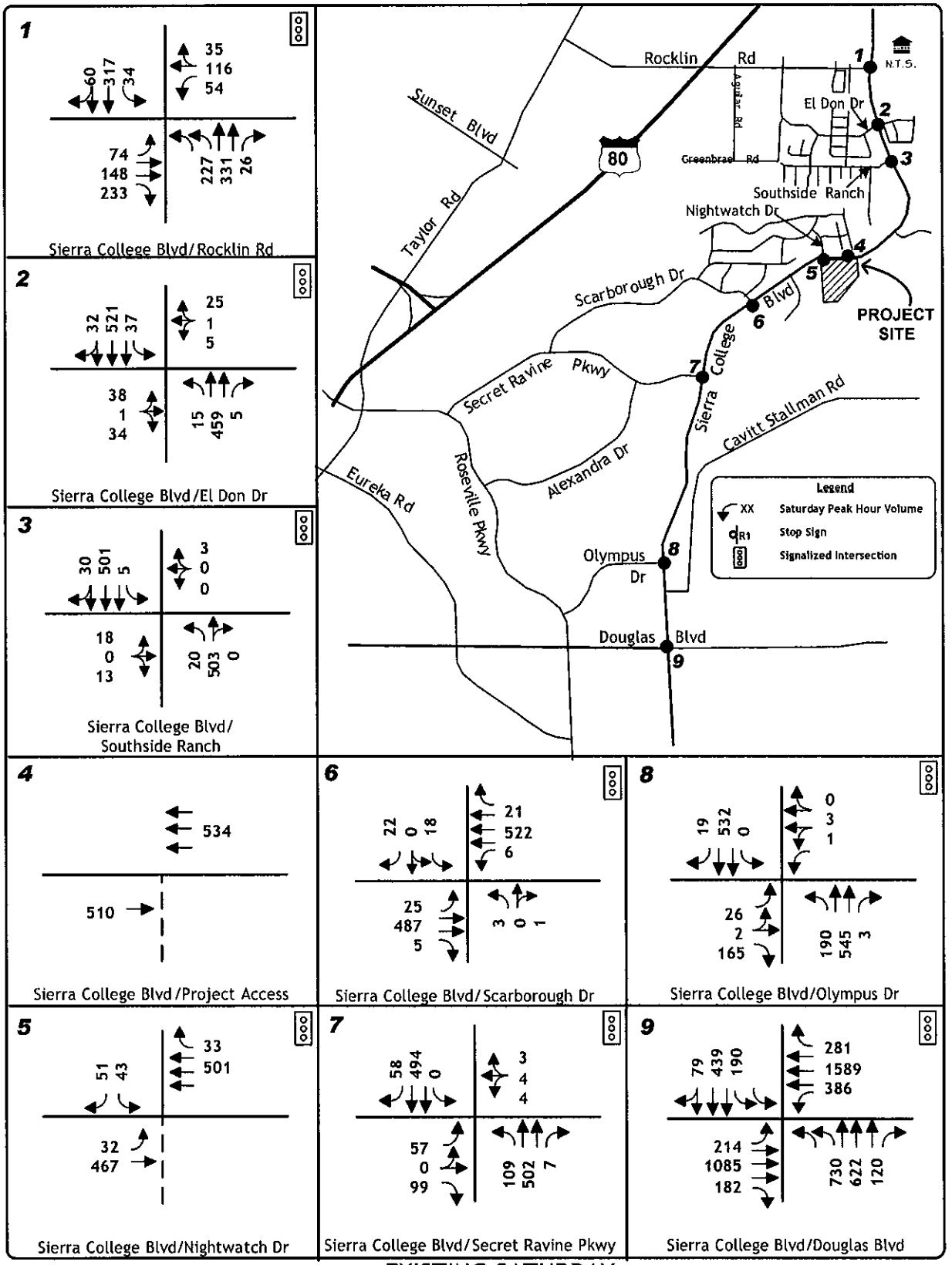
Because Amazing Facts will have services on Saturdays, this analysis addresses traffic conditions occurring during mid-day Saturday peak hours. Saturday counts were conducted within the limits of the City of Rocklin between the hours of 10:00 and 1:00 p.m. in July 2007 and in Roseville in November 2008. The highest one-hour volume observed during this time period was employed for this analysis. The results of these traffic counts are presented in Figure 3.

KDA

Table 2 presents current peak hour Level of Service at the study area intersections. As shown, all study intersections currently operate with Levels of Service that meet the minimum requirements of each agency during the midday peak hour on Saturday

TABLE 2
EXISTING INTERSECTION LEVEL OF SERVICE

Intersection	Control	Time Period: Saturday Peak Hour (10:00 a.m. to 1:00 p.m.)		
		LOS	Volume / Capacity	Average Delay (sec/veh)
Sierra College Blvd / Rocklin Road	Signal	B	0.62	-
Sierra College Blvd / El Don Drive	Signal	A	0.42	-
Sierra College Blvd / Southside Ranch Road	Signal	A	0.40	-
Sierra College Blvd / Nightwatch Drive	Signal	A	0.38	-
Sierra College Blvd / Scarborough Drive	Signal	A	0.21	-
Sierra College Blvd / Secret Ravine Parkway	Signal	B	-	12.5 sec
Sierra College Blvd / Olympus Drive	Signal	C	-	12.6 sec
Sierra College Blvd / Douglas Blvd	Signal	D	-	41.6 sec



KD Anderson & Associates, Inc.
Transportation Engineers

EXISTING SATURDAY
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

0457-001 REV.VSD 11/26/2008

figure 3

Daily Traffic Volumes

The quality of traffic flow on County roads and City streets can also be determined based on the daily traffic volumes and generalized Level of Service thresholds. General "planning level" daily volume thresholds presented in the Placer County General Plan EIR can be used to identify operating Levels of Service on streets and highways. These thresholds are re-printed in Table 3. However, the City of Rocklin makes use of the daily traffic volume thresholds shown in Table 4.

TABLE 3
PLACER COUNTY
EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE

Roadway Capacity Class	Maximum Daily Traffic Volume Per Lane Level of Service				
	A	B	C	D	E
1. Freeway – Level Terrain	6,300	10,620	13,680	17,740	18,000
2. Freeway – Rolling terrain	5,290	8,920	11,650	14,070	15,120
3. Freeway – Mountainous Terrain	3,400	5,740	7,490	9,040	9,720
4. Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
5. Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
6. Arterial – Low Access Control	4,500	5,250	6,000	6,870	7,500
7. Rural 2-lane Highway – Level terrain	1,500	2,950	4,800	7,750	12,500
8. Rural 2-lane highway – Rolling terrain	800	2,100	3,800	5,700	10,500
9. Rural 2-lane highway – Mountainous Terrain	400	1,200	2,100	3,400	7,000
Source: Placer County General Plan FEIR					

TABLE 4
CITY OF ROCKLIN
EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE

LOS	Roadway Segment Capacities: Two Way Average Daily Traffic Volumes						
	Two Lane Collector	Four Lane Undivided Arterial	Four Lane Divided Arterial	Four Lane Restricted Access Arterial	Six Lane Divided Arterial	Six Lane Restricted Access Arterial	Four Lane Freeway
A	9,000	18,000	20,250	21,600	30,315	30,315	37,600
B	10,700	21,300	23,625	25,200	36,000	36,000	52,800
C	12,000	24,000	27,000	28,800	40,500	40,500	68,000
D	13,500	27,000	30,375	32,400	45,560	45,560	76,000
E	15,000	30,000	33,750	36,000	50,525	50,525	80,000

KDA

Today Sierra College Blvd carries 19,150 weekday ADT and 14,340 vehicles per day on Saturday in the vicinity of the proposed project. Because the number of lanes in each direction is unequal, standard LOS threshold are not directly applicable. The 2 lane thresholds could be applicable in the northbound direction. Under Placer County GP standards the current volume is indicative of weekday LOS E on a two lane arterial with a high degree of access control, but LOS C on Saturday. While the City of Rocklin does not have a 2 lane arterial LOS standard, the Saturday volume would be indicative of LOS C-D if ½ of the threshold identified for a 4 lane restricted access alternative was assumed (i.e., LOS C = 14,400 ADT).

The City of Roseville also identifies acceptable Levels of Service based on daily traffic volumes. The City assumes 9,000 vehicles per lane per day capacity on major arterials as a basis for roadway Level of Service and assumes a V/C of 0.81 for the LOS C threshold. For the 4-lane section north of Olympus, the resulting threshold is 29,160 ADT (9,000 X 4 X 0.81) for the LOS C threshold and for the 6-lane section north of Douglas, the threshold would be 43,740 ADT (9,000 X 6 X 0.81). The observed traffic volumes on Sierra College Blvd are far below the threshold and would be indicative of LOS A.

Transit Facilities

Placer County Transit provides bus service in the Rocklin area. However, the nearest local service is on Rocklin Road and on Sierra College Blvd north of Rocklin Road. Dial-a-Ride service is available to residents in the area of the proposed project.

Roseville Transit provides fixed route service in the area south of the project, but the closest route only runs on Sierra College Blvd as far north as Olympus Parkway.

PROJECT IMPACTS

The proposed project is a Seventh Day Adventist Church that would hold its primary services on Saturdays and would have limited weekday activities. Ultimately, the church could sit 2,000 persons for services, with seating for 1,300 anticipated with the first phase.

The site has two points of access. Primary access is to be via the southerly extension of Nightwatch Drive from the Sierra College Blvd / Nightwatch Drive intersection. Secondary access is proposed via a right turn only access on Sierra College Blvd roughly midway along the project's frontage. Development of the secondary access is planned with the first phase of the project, but could be delayed to the second phase depending on the extent of Sierra College Blvd improvements required to accommodate this additional access.

Project Characteristics

Trip Generation. The amount of new traffic associated with development projects is typically forecast using information developed from recognized national sources. The Institute of Transportation Engineers (ITE) publication *Trip Generation, 7th Edition* is a source recognized by Placer County, and applicable trip generation rates for churches operating on Saturdays are presented in Table 5.

TABLE 5
TRIP GENERATION RATES / FORECASTS

Land Use	Unit / Quantity	Trip Generation						
		Saturday Daily	Sunday Peak Hour			Weekday P.M. Peak Hour		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Church (ITE)	Seats	0.90	43%	57%	0.60	50%	50%	0.04
Phase 1	1,300	1,170	335	445	780	26	26	52
Phase 1+2	2,000	2,540	516	684	1,200	40	40	80

As shown in Table 5, the initial 1,300 seat phase of the Amazing Facts Church project could generate 780 trips during the Saturday peak hour. The initial phase of the project is only expected to generate 52 trips during the weekday p.m. peak hour. At full occupancy at the end of phase 2, the site could generate 1,200 Saturday peak hour trips.

Trip Distribution. Having determined the number of trips that are expected to be generated by the project, it is necessary to identify the directional distribution of project-generated traffic. For churches, the location of church attendee residences is the primary indicator of the regional trip distribution.

KDA

As noted earlier, a portion of the congregation now attending Sacramento Central Church near CSU-Sacramento is expected to move their membership to the Amazing Facts site. Based on review of the location of existing membership, it appears that approximately 50 families already attending Sacramento Central Church live in Placer County. Another 30 families reside in the Folsom-Citrus Heights-Orangevale area. While these church members would likely attend Amazing Facts, we are also told that a portion of the membership residing in Sacramento County along the Interstate 80 corridor could relocate their membership. All together, it is assumed that persons currently attending Sacramento Central Church will represent 10% of the total membership at the end of phase 2.

Because most of the church membership will be new, the distribution of church traffic has been assumed to be in rough proportion to the regional population distribution of the western Placer County, north Sacramento County and western El Dorado County area within ten miles of the site. Table 6 outlines the regional assumptions made for this study.

TABLE 6
REGIONAL TRIP DISTRIBUTION ASSUMPTIONS

Direction	Origin / Destination	Route	Percent of Total
North	Lincoln, Penryn, Yuba County	Sierra College Blvd North	5%
	East Rocklin	Nightwatch Dr, Southside Ranch Rd, El Don Dr	3%
	Auburn, Loomis	Interstate 80 east	3%
East	Loomis, North Granite Bay	Rocklin Road east	2%
	Granite Bay, Folsom , West El Dorado County	Rocklin Road east	5%
	Granite Bay	Douglas Blvd east	5%
South	Orangevale, Citrus Heights, Rancho Cordova, Granite Bay	Sierra College Blvd south of Douglas Blvd	15%
	East Roseville	Scarborough Drive west	2.5%
		Secret Ravine Parkway west	10%
West	Rocklin	Rocklin Road west of I-80	2%
	Western Rocklin, Western Roseville, Western Lincoln	SR 65 to Interstate 80 to Rocklin Rd	15%
	North Sacramento County	Interstate 80 to Rocklin Road	15%
		Interstate 80 to Douglas Blvd to Sierra College Blvd	15%
		Interstate 80 to Douglas Blvd to Olympus Drive Sierra College Blvd	2.5%
Total			100%

KDA

Project Trip Assignment. The assignment of project traffic to the local area street system will reflect the alternative routes available between the site and church member residences. The principal choice to be made involves use of the right turn only driveway on Sierra College Blvd. This driveway will be an attractive route for persons using the eastern portion of the parking lot developed under Phase 2, but may also be used under Phase 1.

Using the regional trip distribution assumptions noted previously, project trips were assigned to the local street system assuming access as planned. Figure 4 presents resulting "project only" traffic under Phase 1 with and without access via the Nightwatch Drive intersection, as well as under Phase 1+2 conditions with both access points available.

Assumed Improvements. As noted in the Figure, the project proponents expect to widen Sierra College Blvd along the project frontage. Thus two northbound lanes will be provided on Sierra College Blvd through the Nightwatch Drive intersection. While project frontage improvements on Sierra College Blvd provide the space for a third through lane. This lane and the second northbound lane would have to be "dropped" before reaching the existing single northbound lane beyond the project site. However, because the distance required for the lane drop exceeds the frontage length, this analysis first addresses conditions without a second through lane in order to evaluate the need for the additional improvements required to accommodate two northbound lanes.

Improvements to the Sierra College Blvd / Nightwatch Drive intersection have been assumed under these initial analysis conditions. Improvements will be made to Sierra College Blvd west of the intersection to create a right turn lane into the site at Nightwatch Drive. The median on Sierra College Blvd has been assumed to be reconstructed to create a single left turn lane into the project site. A two lane northbound Nightwatch Drive approach has been assumed, with these two lanes configured as a dedicated left turn lane and a combined left+thru+right turn lane. The exiting southbound right turn lane on Nightwatch Drive has been assumed to be re-striped to permit through traffic. The project's frontage widening has been assumed to be striped to accommodate a separate right turn lane into the site at the new access on Sierra College Blvd.

Existing Plus Project Traffic Conditions and Levels of Service

Figure 5 superimposes project trips onto the current background traffic volumes to create three "Existing plus Project" conditions. Table 7 compares the existing and "plus project" Levels of Service at study intersections.

Phase 1 Traffic Impacts. As shown, the addition of project traffic associated with the first phase of the Amazing Facts Church project will have a negligible effect on Levels of Service occurring during the Saturday peak hour at study intersections. Development of Phase 1 results in conditions within adopted minimum standards at most of the study intersections in Roseville and Rocklin, but LOS D conditions are projected at the **Sierra College Blvd / Rocklin Road intersection**. The addition of project traffic will result in the need for additional improvements beyond those that exist. Dual northbound left turn lanes would be needed to achieve LOS C or better conditions. As will be noted in the discussion of the "Approved Projects" condition, this

improvement is a condition of approval for the Sierra College Center project near the Rocklin Road/Sierra College Blvd intersection.

Locally, the Sierra College Blvd / Nightwatch Drive intersection is forecast to operate at LOS C under Phase 1 conditions with or without the proposed second access onto Sierra College Blvd. This conclusion assumes that only one northbound lane is provided through the intersection. The Level of Service would be LOS A (V/C = 0.52) if the second northbound lane is provided as proposed by the project proponents.

Phase 2 Traffic Impacts. The development of the full project under "Existing Plus Phase 1+2" conditions results in three instances where the minimum LOS C standard will not be met in Rocklin. Minimum Level of Service standards will continue to be satisfied at the study intersections in Roseville.

At the **Sierra College Blvd / Rocklin Road intersection** the addition of project traffic would result in LOS E if the current geometric configuration remained. However, as noted earlier, improvements are expected when the pending Sierra College Center project proceeds. These improvements include dual left turn lanes on northbound Sierra College Blvd, and with that improvement, the intersection would operate at LOS A.

The **Sierra College Blvd / Nightwatch Drive intersection** is projected to operate at LOS D if there is only one northbound through lane on Sierra College Blvd. Too achieve the minimum LOS C goal, it would be necessary to develop the second northbound through lane on Sierra College Blvd through this intersection. With this lane the intersection would operate at LOS B (V/C = 0.62).

The project's **Sierra College Blvd Access** is projected to operate at LOS D if there is only one northbound (eastbound) lane available on Sierra College Blvd. Adding the second through lane would allow the access to operate at LOS B.

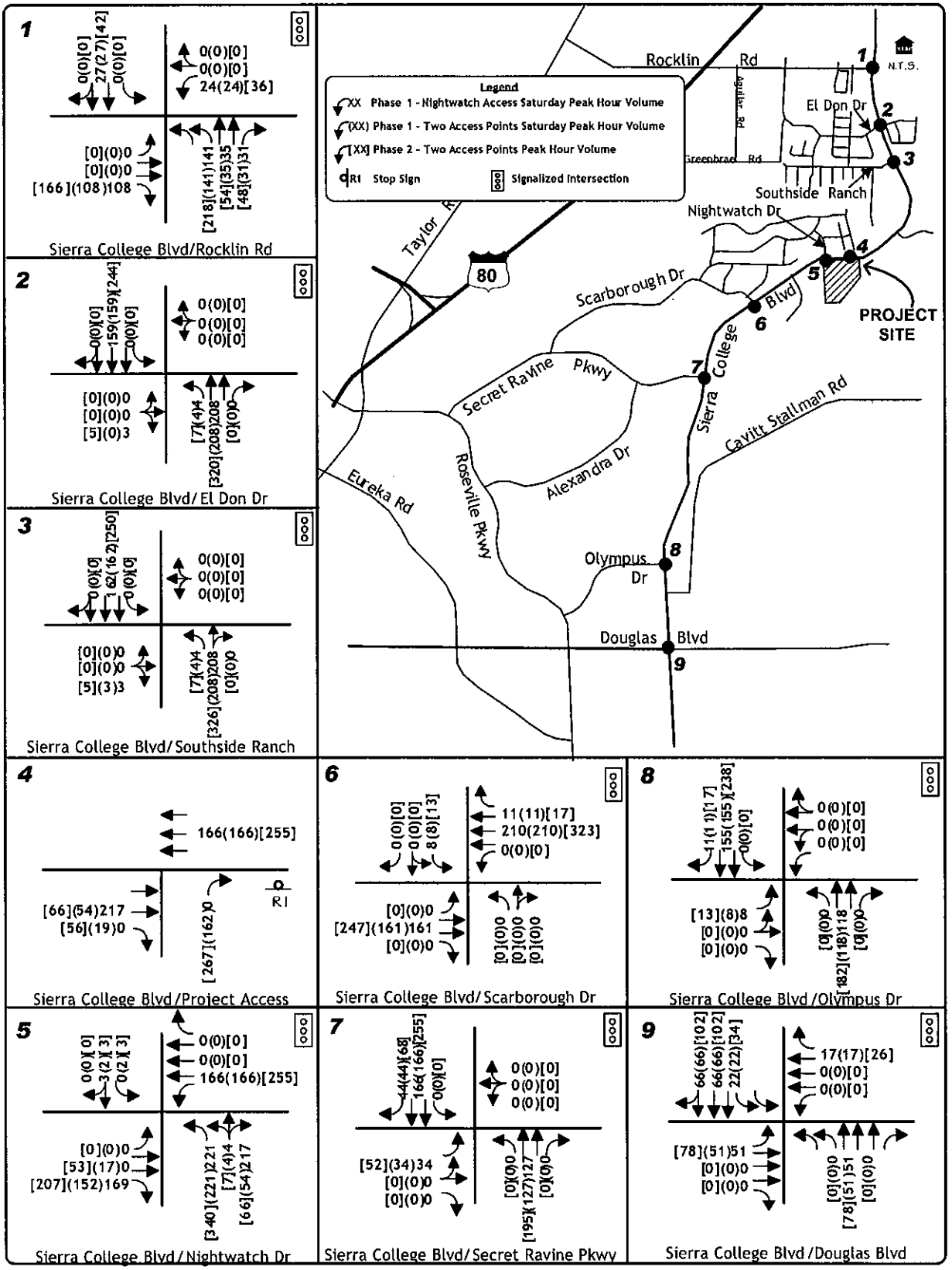
KDA

TABLE 7
EXISTING PLUS AMAZING FACTS CHURCH
SATURDAY PEAK HOUR INTERSECTION LEVELS OF SERVICE

				Existing Plus Project					
				Phase 1				Phase 1+2	
		Existing		1 Access		2 Access		2 Access	
Intersection	**Control**	**LOS**	**Volume / Capacity**	**LOS**	**Volume / Capacity or Average Delay**	**LOS**	**Volume / Capacity or Average Delay**	**LOS**	**Volume / Capacity or Average Delay**
Sierra College Blvd / Rocklin Rd	Signal	B	0.62	**D**	**0.84**	**D**	**0.84**	**E**	**0.96**
	Mitigated[1]	A	0.51	A	0.68	B	0.68	C	0.77
Sierra College Blvd / El Don Dr	Signal	A	0.42	A	0.58	A	0.58	B	0.66
Sierra College Blvd / Southside Ranch Road	Signal	A	0.40	A	0.56	A	0.56	B	0.64
Sierra College Blvd / Access	NB Stop	-	-	-	-	C	17.8 sec	**D**	**26.3 sec**
	Mitigated[2]							B	13.6 sec
Sierra College Blvd / Nightwatch Drive	Signal	A	0.38	C	0.70	B	0.65	**D**	**0.81**
	Mitigated[2]							B	0.61
Sierra College Blvd / Scarborough Drive	Signal	A	0.21	A	0.27	A	0.27	A	0.31
Sierra College Blvd / Secret Ravine Parkway	Signal	B	12.5 sec	B	12.2 sec	B	12.2 sec	B	12.1 sec
Sierra College Blvd / Olympus Drive	Signal		12.6 sec	B	12.2 sec	B	12.2 sec	B	12.0 sec
Sierra College Blvd / Douglas Blvd	Signal		41.6 sec	D	48.2 sec	D	48.2 sec	D	53.5 sec

[1] Install northbound dual left turn lanes
[2] Add second northbound through lane on Sierra College Blvd

KDA

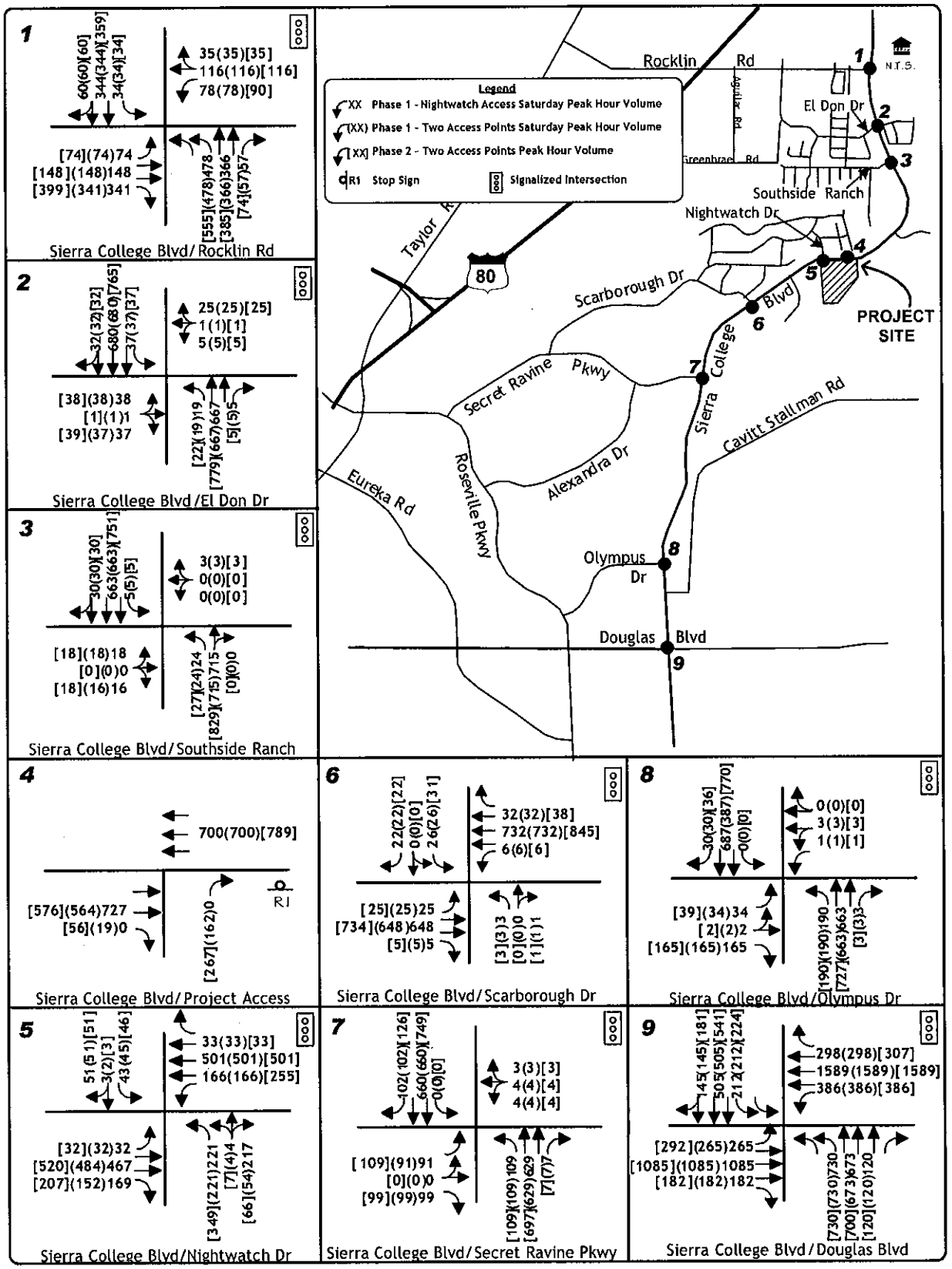


KD Anderson & Associates, Inc.
Transportation Engineers

PROJECT ONLY SATURDAY
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

0457-001 REV.VSD 11/26/2008

figure 4



EXISTING PLUS PROJECT SATURDAY
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

0457-001 REV.VSD 11/26/2008

figure 5

CUMULATIVE IMPACTS

The impacts of developing the Amazing Facts Church project have also been considered within the context of future traffic conditions in this area of Placer County. Three cumulative scenarios were considered at various intersection based on the guidelines followed by each agency. The "Short Term Future" scenario assumes completion of approved and pending projects identified by the City of Rocklin. This scenario was employed to investigate impacts to intersection in the Rocklin city limits but was not requested by the City of Roseville. Two different scenarios were investigated to address "long term future" cumulative conditions. In Roseville, the cumulative analysis addressed Year 2020 conditions as identified under the Roseville CIP traffic model. This scenario assumes implementation of circulation system improvements already included in that city's CIP. For locations in Rocklin, the cumulative analysis accounts for future regional traffic growth and development as projected by the Year 2025 City of Rocklin regional travel demand forecasting model.

Short Term Future Traffic Impacts

Background Traffic Volumes. The City of Rocklin maintains a list of approved projects and notes their development status. This information was used to create the short term future traffic conditions presented in the Draft Rocklin Crossing Traffic Study[1], the most recent traffic study completed in this area at the time the Amazing Facts Church analysis was prepared. Because that study includes a Saturday analysis scenario, it was possible to identify the traffic growth increment identified in that report under "Short Term Plus Rocklin Crossing" condition and apply it for this analysis. However, two additional local projects were added based on input from City of Rocklin staff. These are the Sierra College Center retail/office project at the Sierra College Blvd / Rocklin Road intersections and the Vista Oaks – Highlands Parcel A residential projects.

Other development outside of Rocklin may also occur that will affect short term traffic conditions. The Stoneridge development area of Roseville abuts the Rocklin City limits and could directly add traffic to Scarborough Drive and to the balance of the study area street system. The current City of Roseville development report suggests that 449 single family and 345 multifamily approved dwelling units remain to be completed in that area. The amount of Saturday peak hour traffic associated with this development level was identified, and 15% of that total was assumed to use Sierra College Blvd north through the study area.

Together, the Saturday traffic increment identified in the Rocklin Crossing traffic study and the trips distributed from other identified projects were superimposed onto current volumes to create the background "Existing Plus Approved Projects (EPAP)" condition shown in Figure 6. As noted earlier, this scenario was limited to intersections in the Rocklin city limits.

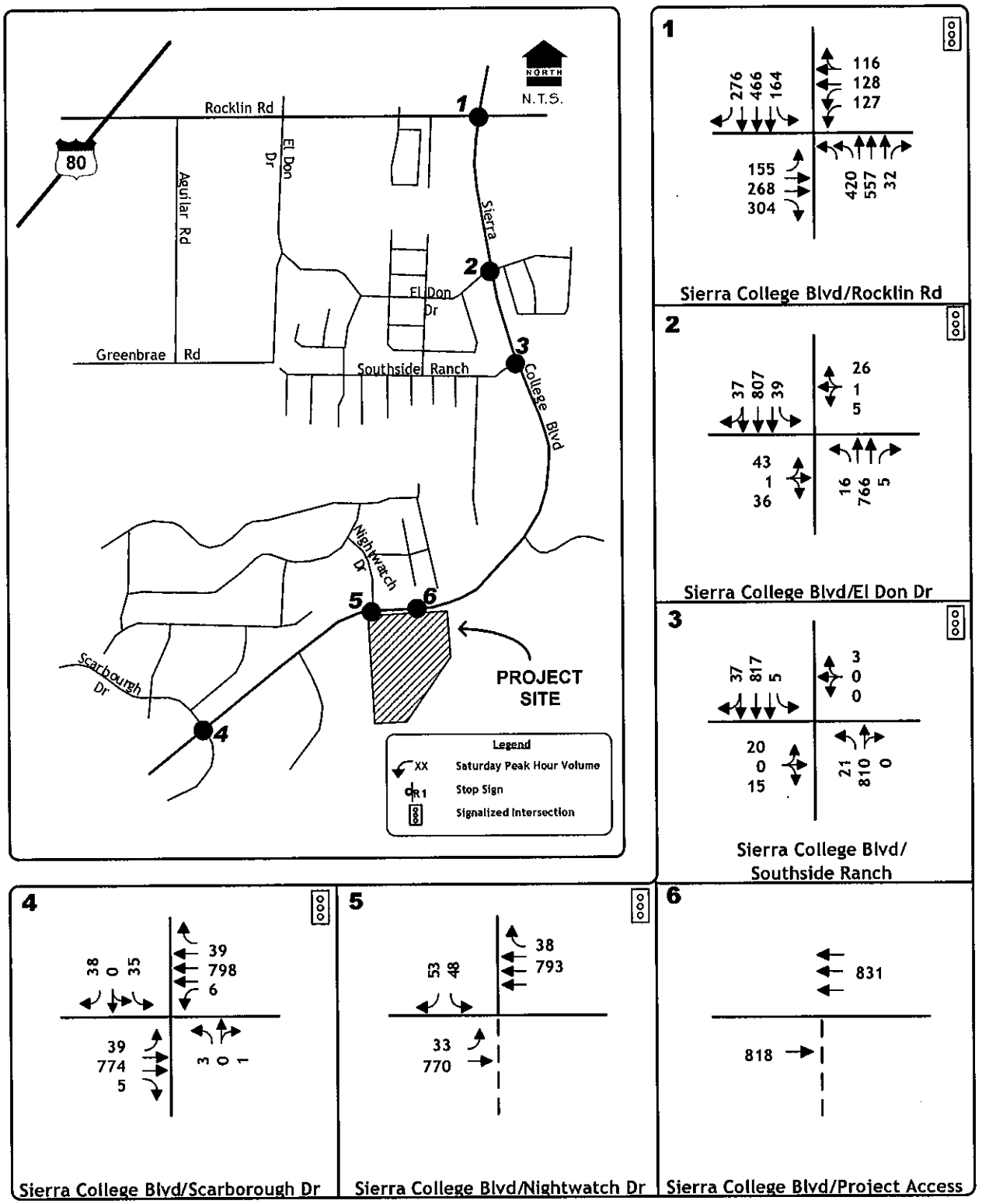
Background Improvements. Various circulation system improvements can be expected to be completed under the short term horizon. In the near term, Sierra College Blvd is to be widened by SPARTA to provide two through lanes in each direction from the El Don Drive intersection

[1] Traffic Impact Analysis prepared by LSA Associates, Inc., September 2006

KDA

north to Interstate 80. At the Rocklin Road / Sierra College Blvd intersection identified development will be accompanied by intersection improvements that include dual left turn lanes on the northbound and westbound approaches. However, under the base condition, no improvements have been assumed along Sierra College Blvd. in the area of the proposed project.

Existing Plus Approved Projects Plus Amazing Facts Church Traffic Conditions. Traffic volumes under "EPAP plus Project" conditions are shown in Figure 7. Levels of Service at study intersections with and without the proposed project are shown in Table 8. As under the "Existing Plus Project" evaluation, EPAP conditions are evaluated for both Phase 1 and Phase 1+2 site development levels.

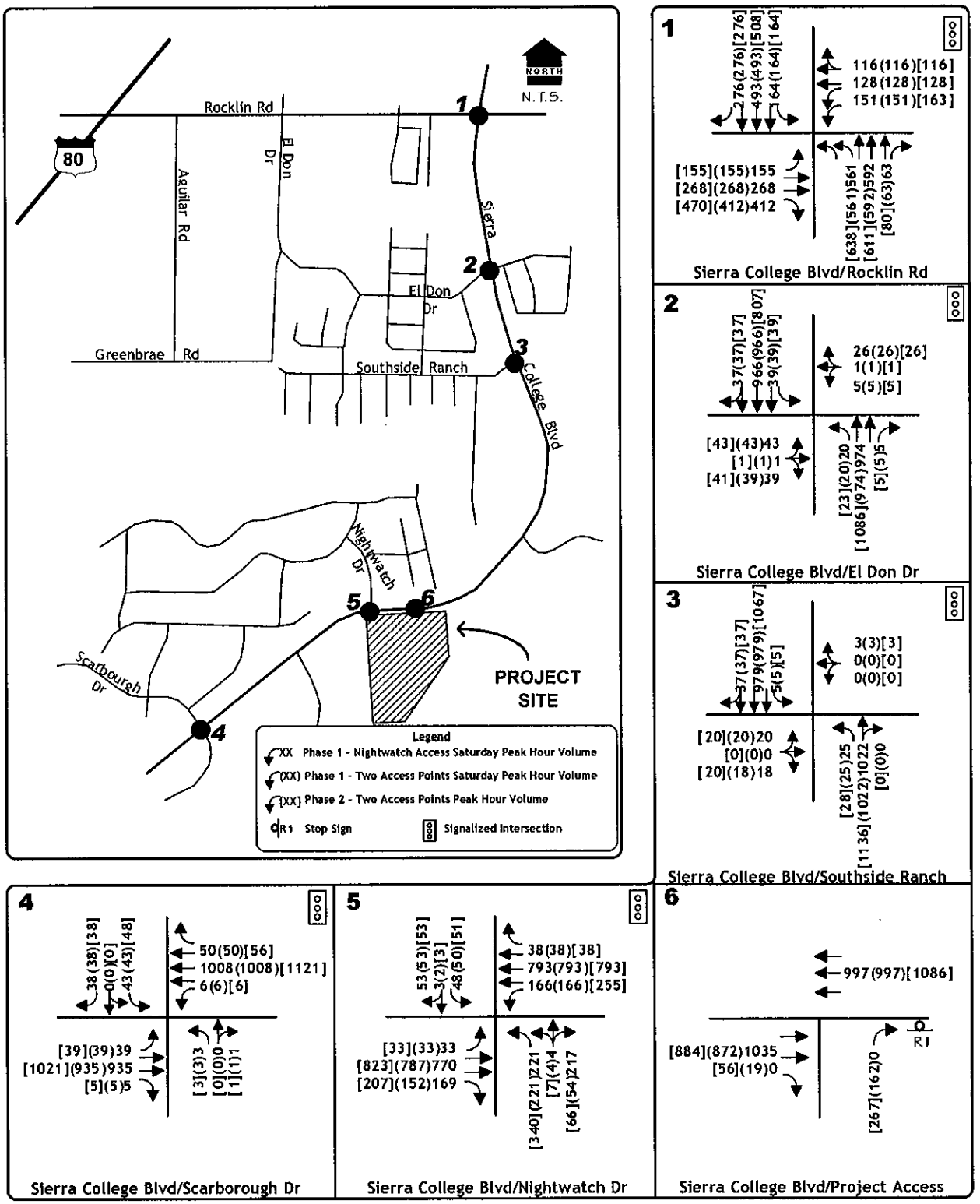


EXISTING PLUS APPROVED PROJECTS
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

0457-001 REV.VSD 11/26/2008

figure 6



EXISTING PLUS APPROVED PROJECTS PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

0457-001 REV.VSD 11/26/2008

figure 7

TABLE 8
EXISTING PLUS APPROVED PROJECTS PLUS AMAZING FACTS CHURCH
SATURDAY PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	Existing Plus Approved Projects		Existing Plus Approved Projects Plus Amazing Facts Church					
				Phase 1				Phase 1+2	
				1 Access		2 Access		2 Access	
		LOS	Volume / capacity	LOS	Volume / capacity	LOS	Volume / Capacity	LOS	Volume / Capacity
Sierra College Blvd / Rocklin Rd	Signal	A	0.51	A	0.57	A	0.57	B	0.61
Sierra College Blvd / El Don Dr	Signal	A	0.38	A	0.45	A	0.45	A	0.50
Sierra College Blvd / Southside Ranch Road	Signal	B	0.63	C	0.79	C	0.79	**D**	**0.87**
	Mitigated[1]							A	0.45
Sierra College Blvd / Access	NB Stop	-	-	-	-	**F**	**68.4sec**	**F**	**271.2 sec**
	Mitigated[1]					C	16.6 sec	**D**	**27.7 sec**
Sierra College Blvd / Nightwatch Drive	Signal	B	0.61	**E**	**0.94**	**D**	**0.89**	**F**	**1.04**
	Mitigated[1]			B	0.64	A	0.59	C	0.72
Sierra College Blvd / Scarborough Drive	Signal	A	0.33	A	0.39	A	0.39	A	0.43

[1] add second through lane on Sierra College Blvd

As shown, the addition of traffic associated with Phase 2 of the project will result in LOS D condition at the **Sierra College Blvd / Southside Ranch Drive intersection**. To deliver LOS C, it would be necessary to add a second northbound through lane at this intersection. While this action is generally consistent with long terms plans for improving Sierra College, it would likely require acquisition of right of way along the east side of Sierra College Blvd from properties within the Town of Loomis. Because these properties are designated as rural residential, they are unlikely to develop further and it is unlikely that fronting developers would install frontage improvements.

As shown, with the addition of background traffic growth, with only one northbound through lane the Sierra **College Blvd / Nightwatch Drive intersection** would operate at LOS E with the first phase of the project. As discussed earlier, adding a second through lane on Sierra College Blvd would improve the Level of Service at this location, and LOS A conditions can be maintained under "EPAP Plus Phase 1" conditions, while LOS C is forecast with Phases 1 + 2.

KDA

Similarly, the Level of Service at the **Amazing Facts Sierra College Blvd Access** will be poor if there is only one northbound (eastbound) lane available on Sierra College Blvd. LOS F conditions are projected with the project. However, the addition of a second through lane would yield LOS C conditions under Phase 1 and LOS D conditions at Phase 1+2.

The "mitigated" LOS D identified at the site access is sensitive to the number of vehicles that choose this route in lieu of the Nightwatch Drive access. For example, if 30 additional motorists elected to turn right at Nightwatch Drive instead of at the Sierra College Blvd access, the resulting "EPAP plus Phase 1+2" condition would be LOS C at the driveway with the identified mitigation (i.e., second through lane). Based on the availability of this alternative access, the forecast LOS D is not viewed as a significant impact.

Year 2020 Cumulative Impacts (City of Roseville)

The City of Roseville evaluates long term traffic impacts based on information developed from the traffic model maintained for the City's 2020 CIP. The City maintains traffic volume forecasts on a weekday p.m. peak hour basis and is able to identify intersection specific improvements assumed to be in place by the year 2020.

Approach. The approach taken to evaluate Saturday conditions in the year 2020 makes use of the city's weekday p.m. peak hour forecasts. Baseline year 2008 and year 2020 weekday peak hour traffic volumes were obtained for the three intersections in Roseville. The volume of traffic on each intersection approach was identified, and the resulting 2008-2020 growth factor on each approach was identified. These growth factors were assumed to be applicable for Saturday conditions, and these growth factors were applied to existing peak hour intersection turning movement traffic volumes to create year 2025 intersection turning movements.

The development of future year intersection turning movement traffic volumes requires that the turning movements at each intersection "balance". To achieve the balance, inbound traffic volumes must equal the outbound traffic volumes, and the volumes must be distributed among the various left-turn, through, and right-turn movements at each intersection. The "balancing" of future year intersection turning movement traffic volumes was conducted using methods described in the Transportation Research Board's (TRB's) National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design.* The NCHRP 255 method applies the desired peak hour directional volumes to the intersection turning movement volumes, using an iterative process to balance and adjust the resulting forecasts to match the desired peak hour directional volumes.

KDA

The Roseville CIP identifies improvements to intersections on Sierra College Blvd within the City of Roseville. At the Douglas Blvd / Sierra College Blvd intersection it is assumed that dual left turn lanes will be developed on both Douglas Blvd approaches and that a separate southbound right turn lane will be installed.

Year 2020 Plus Project Traffic Impacts. The impact of developing Amazing Facts Church has been evaluated under year 2020 conditions has been identified by superimposing Phase 1&2 traffic onto the baseline Saturday peak hour condition. Figure 8 presents Year 2020 volumes with and without project. Resulting Levels of Service are shown in Table 9. As indicated, the addition of project traffic does not result in any location operating at a Level of Service that exceeds the City's minimum standard.

TABLE 9
CUMULATIVE YEAR 2020 (ROSEVILLE)
SATURDAY INTERSECTION LEVELS OF SERVICE

Intersection	Control	No Project		Year 2020 Plus Amazing Facts Church	
		LOS	Volume / Capacity	LOS	Volume / Capacity
Sierra College Blvd / Secret Ravine Parkway	Signal	B	14.8 sec	B	13.7 sec
Sierra College Blvd / Olympus Drive	Signal	B	17.3 sec	B	16.4 sec
Sierra College Blvd / Douglas Blvd	Signal	D	42.9 sec	D	49.6 sec

Year 2025 Cumulative Traffic Conditions

Traffic Volume Forecasts. The City of Rocklin maintains a long term travel demand forecasting model. That model was the basis for long term cumulative Saturday peak hour traffic volume forecasts contained in the Draft Rocklin Crossing traffic study. Because the balance of the land in Rocklin south of the Rocklin Road is built out, it is possible to use the growth increment derived from the Rocklin Crossing forecasts to estimate traffic volumes at study area intersections using the NCHRP 255 techniques.

Figure 9 presents background long term cumulative background traffic volumes at study intersections.

Future Improvements. The long term plan for Sierra College Blvd is a 6 lane controlled access arterial in the vicinity of Amazing Facts, and several major Sierra College Blvd improvement projects are being pursued the Regional Transportation Planning Agency of Placer County (PCTPA). The South Placer Regional Transportation Authority (SPRTA) is a Joint Powers Authority formed by the Cities of Lincoln, Rocklin, Roseville, and Placer County to impose and

KDA

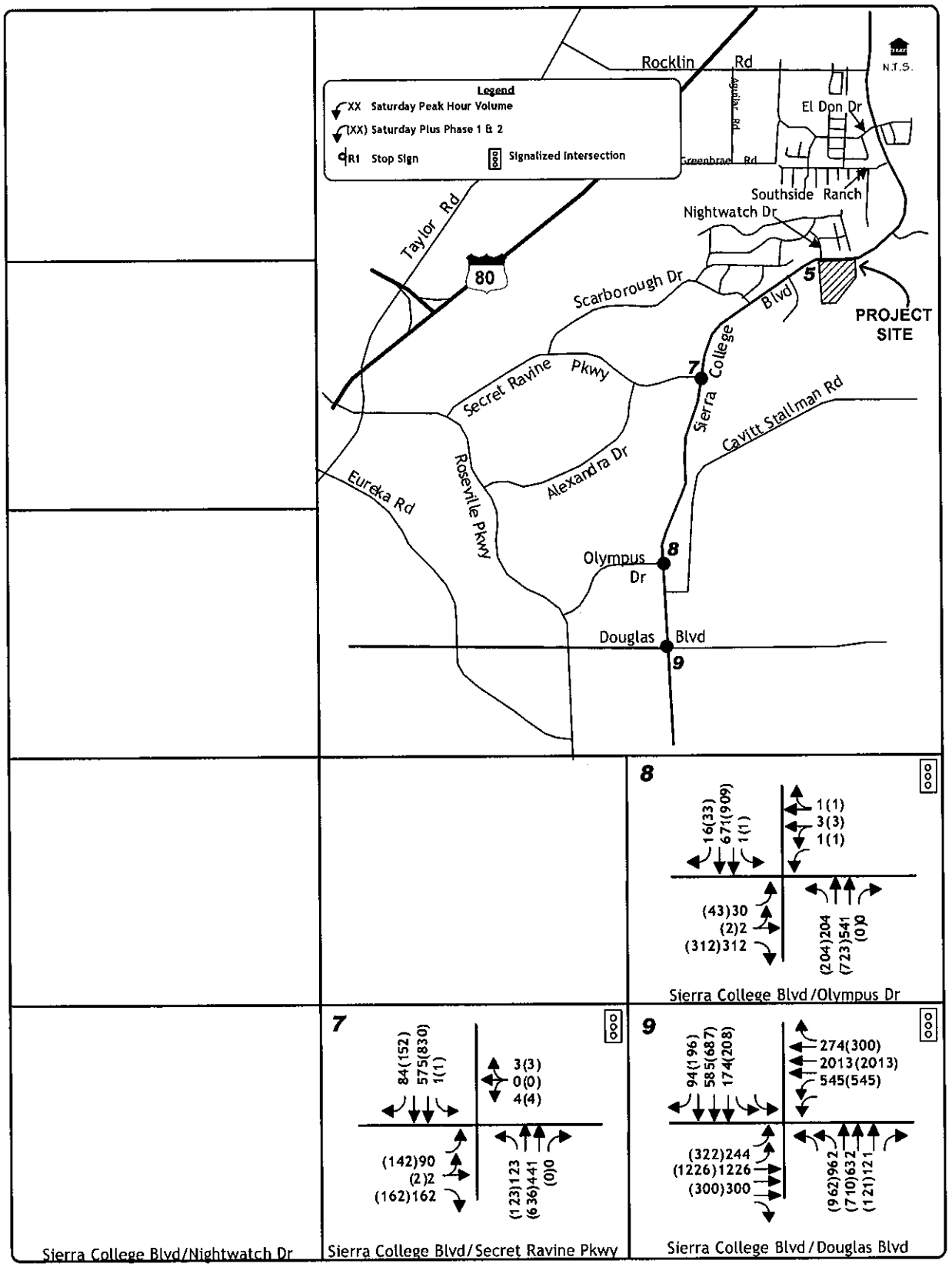
administer regional traffic impact fees known as the Regional Transportation and Air Quality Mitigation Fee. $39.6 million of this regional fee is slated to fund the widening of Sierra College Boulevard from SR 193 to the Sacramento/Placer County line.

Additional work is also planned at the Sierra College Blvd / Rocklin Road intersection, as noted in Figure 8.

Year 2025 Plus Project Traffic Impacts. Figure 9 also superimposes project traffic (phase 1+2) onto background year 2025 traffic volumes. Table 10 summarizes Saturday Levels of Service under Year 2025 conditions.

As shown, with the completion of planned improvements, all study intersections are projected to operate at LOS C or better, with and without the proposed project. Thus, development of this project does not result in the need for additional improvements beyond those already being planned.

KDA

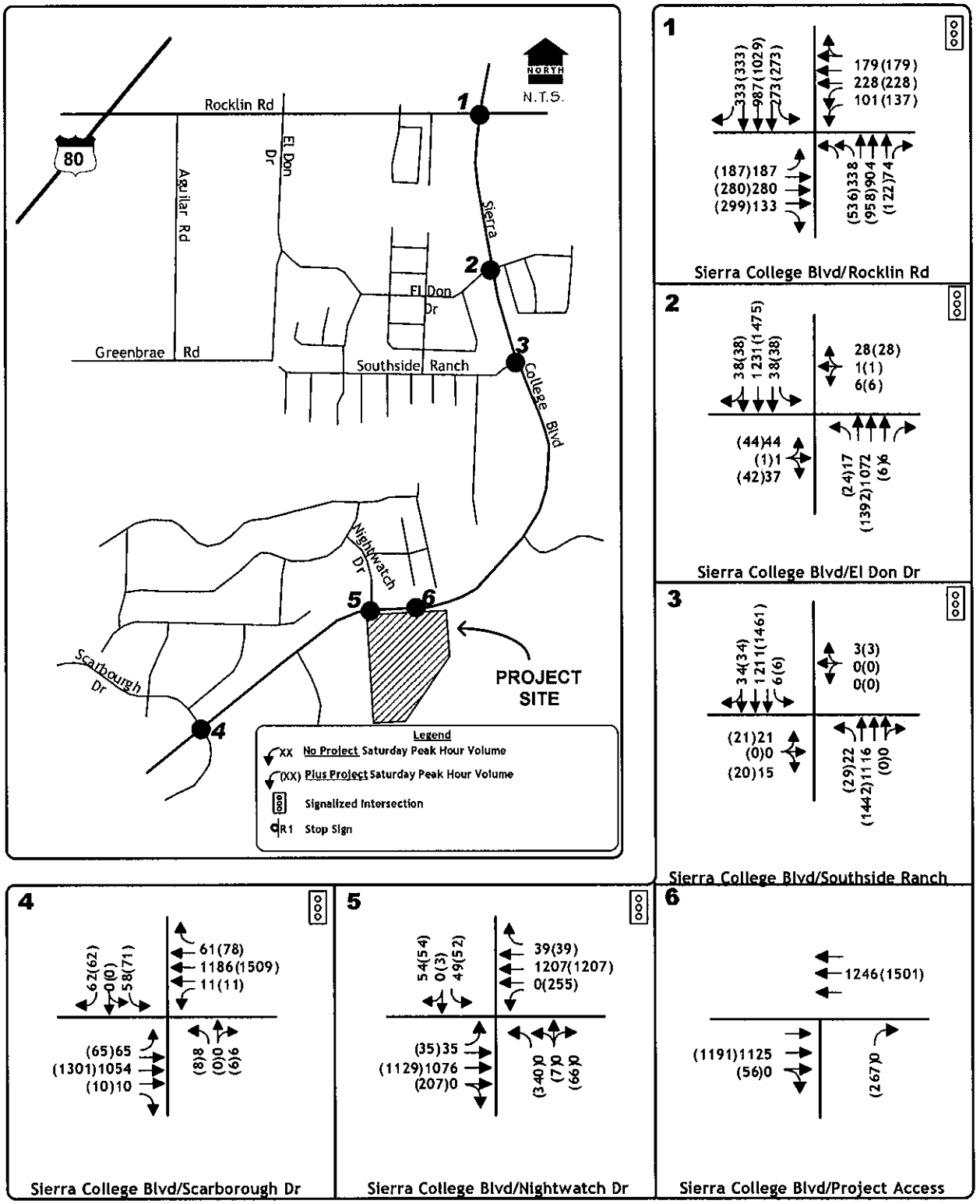


CUMULATIVE YEAR 2020 SATURDAY
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

0457-001 REV.VSD 11/26/2008

figure 8



KD Anderson & Associates, Inc.
Transportation Engineers

CUMULATIVE YEAR 2025
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

0457-001 REV.VSD 11/26/2008

figure 9

TABLE 10
CUMULATIVE YEAR 2025 SATURDAY INTERSECTION LEVELS OF SERVICE

Intersection	Control	No Project		Year 2025 Plus Amazing Facts Church	
		LOS	Volume / Capacity	LOS	Volume / Capacity
Sierra College Blvd / Rocklin Rd	Signal	C	0.72	C	0.78
Sierra College Blvd / El Don Dr	Signal	A	0.49	B	0.61
Sierra College Blvd / Southside Ranch Road	Signal	A	0.44	A	0.57
Sierra College Blvd / Access	NB Stop			C	17.7 sec
Sierra College Blvd / Nightwatch Drive	Signal	A	0.36	C	0.75
Sierra College Blvd / Scarborough Drive	Signal	A	0.47	A	0.56

SAFETY / ACCESS DESIGN EVALUATION

Key issues associated with the safe operation of this project along Sierra College Blvd have been considered.

Evaluation of Key Issues

Sight Distance at Project Access. The available sight distance at the proposed project access was determined through a field review and compared to applicable Placer County (Plate 17) and Caltrans standards. While current topography makes it impossible to field measure the sight distance that will be available at the site access, the sight distance looking west on Sierra College Blvd from the new site access appears to be clear through the Nightwatch Drive intersection (i.e., 450 feet to the west), and approaching vehicles should be visible to exiting motorists at a point 200 feet beyond the intersection. The available sight distance should exceed the Caltrans corner sight distance requirements (i.e., 600 feet at 55 mph), which is the basis for Plate 17.

Driveway Throat Depth. The site plan proposed two connections to the Nightwatch Drive extension and one connection to Sierra College Blvd. In each case, the driveway throat needs to be long enough to store waiting vehicles without blocking the path of entering traffic. Review of the project site plan indicates that the throat on the new Sierra College Blvd access will be approximately 110 feet long. This dimension allows room for 4 to 5 exiting vehicles before entering traffic may be blocked. Review of the level of service calculations made for this location indicates that a 95th percentile queue of 7 vehicles could occur under EPAP plus Phase 1+2 conditions, while a 95th percentile queue of 3 vehicles is forecast under 2025 plus Phase 1+2 conditions when Sierra College Blvd is widened to provide 3 northbound lanes.

KDA

To accommodate the EPAP plus Phase 1+2 queue, it would be necessary to lengthen the throat. Closing off access to another aisle would lengthen the throat by 64' and would provide the necessary space.

Need for Left Turn Lane into the Project Site from Nightwatch Drive. The site plan offers the opportunity for entering traffic to turn left into the site from the Nightwatch Drive extension. It is possible that left turning traffic could occasionally be delayed by exiting northbound traffic. Although a formal left turn lane is not required, to avoid congestion at this location, the Nightwatch Drive extension should be made wide enough to provide the opportunity for southbound through traffic to continue past any left turning vehicles waiting at the more northerly access intersection.

Nightwatch Drive Approach Lanes. The Nightwatch Drive extension is planned with two lanes approaching Sierra College Blvd. To avoid peak period congestion these two lanes should extend southerly to the northern access.

Sierra College Blvd Right Turn Lanes. Before Sierra College Blvd is fully improved to a 6 lane road, the area along the project's frontage should be striped to provide separated right turn lanes into the site. The proposed plan places these right turn lanes at locations that will perpetuate separate right turn lanes when the road is striped for three northbound through lanes.

Design Issues

Design of Sierra College Blvd Lane Drop. While the length of the project's frontage is appreciable (i.e, 800 feet), based on information contained in Figure 3B-12 of the California Manual of Uniform Traffic Control Devices (MUTCD), a distance of 1,075 feet is required to accommodate the required "lane end" arrows in the area of a lane drop and to transition back to a single lane. Thus, in order to carry two northbound lanes through the Nightwatch Drive intersection and safely transition to a single northbound lane, it will be necessary to widen a portion of Sierra College Blvd in the area immediately north of the project site.

Length of southbound Left Turn Lane on Sierra College Blvd. A left turn lane into the project site will be needed on Sierra College Blvd approaching the Nightwatch Drive intersection. The lane will need to be long enough to accommodate the peak arrival characteristics of a church and should make some provision for deceleration. Caltrans Highway Design Manual (HDM) standards for left turn lanes suggest providing 275 feet of deceleration length prior to a stop at 35 mph, 375 feet to stop at 45 mph and 485 feet to come to a stop from 55 mph, although these design guidelines recognize that lesser distance is needed on sustained uphill grades. Under Caltrans standards these requirements are satisfied by a combination of left turn lane and its bay taper.

The length of queues in the left turn lane is dependent on the schedule of church activities. Based on the previous analysis, the longest queues would be expected under "EPAP Plus Phase 1+2" conditions. Assuming that the traffic arriving at the church was concentrated into a twenty minute period, the queue could be expected to contain 20 vehicles and could be 500 feet long. Alternatively, under year 2025 conditions when Sierra College Blvd has been widened to 6 lanes,

the peak period queue would be reduced to 16 vehicles and would be 400 feet long.

Because the need for a long left turn lane would exist infrequently, we recommend that a compromise between storage and deceleration be provided. It is reasonable to suggest that to 400 foot queue be accommodated along with deceleration to a stop from 35 mph. This would imply a turn lane and bay taper that together are 675 feet long.

MITIGATION REQUIREMENTS

Mitigations for "Existing Plus Project" Impacts

As development of Amazing Facts Church proceeds, the following improvements will be needed to mitigate project impacts:

Under **Phase 1**, Amazing Facts Church results in traffic conditions in excess of adopted Level of Service standards at one of the study area intersections.

Amazing Facts should contribute its fair share to the cost of widening the Sierra College Blvd / Rocklin Road intersection to provide a second northbound left turn lane. This improvement, is, however, already a condition of approval of an adjoining Rocklin development project., and City of Rocklin staff have indicated that payment of SPART fees will be adequate mitigation at this location. However, if this improvement is not constructed by others, only 1,050 persons can be accommodated at Amazing Facts before exceeding LOS C.

Amazing Facts should widen Sierra College Blvd along its frontage as proposed. As part of that work a separate southbound left turn lane should be installed and separate right turn lanes should be installed on Sierra College Blvd at the Nightwatch Drive intersection and at the new project access.

Phase 2 results in the need for improvements to Sierra College Blvd at both the Nightwatch Drive intersection and beyond the project limits. Mitigating identified impacts will require creating the second through lane on Sierra College Blvd.

Cumulative Mitigations

Regional Improvements. The project will need to contribute its fair share to the cost of regional circulation system improvements, including widening of Sierra College Blvd. In Placer County this is accomplished by paying adopted fees and by installing long term frontage improvements.

Sierra College Blvd / Southside Ranch Road IntersectionWidening. The project's incremental contribution to short term cumulative Level of Service impacts at this intersection results in the need to add the second northbound through lane at this intersection. This widening is expected to be constructed using Regional Fees (SPARTA), and Amazing facts will contribute its fair share by paying adopted fees. However, the timing of this regionally beneficial improvement is controlled by the member agencies of SPARTA. Thus, it is possible that the road will not be widened by the time that identified Approved Projects are completed and Phase 2 of the project reaches full occupancy. To meet identified LOS goals under this condition, it could be necessary to limit attendance at the site to a level that maintains LOS "C". A total of 1,400 persons could be accommodated under EPAP Plus Project conditions before exceeding LOS "C" if the intersection is not improved.

KDA

APPENDIX

KDA

APPENDIX 11.0

Environmental Noise Assessment

Amazing Facts Ministry

Placer County, California

Job # 2007-082

Prepared For:

Amazing Facts, Inc.

PO Box 1058
Roseville, California 95678

c/o: Mr. Rod Shearer

Prepared By:

j.c. brennan & associates, Inc.

Luke Saxelby

Luke Saxelby
Senior Consultant
Member, Institute of Noise Control Engineering

August 31, 2007

j.c. brennan & associates
consultants in acoustics

P.O. Box 6748 - 263 Nevada Street - Auburn, California 95603 -p: (530) 823-0960 -f: (530) 823-0961

INTRODUCTION

The proposed Amazing Facts Ministry project site is located at the southeast intersection of Nightwatch Drive and Sierra College Blvd in Placer County, California. The proposed project includes three phases. The first phase includes a 1,300 seat multi-use worship space with support facilities that include classrooms, resource center and offices. The resource center is a single story building which supports the ministry by housing materials such as CD's, tapes, periodicals, etc. The resource center also includes a two-bay loading dock for handling the ministries shipping and receiving. The second phase will be an approximate 2,000 seat worship center with expanded lobby space and classrooms. The third phase will be additional support offices and classrooms. Figure 1 shows the project site plan.

This analysis specifically focuses on noise generated by delivery truck passages, loading dock activity, parking lot circulation, and traffic on Sierra College Blvd. Where noise levels are predicted to exceed the Placer County General Plan Noise Element or Noise Ordinance standards, noise mitigation measures are evaluated. Additionally, traffic noise from Sierra College Blvd. may generate exterior and interior noise levels exceeding the applicable Placer County noise level standards. Therefore, the purposes of this noise analysis are to evaluate noise impacts of the proposed project and on the surrounding land uses.

The project site is bordered by residential uses to the north and west. Noise sensitive residential uses are also located approximately 900 and 1600 feet east and south of the proposed project, respectively. However, no noise impacts are predicted at these locations. Therefore, this analysis will focus on the noise-sensitive uses in close proximately to the project.

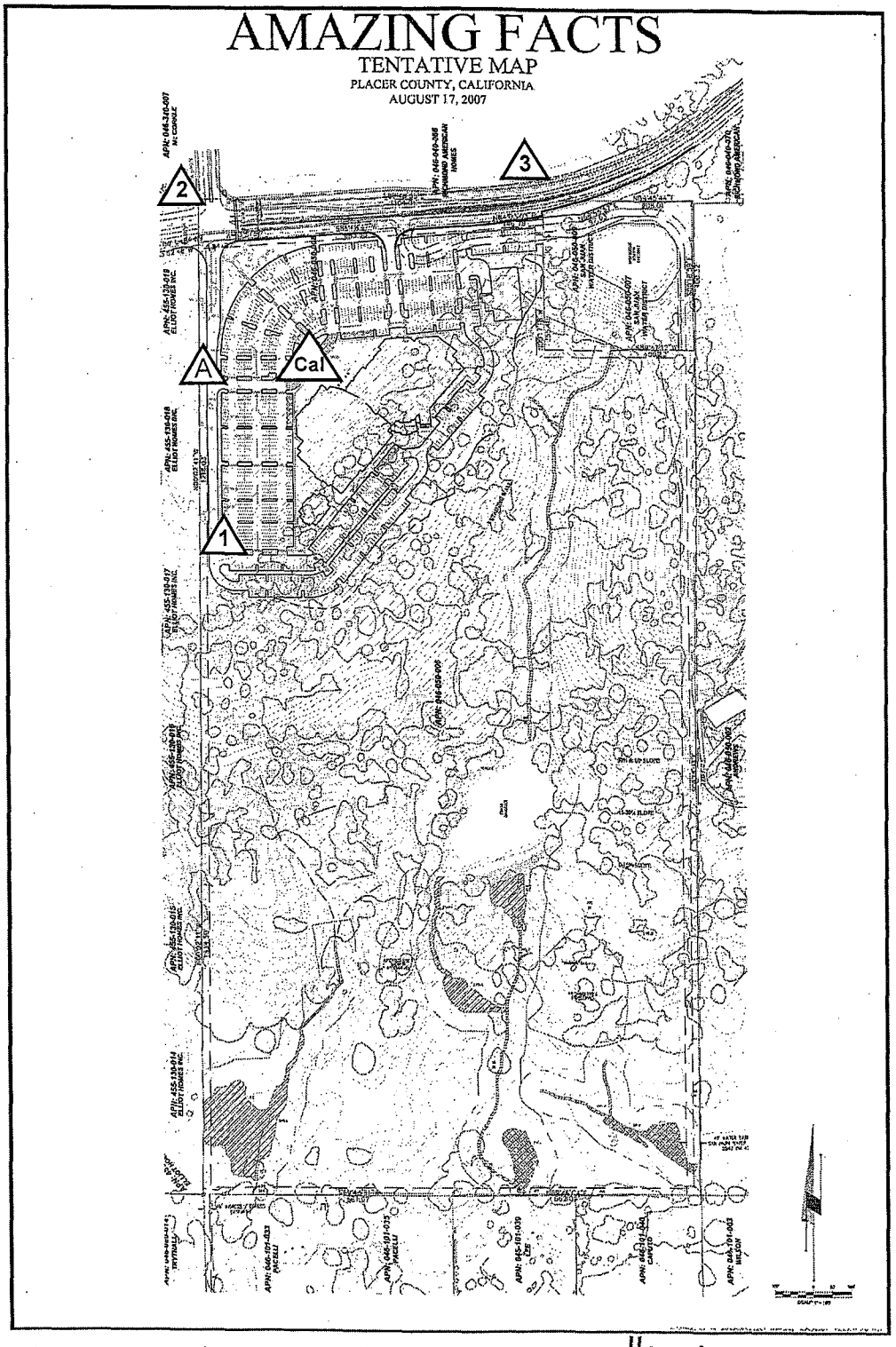
BACKGROUND ON NOISE AND ACOUSTICAL TERMINOLOGY [1]

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If pressure variations occur at least 20 times per second they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dBA. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers within a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dBA. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness.

[1] For an explanation of these terms, see Appendix A: "Acoustical Terminology"

Figure 1
Amazing Facts Ministry – Placer County, California
Tentative Map and Noise Measurement Site Locations



△ : Noise Measurement Site Locations

j.c. brennan & associates
consultants in acoustics

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighting the frequency response of a sound level meter by means of the standardized A-weighting network.

There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

CRITERIA FOR ACCEPTABLE NOISE EXPOSURE

Placer County General Plan

The Granite Bay Community Plan establishes specific goals and policies which are indented to provide a means to achieve noise-compatible land uses in the vicinity of existing or planned noise producing sources. The following is a list the specific goals and policies of the Granite Bay Community Plans Noise Element relative to this project.

GOAL:

To provide the health, safety, and welfare of the Granite Bay area residents by providing a livable environment free from excessive noise.

Policies

1. *Locate noise-sensitive land uses within areas of acceptable community noise equivalent levels.*

2. *Encourage the use of greenbelts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.*

3. *Continue program of monitoring noise sources to assure conformance with noise standards adopted in the Countywide Noise Element.*

4. *Avoid the interface of noise-producing and noise-sensitive land uses.*

5. *Require implementation of noise abatement techniques within new projects where warranted.*

7. *Require project specific noise studies for most commercial, office, public, institutional and residential projects.*

8. *Limit construction activities to daytime hours (7 a.m. to 7 p.m., Monday through Friday).*

Tables 5 and 6 (Tables 1 and 2 in this document) *explain acceptable noise exposure levels based upon the standards adopted in the Countywide Noise Element.*

Table 1
(Table 5 of the Granite Bay Community Plan)
Allowable Ldn Noise Levels Within Specified Zone Districts
Applicable to New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	Property Line of Receiving Use	Interior Space[1]
Residential adjacent to industrial	60 dBA	45 dBA
Other Residential	50 dBA	45 dBA
Office/Professional	70 dBA	45 dBA
Neighborhood Commercial	70 dBA	45 dBA

Notes for Table 1:
*Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.

*Where existing transportation noise levels exceed the standards of this table, the allowable Ldn shall be raised to the same level as that of the ambient level.

*If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.

[1]Interior spaces are defined as any locations where some degree of noise sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

Table 2
(Table 6 of the Granite Bay Community Plan)
Maximum Allowable Noise Exposure (Ldn)
Transportation Noise Sources

Land Use	Outdoor Activity Areas [1]	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq, dB [2]
Residential	60 [3]	45	
Transient Lodging	60 [3]	45	--
Hospitals, Nursing Homes	60 [3]	45	--
Theaters, Auditoriums	--	--	--
Churches, Meeting Halls	60 [3]	--	35
Office Buildings	--	--	40
Schools, Libraries, Museums	--	--	45

[1] Where the location of outdoor activity areas is unknown. the exterior noise level standard shall be applied to the property line of the receiving land use.
[2] As determined for a typical worst-case hour during periods of use.
[3] Where it is not possible to reduce noise in outdoor activity areas to 60 Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Placer County Noise Ordinance Standards

The Placer County Noise Ordinance establishes noise level criteria for stationary noise sources such as outdoor events. The noise ordinance specifically states the following:

1. Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by 5 dBA or;

2. Exceeds the sound level standards as set forth in Table 3, whichever is greater.

Table 3
Placer County Noise Ordinance Criteria for Noise Sensitive Receptors

Sound Level Descriptor	Daytime (7 am – 10 pm)	Nighttime (10 pm – 7 am)
Hourly Leq	55 dB	45 dB
Hourly Lmax	70 dB	65 dB

Each of the sound levels standards specified in Table 3 shall be reduced by 5 dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus 5 dB.

It should be noted that the Table 3 Noise Ordinance standards are based upon hourly average (Leq) and maximum (Lmax) criteria and are therefore more restrictive than the day/night average (Ldn) standards shown in Table 1. Therefore, application of the Table 3 criteria to noise generated from on-site activities is the more conservative approach and would result in compliance with both the Placer County General Plan Noise Element and Noise Ordinance standards.

EXISTING AMBIENT NOISE ENVIRONMENT

The existing noise environment at the project site is defined primarily by traffic on Sierra College Blvd. To generally quantify existing ambient noise levels at the project site, j.c. brennan & associates, Inc. conducted short-term and continuous noise level measurements on the project site on July 23 and July 28, 2007.

The noise level measurements were conducted to determine typical average and maximum noise levels in the immediate project vicinity. Table 4 shows a summary of the results of the ambient noise level measurements. Figure 1 shows the noise measurement locations. Figure 2 shows the location of the continuous noise measurement site.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the noise level measurement survey. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

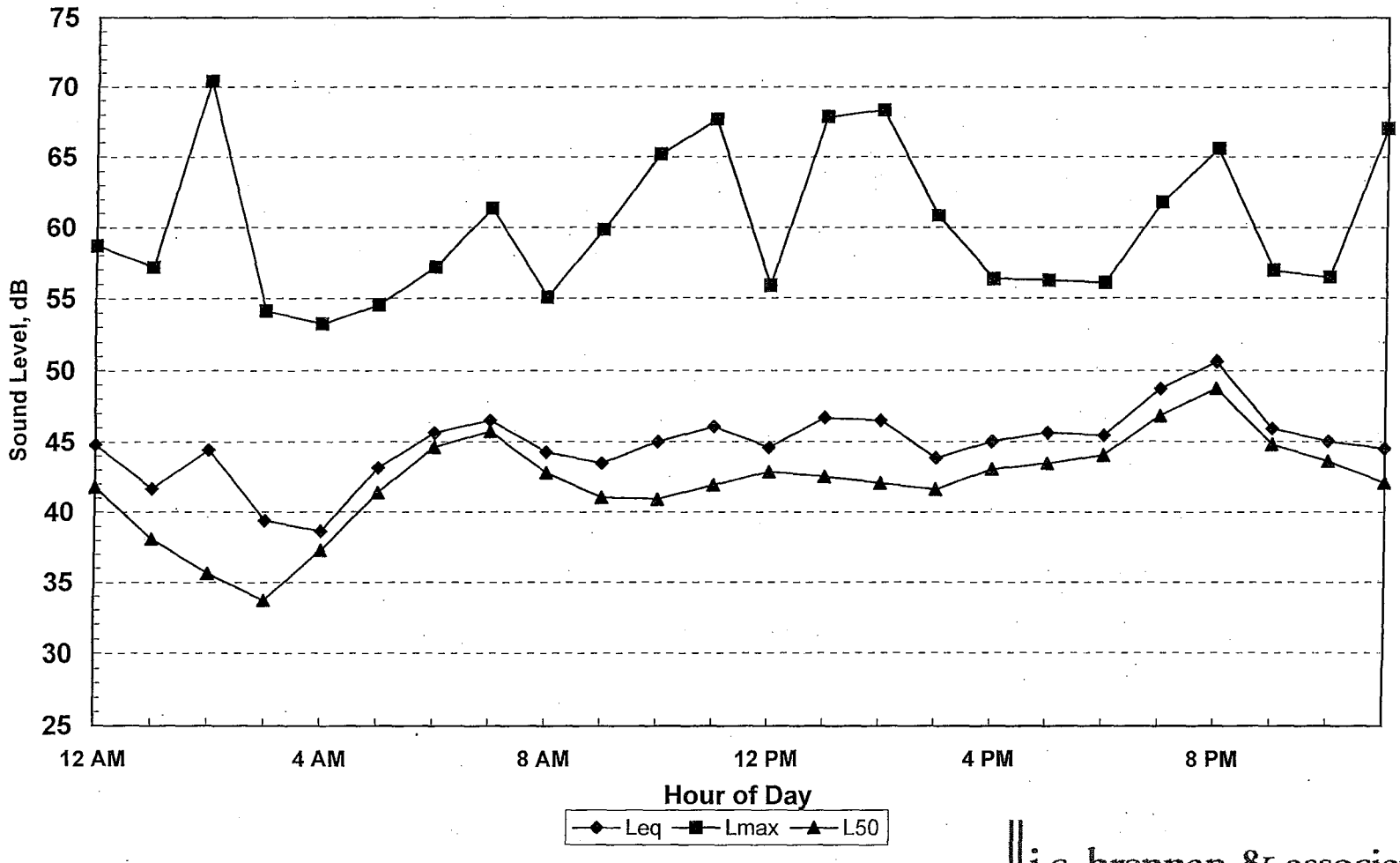
Table 4
Summary of Ambient Noise Measurement Results
Amazing Facts Ministry Project – Placer County, California

	Location	Ldn	Daytime (7 am – 10 pm)		Nighttime (10 pm – 7 am)		Noise Sources
			Average (Leq)	Maximum (Lmax)	Average (Leq)	Maximum (Lmax)	
1	SW Edge of Proposed Parking Lot	NA	39 dB	47 dB	NA	NA	Traffic, plane, birds, construction
2	NW Corner of Night Watch & Sierra College Blvd.	NA	73 dB	87 dB	NA	NA	Traffic
3	NE of Project Site, Across Sierra College Blvd. Near Residential	NA	73 dB	86 dB	NA	NA	Traffic
A	West Boundary	51 dB	44-51 dB	55-68 dB	39-46 dB	53-70 dB	Traffic

Notes: Source - j.c. brennan & associates, Inc. 2007.

Based upon the results of the noise survey, ambient noise levels in Sierra College Blvd. corridor are typical of a busy traffic corridor. However, noise levels along the western boundary of the project site were measured to drop off rapidly with increasing distance from Sierra College Blvd.

Figure 2
24hr Continuous Noise Monitoring - Site A
Amazing Facts Ministry - Placer County, California
Saturday, July 28, 2007



Ldn = 50.5 dB

j.c. brennan & associates
consultants in acoustics

PROJECT NOISE GENERATION AND POTENTIAL NOISE IMPACTS

Noise impacts due to the proposed project were evaluated relative to the applicable Placer County noise criteria. Noise generated by project-related activities was quantified through a combination of noise measurements, and application of accepted noise modeling techniques.

Truck Circulation Noise

The proposed project would include approximately 7 trucks per day, 6 carrier delivery/pickup type trucks and one or two semi trucks per week. It is anticipated that peak hour deliveries could include up to 4 delivery/pickup trucks and one semi truck.

Based on j.c. brennan & associates, Inc. data for heavy truck passages, the sound exposure level (SEL) at a reference distance of 50 feet is approximately 88 dB, and a maximum (Lmax) noise level of 75 dB. Typical medium truck arrivals and departures are approximately 84 dB SEL and 72 dB Lmax at 50 feet. Based upon the data described above, the following formula can be utilized to determine the hourly noise level due to the truck traffic passbys

$$L_{eq} = 88 + 10 * (\log N_{eq}) - 35.6, \text{ dB where:}$$

88 is the mean sound exposure level (SEL) for a heavy truck arrival and departure (84 for medium trucks), and 10 * (log N_{eq}) is 10 times the logarithm of the number of truck arrivals and departures during an hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Based upon the above formula, the hourly L_{eq} generated during the hour of truck activity with one heavy truck arrival/departure and four medium truck arrival/departure, would be approximately 56 dB L_{eq} and 75 dB L_{max} at a distance of 50 feet. Table 5, later in this document, provides a complete summary of the predicted project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

Loading Dock Operations

Loading dock operations typically generate noise levels of approximately 60 dB Leq and 83 dB Lmax at a distance of 50 feet from the loading dock. The primary noise source associated with loading dock areas is typically heavy trucks stopping (air brakes), backing into the loading areas as necessary, and pulling out of the loading docks (revving engines) and fork lifts. Table 5, later in this document, provides a complete summary of the predicted project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

Parking Lot Noise Generation

Ingress/Egress along West Property Line

The project traffic study predicts 572 peak hour trips utilizing the west project access at Nightwatch Drive. As a means of determining the noise levels due 572 vehicles traveling along the west project boundary j.c. brennan & associates, Inc. utilized noise level data collected for passenger vehicles in parking lots. A typical SEL due to an automobile passby was found to be 68 dB SEL and 63 dB Lmax, at a distance of 50 feet. Based upon the peak hour trips provided by the project traffic study and the reference SEL measurements, the vehicle circulation Leq noise level can be determined using the following formula:

$$\text{Peak Hour Leq} = 68 + 10 * \log(572) - 35.6, \text{ dB where:}$$

68 is the mean sound exposure level (SEL) for a vehicle passby, and 10 * (log N_{eq}) is 10 times the logarithm of the number of vehicle passbys during an hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Based upon the above formula, the hourly L_{eq} generated during the peak hour of vehicle circulation, would be approximately 60 dB L_{eq} and 63 dB L_{max} at a distance of 50 feet. Table 5, later in this document, provides a complete summary of the predicted project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

West Parking Lot Area:

The project traffic study predicts that the project would generate 572 peak hour trips through the Nightwatch project access. This analysis assumes that all of these trips could park within approximately 150 feet of the nearest property lines.

As a means of determining the noise levels due to parking lot activities j.c. brennan & associates, Inc. utilized noise level data collected for parking lots. A typical SEL due to automobile arrivals and departures, including car doors slamming and people conversing is approximately 71 dB, with a maximum level of 63 dB Lmax, at a distance of 50 feet. Based upon the peak hour trips provided by the project traffic study and the reference SEL measurements, the parking lot Leq noise level can be determined using the following formula:

$$\text{Peak Hour Leq} = 71 + 10 * \log(572) - 35.6, \text{dB}$$

71 is the mean sound exposure levels (SEL) for an automobile arrival and departure, and 10 * log (572) is 10 times the logarithm of the number of automobile or motorcycle arrivals and departures per hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Based upon the equations above, the parking lot would result in a daytime peak hour Leq of approximately 63 dB Leq at a distance of 50 feet. Table 5, later in this document, provides a complete summary of the predicted project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

North Parking Area:

The project traffic study predicts that the project would generate 323 peak hour trips through the east project access. This analysis assumes that all of these trips could park within approximately 280 feet of the nearest property lines.

As a means of determining the noise levels due to parking lot activities j.c. brennan & associates, Inc. utilized noise level data collected for parking lots. A typical SEL due to automobile arrivals and departures, including car doors slamming and people conversing is approximately 71 dB, with a maximum level of 63 dB Lmax, at a distance of 50 feet. Based upon the peak hour trips provided by the project traffic study and the reference SEL measurements, the parking lot Leq noise level can be determined using the following formula:

$$\text{Peak Hour Leq} = 71 + 10 * \log(323) - 35.6, \text{dB}$$

71 is the mean sound exposure levels (SEL) for an automobile arrival and departure, and 10 * log(323) is 10 times the logarithm of the number of automobile or motorcycle arrivals and departures per hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Based upon the equations above, the parking lot would result in a daytime peak hour Leq of approximately 61 dB Leq at a distance of 50 feet. Table 5, later in this document, provides a complete summary of the predicted project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

Mechanical Equipment Noise

Based on discussions with the project applicant, the project HVAC will be provided by packaged roof-top HVAC units. At the time of this analysis mechanical plans were not available. In order to provide a preliminary assessment of potential HVAC mechanical noise levels, j.c. brennan & associates, Inc. performed an assessment of HVAC noise levels based upon the following methodology as outlined below.

Methodology

For the purpose of this analysis it was assumed that cooling capacity would be based upon approximately one ton of cooling per 500 sf. of finished floor space. Once the raw cooling capacity tonnage was calculated for each of the proposed buildings, j.c. brennan & associates, Inc. selected actual mechanical units which can supply the required nominal tonnage requirements. The sound level data for these units were input along with the project site plan data into the Environmental Noise Model (ENM) to generate HVAC noise contours for the proposed project.

Assumptions

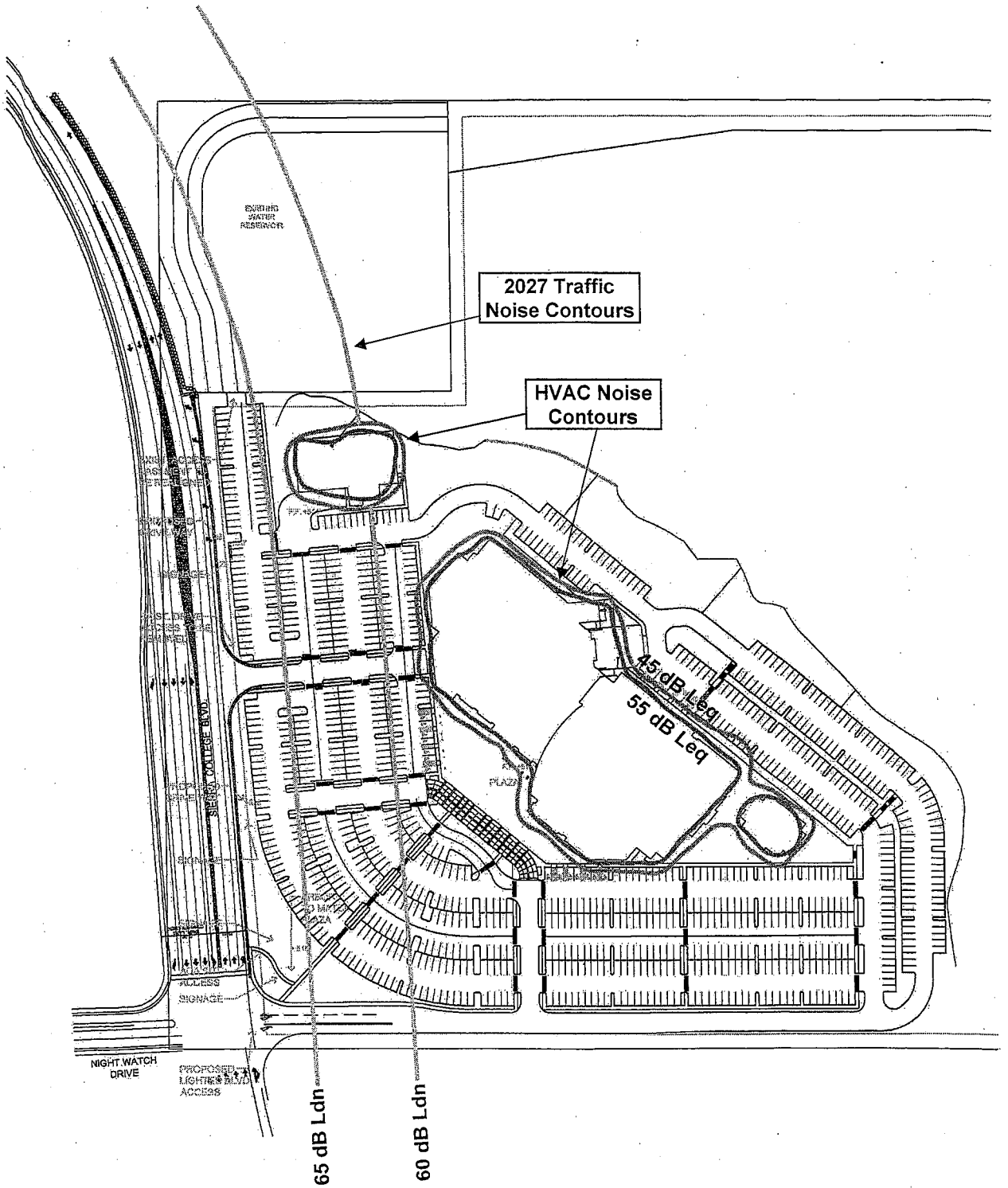
Based upon this estimate, the following assumptions were used in this noise study:

Phase 1:	Main Building:	60,000 s.f.	= 120 tons = 6 units @ 20 tons each
	Resource Center:	11,000 s.f.	= 22 tons = 2 units @ 10 tons each
Phase 2:	Main Building:	85, 500 s.f.	= 171 tons = 9 units @ 20 tons each
Phase 3	Addition Building	20,000 s.f.	= 40 tons = 4 units @ 10 tons each

The packaged roof-top units were assumed to be Lennox L Series Units model numbers LGC120S2 and LGC240S2. The 10 ton unit had an ARI sound rating number of 88 and the 20 ton unit had a rating of 92.

It was assumed that the HVAC units would be evenly distributed across the rooftops of the buildings and that building parapets would completely shield the units from view to the nearest residential areas. Figure 3 shows the results of the HVAC noise modeling process. Based upon this process, the project's 45 dB HVAC noise contour is predicted to be confined to the project site. Therefore, no additional noise reduction measures are likely to be required.

Figure 3
Amazing Facts Ministry – Placer County, California
Predicted Noise Contours



j.c. brennan & associates
consultants in acoustics

Table 5
Predicted Project-Related Noise Levels at Nearest Residential Property Lines
Amazing Facts Ministry Project – Placer County, California

			Predicted Peak Hour Noise Levels[1]		Placer County Noise Standards	
Noise Source	Direction of Nearest Residential Property Line	Distance	Leq	Lmax	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Truck Circulation	West (RA-B-X Zoning)	35'	**56 dB**	**75** dB – Hvy Truck **72 dB** – Med Truck	55 dB Leq / 70 dB Lmax	45 dB Leq / 65 dB Lmax
Loading Dock Operations		765'	36 dB	59 dB		
Parking Lot Ingress/Egress		35'	**60 dB**	63 dB		
Parking Lot Activity		150'	54 dB	61 dB		
Truck Circulation	North (Existing Single Family Residential – City of Rocklin)[1]	150'	43 dB	65 dB		
Loading Dock Operations		285'	39 dB	62 dB		
Parking Lot Activity		280'	40 dB	47 dB		

[1]Predicted noise levels at this location include a -6 dB offset to account for existing sound wall.
Source: j.c. brennan & associates, Inc. 2007

Based upon the Table 5 data, truck circulation and parking lot ingress/egress along the western boundary of the project site is predicted to generate noise levels exceeding the Placer County Noise Ordinance criteria. Therefore, consideration of noise reduction measures is appropriate.

In order to achieve compliance with the County's exterior noise level standards, a barrier noise reduction analysis was performed. Table 6 shows the results of this analysis. Appendix B provides the complete inputs and results for each barrier calculation.

Table 6
Predicted Project-Related Noise Levels with Varying Noise Barrier Heights
Amazing Facts Ministry Project – Placer County, California

		Predicted Peak Hour Noise Levels		Stockton Noise Standards	
Noise Source	Direction of Nearest Residential Property Line	Unmitigated Noise Level	Wall Height - Noise Level	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Truck Circulation	West (RA-B-X Zoning)	**56 dB Leq**	6' - 51 dB Leq 7' - 51 dB Leq	55 dB Leq / 75 dB Lmax	45 dB Leq / 65 dB Lmax
Truck Circulation		**75 dB Lmax**	6' - **71 dB** Lmax 7' - 70 dB Lmax		
Parking Lot Ingress/Egress		**60 dB Leq**	6' – 55 dB 7' – 54 dB		

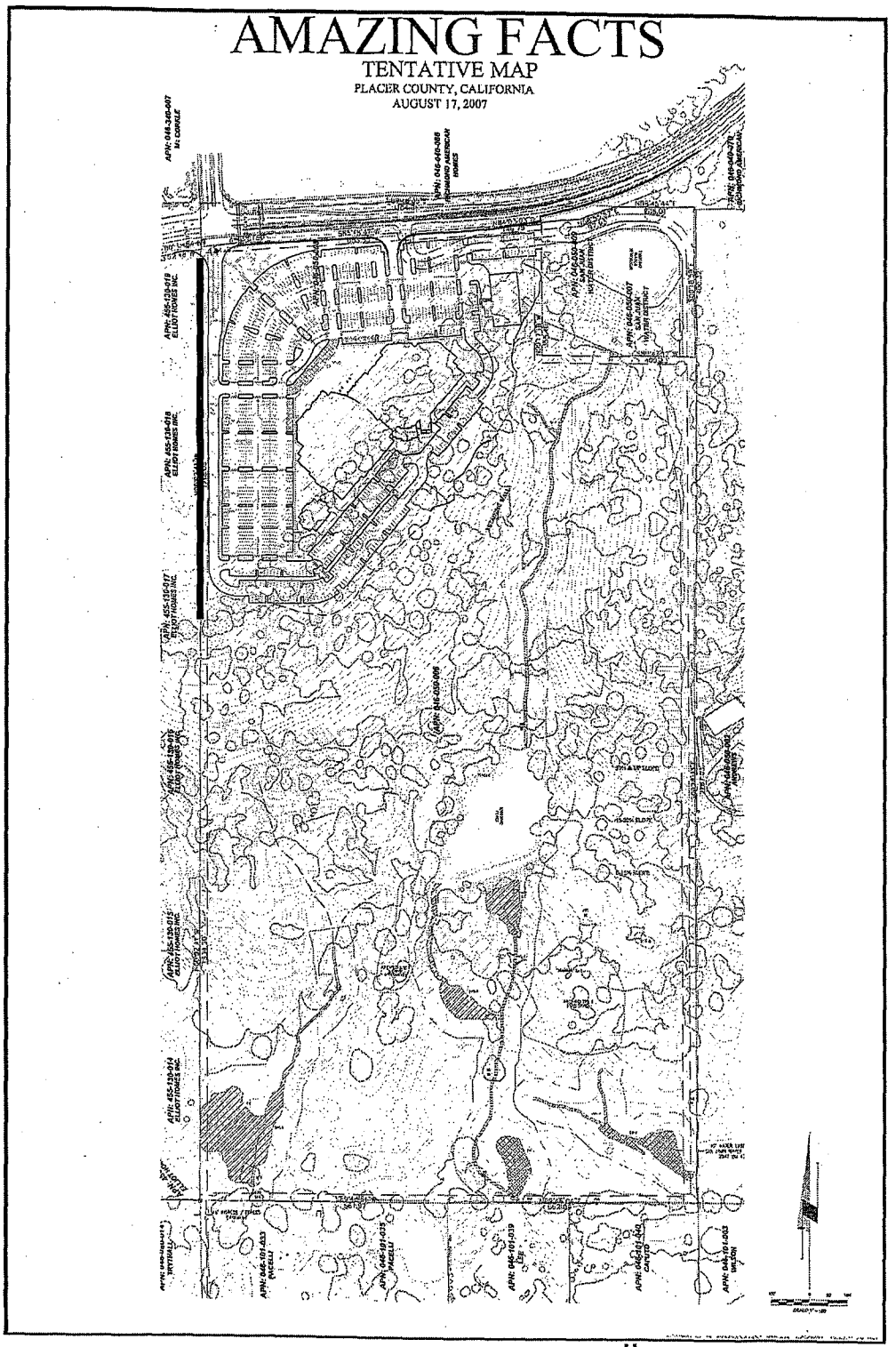
[1] Barrier calculations are based upon existing site grading and should be re-evaluated when a site grading plan is available.

Source: j.c. brennan & associates, Inc. 2007.

Based upon the Table 6 data, construction of a 7 foot tall sound wall along the western property line of the of the proposed project is predicted to achieve compliance with the Placer County Noise Ordinance 55 dB Leq and 70 dB Lmax daytime exterior noise level standards at the nearest residential property lines. However, peak hours of parking lot activity would still exceed the Placer County nighttime noise ordinance 45 dB Leq noise level standard at the west property line. Therefore, special events would need to end with sufficient time for the parking lot to empty prior to 10:00 pm. Figure 4 shows the potential sound wall location.

Figure 4

Amazing Facts Ministry Worship Center – Placer County, California
Potential Sound Wall Location



▬▬ : Potential Sound Wall Location

j.c. brennan & associates
consultants in acoustics

EVALUATION OF FUTURE TRAFFIC NOISE LEVELS AT THE PROJECT SITE

Traffic Noise Prediction Methodology:

j.c. brennan & associates, Inc. employs the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) for the prediction of traffic noise levels. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

On July 23, 2007 j.c. brennan & associates, Inc. conducted on-site noise level measurements and concurrent traffic counts of Sierra College Blvd. traffic noise on the project site. The purpose of the short-term traffic noise level measurements was to determine the accuracy of the FHWA model in describing the existing noise environment on the project site, accounting for shielding from local topography, actual travel speeds, and roadway grade. Noise measurement results were compared to the FHWA model results by entering the observed traffic volume, speed and distance as inputs to the FHWA model. See Figure 1 for the traffic noise calibration site labeled "Cal" on Figure 1.

Instrumentation used for the measurements were Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters which were calibrated in the field before use with an LDL CAL200 acoustical calibrator. Based upon the calibration results, the FHWA Model was found to over-predict traffic noise levels by approximately 12 dB at the proposed location of the outdoor plaza. However, this over-prediction was due to shielding from topography and atmospheric conditions which may not exist when the project is constructed. Therefore, a conservative offset of -3 dB was applied to the FHWA traffic noise model to account for the fact that Sierra College Blvd. will remain depressed relative to the project site. This offset was not applied to the Resource Center due to its proximity to Sierra College Blvd. A complete listing of the FHWA calibration inputs and results is provided in Appendix C.

Future Exterior Traffic Noise Levels:

To determine the future traffic noise levels on the project site, j.c. brennan & associates, Inc. utilized traffic data, obtained from KD Anderson Transportation Engineers. Table 7 shows the predicted future traffic noise levels at the project site. Appendix D provides the inputs to the FHWA Traffic Noise Prediction Model.

Table 7
Predicted Future Traffic Noise Levels
Amazing Facts Ministry Project – Placer County, California

Roadway	Location	Distance	Offset	Exterior Noise Level, (Ldn)	Exterior Traffic Noise Level (Leq)	Interior Traffic Noise Level (Leq) [1]
Sierra College Blvd.	Outdoor Plaza	330'	-3 dB	58 dB	NA	NA
	Resource Center	165'	0 dB	NA	65 dB	40 dB
	Main Building	330'	-3 dB	NA	61 dB	33 dB

[1] Assumes a 25 dB exterior-to-interior minimum noise level reduction (NLR) typically provided by modern construction practices.
Note: A complete listing of FHWA Model inputs and results is provided in Appendix D.

Based upon the results shown in Table 7, the predicted exterior traffic noise level at the proposed outdoor plaza area would comply with the County's 60 dB Ldn exterior noise level standard for church uses. Additionally, interior noise levels are also predicted to comply with the County's 40 dB Leq interior noise levels standard applied to interior spaces of church uses.

CONCLUSIONS

In order to comply with the Placer County General Plan Noise Element and Noise Ordinance noise standards, the following noise reduction measures should be considered:

- Truck deliveries and loading/unloading activities should be restricted to daytime hours (7 a.m. to 10 p.m.);
- A 7 foot tall property line noise barrier should be constructed along the western property line, as shown on Figure 4;
- Sound wall heights are preliminary and should be reviewed when a full project grading plan is available;
- Noise barriers should be constructed of concrete masonry (CMU) units, solid concrete panels, earthen berms, or any combination of these materials. Wood is not recommended due to eventual warping and degradation of acoustical performance. Other types of materials should be reviewed by an acoustical consultant prior to use;
- Special events should be scheduled to end with sufficient time for the parking lot to empty before 10 pm;
- All rooftop HVAC mechanical equipment should be shielded from view by solid barriers and/or building parapets.

These conclusions are based on the site plan and operational data provided by the project applicant, the assumptions stated in this report, traffic information obtained from project traffic study, noise reduction data for commercial construction. j.c. brennan & associates, Inc., is not responsible for degradation in acoustic performance due to poor construction practices, failure to comply with applicable building code requirements, or for failure to adhere to standard building practices.

Appendix A
Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B-1

Barrier Insertion Loss Calculation

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Location(s): 1

Noise Level Data:

Source Description: Trucks - Leq
Source Noise Level, dBA: 56
Source Frequency (Hz): 500
Source Height (ft): 528

Site Geometry:

Receiver Description: West Property Line
Source to Barrier Distance (C_1): 30
Barrier to Receiver Distance (C_2): 20

Pad/Ground Elevation at Receiver: 520
Receiver Elevation[1]: 525
Base of Barrier Elevation: 520
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
526	6	-5	51	No
527	7	-5	51	Yes
528	8	-6	50	Yes
529	9	-7	49	Yes
530	10	-9	47	Yes
531	11	-10	46	Yes
532	12	-11	45	Yes
533	13	-12	45	Yes
534	14	-13	44	Yes
535	15	-13	43	Yes
536	16	-14	42	Yes

Notes: 1.Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

j.c. brennan & associates
consultants in acoustics

Appendix B-2

Barrier Insertion Loss Calculation

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Location(s): 1

Noise Level Data:

Source Description: Trucks - Lmax Semis
Source Noise Level, dBA: 75
Source Frequency (Hz): 550
Source Height (ft): 528

Site Geometry:

Receiver Description: West Property Line
Source to Barrier Distance (C_1): 30
Barrier to Receiver Distance (C_2): 20

Pad/Ground Elevation at Receiver: 520
Receiver Elevation[1]: 525
Base of Barrier Elevation: 520
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
526	6	-5	71	No
527	7	-5	70	Yes
528	8	-6	69	Yes
529	9	-8	68	Yes
530	10	-9	67	Yes
531	11	-10	65	Yes
532	12	-11	65	Yes
533	13	-12	64	Yes
534	14	-13	63	Yes
535	15	-14	62	Yes
536	16	-14	61	Yes

Notes: 1.Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

j.c. brennan & associates
consultants in acoustics

Appendix B-3

Barrier Insertion Loss Calculation

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Location(s): 1

Noise Level Data:

Source Description: Parking Lot Ingress/Egress
Source Noise Level, dBA: 62
Source Frequency (Hz): 500
Source Height (ft): 521

Site Geometry:

Receiver Description: West Property Line
Source to Barrier Distance (C_1): 30
Barrier to Receiver Distance (C_2): 20

Pad/Ground Elevation at Receiver: 520
Receiver Elevation[1]: 525
Base of Barrier Elevation: 520
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
526	6	-7	55	Yes
527	7	-8	54	Yes
528	8	-10	52	Yes
529	9	-11	52	Yes
530	10	-11	51	Yes
531	11	-12	50	Yes
532	12	-13	49	Yes
533	13	-14	48	Yes
534	14	-15	48	Yes
535	15	-15	47	Yes
536	16	-15	47	Yes

Notes: 1.Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

j.c. brennan & associates
consultants in acoustics

Appendix B-4

Barrier Insertion Loss Calculation

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Location(s): 2

Noise Level Data:

Source Description: Trucks
Source Noise Level, dBA: 56
Source Frequency (Hz): 500
Source Height (ft): 528

Site Geometry:

Receiver Description: Residential to North - Existing Wall
Source to Barrier Distance (C_1): 150
Barrier to Receiver Distance (C_2): 20

Pad/Ground Elevation at Receiver: 530
Receiver Elevation[1]: 535
Base of Barrier Elevation: 530
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
536	6	-6	50	Yes
537	7	-7	49	Yes
538	8	-8	48	Yes
539	9	-9	47	Yes
540	10	-10	46	Yes
541	11	-11	46	Yes
542	12	-11	45	Yes
543	13	-12	44	Yes
544	14	-13	43	Yes
545	15	-13	43	Yes
546	16	-14	42	Yes

Notes: 1.Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

j.c. brennan & associates
consultants in acoustics

Appendix C

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) Calibration Worksheet

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Roadway Tested: Sierra College Blvd
Test Location: Site 1
Test Date: July 23, 2007

Weather Conditions:

Temperature (Fahrenheit): 90
Relative Humidity: Dry
Wind Speed and Direction: 0-5
Cloud Cover: Clear

Sound Level Meter:

Sound Level Meter: LDL Model 820
Calibrator: LDL Model CAL200
Meter Calibrated: Immediately before and after test
Meter Settings: A-weighted, slow response

Microphone:

Microphone Location: On Project Site
Distance to Centerline (feet): 390
Microphone Height: 5 feet above ground
Intervening Ground (Hard or Soft): **Soft**
Elevation Relative to Road (feet): -6

Roadway Condition:

Pavement Type Asphalt
Pavement Condition: Good
Number of Lanes: 4
Posted Maximum Speed (mph): 50

Test Parameters:

Test Time: 10:11 AM
Test Duration (minutes): 10
Observed Number Automobiles: 162
Observed Number Medium Trucks: 3
Observed Number Heavy Trucks: 3
Observed Average Speed (mph): 50

Model Calibration:

Measured Average Level (L_{eq}): 41.3
Level Predicted by FHWA Model: 55.5
Difference: 14.2 dB

Conclusions:

The model over-predicted because the line of sight to vehicle tires was broken and some cars were only slightly visible from the site location.

j.c. brennan & associates
consultants in acoustics

Appendix D-1

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)

Noise Prediction Worksheet

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Roadway Name: Sierra College Blvd.

Traffic Data:

Year:	2027
Average Daily Traffic Volume:	34,567
Percent Daytime Traffic:	85
Percent Nighttime Traffic:	15
Percent Medium Trucks (2 axle):	2
Percent Heavy Trucks (3+ axle):	1
Assumed Vehicle Speed (mph):	50
Intervening Ground Type (hard/soft):	**Soft**

Traffic Noise Levels:

				----------L_{dn}, dB----------			
Location:	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Outdoor Plaza	330	-3	57	48	49	58

Traffic Noise Contours:

L_{dn} Contour, dB	Distance from Centerline, (ft)
75	26
70	56
65	121
60	261

Notes:

j.c. brennan & associates
consultants in acoustics

Appendix D-2

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Leq Noise Prediction Sheet

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Roadway: Sierra College Blvd.

Modeled Location:

Location: Resource Center
Distance to Centerline (feet): 165

Intervening Ground (Hard or Soft): **Soft**
Elevation Relative to Road (feet): NA

Roadway Condition:

Pavement Type Asphalt
Pavement Condition: Good
Number of Lanes: 4
Posted Maximum Speed (mph): 50

Prediction Parameters:

# of Minutes 60
Number Automobiles: 2870
Number Medium Trucks: 59
Number Heavy Trucks: 30
Observed Average Speed (mph): 50

Model Calibration:

Calibration Adjustment 0.0
Level Predicted by FHWA Model: 65

Total Exterior Level: ***65 dB***

Predicted Interior Level: [1] ***40 dB***

Conclusions:

[1] Assumes a 25 dB exterior-to-interior noise level reduction (NLR) typically provided by modern construction practices.

j.c. brennan & associates
consultants in acoustics

Appendix D-3

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Leq Noise Prediction Sheet

Project Information:

Job Number: 2007-082
Project Name: Amazing Facts
Roadway: Sierra College Blvd.

Modeled Location:

Location: Main Church
Distance to Centerline (feet): 330

Intervening Ground (Hard or Soft): **Soft**
Elevation Relative to Road (feet): NA

Roadway Condition:

Pavement Type Asphalt
Pavement Condition: Good
Number of Lanes: 4
Posted Maximum Speed (mph): 50

Prediction Parameters:

# of Minutes 60
Number Automobiles: 2870
Number Medium Trucks: 59
Number Heavy Trucks: 30
Observed Average Speed (mph): 50

Model Calibration:

Calibration Adjustment -3.0
Level Predicted by FHWA Model: 61

Total Exterior Level: ***58 dB***

Predicted Interior Level: [1] ***33 dB***

Conclusions:

[1] Assumes a 25 dB exterior-to-interior minimum noise level reduction (NLR) typically provided by modern construction practices.

j.c. brennan & associates
consultants in acoustics

APPENDIX 12.0

GEOTECHNICAL ENGINEERING REPORT
for
AMAZING FACTS PROPERTY
Sierra College Boulevard and Nightwatch Drive
APNs 046-050-006 and -008
Placer County, California

Prepared for:
Shearer & Associates, Inc.
1404 NE 134th Street, Suite 200
Vancouver, Washington 98685

Prepared by:
Holdrege & Kull
792 Searls Avenue
Nevada City, California 95959

Project No. 3307A-02
April 15, 2009

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

Project No. 3307A-02
April 15, 2009

Rod Shearer
Shearer & Associates, Inc.
1404 NE 134th Street, Suite 200
Vancouver, Washington 98685

Reference: ***Amazing Facts Property***
Sierra College Boulevard and Nightwatch Drive
APNs 046-050-006 and 046-050-008
Placer County, California

Subject: ***Geotechnical Engineering Report***

Dear Mr. Shearer:

This report presents the results of our geotechnical engineering investigation for the Amazing Facts property on Sierra College Boulevard in Placer County, California. Based on our conversation with Russ King of King Engineering, we understand that a church facility and associated driveway, parking areas and underground utilities are proposed for the northern portion of the approximate 75-acre property.

The findings presented in this report are based on our subsurface investigation, laboratory test results, and our experience with subsurface conditions in the area. Our opinion is that the project can be completed as proposed, provided the recommendations presented in this report are implemented. From a geotechnical engineering standpoint, our primary concern includes resistant rock at shallow depths. Recommendations for rock excavation are presented in the report.

Please contact us if you have any questions regarding our observations or the recommendations presented in this report.

Sincerely,

HOLDREGE & KULL

Prepared by:

Ryan L. Mack, C.E. 73139
Project Engineer

Reviewed by:

Rob Fingerson, G.E. 2699
Senior Engineer

copies: 5 to Shearer & Associates / Attn: Rod Shearer
2 to King Engineering

F:\1 Projects\3307 Amazing Facts Gtk_ESA\3307A-02 Gtk\3307A-02 Gtk.doc

TABLE OF CONTENTS

1 INTRODUCTION....1
1.1 SITE DESCRIPTION....1
1.2 PROPOSED IMPROVEMENTS....1
1.3 PURPOSE....2
1.4 SCOPE-OF-SERVICES....2

2 SITE INVESTIGATION....2
2.1 LITERATURE REVIEW....3
2.1.1 Soil Survey....3
2.1.2 Geologic Setting....3
2.1.3 Previous Site Investigations....4
2.2 FIELD INVESTIGATION....4
2.2.1 Surface Conditions....4
2.2.2 Subsurface Soil Conditions....5
2.2.3 Ground Water Conditions....5

3 LABORATORY TESTING....5

4 SLOPE STABILITY ANALYSIS....6

5 CONCLUSIONS....8

6 RECOMMENDATIONS....9
6.1 GRADING....9
6.1.1 Clearing and Grubbing....9
6.1.2 Cut Slope Grading....10
6.1.3 Soil Preparation for Fill Placement....11
6.1.4 Soil Fill Placement....11
6.1.5 Differential Fill Depth....12
6.1.6 Rock Fill Placement....13
6.1.7 Fill Slope Grading....13
6.1.8 Erosion Controls....14
6.1.9 Underground Utility Trenches....14
6.1.10 Construction Dewatering....17
6.1.11 Soil Corrosion Potential....17
6.1.12 Surface Water Drainage....18
6.1.13 Grading Plan Review and Construction Monitoring....18
6.2 STRUCTURAL IMPROVEMENT DESIGN CRITERIA....18

6.2.1 Seismic Design Criteria....19
6.2.1.1 - 2007 Seismic Design Parameters....19
6.2.2 Foundations....20
6.2.3 Slab-on-Grade Floor Systems....21
6.2.4 Rock Anchors....23
6.2.5 Retaining Wall Design Criteria....24
Table 6.2.5.1 - Equivalent Fluid Unit Weights....25
6.2.6 Pavement Design....26
Table 6.2.6.1 - Recommended Pavement Sections....27

7 LIMITATIONS....28

FIGURES

Figure 1 Site Vicinity Map
Figure 2 Exploratory Trench Location Map

APPENDICES

Appendix A Proposal
Appendix B Important Information About Your Geotechnical Engineering Report (included with permission of ASFE, Copyright 2004)
Appendix C Exploratory Trench Logs
Appendix D Laboratory Test Data

1 INTRODUCTION

At the request of Rod Shearer of Shearer & Associates, Inc., Holdrege & Kull (H&K) performed a geotechnical investigation at the Amazing Facts property designated as Placer County Assessor's Parcel Numbers (APNs) 046-050-006 and 046-050-008, near the intersection of Sierra College Boulevard and Nightwatch Drive, in Placer County, California. The geotechnical investigation was performed in general accordance with our February 17, 2009 proposal for the project, a copy of which is included as Appendix A of this report. For your review, Appendix B contains a document prepared by ASFE entitled *Important Information About Your Geotechnical Engineering Report,* which summarizes the general limitations, responsibilities, and use of geotechnical reports.

1.1 SITE DESCRIPTION

The approximate 75-acre property is located southeast of the intersection of Sierra College Boulevard and Nightwatch Drive in Placer County, California. The property is bordered by rural residential property to the south and west, by a residential subdivision to the north and by Placer County Water Agency property to the east.

At the time of our field investigation, the project site was undeveloped except for partial clearing, dirt access roads, and a previously graded pond area in the southern portion of the site. Site topography varied from relatively flat in the northernmost portion near the area of proposed improvements, to steeply sloping in the eastern and southern portions of the site.

1.2 PROPOSED IMPROVEMENTS

Based on our review of an April 2007 site plan provided by King Engineering, we understand that the proposed project will likely include the construction of a multi structure church facility with paved parking areas and driveways, landscaping and underground utilities. The improvements will generally be located in the northern portion of the site adjacent to Sierra College Boulevard on south facing slopes.

Based on discussions with representatives of Shearer & Associates, we understand that the project is still in the conceptual or preliminary design stage and is subject to change. We anticipate construction may include wood-framed, steel and concrete multi-story structures utilizing slabs-on grade and retaining walls.

We anticipate that grading for the project will include excavation of surface soil in the proposed parking areas to be used for fill material within proposed building

pads, as well as grading for driveways and excavation for underground utilities. Estimated fill depths of up to 20 feet and 10-foot cuts are proposed.

1.3 PURPOSE

We performed a surface reconnaissance and subsurface geotechnical investigation at the site in the area proposed for improvements, collected soil samples for laboratory testing, and performed engineering calculations including a slope stability analysis. The purpose of our investigation was to provide grading and drainage recommendations, foundation and retaining wall design criteria, slab-on-grade recommendations, and pavement design for the proposed improvements.

1.4 SCOPE-OF-SERVICES

To prepare this report, we performed the following scope of services:

- We performed a site investigation, including a literature review and a limited subsurface investigation.
- We collected bulk soil samples from selected exploratory trenches.
- We performed laboratory tests on select soil samples obtained during our subsurface investigation to determine their engineering material properties.
- Based on observations made during our subsurface investigation and the results of laboratory testing, we performed engineering calculations to provide geotechnical engineering recommendations for earthwork and structural improvements.

Our scope of services did not include a groundwater flow analysis nor an evaluation of the site for the presence of hazardous materials, historic mining features, asbestiform minerals, mold, or corrosive subsurface conditions. We also did not review the conditions of the existing earth dam near the southern portion of the property.

2 SITE INVESTIGATION

We performed a site investigation to characterize the existing surface conditions and shallow subsurface soil/rock conditions. Our site investigation included a literature review and field investigation as described below.

2.1 LITERATURE REVIEW

We performed a limited review of geologic literature pertaining to the project site. The following sections summarize our findings.

2.1.1 Soil Survey

As part of our study, we reviewed the *Soil Survey of Placer County, California, Western Part,* prepared by the USDA Soil Conservation Service, 1980. The soil survey indicates that the project site is located in an area containing the Exchequer very stony loam soil series.

The soil survey describes the Exchequer soil as shallow, somewhat excessively drained, very stony soil underlain by hard andesitic breccia. Typically, the surface soil consists of brown, very stony loam and cobbly loam, which extends to an approximate depth of 11 inches below the ground surface (bgs). The brown loam is typically underlain by hard andesitic breccia. The shallow soil depth and the presence of resistant shallow rock are noted as potential limitations to development on this soil type.

2.1.2 Geologic Setting

We reviewed the Geologic Map of the Sacramento Quadrangle, California Division of Mines and Geology, 1987, for information about site geology. The map indicates that early Pliocene - late Miocene age andesitic conglomerate and mudflow breccia (lahar) of the Mehrten Formation underlie the site.

The andesitic lava flows that underlie the site contain subrounded to subangular boulders of andesite and other rock types that were entrained by the lava as it flowed downslope and solidified. The Miocene and Pliocene epochs are considered to have occurred between 22 to 5 million years and 5 to 2 million years before present, respectively.

We reviewed California Geological Survey Open File Report 96-08, Probabilistic Seismic Hazard Assessment for the State of California, and the 2002 update entitled California Fault Parameters. The documents indicate the property is located within the Foothills Fault System. The Foothills Fault System is designated as a Type C fault zone, with low seismicity and a low rate of recurrence. The 1997 edition of California Geological Survey Special Publication 43, Fault Rupture Hazard Zones in California, describes active faults and fault zones (activity within 11,000 years), as part of the Alquist-Priolo Earthquake Fault Zoning Act. The map

and document indicate the site is not located within an Alquist-Priolo active fault zone.

2.1.3 Previous Site Investigations

H&K previously performed a preliminary geotechnical investigation and a Phase I Environmental Site Assessment for the Amazing Facts project.

- Our June 2007 preliminary geotechnical investigation included a shallow subsurface investigation to determine the depth to rock across the area of proposed improvements in the northern portion of the site. The preliminary investigation included the excavation of 16 trenches which generally revealed a shallow layer of surface soil underlain by resistant rock. Our report included a discussion of the shallow depth to resistant rock and provided preliminary recommendations regarding drainage and grading. We did not perform laboratory testing as part of our preliminary investigation.
- Our *Phase I Environmental Site Assessment,* dated June 13, 2007, discussed past uses of the property and evaluated potential environmental concerns.

2.2 FIELD INVESTIGATION

We performed our field investigation on February 27, 2009. During our field investigation, we observed the local topography and surface conditions and performed a limited subsurface investigation. The following sections summarize surface and subsurface conditions observed during our field investigation.

Our subsurface investigation included the excavation of 4 shallow exploratory trenches within the proposed improvement area in the northern portion of the property. We excavated to depths ranging between 8 inches and 18 inches below the ground surface (bgs) using a Kubota KX-121 excavator equipped with an 18-inch bucket. Collection of undisturbed samples was limited due to the shallow depth of resistant rock onsite. We collected grab and bulk samples from the exploratory trenches for laboratory testing. An engineer from our firm logged the soil conditions revealed in the exploratory trenches. Figure 2 shows the approximate exploratory trench locations.

2.2.1 Surface Conditions

At the time of our investigation, the site was undeveloped. The site generally slopes to the southeast with a large triangular plateau in the northernmost portion of the property where improvements are proposed. Vegetation on the plateau

consists of grasses and forbs with few to no trees. Vegetation on the slopes consists of grasses, forbs, pine and oak trees as well as manzanita and poison oak.

2.2.2 Subsurface Soil Conditions

The soil conditions described are generalized, based on our observations of the subsurface conditions revealed in our exploratory trenches. More detailed information can be found in the trench logs in Appendix C.

Trenches T-1 through T-4 all revealed similar subsurface conditions. The trenches were excavated through surface soil consisting of reddish brown, moist, loose silty gravel with sand. The silty gravel with sand was underlain by resistant rock at depths ranging from 8 inches bgs to 18 inches bgs. Our trenches terminated at refusal within the resistant rock.

2.2.3 Ground Water Conditions

During our site investigation, we did not encounter groundwater seepage in our exploratory trenches, nor did we observe onsite springs or seeps emanating from the ground surface. We did observe several pools of standing water onsite.

Our exploratory trench observations of subsurface conditions were made in February 2009 following a period of wet weather. Although we did not observe groundwater in our exploratory trenches, our experience has shown that isolated areas of seepage and saturated soil will likely be encountered in excavations which reveal the soil/weathered rock transition and rock fractures, particularly during or shortly after the rainy season.

3 LABORATORY TESTING

We performed laboratory tests on selected soil samples collected from our subsurface exploratory trenches to determine their engineering material properties. These engineering material properties were used to develop geotechnical engineering recommendations for earthwork and structural improvements. We performed the following laboratory tests:

- Direct Shear Strength (ASTM D3080),
- Resistance Value (ASTM D2844)
- Particle Size Determination (ASTM D422), and
- Expansion Index (ASTM 4829).

Collection of undisturbed soil samples for laboratory testing was limited by shallow depth to resistant rock and significant gravel content in the subsurface soil revealed in the exploratory trenches. Appendix D presents graphical direct shear, expansion index and particle size test results.

We performed a particle size determination on a sample of reddish brown silty gravel with sand collected from the surface to approximately 10 inches bgs in trench T-2. The test revealed the sample consisted of approximately 41 percent gravel, 30 percent sand and 29 percent silt and clay. Based on the particle size determination, we classified the soil as silty gravel with sand (GW).

We also performed expansion index testing on a portion of sample PB 2-1 described as a reddish brown silty gravel with sand. A portion of the sample was remolded in a 1.0-inch-high ring and submerged in water under an applied loading of 144 pounds per square foot (psf). We observed the loaded sample for a minimum of 24 hours. During that time we measured the swell (or settlement) with a dial micrometer. Expansion index test results of 10 indicate the sample exhibited very low expansion potential, as classified by UBC guidelines.

An R-value test was performed on a composite bulk sample obtained from the ground surface to 1-foot bgs in trenches T-1 through T-4. The sample was composed of reddish brown, silty gravel with sand. The test indicated that the predominantly granular soil had an R-value of 11, by exudation pressure.

We performed a direct shear test on a remolded portion of composite sample PB 4-1, collected at depths ranging from the surface to 1.5 feet bgs in exploratory trench T-4. The sample was composed of silty gravel with sand. The soil was consolidated under an applied normal load in a loose state and sheared. The direct shear test indicated the soil exhibited a friction angle of 30 and cohesion of 620 psf.

4 SLOPE STABILITY ANALYSIS

The stability of a slope is evaluated by calculating its "factor of safety". The factor of safety (FS) is a ratio obtained by dividing the resisting forces (i.e., the strength of the material comprising the slope) by the driving forces (resulting from the slope gradient, groundwater, and earthquake loading). If the factor of safety is greater than 1, the slope is theoretically stable. A factor of safety equal to or less than 1 means the slope is theoretically unstable. Required factors of safety are selected in an effort to address uncertainties in the conditions as well as the anticipated consequences of slope instability. Typically, when evaluating slope stability,

minimum factors of safety of 1.5 or higher are considered to account for variability in groundwater, subsurface soil and rock conditions, and laboratory test results.

The slope configuration used in our slope stability analyses was based on review of topographic site plans provided by King Engineering. The slope model used was based on trenches we excavated in our previous investigation on or near the sloping portion of the site, and on material properties determined from our laboratory testing. Our analysis was performed using Stabl6™ software utilizing Bishop's simplified methods of slices.

Our slope stability analyses were based on a variety of assumptions and variables, including:

1. Strength data variables - The strength data used in our calculations were varied based on several assumptions. The strength of the material making up the slope was estimated by considering the direct shear test results and our previous experience with slopes in the area.

2. Geometry - Our stability analyses considered slope geometry and slope gradient configurations based on the topographic site plan.

3. Piezometric Surfaces – Although we did not encounter subsurface water or seepage during our site investigation, we included a piezometric surface in the stability analysis to account for possible seasonal fluctuation in groundwater or saturated soil conditions. Typically, the assumed water table acts to reduce the stability of the slope by increasing the driving forces tending to cause a failure, while simultaneously reducing the shear strength available to resist a failure. We used soil strength parameters obtained from our laboratory tests to evaluate the stability of trial cut and fill slope configurations in the area of the proposed building pad and driveway.

For the purposes of our engineering analysis, we modeled the soil onsite as having an internal friction angle of 30 degrees, 200 pounds per square foot of cohesion, and a total unit weight of 100 pounds per cubic foot. We also conservatively modeled the subsurface rock onsite as having an internal friction angle of 40 degrees, 1000 pounds per square foot of cohesion, and a total unit weight of 145 pounds per cubic foot. Our slope stability analysis was based on a computer assisted method of slices. In addition, we considered a minimum acceptable factor of safety of 1.5 under static conditions.

The slope stability analysis considered large scale or global failure of the slope. Because the site is generally underlain by resistant rock at relatively shallow depths, it is our opinion the likelihood of deep-seated failure is very low. However, sloughing, raveling, and erosion of relatively loose material on the slope faces were not considered in the analysis and should be expected to occur, particularly on slopes steeper than approximately 2:1, H:V. Exposed slopes will require periodic maintenance to remove surficial erosion and debris.

5 CONCLUSIONS

The following conclusions are based on our field observations, laboratory test results, engineering analysis, and our experience in the area.

1. Our opinion is that the site is suitable for the proposed improvements, provided that the geotechnical engineering recommendations and design criteria presented in this report are incorporated into the project plans.
2. Our primary concern is the presence of resistant rock at shallow depths which may affect excavatability.
3. Based on our site observations, the geology of the region and our experience in the area, our opinion is that the risk of seismically induced hazards such as liquefaction and surface rupture is remote at the project site.
4. Because the site is generally underlain by resistant rock at relatively shallow depths, it is our opinion the likelihood of deep-seated failure is very low. However, sloughing, raveling, and erosion of relatively loose material on the slope faces should be expected to occur, particularly on slopes steeper than approximately 2:1, H:V.
5. Based on the site geology and our observation of the surface conditions, we anticipate that grading and excavation onsite will reveal variably weathered rock. Spoil resulting from excavation onsite may consist of predominantly angular, gravel to cobble-sized rock fragments. This material may be suitable for use as fill, depending on the nominal size of the rock fragments, but will likely require specific recommendations for fill placement and observation to confirm compaction. Recommendations addressing rock fill placement are included in this report.
6. We did not observe existing fill in our exploratory trenches. However, if fill is encountered during grading, fill should not be relied upon to support proposed improvements. Recommendations for overexcavation and replacement of existing fill, if encountered, are provided in the following sections.

7. During our site investigation, we did not observe groundwater or seepage within our exploratory trenches. We anticipate that moist to saturated soil conditions and groundwater may be encountered during grading, particularly in excavations that reveal the soil/rock transition. Recommendations addressing moisture conditioning, drainage, and fill placement are presented in the following sections of this report.

8. Prior to grading and construction, we should be retained to review the proposed grading plan and structural improvements to confirm our recommendations.

6 RECOMMENDATIONS

The following geotechnical engineering recommendations are based on our understanding of the project as currently proposed, our field observations, the results of our laboratory testing program, engineering analysis, and our experience in the area.

6.1 GRADING

The following sections present our grading recommendations. The grading recommendations address clearing and grubbing, soil preparation, cut slope grading, fill placement, fill slope grading, erosion control, subsurface drainage, surface water drainage, construction dewatering, underground utility trenches, soil corrosion potential, plan review, and construction monitoring.

6.1.1 Clearing and Grubbing

The areas to be graded should be cleared and grubbed to remove vegetation and other deleterious materials as described below.

1. Strip and remove debris from clearing operations and the top 1 to 2 inches of soil containing shallow vegetation, roots and other deleterious materials. The organic topsoil can be stockpiled onsite and used in landscape areas but is not suitable for use as fill. The project geotechnical engineer should approve any proposed use of the spoil generated from stripping prior to placement.

2. Although not observed during our investigation, if loose, untested fill is encountered during site development, overexcavate to competent native soil or weathered rock a minimum of 5 feet beyond the areas of proposed improvements.

3. Remove rocks greater than 8 inches in greatest dimension (oversized rock) from native soil by scarifying to a depth of 12 inches below finish grade or to resistant rock in areas to support pavement, slabs-on-grade or other flatwork. Oversized rock may be used in landscape areas, rock landscape walls, or removed from the site. Oversized rock can be stockpiled onsite and used to construct fills, but must be placed at or near the bottom of deep fills and must be placed in windrows to avoid nesting. No oversized rock should be placed in the upper 3 feet of any structural fill. The project geotechnical engineer should approve the use of oversized rock prior to constructing fill.
4. Fine grained, potentially expansive soil, as determined by H&K, that is encountered during grading should be mixed with granular soil, or overexcavated and stockpiled for removal from the project site or for later use in landscape areas. A typical mixing ratio for granular to expansive soil is 4 to 1. The actual mixing ratio should be determined by H&K.
5. Vegetation, deleterious materials, structural debris, and oversized rocks not used in landscape areas, drainage channels, or other non-structural uses should be removed from the site.

6.1.2 Cut Slope Grading

Based on our understanding of the project at this time, we anticipate that permanent cut slopes up to 5 feet in height may be created during grading of the proposed improvements. In general, permanent cut slopes in soil should not be steeper than 2:1, horizontal to vertical (H:V). However, cut slopes may be graded to 1:1, H:V, where excavations reveal resistant rock. The upper portion of cut slopes revealing soil, typically the upper one to two feet, should be graded to an approximate 2:1, H:V, slope to reduce sloughing and erosion of looser surface soil.

Temporary cut slopes may be constructed to facilitate retaining wall construction. We anticipate that resistant rock subsurface conditions will be favorable for construction of temporary cut slopes no steeper than ½:1, H:V, for a maximum height of approximately 10 feet. To reduce the likelihood of sloughing or failure, temporary cut slopes should not remain over the winter.

A representative of H&K must observe temporary cut slopes steeper than 2:1, H:V, during grading to confirm the soil and rock conditions encountered. We recommend that personnel not be allowed between the cut slope and the proposed retaining structure, form work, grading equipment, or parked vehicles during construction, unless the stability of the slope has been reviewed by H&K or the slope has been confirmed to meet OSHA excavation standards.

6.1.3 Soil Preparation for Fill Placement

Where fill placement is proposed, the surface soil exposed by site clearing and grubbing should be prepared as described below.

1. The surface soil should be scarified to a minimum depth of 8 inches below the existing ground surface, or to resistant rock, whichever is shallower. Following scarification, the soil should be uniformly moisture conditioned to within approximately 3 percentage points of the ASTM D1557 optimum moisture content.
2. The scarified and moisture conditioned soil should then be compacted to achieve a minimum relative compaction of 90 percent based on ASTM D1557 maximum dry density. The moisture content, density, and relative percent compaction should be verified by a representative of H&K. The earthwork contractor should assist our representative by excavating test pads with onsite earth moving equipment.
3. Where fill placement is proposed on native slopes steeper than approximately 5:1, H:V, a base key and routine benches must be provided. Unless otherwise recommended by the project geotechnical engineer, the base key should be excavated at the toe of the fill to resistant rock or a minimum of 2 feet into competent stratum, as determined by a representative of H&K during construction observation. The bottom of the base key should be approximately level or sloped slightly into the hillside.
4. The fill must be benched into existing side slopes as fill placement progresses. Benching must extend through loose surface soil into firm material, and at intervals such that no loose surface soil is beneath the fill. As a minimum, a horizontal bench should be excavated every 5 vertical feet or as determined by a representative of H&K.

6.1.4 Soil Fill Placement

Soil fill placement proposed for the project should incorporate the following recommendations:

1. Soil used for fill should consist of uncontaminated, predominantly granular, non-expansive native soil or approved import soil. Rock used in fill should be broken into pieces no larger than 8 inches in diameter. Rocks larger than 8 inches are considered oversized material and should be stockpiled for offhaul or later use in landscape areas and drainage channels.

2. Import soil should be predominantly granular, non-expansive and free of deleterious material. Import material that is proposed for use onsite should be submitted to H&K for approval and possible laboratory testing at least 72 hours prior to transport to the site.
3. Cohesive, predominantly fine grained, or potentially expansive soil encountered during grading should be stockpiled for removal, mixed as directed by H&K, or used in landscape areas.
4. As an option, cohesive fine grained, or potentially expansive soil can often be placed in the deeper portions of proposed fill (e.g., depths greater than 3 feet below subgrade in building footprints). However, this option would have to be evaluated on a case-by-case basis with consideration of the fill depth and proposed loading.
5. Soil used to construct fill should be uniformly moisture conditioned to within approximately 3 percentage points of the ASTM D1557 optimum moisture content. Wet soil may need to be air dried or mixed with drier material to facilitate placement and compaction, particularly during or following the wet season.
6. Fill should be constructed by placing uniformly moisture conditioned soil in maximum 8-inch-thick loose, horizontal lifts (layers) prior to compacting.
7. All fill should be compacted to a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density. The upper 12 inches of fill in paved areas, beneath proposed slabs-on-grade, and within the proposed building footprint should be compacted to a minimum of 95 percent relative compaction.

The moisture content, density and relative percent compaction of fill should be confirmed by a representative of H&K during construction.

6.1.5 Differential Fill Depth

The recommendations presented in this section are intended to reduce the magnitude of differential settlement-induced structural distress associated with variable fill depth beneath structures.

In general, site grading should be performed so that cut-fill transition lines do not occur directly beneath any structures. In addition, differential fill depths beneath structures should not exceed 5 feet. However, because of the relatively shallow depth to resistant rock observed at the site, we anticipate that it will not be feasible to overexcavate the cut portions of cut/fill building pads in an effort to reduce differential settlement. The use of modified foundation systems or deepened

footings may be appropriate to reduce settlement at locations where significant differential fill depths will occur. We can provide site specific settlement analysis, and recommendations to mitigate the potential for differential settlement, once grading plans and design of the proposed structures has been completed.

6.1.6 Rock Fill Placement

Based on our observation of the rocky nature of the subsurface conditions revealed in our exploratory trenches, we anticipate that fill material generated from the project site may contain significant rock fragments, and that compaction testing with conventional methods may be difficult or inappropriate. Typically, fill that consists primarily of soil can be tested for relative compaction by using a nuclear density gauge. Our opinion is that rock fill cannot be reliably tested using this method.

We recommend that quality assurance during rock fill placement be based on a procedural approach, or method specification, rather than a specified relative compaction. The procedural requirements will depend on the equipment used, as well as the nature of the fill material, and will need to be determined by the geotechnical engineering firm onsite. Typically, procedural recommendations are based on the measured relative compaction of a test fill constructed onsite.

Based on our experience in the area, we anticipate that the procedural specification will require a minimum of six passes (back and forth equaling one pass) with a Cat 563 or similar, self-propelled, vibratory compactor to compact a maximum 8-inch thick, loose lift. Processing or screening of the fill material will be needed to remove rocks larger than approximately 8 inches in maximum dimension. Continuous or nearly continuous observation by a representative of H&K would be required during fill placement to confirm that procedural specifications have been met.

6.1.7 Fill Slope Grading

Based on our understanding of the project, we anticipate that fill slopes up to 30 feet in height may be created as part of the proposed improvements. In general, permanent fill slopes created onsite should be no steeper than 2:1, H:V. H&K should review fill slope configurations greater than approximately 15 feet in height, if proposed, prior to fill placement. Compaction and fill slope grading must be confirmed by H&K in the field.

Steeper fill slopes may be feasible with the use of geotextile reinforcement and/or rock facing. We can provide reinforced or buttressed fill slope design for the project, if requested.

Fill should be placed in horizontal lifts to the lines and grades shown on the project plans. Slopes should be constructed by overbuilding the slope face and then cutting it back to the design slope gradient. Fill slopes should not be constructed or extended horizontally by placing soil on an existing slope face and/or compacted by track walking.

6.1.8 Erosion Controls

Graded portions of the site should be seeded as soon as possible to allow vegetation to become established prior to and during the rainy season. In addition, grading that results in greater than one acre of soil disturbance or in sensitive areas may require the preparation of a site-specific storm water pollution prevention plan. As a minimum, the following controls should be installed prior to and during grading to reduce erosion.

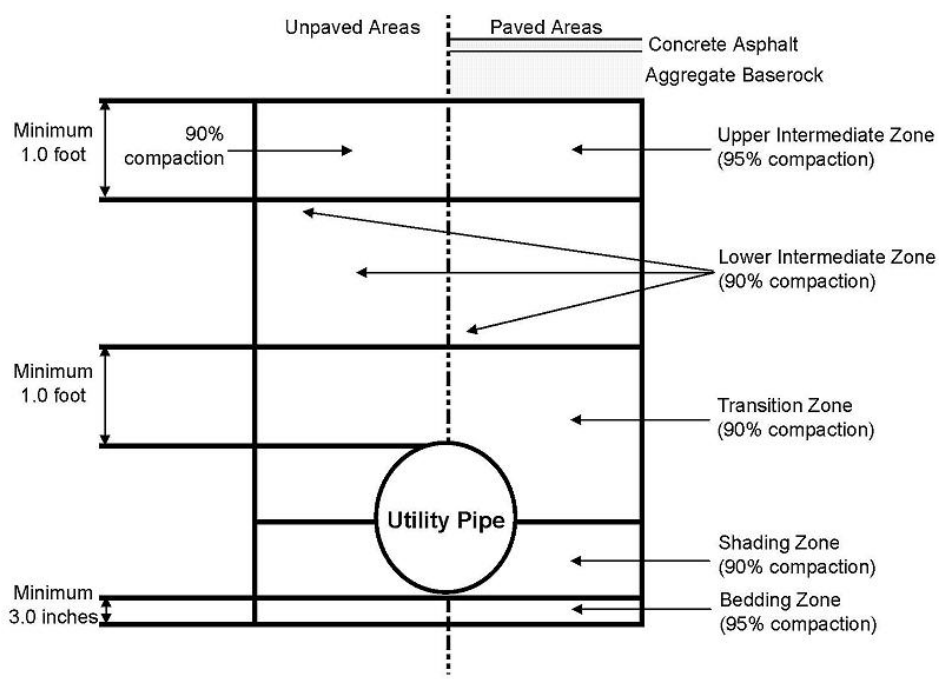
1. Prior to commencement of site work, fiber rolls should be installed down slope of the proposed area of disturbance to reduce migration of sediment from the site. Fiber rolls on slopes are intended to reduce sediment discharge from disturbed areas, reduce the velocity of water flow, and aid in the overall revegetation of slopes. The fiber rolls should remain in place until construction activity is complete and vegetation becomes established.
2. Soil exposed in permanent slope faces should be hydroseeded or hand seeded/strawed with an appropriate seed mixture compatible with the soil and climate conditions of the site as recommended by the local Resource Conservation District.
3. Following seeding, jute netting or erosion control blankets should be placed and secured over the slopes steeper than 2:1, H.V.
4. Surface water drainage ditches should be established as necessary to intercept and redirect concentrated surface water away from cut and fill slope faces. The intercepted water should be discharged into natural drainage courses or into other collection and disposal structures.

6.1.9 Underground Utility Trenches

Underground utility trenches should be excavated and backfilled as described below.

1. Based on subsurface conditions observed in our exploratory trenches, we anticipate that resistant rock at shallow depths will limit utility trench excavations. Pre-ripping of the trench alignment, using trenchers or rock-wheels may be required, particularly if utility trench excavations are deeper than three feet.
2. The California Occupational Safety and Health Administration (OSHA) requires all utility trenches deeper than 4 feet bgs be shored with bracing equipment prior to being entered by any individuals, whether or not they are associated with the project.
3. We anticipate that shallow subsurface seepage may be encountered, particularly if utility trenches are excavated during the winter, spring, or early summer. The earthwork contractor may need to employ dewatering methods as discussed in the Construction Dewatering section on page 17 to excavate, place and compact the trench backfill materials.
4. Trench backfill used within the bedding zone, shading zone, and transition zones, as shown on the following figure, should consist of ¾-inch minus crushed rock.

TRENCH BACKFILL



5. Soil used as trench backfill within the lower and upper intermediate zones, as shown on the above figure, should consist of non-expansive soil with a PI of less than or equal to 15 (based on ASTM D4318) and should not contain rocks greater than 3 inches in greatest dimension.
6. Soil used to construct trench backfill should be uniformly moisture conditioned to within 3 percentage points of the ASTM D1557 optimum moisture content.
7. Trench backfill should be constructed by placing uniformly moisture conditioned soil in maximum 12-inch-thick loose lifts (layers) prior to compacting.
8. Pipe bedding zone: Trench backfill placed in the pipe bedding zone (beneath the utilities) should be compacted to a minimum relative compaction of 95 percent of the ASTM D1557 maximum dry density.
9. Pipe shading zone: Trench backfill placed within the pipe shading zone (above the bedding zone and to a height of one pipe radius above the pipe spring line) should be compacted to a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density.
10. Pipe transition zone: Trench backfill placed within the pipe transition zone (above the pipe shading zone to one foot over the pipe top surface) should be compacted to a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density.
11. Lower intermediate zone: Trench backfill placed within the lower intermediate zone (above the pipe transition zone to 1 foot below the finished subgrade surface) should be compacted to a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density.
12. Upper intermediate zone (unpaved areas): Trench backfill placed within the upper intermediate zone (above the lower intermediate zone to the finished subgrade surface) in unpaved (non-road and non-parking lot) areas should be compacted to a minimum relative compaction of 90 percent of the ASTM D1557 maximum dry density.
13. Upper intermediate zone (paved areas): Trench backfill placed within the upper intermediate zone (above the lower intermediate zone to the finished subgrade surface) in paved (road and parking lot) areas should be compacted to a minimum relative compaction of 95 percent of the ASTM D1557 maximum dry density.
14. The loose lift thickness, moisture, density and relative compaction of the trench backfill soil should be verified by a representative of H&K.

15. Construction quality assurance tests should be performed at a frequency determined by the project geotechnical engineer.
16. The earthwork contractor should assist our representative by excavating test pads with onsite earth moving equipment.

6.1.10 Construction Dewatering

The earthwork contractor should be prepared to dewater excavations if seepage is encountered during grading. Seepage will likely be encountered if grading is performed during or immediately after the rainy season. In addition, perched groundwater may be encountered on resistant rock layers even during the summer months.

If subsurface seepage or groundwater conditions are encountered which prevent or restrict fill placement or construction of the proposed improvements, subdrains may be necessary. If groundwater or saturated soil conditions are encountered during grading, we should be retained to observe the conditions and provide site specific subsurface drainage recommendations. The following typical measures can be employed to mitigate the presence of seepage in excavations.

1. We anticipate that dewatering of utility trenches can be performed by constructing sumps to depths below the trench bottom and removing the water with sump pumps.
2. Additional sump excavations and pumps should be added as necessary to keep the excavation bottom free of standing water and relatively dry when placing and compacting the trench backfill material.

6.1.11 Soil Corrosion Potential

Index testing of the soil in an effort to evaluate corrosion potential was not performed as a part of our soil evaluation. Based on review of soil survey information the native soil conditions onsite possess a low and moderate corrosion potential for uncoated steel and concrete, respectively.

To reduce the likelihood of corrosion problems, materials used for underground utilities, permanent subsurface drainage improvements, and foundation systems should be selected based on local experience and practice. If alternative or new construction methods or materials are being proposed, it may be appropriate to have the selected materials evaluated by a corrosion engineer for compatibility with the onsite soil and groundwater conditions.

6.1.12 Surface Water Drainage

Proper surface water drainage is important to the successful development of the project. We recommend the following measures to help mitigate surface water drainage problems:

1. Slope final grades in structural areas so that surface water drains away from building pad finish subgrade at a minimum 2 percent slope for a minimum distance of 10 feet. For structures utilizing slab-on-grade interior floor systems we recommend increasing the slope to 4 percent.
2. To reduce surface water infiltration, compact and slope all soil placed adjacent to building foundations such that water is not allowed to pond. Backfill should be free of deleterious materials.
3. Direct downspouts to positive drainage or a closed collector pipe that discharges flow to positive drainage.
4. Construct V-ditches at the top of cut and fill slopes where necessary to reduce concentrated surface water flow over slope faces. Typically, V-ditches should be 3 feet wide and at least 6 inches deep. Surface water collected in V-ditches should be directed away and downslope from proposed building pads and driveways into a drainage channel.

6.1.13 Grading Plan Review and Construction Monitoring

Construction quality assurance includes review of plans and specifications and performing construction monitoring as described below.

1. H&K should be retained to review the final grading plans prior to construction to confirm our understanding of the project at the time of our investigation, to determine whether our recommendations have been implemented, and to provide additional and/or modified recommendations, if necessary.
2. H&K should be retained to perform construction quality assurance (CQA) monitoring of all earthwork grading performed by the contractor to determine whether our recommendations have been implemented, and if necessary, provide additional and/or modified recommendations.

6.2 STRUCTURAL IMPROVEMENT DESIGN CRITERIA

The following sections present our structural improvement design criteria and recommendations. The recommendations address foundations, seismic parameters, concrete slabs-on-grade, retaining walls and pavement design.

6.2.1 Seismic Design Criteria

Our classification of on-site soil conditions is based on field observations and laboratory tests. The on-site soil primarily consists of granular soil composed of silty gravel with sand. Based on the presence of predominantly granular soil and resistant rock at relatively shallow depths, we classified the on-site soil as GW for design purposes.

Table 6.2.1.1 below summarizes seismic design criteria based on Section 1613 of the 2007 California Building Code, CCR Title 24, Part 2. The building code updates are effective as of January 2008.

We used Section 1613 of the 2007 California Building Code (CBC) and the United States Geological Survey (USGS), *Java Ground Motion Parameter Calculator, Earthquake Ground Motion Tools, Version 5.0.8*, to develop the following seismic design parameters:

6.2.1.1 - 2007 Seismic Design Parameters

Description	Value	Reference	Description	Value	Reference
Latitude Longitude	38.774 -121.209	1	Site Class	B	2
Site Coefficient, F_A	1.00	6	Site Coefficient, F_V	1.00	7
Short (0.2 sec) Spectral Response, S_S	0.398*g*	3, 5	Long (1.0 sec) Spectral Response, S_1	0.197*g*	4, 5
S_S modified for Site Class Effects, S_{MS}	0.398*g*	8, 5	S_1 modified for Site Class Effects, S_{M1}	0.197*g*	9, 5

References:

1. *USGS 7.5 min*
2. *2007 CBC, Table 1613.5.2*
3. *CBC Figure 1613.5(3)*
4. *CBC Figure 1613.5(4)*
5. *USGS Uniform Hazard Response Spectra, v 5.0.8*
6. *2007 CBC, Table 1613.5.3(1)*
7. *2007 CBC, Table 1613.5.3(2)*
8. *2007 CBC, Equation 16-37*
9. *2007 CBC, Equation 16-38*

6.2.2 Foundations

Provided that the grading for the project is performed in accordance with the recommendations presented in this report, our opinion is that the site will be suitable for the use of conventional perimeter foundations, isolated interior footings, and interior slabs-on-grade. Following are our recommendations for foundations constructed on compacted and tested fill or competent native soil:

1. Footings for single story structures should be a minimum of 12 inches wide and trenched through any loose surface material, potentially expansive soil, or untested fill, and a minimum of 12 inches into competent native soil, weathered rock or compacted fill. Footings for two-story structures should be a minimum of 15 inches wide and trenched a minimum of 18 inches into competent native soil, weathered rock or compacted fill. If clay is encountered at the base of footing excavations, the footing should be deepened through the clay lens into underlying granular material or weathered rock, as determined in the field by H&K.
2. The base of the footing excavation should be approximately level. On sloping sites, it will be necessary to step the base of the footing excavation as necessary to maintain a slope of less than 10 percent at the base of the footing.
3. Footing trenches should be cleaned of all loose soil and construction debris prior to placing concrete. A representative from H&K should observe the footing excavations prior to concrete placement.
4. As a minimum, the footings should be designed with two No. 4 rebar reinforcement, one near the top of the footing and one near the bottom. A minimum of 3 inches of concrete coverage should surround the bars.
5. Footing excavations should be saturated prior to placing concrete to reduce the risk of problems caused by wicking of moisture from curing concrete. However, concrete should not be placed through standing water in the footing excavations.
6. In an effort to reduce the likelihood of settlement-induced distress to the proposed structures, we recommend that strip and isolated footings with a minimum embedment depth of 12 inches in competent native soil or compacted and tested fill be sized for an allowable bearing capacity of 3000 psf for dead plus live loads. This value can be increased by 500 psf for each additional foot of embedment up to a limiting value of 3500 psf. Allowable bearing may be increased by 33 percent for additional transient loading, such

as wind or seismic loads. Footings placed on resistant rock may use a higher allowable bearing capacity of 4,000 psf.

7. A triangularly-distributed lateral resistance (passive soil resistance) of 300d psf, where d is footing depth, may be used for footings. This value may be increased by 33 percent for wind and seismic. As an alternate to the passive soil resistance described above, a coefficient of friction for resistance to sliding of 0.35 may be used.

8. Total settlement of individual foundations will vary depending on the plan dimensions of the foundation and actual structural loading. Based on anticipated foundation dimensions and loads, we estimate that total post-construction settlement of footings designed and constructed in accordance with our recommendations will be on the order of one-half inch. Differential settlement between similarly loaded, adjacent footings is expected to be less than one-quarter inch, provided footings are founded on similar materials (e.g., all on structural fill, native soil or rock). Differential settlement between adjacent footings founded on dissimilar materials (e.g., one footing on soil and an adjacent footing on rock) may approach the maximum anticipated total settlement. Settlement of foundations is expected to occur rapidly and should be essentially complete shortly after initial application of loads.

9. We anticipate that construction may include concrete “tilt up” structures. Concrete tilt-up construction transfers loads to the footings relatively quickly. Therefore, elastic settlement of the footings may become a factor when aligning the panels. We estimate that, using the recommended allowable bearing pressures presented in this report, total elastic footing settlement would be on the order of ¾ inch with differential settlement of ½ inch. Elastic settlement occurs relatively quickly (several days). Therefore, it is expected that the top of the panels may yield slightly during placement. Alignment of the top of the panels will be governed by their height. Therefore, taller panels will typically reveal more horizontal displacement at the top than shorter walls. We recommend that the crane setting the panels hold the load as long as possible to allow mobilization of the footings. Some adjustment of the panels may be required following placement.

6.2.3 Slab-on-Grade Floor Systems

Our opinion is that interior concrete slab-on-grade floors may be used in conjunction with perimeter concrete foundations for the proposed improvements. The project structural engineer should design slabs-on-grade with regard to the

anticipated loading. This section presents typical slab sections and reinforcement schedules used for construction in the region and presents construction recommendations. We can provide project specific slab-on-grade design for the proposed improvements once anticipated loading and serviceability criteria have been established.

1. The slab-on-grade should be a minimum of 4 inches thick. If floor loads higher than 250 psf or intermittent live loads are anticipated, a structural engineer should determine the slab thickness and steel reinforcing schedule.
2. The subgrade soil around the slabs-on-grade should be sloped away from the proposed slab subgrade a minimum of 4 percent for a distance of 10 feet as discussed in the Surface Water Drainage section of this report. A representative from H&K should observe pad and subgrade elevations prior to forming the slab footings.
3. As a minimum, No. 3 rebar on 18-inch centers or flat sheets of 6x6, W4.0xW4.0 welded wire mesh (WWM) should be used as slab reinforcement. We do not recommend using rolls of WWM because vertically centered placement of rolled mesh within the slab is difficult to achieve. All rebar and sheets of WWM should be placed in the center of the slab and supported on concrete "dobies". We do not recommend "hooking and pulling" of steel during concrete placement.
4. Prior to placing the vapor retarder and concrete, slab subgrade soil must be moisture conditioned to between 75 and 90 percent saturation to a depth of 24 inches. Moisture conditioning should be performed for a minimum of 24 hours prior to concrete placement. Clayey soil may take up to 72 hours to reach this required degree of saturation. If the soil is not moisture conditioned prior to placing concrete, moisture will be wicked out of the concrete, possibly contributing to shrinkage cracks. Additionally, our opinion is that moisture conditioning the soil prior to placing concrete will reduce the likelihood of soil swell or heave following construction at locations where fine grained, potentially expansive soil is encountered. To facilitate slab-on-grade construction, we recommend that the slab subgrade soil be moisture conditioned following rock placement. Following moisture conditioning, the vapor retarder should be placed.
5. Slabs should be underlain by 4 inches of washed rock. The rock should be uniformly graded so that 100% passes the 1-inch sieve, with 0% to 5% passing the No. 4 sieve. Following rock placement, the subgrade soil should be moisture conditioned for 24 hours. The rock should then be overlain by a

vapor retarder at least 15 mils thick. All penetrations through the vapor retarder should be taped or sealed to reduce vapor. Laps in the vapor retarder should be taped. If requested, H&K can provide observation of the vapor retarder prior to placing concrete. The vapor retarder may be omitted in areas that do not have moisture sensitive floor coverings (i.e., exterior parking areas).

6. Regardless of the type of vapor retarder used, moisture can wick up through a concrete slab. Excessive moisture transmission through a slab can cause adhesion loss, warping and peeling of resilient floor coverings, deterioration of adhesive, seam separation, formation of air pockets, mineral deposition beneath flooring, odor and fungi growth. Slabs can be tested for water transmissivity in areas that are moisture sensitive. Commercial sealants, entrained air, fly ash and a reduced water to cement ratio can be incorporated into the concrete to reduce slab permeability. A waterproofing consultant should be contacted if moisture sensitive flooring is proposed.
7. Expansion joints should be provided between the slab and perimeter footings. Control joints should bisect the length and width of the slab at intervals specified by the American Concrete Institute (ACI) or Portland Concrete Association (PCA).
8. Exterior slabs-on-grade, such as sidewalks, may be placed directly on compacted fill without the use of a baserock section. For exterior slabs, the native soil should be ripped, moisture conditioned and recompacted to an 8-inch depth per the grading recommendations presented in this report.
9. All deleterious material must be removed prior to placing concrete.
10. We recommend that concrete have a water/cement ratio no greater than 0.45. Pozzolans or other additives may be added to increase workability.
11. Concrete slabs should be moisture cured for at least seven days after placement. Excessive curling of the slab may occur if moisture conditioning is not performed. This is especially critical for slabs that are cast during the warm summer months.
12. Concrete slabs impart a relatively small load on the subgrade (approximately 50 psf). Therefore, some vertical movement should be anticipated from possible expansion or differential loading.

6.2.4 Rock Anchors

Rock anchors or doweling may be used to provide lateral and uplift resistance where shallow, competent rock limits footing excavation. Rock anchors should

only be installed in competent rock, to be determined in the field by a representative of H&K. The design of rock anchors should include the following criteria.

1. Pull-out resistance for rock anchors will generally be limited by the shear resistance between the grout and the native rock. For design purposes, a pull-out resistance of 50 pounds per square inch of grout/competent rock contact may be used. Because of the strain in the anchor steel during pull-out, we recommend that the upper 6 inches of grout/competent rock contact be neglected when sizing for uplift.
2. We recommend that the drilled hole have a minimum ½-inch annular clearance between the steel and surrounding rock. Thus, grouting a No. 4 rebar would require a 1½-inch diameter hole.
3. Lateral shear resistance for rock anchors should be designed using V_s=0.45 F_y, where F_y equals the tensile strength of the steel. To develop this shear resistance, a minimum steel embedment of 24 inches into undisturbed, competent rock should be used.
4. Prior to anchor placement, loose debris, dust, and standing water in the hole must be removed by blowing with oil-free compressed air, cleaning the hole with a nylon brush, and then blowing out the remaining dust. Dust and debris left in the hole will significantly reduce anchor capacity.
5. We recommend using a cement grout that has a water/cement ratio of less than 0.6 to construct rock anchors. If high strength epoxy or other adhesives are proposed, H&K should review the proposed rock anchor detail prior to construction.
6. If rock anchors are used on more than 10 percent of the foundation system of any given structure, a representative of H&K should perform pull tests on select anchors.

6.2.5 Retaining Wall Design Criteria

The following active and passive pressures are for retaining walls in cut native soil or backfilled with granular onsite soil. If import soil is used, a representative from our firm should be retained to observe and test the soil to determine its strength properties. The pressures exerted against retaining walls may be assumed to be equal to a fluid of equivalent unit weight.

Table 6.2.5.1 presents equivalent fluid unit weights for cut native soil and onsite fill compacted per the grading recommendations presented in this report. For approximately horizontal backfill we assume that the retained fill surface will be no steeper than 10% for a minimum distance of the wall height from the back of the retaining wall. If surcharge loads (such as adjacent building foundations) or live loads will be applied within a distance of the wall height from the back of the wall, we should be retained to review the loading conditions and revise our recommendations, if necessary.

Table 6.2.5.1 - Equivalent Fluid Unit Weights *(1)*

Loading Condition	Retained Cut or Compacted Fill (approximately horizontal backfill)	Retained Cut or Compacted Fill (retained slope up to 2:1, H:V)
Active Pressure (pcf)	30	50
Passive Pressure (pcf)	300	300
At-Rest Pressure (pcf)	50	65
Coefficient of Friction	0.35	0.35

Note: (1) The equivalent fluid unit weights presented are ultimate values and do not include a factor of safety. The passive pressures provided assume footings are founded in competent native soil or engineered fill.

Please note that the use of the tabulated active pressure unit weight requires that the wall design accommodate sufficient deflection for mobilization of the retained soil to occur. Typically, a wall yield of less than 1 percent of the wall height is sufficient to mobilize active conditions in granular soil. However, if the walls are rigid or restrained to prevent rotation, at-rest conditions should be used for design.

Recommendations for design and construction of retaining walls are listed below:

1. Compaction equipment should not be used directly adjacent to retaining walls unless the wall is designed or braced to resist the additional lateral pressures.
2. If any surface loads are closer to the top of the retaining wall than its height, H&K should review the loads and loading configuration. We should be retained to review wall details and plans for any wall over 10 feet in height.
3. All retaining walls must be well drained to reduce hydrostatic pressures. Walls should be provided with a drainage blanket to reduce additional lateral forces and minimize saturation of the backfill soil. Drainage blankets may consist of graded rock drains or geosynthetic blankets.

4. Rock drains should consist of a minimum 12-inch wide, Caltrans Class II, permeable drainage blanket, placed directly behind the wall; or crushed washed rock enveloped in a non-woven geotextile filter fabric such as Amoco 4546™ or equivalent. Drains should have a minimum 4-inch diameter, perforated, schedule 40, PVC pipe placed at the base of the wall, inside the drainrock, with the perforations placed down. The PVC pipe should be sloped so that water is directed away from the wall by gravity. A geosynthetic drainage blanket such as Enkadrain™ or equivalent may be substituted for the rock drain, provided the collected water is channeled away from the wall. If a geosynthetic blanket is used, backfill must be compacted carefully so that equipment or soil does not tear or crush the drainage blanket.
5. Adequate drainage and waterproofing for retaining walls associated with finished interior spaces are essential to reduce the likelihood of seepage and vapor transmission into the living space. We recommend that an appropriate waterproofing sealant be applied to the exterior surface of such retaining walls. A waterproofing consultant may be contacted to further review seepage and vapor transmission.
6. Additional lateral loading on retaining structures due to seismic accelerations may be considered at the designer's option. For an earthquake producing a design horizontal acceleration of 0.2g, we recommend that the resulting additional lateral force applied to unrestrained (cantilevered) retaining structures with drained level backfill onsite be estimated as $P_{ae}=9H^2$ pounds, where H is the height of the wall in feet. The additional seismic force may be assumed to be applied at a height of 0.6H above the base of the wall. This seismic loading is for a drained, level backfill condition only; H&K should be consulted for values of seismic loading due to non-level or non-drained backfill conditions. The use of reduced factors of safety is often appropriate when reviewing overturning and sliding resistance during seismic events.

6.2.6 Pavement Design

Based on our review of the project grading plans, we understand that the parking area in the northernmost portion of the property will be located in an area of cut within the resistant rock. We also anticipate that the fill used for the other parking areas will consist of both onsite soil as well as gravel-size rock fragments derived from rock excavation. Our R-value testing was performed on the shallow surface soil observed onsite, and resulted in an R-value of 11 by exudation pressure. Considering the depth of rock excavation expected onsite, and the likelihood of

significant rock content in the resulting fill material, we have elected to use an R-value of 30 for preliminary design of asphalt pavement sections.

The following recommended asphalt concrete flexible pavement sections are based on preliminary traffic indices (TIs) of 5.5 and 6.5 as requested by King Engineering. The TIs are being considered on a preliminary basis to facilitate planning of the proposed onsite and offsite roadways. Other TIs may need to be considered in design if heavy vehicle loads, truck traffic, or improvements to the adjacent streets are proposed. Pavement design is presented in Table 6.2.6.1 below.

Table 6.2.6.1 - Recommended Pavement Sections

Traffic Index: 5.5 Design R-Value: 30	Alternate A Pavement Section (inches)	Alternate B Pavement Section (inches)
Caltrans Section 26, Standard Specifications, Asphalt Concrete	3.0	3.5
Caltrans Section 26, Class 2 Baserock 95% compaction	7.0	6.0
Subgrade Soil 95% compaction	8.0	8.0
Traffic Index: 6.5 Design R-Value: 30	**Alternate A Pavement Section (inches)**	**Alternate B Pavement Section (inches)**
Caltrans Section 26, Standard Specifications, Asphalt Concrete	3.5	4.0
Caltrans Section 26, Class 2 Baserock 95% compaction	9.0	8.0
Subgrade Soil 95% compaction	8.0	8.0

We make the following recommendations regarding paving at the site.

1. Fill must be compacted to a minimum of 90 percent of the maximum dry density per ASTM D 1557, Modified Proctor. The upper 8 inches of subgrade in areas to be paved must be compacted to a minimum of 95 percent per ASTM D 1557. Baserock should be compacted to a minimum of 95 percent

per ASTM D 1557. Moisture content, density and relative percent compaction should be verified by H&K. In addition to density testing, the subgrade must be proofrolled under the observation of a representative of H&K, prior to baserock placement.

2. Subgrade should be sloped to drain away from the proposed road alignment.
3. Import soil, if used, should be predominantly granular, non-expansive and free of deleterious material. Proposed import should be submitted to H&K for testing prior to transport to the site.
4. Steel reinforced concrete slabs should be considered for use in loading bays, service docks, garbage facilities, and other areas where frequent, heavy vehicle loads are anticipated. The project structural engineer should determine slab thickness and steel reinforcement.
5. Depending on the subsurface conditions encountered and the sources of fill, the actual subgrade material may vary significantly from that tested during this investigation. Representative subgrade samples should be obtained and additional R-value tests performed, if appropriate, to confirm the recommendations in this report. If the results of confirmation testing vary significantly from those used in design, the recommended pavement sections may need to be revised.

7 LIMITATIONS

The following limitations apply to the findings, conclusions and recommendations presented in this report:

1. Our professional services were performed consistent with the generally accepted geotechnical engineering principles and practices employed in northern California. This warranty is in lieu of all other warranties, either expressed or implied.
2. These services were performed consistent with our agreement with our client. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of our services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report. This report is solely for the use of our client unless noted otherwise. Any reliance on this report by a third party is at the party's sole risk.
3. If changes are made to the nature or design of the project as described in this report, then the conclusions and recommendations presented in this report

should be considered invalid. Only our firm can determine the validity of the conclusions and recommendations presented in this report. Therefore, we should be retained to review all project changes and prepare written responses with regards to their impacts on our conclusions and recommendations. However, we may require additional fieldwork and laboratory testing to develop any modifications to our recommendations. Costs to review project changes and perform additional fieldwork and laboratory testing necessary to modify our recommendations are beyond the scope of services presented in this report. Any additional work will be performed only after receipt of an approved scope of services, budget, and written authorization to proceed.

4. The analyses, conclusions and recommendations presented in this report are based on site conditions as they existed at the time we performed our surface and subsurface field investigations. We have assumed that the subsurface soil and groundwater conditions encountered at the location of our exploratory trenches are generally representative of the subsurface conditions throughout the entire project site. However, the actual subsurface conditions at locations between and beyond our exploratory trenches may differ. Therefore, if the subsurface conditions encountered during construction are different than those described in this report, then we should be notified immediately so that we can review these differences and, if necessary, modify our recommendations.

5. The elevation or depth to groundwater underlying the project site may differ with time and location.

6. The project site map shows approximate exploratory trench locations as determined by pacing distances from identifiable site features. Therefore, the trench locations should not be relied upon as being exact nor located with surveying methods.

7. Our geotechnical investigation scope of services did not include evaluating the project site for the presence of historic mining operations or hazardous materials. Although we did not observe evidence of historic mining activity or hazardous materials within the proposed building area at the time of our field investigation, all project personnel should be careful and take the necessary precautions should hazardous materials be encountered during construction. Possible historic mining excavation not detected during our investigation may impact the proposed improvements.

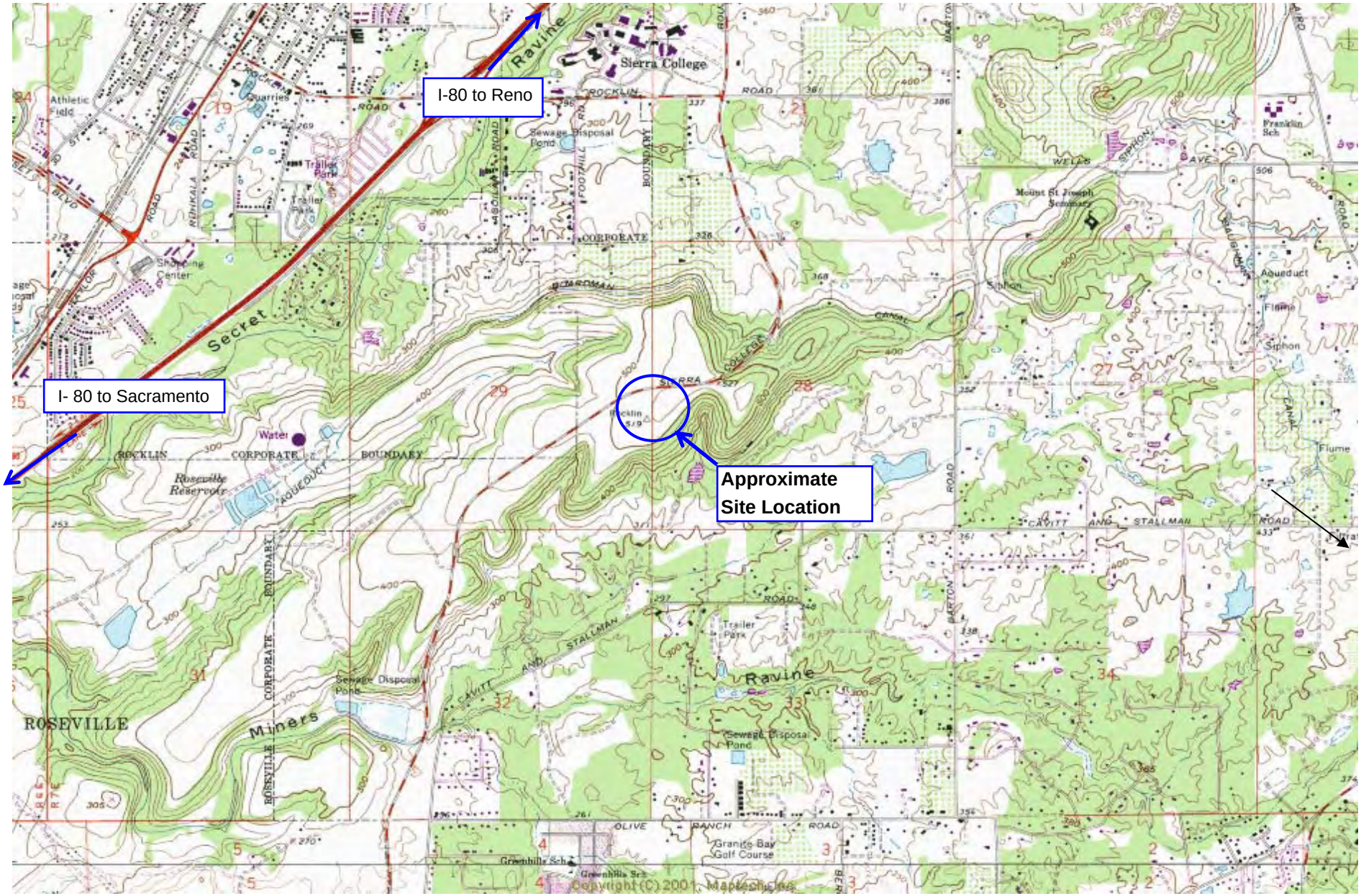
8. The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time. The changes may be due to natural processes or to the works of man, on the

project site or adjacent properties. In addition, changes in applicable or appropriate standards can occur, whether they result from legislation or the broadening of knowledge. Therefore, the recommendations presented in this report should not be relied upon after a period of two years from the issue date without our review.

FIGURES

Figure 1 **Site Vicinity Map**

Figure 2 **Exploratory Trench Location Map**



SOURCE: MAPTECH, Terrain Navigator Pro, ver. 7.0 - USGS 7.5 minute topographic map, Rocklin Quadrangle, 1981.

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS
792 Searls Avenue • Nevada City, CA 95959
(530) 478-1305 • FAX (530) 478-1019

TOPOGRAPHIC VICINITY MAP
APN's 046-050-006 and -008
Placer County, California

PROJECT NO. 3307A-02

FIGURE 1

April 2009

APPENDIX A PROPOSAL

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

Proposal No. PN08237
February 17, 2009

Mr. Rod Shearer
Shearer & Associates
1404 Northeast 134th Street, Suite 200
Vancouver, WA 98685

Reference: ***Proposed Amazing Facts Site***
Sierra College Boulevard and Nightwatch Drive
APNs 046-050-006 and 046-050-008
Placer County, California

Subject: ***Proposal for Geotechnical Engineering Services***

Dear Mr. Shearer:

At your request, Holdrege & Kull (H&K) prepared this proposal to provide geotechnical engineering services for the Amazing Facts property at APNs 046-050-006 and 046-050-008 in Placer County, California. We understand that the project will consist of the construction of a church facility and associated parking areas, driveways and underground utilities. The purpose of our services will be to provide a design-level geotechnical report for the project to satisfy the requirements of Placer County. We previously performed a limited subsurface investigation and prepared a preliminary geotechnical report for the property dated May 25, 2007.

SCOPE OF SERVICES

Based on our understanding of the project, we propose to perform the following scope of services.

Site Investigation

H&K's site investigation will include only the area currently proposed for improvement. We will perform a map and literature search, and review published documents pertinent to the area proposed for improvement. We will perform a site reconnaissance to identify surface conditions that may impact the proposed development plans.

(530) 478-1305 • FAX (530) 478-1019 • E-mail: handk@HandK.net • 792 Searls Avenue • Nevada City, CA 95959 • A California Corporation

Our subsurface investigation will include the excavation of 3 to 4 shallow exploratory trenches in the vicinity of the proposed improvements to depths up to 10 feet or to resistant rock. We will obtain undisturbed and bulk samples of soil for laboratory testing. An engineer or geologist from our firm will log the trenches in the field.

Laboratory Testing

H&K will perform laboratory tests on selected soil samples to determine their engineering material properties. We anticipate our laboratory testing will include moisture/density determination, Atterberg limits, expansion index (if appropriate), direct shear testing, and R-value determination. Direct shear test results are used to calculate foundation and retaining wall design criteria. Moisture/density tests are used to determine the dry density and moisture content of relatively undisturbed soil samples. R-value test results will be used to provide pavement design recommendations for the proposed parking area and driveways.

If clayey, potentially expansive soil is observed, we will perform expansion index and/or Atterberg limits testing to evaluate the expansion potential of the soil.

Engineering

Using the laboratory test results, we will perform the necessary calculations to provide foundation and retaining wall design criteria, recommended pavement thicknesses based on assumed traffic indices, and general grading and drainage recommendations.

Geotechnical Report

Following completion of the above tasks, we will compile a geotechnical report that will include:

- Logs of exploratory trenches;
- Site plan showing approximate location of exploratory trenches;
- Description of site geology, and the soil and rock conditions encountered;
- Conclusions regarding the feasibility of the proposed improvements, including retaining structures, from a geotechnical standpoint; and
- Site class and seismic design criteria based on the 2007 CBC.

As required by the County of Placer's memorandum dated December 24, 2008, H&K's geotechnical report will address:

- Pavement section design for parking areas and driveways;
- Foundation and retaining wall design criteria;
- General recommendations for grading and erosion control;
- Observations regarding groundwater and expansive soil; and
- Conclusions regarding slope stability.

FEES

We performed a preliminary investigation at the site in 2007. This design-level investigation requires that we perform additional subsurface investigations and soil sampling, as the samples we collected in 2007 were discarded after one year. We are also required to address County requirements regarding slope stability, which was not included in our previous proposal.

Our services will be performed on a time and materials basis per the attached 2009 fee schedule. Our fee will not exceed $4,000 and may be less depending upon the time required to obtain the soil samples and perform stability analysis. Progress billing will be monthly based on the fee schedule.

TIMING

We will perform our field investigation within one week of receiving authorization to proceed, weather permitting. We can usually provide verbal, preliminary design recommendations within two weeks of our field investigation. We anticipate the geotechnical report would be issued within three weeks of the field investigation.

AUTHORIZATION TO PROCEED

If you are in agreement with the scope of services and fee presented in this proposal, please sign the attached agreement for geotechnical engineering services and return one copy along with a retainer in the amount of $2,000 as our authorization to proceed.

We appreciate the opportunity to provide you with this proposal. If you have any questions regarding this proposal, please feel free to contact our office.

Sincerely,

HOLDREGE & KULL

Jason W. Muir, P.E., G.E.
Principal Engineer

encl: Agreement for Geotechnical Engineering Services

copy: Rod Shearer via email, RShearer@shearerandassociates.com

F:\2 Proposals\1 - 2008 Proposals\PN08237 Amazing Facts\PN08237 GtkPro.doc

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

AGREEMENT FOR GEOTECHNICAL ENGINEERING SERVICES

THIS AGREEMENT, effective as of this 17 day of February 2009, is by and between ("Client") and Holdrege & Kull Consulting Engineers and Geologists ("Engineer").

THE PROJECT is generally described as: Amazing Facts and is located at Sierra College Boulevard and Nightwatch Drive, Placer County, California.

THIS AGREEMENT consists of the following documents which are incorporated herein by reference:

- GENERAL CONDITIONS FOR GEOTECHNICAL ENGINEERING SERVICES; and
- Engineer's PROPOSAL PN08237 dated February 17, 2009 and FEE SCHEDULE; and
- Any documents specifically listed below or incorporated by reference in the listed documents.

N/A
N/A
N/A
N/A

Engineer agrees to perform the Services set forth in this Agreement and in accordance with its terms, including all attachments incorporated herein by reference. This Agreement may not be modified or altered, except in writing as specifically described in this Agreement.

	CLIENT:	ENGINEER:
Signature:		
Print Name:		JASON W. MUIR, CE 60167
Title:		Principal
Company:		Holdrege & Kull
Street Address:		792 Searls Avenue
City, State, Zip Code:		Nevada City, CA 95959
Email:		jmuir@handk.net or rmack@handk.net
Phone:		530 478 1305
Fax:		530 478 1019
Date:		February 17, 2009

GENERAL CONDITIONS FOR GEOTECHNICAL ENGINEERING SERVICES

1. DEFINITIONS

1.1. Contract Documents. Plans, specifications, and agreements between Client and Contractors, including addenda, amendments, supplementary instructions, and change orders.

1.2. Contractor. The contractor or contractors, including its/their subcontractors of every tier, retained to construct the Project for which Engineer is providing Services under this Agreement.

1.3. Day(s). Calendar day(s) unless otherwise stated.

1.4. Hazardous Materials. The term Hazardous Materials means any toxic substances, chemicals, radioactivity, pollutants or other materials, in whatever form or state, known or suspected to impair the environment in any way whatsoever. Hazardous Materials include, but are not limited to, those substances defined, designated or listed in any federal, state or local law, regulation or ordinance concerning hazardous wastes, toxic substances or pollution.

1.5. Services. The Services provided by Engineer as set forth in this Agreement, the PROPOSAL and any written amendment to this Agreement.

1.6. Work. The labor, materials, equipment and services required to complete the work described in the Contract Documents.

2. SCOPE OF SERVICES

Engineer will perform the Services described in the attached PROPOSAL.

2.1. Changes in Scope. If Engineer provides Client with a written confirmation of a change in the scope of services outlined in the PROPOSAL, it will become an amendment to this Agreement unless Client objects in writing within 5 business days after receipt. All Services performed by Engineer on the Project are subject to the terms and limitations of this Agreement. If Services are performed, but the parties do not reach agreement concerning modifications to the scope of services outlined in the PROPOSAL or compensation, then the terms and limitations of this Agreement apply to such Services, except for the payment terms. The parties agree to resolve disputes concerning modifications to scope or compensation pursuant to Section 19, "Disputes."

2.2. Licenses. Engineer will procure and maintain business and professional licenses and registrations necessary to provide its Services.

2.3. Excluded Services. Engineer's Services under this Agreement include only those Services specified in the PROPOSAL.

2.3.1. General. Client expressly waives any claim against Engineer resulting from its failure to perform recommended additional Services that Client has not authorized Engineer to perform, and any claim that Engineer failed to perform services that Client instructs Engineer not to perform.

2.3.2. Biological Pollutants. Engineer's scope of services outlined in the PROPOSAL specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, viruses, and/or any of their byproducts. Engineer's scope of services outlined in the PROPOSAL will not include any interpretations, recommendations or findings pertaining to Biological Pollutants. Client agrees that Engineer has no liability for any claims alleging a failure to investigate, detect, prevent, assess, or make recommendations for preventing, controlling, or abating Biological Pollutants. Furthermore, Client agrees to defend, indemnify, and hold harmless Engineer from all claims by any third party concerning Biological Pollutants, except for damages caused by Engineer's sole negligence.

3. PAYMENTS TO ENGINEER

3.1. Basic Services. Engineer will perform Services set forth in the attached PROPOSAL and FEE SCHEDULE (if applicable) for the amount(s) set forth therein.

3.2. Additional Services. Any Services performed under this Agreement, except those Services expressly identified in the attached PROPOSAL, will be provided on a time and materials basis unless otherwise specifically agreed to in writing by both parties.

3.3. Estimate of Fees. Engineer will, to the best of its ability, perform the Services and accomplish the objectives defined in this Agreement within any written cost estimate provided by Engineer. Client recognizes that changes in scope and schedule, and unforeseen circumstances can all influence the successful completion of Services within the estimated cost. The use of an estimate of fees or of a "not to exceed" limitation is not a guarantee that the Services will be completed for that amount; rather, it indicates that Engineer shall not incur fees and expenses in excess of the estimate or limitation amount without obtaining Client's agreement to do so.

3.4. Rates. Client will pay Engineer at the rates set forth in the PROPOSAL and FEE SCHEDULE, as applicable.

3.4.1. Changes to Rates. Client and Engineer agree that the FEE SCHEDULE is subject to periodic review and amendment, as appropriate to reflect Engineer's then-current fee structure. Engineer will give Client at least 30 days advance notice of any

changes. Unless Client objects in writing to the proposed amended fee structure within 30 days of notification, the amended fee structure will be incorporated into this Agreement and will then supersede any prior fee structure. If Client timely objects to the amended fee structure, and Engineer and Client cannot agree upon a new fee structure within 30 days after notice, Engineer may terminate this Agreement and be compensated as set forth under Section 18, "Termination."

3.4.2. Prevailing Wages. Unless Client specifically informs Engineer in writing that prevailing wage regulations cover the Project and the PROPOSAL identifies it as covered by such regulations, Client will reimburse, defend, indemnify and hold harmless Engineer from and against any liability resulting from a subsequent determination that prevailing wage regulations cover the Project, including all costs, fines and attorneys' fees.

3.5. Payment Timing; Late Charge. All invoices are due upon receipt. All amounts unpaid 30 days after the invoice date will include a late payment charge from the date of the invoice, at the rate of 1-1/2% per month or the highest rate permitted by law. Client will reimburse Engineer for any costs, including legal fees, associated with the collection of unpaid amounts.

4. STANDARD OF PERFORMANCE; DISCLAIMER OF WARRANTIES

4.1. Level of Service. Engineer offers different levels of geotechnical engineering Services to suit the desires and needs of different clients. Although the possibility of error can never be eliminated, more detailed and extensive Services yield more information and reduce the probability of error, but at increased cost. Client must determine the level of Services adequate for its purposes. Client has reviewed the PROPOSAL and has determined that it does not need or want a greater level of Services than that being provided.

4.2. Standard of Care. Subject to the limitations inherent in the agreed scope of services outlined in the PROPOSAL as to the degree of care, the amount of time and expenses to be incurred, and subject to any other limitations contained in this Agreement, Engineer may perform its Services consistent with that level of care and skill ordinarily exercised by other professional engineers practicing in the same locale and under similar circumstances at the time the Services are performed.

4.3. No Warranty. No warranty, express or implied, is included or intended by this Agreement.

5. ESTIMATE OF CONSTRUCTION COSTS

Client acknowledges that construction and Project development are subject to many influences that are not subject to precise forecasting and are outside of Engineer's control. Client further acknowledges that actual costs incurred may vary substantially from the estimates prepared by Engineer and that Engineer does not warrant or guaranty the accuracy of construction or development cost estimates.

6. CONSTRUCTION PHASE SERVICES

If Engineer's scope of services outlined in the PROPOSAL includes observation and/or testing during the course of construction, Engineer may:

6.1. Construction Observation.

6.1.1. Site Meetings & Visits. Engineer will participate in job site meetings as requested by Client, and, unless otherwise requested by Client, visit the site at times specified in the PROPOSAL or, if not specified in the PROPOSAL, at intervals as Engineer deems appropriate to the various stages of construction to observe the geotechnical conditions encountered by Contractor and the progress and quality of the geotechnical aspects of the Work. Engineer will rely on Client or Client's representative for timely notification of changes to the construction schedule, so that Engineer can schedule site visits for testing and observation accordingly. Based on information obtained during such visits and on such observations, Engineer may inform Client of the progress of the geotechnical aspects of the Work. Client understands that Engineer may not be on site continuously; and, unless expressly agreed otherwise, Engineer will not observe all of the Work.

6.1.2. Contractor's Performance. Engineer does not, and cannot, warrant or guarantee that all of the geotechnical Work performed by Contractor meets the requirements of Engineer's geotechnical recommendations or the plans and specifications for such geotechnical Work; nor can Engineer be responsible for Contractor's failure to perform the Work in accordance with the plans, specifications or the recommendations of Engineer.

6.1.3. Contractor's Responsibilities. Engineer will not supervise, direct or have control over the Work nor will Engineer have authority over or responsibility for the means, methods, techniques, sequences or procedures of construction selected by Contractor for the geotechnical aspects of the Project; for safety precautions and programs incident to the Work; nor for any failure of Contractor to comply with Laws and Regulations applicable to Contractor furnishing and performing its Work.

6.1.4. Final Report. At the conclusion of Construction Phase Services, Engineer will provide Client with a written report summarizing the tests and observations, if any, made by Engineer.

6.2. Review of Contractor's Submittals. If included in the scope of services outlined in the PROPOSAL, Engineer will review and take appropriate action on the Contractor's submittals, such as shop drawings, product data, samples, and other required submittals. Engineer will review such submittals solely for general conformance with Engineer's design, and will not

include review for the following, all of which will remain the responsibility of the Contractor: accuracy or completeness of details, quantities or dimensions; construction means, methods, sequences or procedures; coordination among trades; or construction safety.

6.3. Tests. Tests performed by Engineer on finished Work or Work in progress are taken intermittently and indicate the general acceptability of the Work on a statistical basis. Engineer's tests and observations of the Work are not a guarantee of the quality of Work and do not relieve other parties from their responsibility to perform their Work in accordance with applicable plans, specifications and requirements.

7. CLIENT'S RESPONSIBILITIES

In addition to payment for the Services performed under this Agreement, Client agrees to:

7.1. Cooperation. Assist and cooperate with Engineer in any manner necessary and within its ability to facilitate Engineer's performance under this Agreement.

7.2. Representative. Designate a representative with authority to receive all notices and information pertaining to this Agreement, communicate Client's policies and decisions, and assist as necessary in matters pertaining to the Project and this Agreement. Client's representative will be subject to change by written notice.

7.3. Rights of Entry. Provide access to and/or obtain permission for Engineer to enter upon all property, whether or not owned by Client, as required to perform and complete the Services. Engineer will operate with reasonable care to reduce damage to the Project Site(s). However, Client recognizes that Engineer's operations and the use of investigative equipment may unavoidably alter conditions or affect the environment at the existing Project Site(s). The cost of repairing such damage will be borne by Client and is not included in the fee unless otherwise stated.

7.4. Relevant Information. Supply Engineer with all information and documents in Client's possession or knowledge which are relevant to Engineer's Services. Client warrants the accuracy of any information supplied by it to Engineer, and acknowledges that Engineer is entitled to rely upon such information without verifying its accuracy. Prior to the commencement of any Services in connection with a specific property, Client will notify Engineer of any known potential or possible health or safety hazard existing on or near the Project Site, with particular reference to Hazardous Materials or conditions.

7.5. Subsurface Structures. Correctly designate on plans to be furnished to Engineer, the location of all subsurface structures, such as pipes, tanks, cables and utilities within the property lines of the Project Site(s), and be responsible for any damage inadvertently caused by Engineer to any such structure or utility not so designated. Engineer is not liable to Client for any losses, damages or claims arising from damage to subterranean structures or utilities that were not correctly shown on plans furnished by Client to Engineer.

8. CHANGED CONDITIONS

If Engineer discovers conditions or circumstances that it had not contemplated at the commencement of this Agreement ("Changed Conditions"), Engineer will notify Client of the Changed Conditions. Client and Engineer agree to that they will then renegotiate in good faith the terms and conditions of this Agreement. If Engineer and Client cannot agree upon amended terms and conditions within 30 days after notice, Engineer may terminate this Agreement and be compensated as set forth in Section 18, "Termination."

9. HAZARDOUS MATERIALS

Client understands that Engineer's Services under this Agreement are limited to geotechnical engineering and that Engineer has no responsibility to locate, identify, evaluate, treat or otherwise consider or deal with Hazardous Materials. Client is solely responsible for notifying all appropriate federal, state, municipal or other governmental agencies, including the potentially affected public, of the existence of any Hazardous Materials located on or in the Project site, or located during the performance of this Agreement. The existence or discovery of Hazardous Materials constitutes a Changed Condition under this Agreement.

10. CERTIFICATIONS

Client agrees not to require that Engineer execute any certification with regard to Services performed or Work tested and/or observed under this Agreement unless: 1) Engineer believes that it has performed sufficient Services to provide a sufficient basis to issue the certification; 2) Engineer believes that the Services performed or Work tested and/or observed meet the criteria of the certification; and 3) Engineer has reviewed and approved in writing the exact form of such certification prior to execution of this Agreement. Any certification by Engineer is limited to an expression of professional opinion based upon the Services performed by Engineer, and does not constitute a warranty or guaranty, either expressed or implied.

11. ALLOCATION OF RISK

11.1. Limitation of Remedies. The total cumulative liability of Engineer, its subEngineers and subcontractors, and all of their respective shareholders, directors, officers, employees and agents (collectively "Engineer Entities"), to Client arising from Services under this Agreement, including attorney's fees due under this Agreement, will not exceed the gross compensation received by Engineer under this Agreement or $50,000, whichever is

greater; provided, however, that such liability is further limited as described below. This limitation applies to all lawsuits, claims or actions that allege errors or omissions in Engineer's Services, whether alleged to arise in tort, contract, warranty, or other legal theory. Upon Client's written request, Engineer and Client may agree to increase the limitation to a greater amount in exchange for a negotiated increase in Engineer's fee, provided that they amend this Agreement in writing as provided in Section 20.

11.2. Indemnification.

11.2.1. Indemnification of Client. Subject to the provisions and limitations of this Agreement and all otherwise applicable statutes of limitations and repose, Engineer agrees to indemnify and hold harmless Client, its shareholders, officers, directors and employees from and against any and all claims, suits, liabilities, damages, expenses (including reasonable attorney's fees and costs of defense), or other losses (collectively "Losses") to the extent caused by Engineer's negligent performance of its Services under this Agreement.

11.2.2. Indemnification of Engineer. Client will indemnify and hold harmless Engineer Entities from and against any and all Losses to the extent caused by the negligence of Client, its employees, agents and contractors. In addition, except to the extent caused by Engineer's sole negligence, Client expressly agrees to defend, indemnify and hold harmless Engineer Entities from and against any and all Losses arising from or related to the existence, disposal, release, discharge, treatment or transportation of Hazardous Materials, or the exposure of any person to Hazardous Materials, or the degradation of the environment due to the presence, discharge, disposal, release of or exposure to Hazardous Material.

11.3. Consequential Damages. Neither Client nor Engineer will be liable to the other for any special, consequential, incidental or penal losses or damages including but not limited to losses, damages or claims related to the unavailability of property or facilities, shutdowns or service interruptions, loss of use, profits, revenue, or inventory, or for use charges, cost of capital, or claims of the other party and/or its customers.

11.4. ***No Personal Liability.*** Client expressly waives that right to sue or otherwise make any claim against any of the Engineer's officers or employees, past or present, as individuals, for any cause.

11.5. Continuing Agreement. The indemnity obligations and the limitations of liability established under this Agreement will survive the expiration or termination of this Agreement. If Engineer provides Services to Client that the parties do not confirm through execution of an amendment to this Agreement, the obligations of the parties to indemnify each other and the limitations on liability established under this Agreement apply to such Services as if the parties had executed an amendment.

12. INSURANCE

12.1. Engineer's Insurance. Engineer will obtain, if reasonably available, the following coverage:

12.1.1. Statutory Workers' Compensation/ Employer's Liability Insurance;

12.1.2. Commercial General Liability Insurance with a limit of not less than $1,000,000 per occurrence and $1,000,000 aggregate limit;

12.1.3. Automobile Liability Insurance, including liability for all owned, hired and non-owned vehicles with a combined single limit per occurrence of $1,000,000; and

12.1.4. Professional Liability Insurance in amounts of $1,000,000 per claim and annual aggregate.

12.2. Contractor's Insurance. Client shall require that all Contractors and subcontractors for the Project name Engineer as an additional insured under their General Liability and Automobile Liability insurance policies. If Client is not the Project owner, Client will require the Project owner to require the owner's Contractor to purchase and maintain General Liability, Builder's Risk, Automobile Liability, Workers' Compensation, and Employer's Liability insurance with limits no less than as set forth above, and to name Engineer and its subcontractors and subconsultants as additional insureds on the owners' General Liability insurance.

12.3. Certificates of Insurance. Upon request, Engineer and Client will each provide the other with certificate(s) of insurance evidencing the existence of the policies required herein. Except for Professional Liability and Workers' Compensation Insurance, all policies required herein shall contain a waiver of subrogation.

13. OWNERSHIP AND USE OF DOCUMENTS

13.1. Client Documents. All documents provided by Client will remain the property of Client. Engineer will return all such documents to Client upon request, but may retain file copies of such documents.

13.2. Engineer's Documents. Unless otherwise agreed in writing, all documents and information prepared by Engineer or obtained by Engineer from any third party in connection with the performance of Services, including, but not limited to, Engineer's reports, boring logs, maps, field data, field notes, drawings and specifications, laboratory test data and other similar documents (collectively "Documents") are the property of Engineer. Engineer has the right, in its sole discretion, to dispose of or retain the Documents.

13.3. Use of Documents. All Documents prepared by Engineer are solely for use by Client.

13.3.1. Use by Client. Client has the right to reuse the Documents for purposes reasonably connected with the Project for which the Services are

provided, including without limitation design and licensing requirements of the Project.

13.3.2. Use by Engineer. Engineer retains the right of ownership with respect to any patentable concepts or copyrightable materials arising from its Services and the right to use the Documents for any purpose.

13.4. Electronic Media. Engineer may agree at Client's request to provide Documents and information in an electronic format. Client recognizes that Documents or other information recorded on or transmitted as electronic media are subject to undetectable alteration due to (among other causes) transmission, conversion, media degradation, software error, or human alteration. Accordingly, all Documents and information provided by Engineer in electronic media are for informational purposes only and not as final documentation. Unless otherwise defined in the PROPOSAL, Engineer's electronic Documents and media will conform to Engineer's standards. Engineer will provide any requested electronic Documents for a 30-day acceptance period, and Engineer will correct any defects reported by Client to Engineer during this period. Engineer makes no warranties, either express or implied, regarding the fitness or suitability of any electronic Documents or media.

13.5. Unauthorized Reuse. No party other than Client may rely, and Client will not represent to any other party that it may rely on Documents without Engineer's express prior written consent and receipt of additional compensation. Client will not permit disclosure, mention, or communication of, or reference to the Documents in any offering circular, securities offering, loan application, real estate sales documentation, or similar promotional material without Engineer's express prior written consent. Client waives any and all claims against Engineer resulting in any way from the unauthorized reuse or alteration of Documents by itself or anyone obtaining them through Client. Client will defend, indemnify and hold harmless Engineer from and against any claim, action or proceeding brought by any party (including reasonable attorneys fees, expert fees and other costs of defense) arising out of the reuse, alteration, or reliance on the Documents or information or opinions contained in Documents without having obtained Engineer's prior written consent.

14. SAMPLES AND CUTTINGS

14.1. Sample Retention. If Engineer provides laboratory testing or analytic Services, Engineer will preserve such soil, rock, water, or other samples as it deems necessary for the Project, but no longer than 45 days after issuance of any Documents that include the data obtained from these samples. Client will promptly pay and be responsible for the removal and lawful disposal of all contaminated samples, cuttings, Hazardous Materials, and other hazardous substances.

14.2. Monitoring Wells. Client will take custody of all monitoring wells and probes installed during any investigation by Engineer, and will take any and all necessary steps for the proper maintenance, repair or closure of such wells or probes at Client's expense.

15. RELATIONSHIP OF THE PARTIES

Engineer will perform Services under this Agreement as an independent contractor.

16. CONSENT TO ASSIGNMENT

Client and Engineer, respectively, each binds itself and its successors and assigns to the other and its successors and assigns with respect to all covenants of this Agreement. Neither Client nor Engineer shall assign, sublet or transfer any rights under or interest in this Agreement without the prior written consent of the other party, including but not limited to: (a) any interest in the proceeds of this Agreement, or any proceeds of claims arising from or under this Agreement; (b) any claims, causes of action or rights against the other party arising from or under this Agreement; (c) the control of claims or causes of action against the other party arising from or under this Agreement; and (d) any proceeds from claims or causes of action as security, collateral or the source of payment for any notes or liabilities to any third party. This section shall not, however, apply to any subrogation rights (if any) of any insurer of either party. This section shall survive the completion or termination of this Agreement for any reason and shall remain enforceable between parties.

Engineer may subcontract for the services of others without obtaining Client's consent if Engineer deems it necessary or desirable for others to perform certain Services.

17. SUSPENSION AND DELAYS

17.1. Procedures. Client may, at any time by 10 days written notice suspend performance of all or any part of the Services by Engineer. Engineer may terminate this Agreement if Client suspends Engineer's Services for more than 60 days and Client will pay Engineer as set forth under Section 18, "Termination." If Client suspends Engineer's Services, or if Client or others delay Engineer's Services, Client and Engineer agree to equitably adjust: (1) the time for completion of the Services; and (2) Engineer's compensation in accordance with Engineer's then current Fee Schedule for the additional labor, equipment, and other charges associated with maintaining its workforce for Client's benefit during the delay or suspension, or charges incurred by Engineer for demobilization and subsequent remobilization.

17.2. Liability. Engineer is not liable to Client for any failure to perform or delay in performance due to circumstances beyond Engineer's control, including but not limited to pollution, contamination, or release of hazardous substances, strikes, lockouts, riots, wars, fires, flood, explosion, "acts of God," adverse weather

conditions, acts of government, labor disputes, delays in transportation or inability to obtain material and equipment in the open market.

18. TERMINATION

18.1. Termination for Convenience. Engineer and Client may terminate this Agreement for convenience upon 30 days written notice delivered or mailed to the other party.

18.2. Termination for Cause. In the event of material breach of this Agreement, the party not breaching the Agreement may terminate it upon 10 days written notice delivered or mailed to the other party. The termination notice shall state the basis for the termination. The Agreement may not be terminated for cause if the breaching party cures the breach within the 10-day period.

18.3. Payment on Termination. Following termination other than for Engineer's material breach of this Agreement, Client will pay Engineer for Services performed prior to the termination notice date, and for any necessary Services and expenses incurred in connection with the termination of the Project, including but not limited to, the costs of completing analysis, records and reports necessary to document job status at the time of termination and costs associated with termination of subcontractor contracts in accordance with Engineer's then current Fee Schedule.

19. DISPUTES

19.1. Mediation. All disputes between Engineer and Client are subject to mediation. Either party may demand mediation by serving a written notice stating the essential nature of the dispute, amount of time or money claimed, and requiring that the matter be mediated within 45 days of service of notice.

19.2. Precondition to Other Action. No action or suit may be commenced unless the mediation did not occur within 45 days after service of notice; or the mediation occurred but did not resolve the dispute; or a statute of limitation would elapse if suit was not filed prior to 45 days after service of notice.

19.3. Choice of Law; Venue. This Agreement will be construed in accordance with and governed by the laws of the state in which the Project is located. Unless the parties agree otherwise, any mediation or other legal proceeding will occur in the state in which the Project is located.

19.4. Statutes of Limitations. Any applicable statute of limitations will be deemed to commence running on the earlier of the date of substantial completion of Engineer's Services under this Agreement or the date on which claimant knew, or should have known, of facts giving rise to its claims.

20. MISCELLANEOUS

20.1. Integration and Severability. This Agreement reflects the entire agreement of the parties with respect to its terms and supersedes all prior agreements, whether written or oral. If any portion of this Agreement is void or voidable, such portion will be deemed stricken and the Agreement reformed to as closely approximate the stricken portions as the law allows.

20.2. Modification of this Agreement. This Agreement may not be modified or altered, except by a written agreement signed by authorized representatives of both parties and referring specifically to this Agreement.

20.3. Notices. Any and all notices, requests, instructions, or other communications given by either party to the other must be in writing and either hand delivered to the recipient, or delivered by first-class mail (postage prepaid), or express mail (billed to sender), by fax, or by email, at the addresses given in this Agreement.

20.4. Headings. The headings used in this Agreement are for convenience only and are not a part of this Agreement.

20.5. Waiver. The waiver of any term, conditions or breach of this Agreement will not operate as a subsequent waiver of the same term, condition, or breach.

End of General Conditions

APPENDIX B ***IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT (Included with permission of ASFE, Copyright 2004)***

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.

IIGER06045.0M

APPENDIX C EXPLORATORY TRENCH LOGS

TRENCH T-1

PROJECT NO.	PROJECT NAME	ELEVATION	DATE	PAGE	TRENCH NO.
3307A-02	AMAZING FACTS SITE	526 FEET MSL	02-27-09	1 OF 1	T-1

EXCAVATION METHOD	SAMPLING METHOD	GROUNDWATER ENCOUNTERED	CAVED
KUBOTA KX121-3 WITH 18-INCH BUCKET	NONE	NONE	NONE

SAMPLE NO.	POCKET PEN (tsf)	DRY DENSITY (PCF)	PERCENT MOISTURE	DEPTH (FT)	USCS	DESCRIPTIONS/REMARKS
					GW	REDDISH BROWN (2.5YR 4/4), SILTY GRAVEL WITH SAND, MOIST, LOOSE, NON-PLASTIC, FINE ROOTS TO 2 INCHES BGS
				1		TRENCH TERMINATED AT 12 INCHES BGS, REFUSAL ON RESISTANT ROCK
				2		
				3		
				4		
				5		
				6		
				7		
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

HOLDREGE & KULL

TRENCH T-2

PROJECT NO.	PROJECT NAME	ELEVATION	DATE	PAGE	TRENCH NO.
3307A-02	AMAZING FACTS SITE	520 FEET MSL	02-27-09	1 OF 1	T-2

EXCAVATION METHOD	SAMPLING METHOD	GROUNDWATER ENCOUNTERED	CAVED
KUBOTA KX121-3 WITH 18-INCH BUCKET	NONE	NONE	NONE

SAMPLE NO.	POCKET PEN (tsf)	DRY DENSITY (PCF)	PERCENT MOISTURE	DEPTH (FT)	USCS	DESCRIPTIONS/REMARKS
					GW	REDDISH BROWN (2.5YR 4/4), SILTY GRAVEL WITH SAND, MOIST, LOOSE, NON-PLASTIC
				1		TRENCH TERMINATED AT 10 INCHES BGS, REFUSAL ON RESISTANT ROCK
				2		
				3		
				4		
				5		
				6		
				7		
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

HOLDREGE & KULL

TRENCH T-3

PROJECT NO.	PROJECT NAME	ELEVATION	DATE	PAGE	TRENCH NO.
3307A-02	AMAZING FACTS SITE	517.5 FEET MSL	02-27-09	1 OF 1	T-3

EXCAVATION METHOD	SAMPLING METHOD	GROUNDWATER ENCOUNTERED	CAVED
KUBOTA KX121-3 WITH 18-INCH BUCKET	NONE	NONE	NONE

SAMPLE NO.	POCKET PEN (tsf)	DRY DENSITY (PCF)	PERCENT MOISTURE	DEPTH (FT)	USCS	DESCRIPTIONS/REMARKS
					GW	REDDISH BROWN (2.5YR 4/4), SILTY GRAVEL WITH SAND, MOIST, LOOSE, NON-PLASTIC, FINE ROOTS TO 3 INCHES BGS
				1		TRENCH TERMINATED AT 8 INCHES BGS, REFUSAL ON RESISTANT ROCK
				2		
				3		
				4		
				5		
				6		
				7		
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

HOLDREGE & KULL

TRENCH T-4

PROJECT NO.	PROJECT NAME	ELEVATION	DATE	PAGE	TRENCH NO.
3307A-02	AMAZING FACTS SITE	522.5 FEET MSL	02-27-09	1 OF 1	T-4

EXCAVATION METHOD	SAMPLING METHOD	GROUNDWATER ENCOUNTERED	CAVED
KUBOTA KX121-3 WITH 18-INCH BUCKET	NONE	NONE	NONE

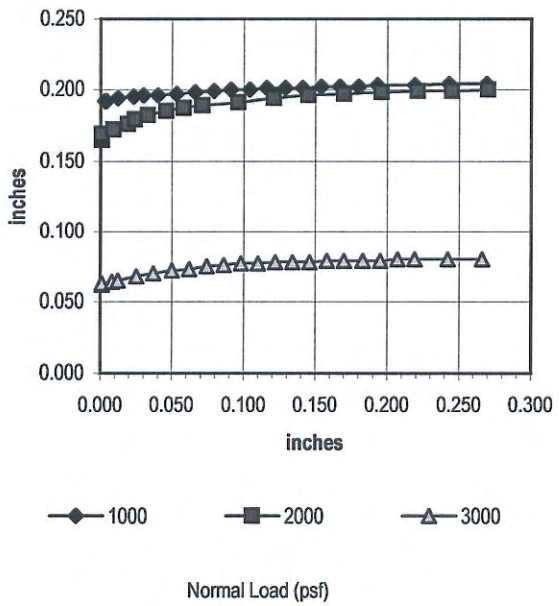
SAMPLE NO.	POCKET PEN (tsf)	DRY DENSITY (PCF)	PERCENT MOISTURE	DEPTH (FT)	USCS	DESCRIPTIONS/REMARKS
				1	GW	REDDISH BROWN (2.5YR 4/4), SILTY GRAVEL WITH SAND, MOIST, LOOSE, NON-PLASTIC, FINE ROOTS TO 2 INCHES BGS
				2		TRENCH TERMINATED AT 18 INCHES BGS, REFUSAL ON RESISTANT ROCK
				3		
				4		
				5		
				6		
				7		
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

HOLDREGE & KULL

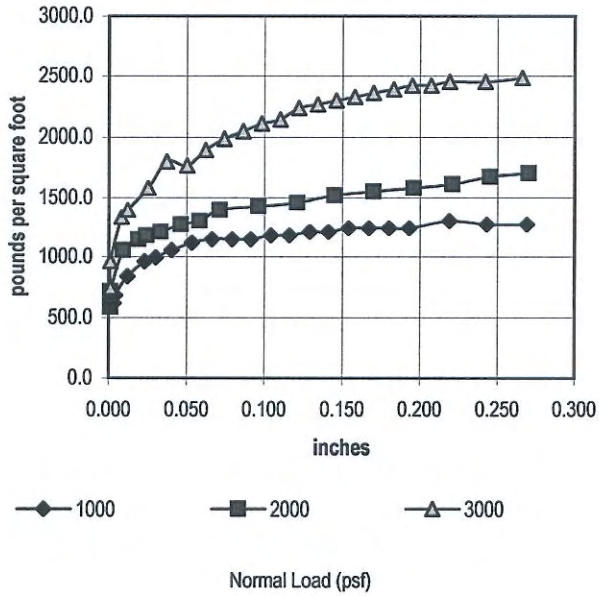
APPENDIX D LABORATORY TEST DATA

DIRECT SHEAR
TEST RESULTS

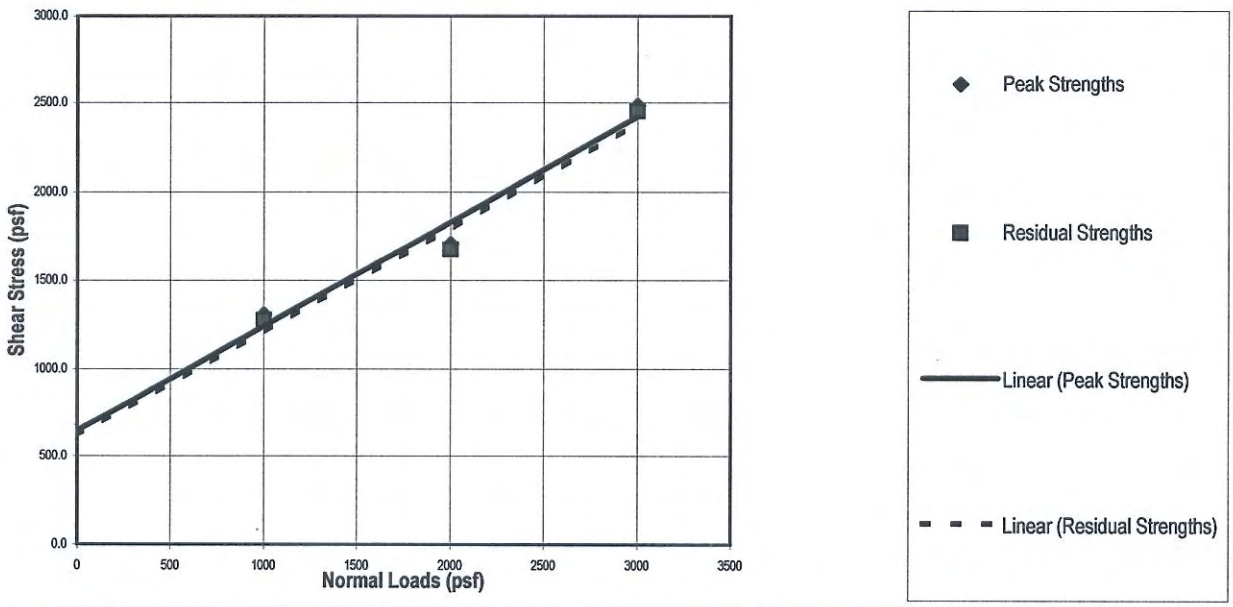
Shear Strain vs. Normal Strain



Shear Strain vs. Shear Stress



Mohr-Coulomb Failure Envelope



SHEAR STRENGTH TEST RESULTS		
PARAMETERS	PEAK STRENGTH:	RESIDUAL STRENGTH:
FRICTION ANGLE, (Degree)	30.5	30.5
COHESION, (psf)	652.0	621.0

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS
792 SEARLS AVENUE
NEVADA CITY, CA 95959
(530) 478-1305 FAX 478-1019

PROJECT NAME:	Amazing Facts		
PROJECT NO.:	3307A-02	DATE:	3/18/2009
BORING / TRENCH NO.:	4	LAB NO.:	9-028
SAMPLE NO.:	PB4-1	SAMPLE DEPTH (ft.):	0-1.5
DESCRIPTION:	Reddish Brown (2.5YR 4/4) Silty Gravel with Sand		

Expansion Index/Swell

ASTM D4829/UBC 18.2

Project No.:	3307A-02	Project Name:	Amazing Facts			Date:	3/27/2009
Sample No.:	PB2-1	Boring/Trench No.:	2	Depth (ft.)	0-10"	Tested By:	MLHF
Soil Description:	Reddish Brown (2.5YR 4/4) Silty Gravel with Sand					Checked By:	JHA
Estimated % of sample retained on #4:						Lab. No.:	15-09-39

Specimen Type:	Undisturbed:		Disturbed:		Remolded to:		ASTM Guidelines
Tube Dia. (Inch) =		Ring Dia. (Inch) =	4	Ring Height (Inch) =	1.00		

FIELD DATA Tube Sample Moisture & Density			LAB DATA	Test wt.	144	Test wt.		Test wt.	
				Initial	Final	Initial	Final	Initial	Final
Tare Tube Number		TI	Tare Number	0.00					
Tare Weight	(gr)	51.05	Tare Ring Weight (gr)	200.93	0.00				
Wet Soil + Tare	(gr)	132.77	Tare Pan Weight (gr)	0.00	279.93				
Dry Soil + Tare	(gr)	125.02	Wet Soil + Tare (gr)	587.13	705.28				
Weight of Water	(gr)	7.75	Dry Soil + Tare (gr)	550.50	629.50	0.00		0.00	
Dry Soil Weight	(gr)	73.97	Weight of Water (gr)	36.63	75.78	0.00	0.00	0.00	0.00
Moisture Content	(%)	10.48	Dry Soil Weight (gr)	349.57	349.57	0.00	0.00	0.00	0.00
Soil Height	(In.)		Moisture Content (%)	10.48	21.68	0.00	0.00	0.00	0.00
Wet Unit Weight	(pcf)	#REF!	Wet Unit Weight (pcf)	117.09	127.58				
Dry Unit Weight	(pcf)	#REF!	Dry Unit Weight (pcf)	105.99	104.85				
			Sample Height (Inches)	1.00	1.011				
Specific Gravity		2.7	Percent Saturation	47.98	96.46				

Expansion Index Number

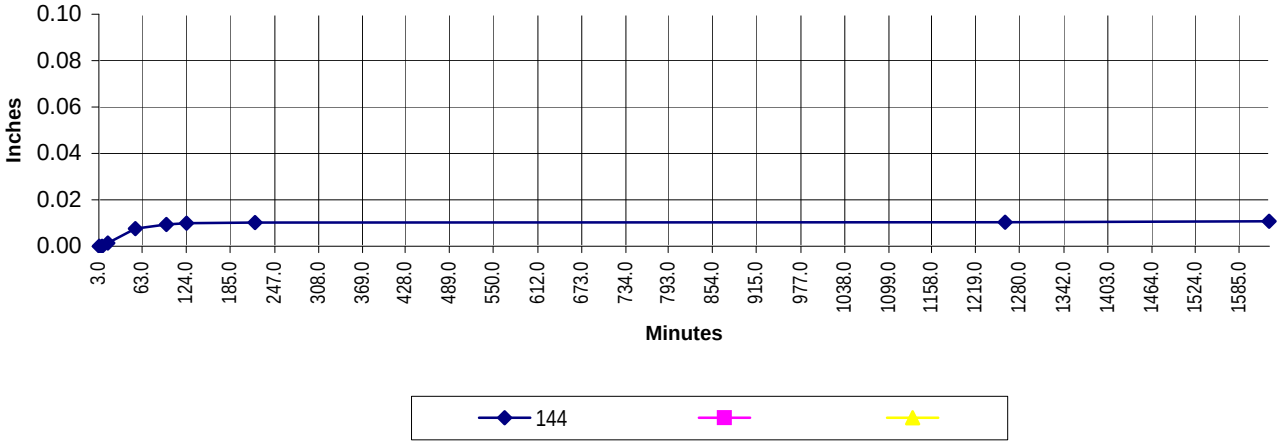
Surcharge (psf)	Uncorrected	Corrected to 50% Saturation
Test wt. 144	11	10
Test wt.		
Test wt.		

Elapsed Time (m:s)	Change in Height (Inches)	Elapsed Time (m:s)	Change in Height (Inches)	Elapsed Time (m:s)	Change in Height (Inches)
3.0	0.0000				
7.0	0.0000				
15.0	0.0014				
53.0	0.0076				
96.0	0.0094				
124.0	0.0100				
219.0	0.0102				
1260.0	0.0104				
1626.0	0.0108				

Expansion Index Values and Descriptions

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

Expansion Versus Time



HOLDREGE & KULL

(530) 478-1305 - Fax (530) 478-1019 - 792 Searls Ave.- Nevada City, CA 95959 - A California Corporatior

(530) 478-1305 - Fax (530) 478-1019 - 792 Searls Ave.- Nevada City, CA 95959 - A California Corporation

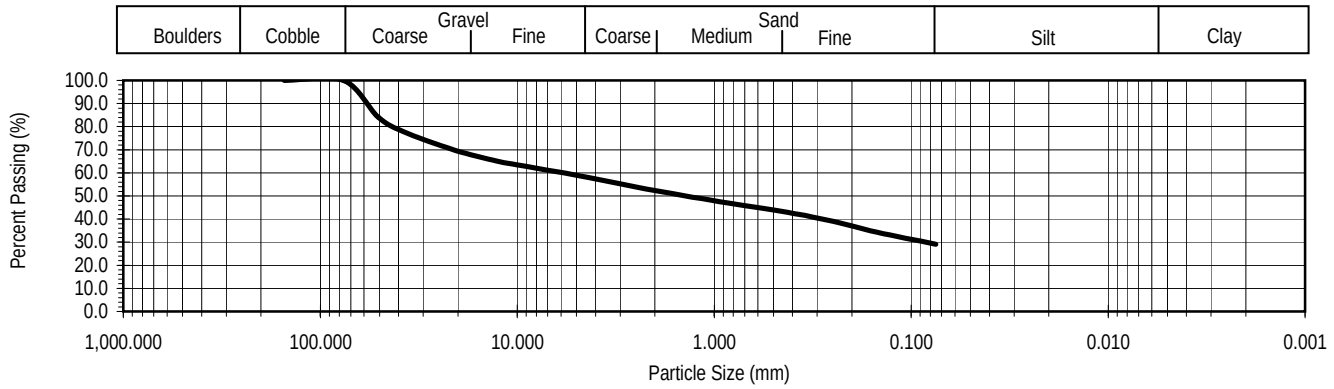
Particle Size Distribution

ASTM D422

Project No.:	**3307A-02**	Project Name:	**Amazing Facts**	Date:	**3/18/2009**
Sample No.:	**PB2-1**	Boring/Trench:	**2**	Depth, (ft.): **0-10"**	Tested By: **MLHF**
Description:	**Reddish Brown (2.5YR 4/4) Silty Gravel with Sand**			Checked By:	**JHA**
Sample Location:	**contains minor organics**			Lab. No.:	**9-028**

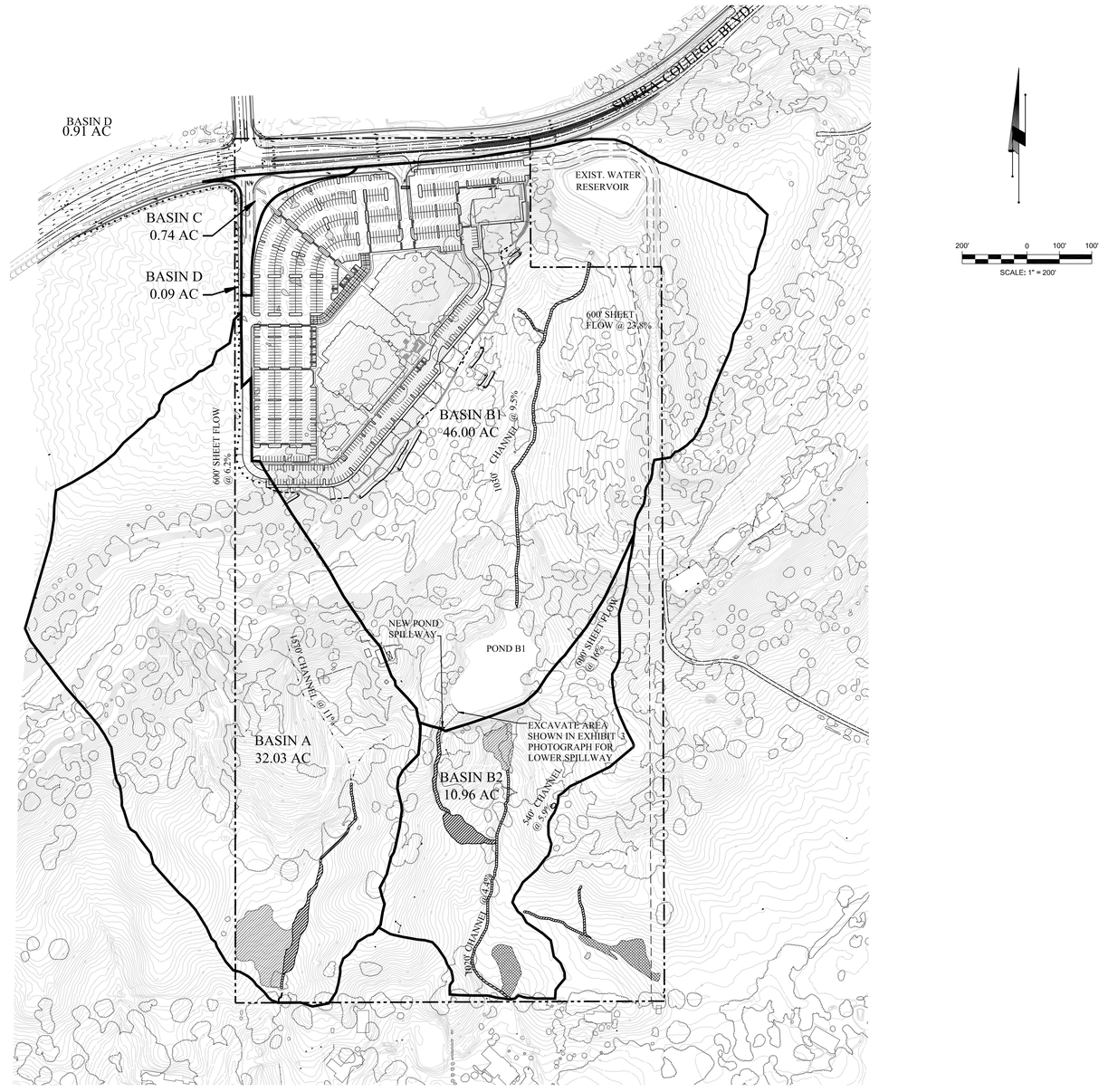
Sieve Size	Particle Diameter		Dry Weight on Sieve			Percent
	Inches	Millimeter	Retained On Sieve	Accumulated On Sieve	Passing Sieve	Passing
(U.S. Standard)	(in.)	(mm)	(gm)	(gm)	(gm)	(%)
6 Inch	6.0000	152.4	0.00	0.0	2,805.6	100.0
3 Inch	3.0000	76.2	0.00	0.0	2,805.6	100.0
2 Inch	2.0000	50.8	448.32	448.3	2,357.2	84.0
1.5 Inch	1.5000	38.1	169.01	617.3	2,188.2	78.0
1.0 Inch	1.0000	25.4	159.16	776.5	2,029.1	72.3
3/4 Inch	0.7500	19.1	95.88	872.4	1,933.2	68.9
1/2 Inch	0.5000	12.7	108.72	981.1	1,824.5	65.0
3/8 Inch	0.3750	9.5	53.76	1,034.9	1,770.7	63.1
#4	0.1870	4.7500	126.29	1,161.1	1,644.4	58.6
#10	0.0787	2.0000	177.32	1,338.5	1,467.1	52.3
#20	0.0335	0.8500	149.66	1,488.1	1,317.4	47.0
#40	0.0167	0.4250	114.24	1,602.4	1,203.2	42.9
#60	0.0098	0.2500	107.55	1,709.9	1,095.7	39.1
#100	0.0059	0.1500	131.02	1,840.9	964.6	34.4
#200	0.0030	0.0750	149.32	1,990.2	815.3	29.1
Hydrometer						

Particle Size Gradation



HOLDREGE & KULL

APPENDIX 13.0



AMAZING FACTS

PLACER COUNTY, CALIFORNIA

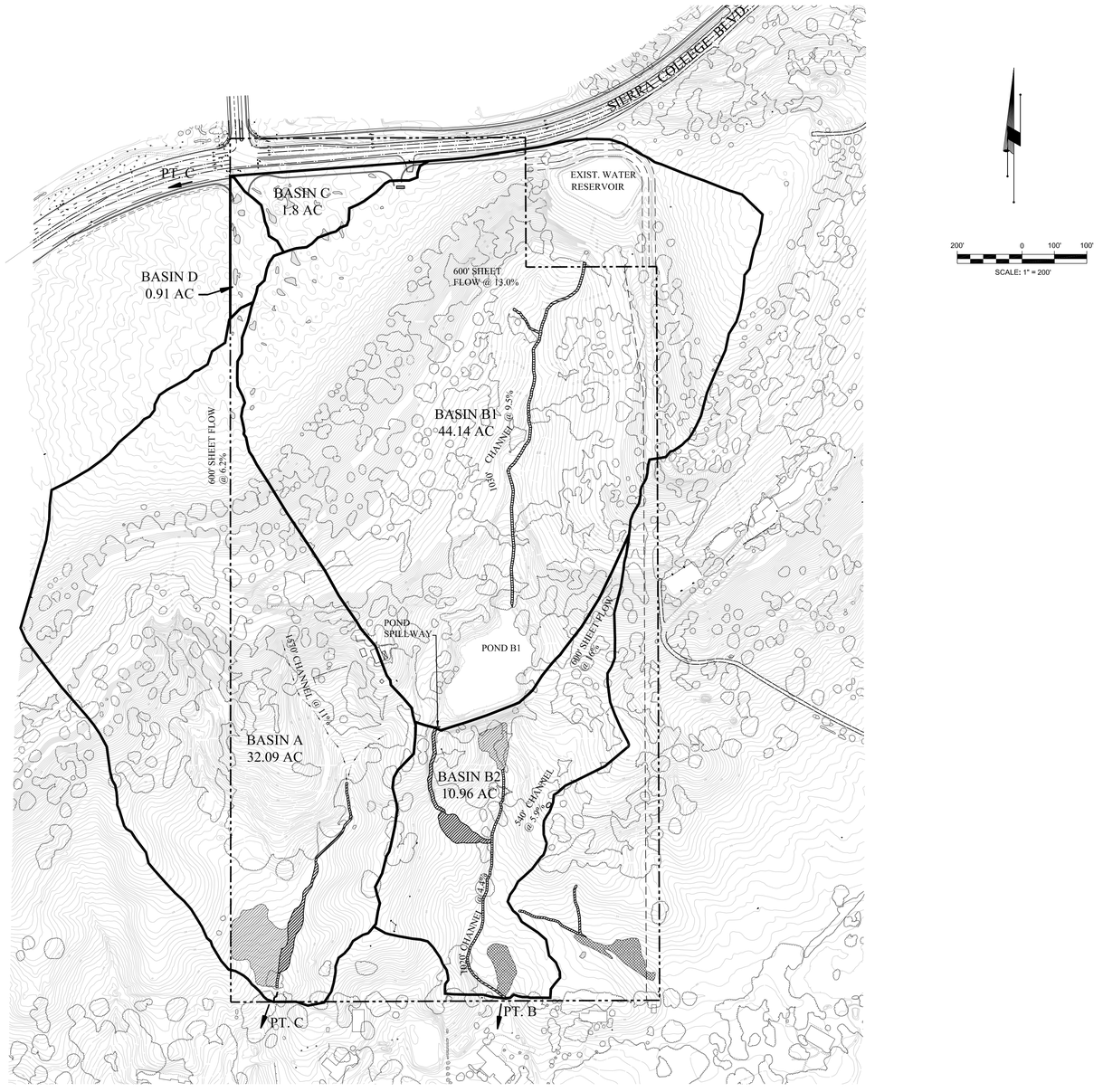
OCTOBER 17, 2008

PRELIMINARY DRAINAGE MAP NO.2 - AFTER DEVELOPMENT DRAINAGE AREAS

POND B1 DATA

SPILLWAY - CONCRETE WEIR WITH 1.25' WIDE BOTTOM SLOT, 5' WIDE TOP WIDTH, FOLLOWED BY A GRASS LINED SWALE.
LOWER WEIR SPILL ELEVATION = 347.3
UPPER WEIR SPILL ELEVATIONS = 348.6 CONCETE AND 349.6 EARTH
FREEBOARD AT 100-YR STORM = 2' @ Q_{100} = 33 CFS
MAX OUTLET WEIR RATING = 104 CFS AT W.S. ELEVATION = 350.86 (1.14' FREE BOARD)

H:\1PROJ\04-18-AMAZING\dwg\Drainage Maps.dwg 10/20/2008 3:05:31 PM PDT



AMAZING FACTS

PLACER COUNTY, CALIFORNIA

OCTOBER 17, 2008

PRELIMINARY DRAINAGE MAP NO.1 - BEFORE DEVELOPMENT DRAINAGE AREAS

POND B1 DATA

THIS POND ACTS AS A DETENTION BASIN.
POND SURFACE = 1.38 AC
SPILLWAY ELEVATION = 349.1

TOP OF DAM ELEVATION = 352
DAM SIZE = 17' HIGH X 300' LONG
POND VOLUME = 6 AC-FT±

SPILLWAY - TRAPEZOIDAL SHAPE, 8' BOTTOM WIDTH, GRASS LINED

H:\1PROJ\04-18-AMAZING\dwg\Drainage Maps.dwg 10/20/2008 3:05:31 PM PDT

PRELIMINARY DRAINAGE STUDY
For

Amazing Facts
Placer County, California

December 23, 2008

Prepared By:

KING ENGINEERING INC.

PLANNING
ENGINEERING
CONSTRUCTION SUPPORT

563 Brunswick Road, Suite 11 Grass Valley, CA 95945

Phone (530) 272-8328 Fax (530) 272-6039

Contents

	Page
Report – Section A	
Introduction ……	**1**
Site Characteristics……..	**1**
Inventory of existing downstream drainage conditions & facilities……...	**2**
Proposed Drainage Improvements …….	**2**
Impacts to Off Site Drainage and Proposed Mitigation Measures……...	**3**
Water Quality and Erosion Control……..	**4**
Design Details and Criteria……..	**4**
Summary Tables – Section B	
Table 1 - Comparison of before development flows to after development flows……	**b1**
Table 2 - Small watershed peak flow worksheet - before development ……	**b2**
Table 3 - Small watershed peak flow worksheet – after development…….....	**b2**
HEC-1 Calculations – Section C	
Before Development	
Existing pond B1 outlet discharge rating per HEC-RAS HEC-1 input data…….	**c1-3**
HEC -1 output data Q2-Q100 ……	**c4-9**
After Development	
Proposed pond B1 outlet discharge rating per HEC-RAS HEC-1 input data……	**c10-12**
HEC -1 output data Q2-Q100……	**c13-18**
Exhibits – Section D	
Exhibit 1a-1b - Unit Peak Flow Values (Placer County SWMM)…….	**d1-2**
Exhibit 2 - USDA soil types and soil map…….	**d3-5**
Exhibit 3 - Pictures of off site drainage facilities and creeks…….	**d6**
Maps – Section E (attached separately)	
Drain Map #1 - Drainage areas before development ……	**folded**
Drain Map #2 - Drainage areas after development ……	**folded**

Introduction

The project site is approximately 75.5 acres located south of Sierra College Boulevard between the San Juan Water District reservoir and Nightwatch Drive. The development is a proposed church with an office building and a ministry resource building along with associated parking lot, landscaping and utility service connections. The parking lot provides space for approximately 1,007 vehicles and connects to Sierra College Boulevard with two driveways.

This study provides calculations that show peak drainage flows to points at the property boundary where storm water discharges. These calculations compare the pre-development flows to the post development flows at the project boundary. This plan proposes to keep the drainage patterns essentially unchanged. The impacts and proposed mitigations to offset those impacts are listed herein. Calculations for peak drainage flow and drainage facilities sizing conform to the Placer County Stormwater Management Manual criteria.

Site Characteristics

The site drains to the south, toward an unnamed tributary to Miners Ravine. Ground slopes range from flat to 35%. Topographic features include a man-made pond located near the middle of the site, having a watershed area of about 44 acres. The age of the pond is unknown. This report makes no expressed or implied warranty as to the structural integrity of the dam at this pond. The dam is approximately 17 feet high and 300 feet long. The pond has a bottom outlet slide gate valve of unknown size that is normally closed. The volume of the pond is estimated at 6 acre feet. The pond has a grass lined earthen spillway with a trapezoidal shaped cross section. The bottom width of the outlet trapezoid is 14 feet. The pond and dam are too small to be under the jurisdiction of California Division of Safety of Dams. An analysis of the structural integrity of the dam is proposed in the impact and mitigation section below as a condition of project approval.

Flood plains are limited to the flow lines of the natural swales, wetland seeps and the shoreline of ponds. The FEMA Flood Insurance Rate Map for Placer County (Placer County, CA Unincorporated Areas, Community-Panel Number 06061 C0418G) indicates that the project site is in zone D or X meaning it is beyond the 500 year flood plain or the flood hazard is undetermined. Wetlands and Vernal Pools have been mapped on the site as shown in the report entitled " Kelley Property (Amazing Facts), Placer County, California – Revised Wetland Delineation" prepared on April 15, 2005 by ECORP Consulting, Inc.

The Soil Survey of Placer County (USDA Soil Conservation Service, 1980) shows the on site soil series to be comprised of the (106, 109) Andregg, and (144) Exchequer and (152,153) Inks and Xerofluvent soils. These soils are classified as hydrologic group C and D.

Groundwater within a free flowing aquifer is not expected to affect the peak flow rates to the drainage system. Subsurface drains will be installed at various locations during construction as needed to intercept perched groundwater, if any, in order to stabilize subgrades.

Native vegetation consists of oak woodland with upland grasses and forbs.

Inventory of existing downstream drainage conditions and facilities

Drainage map #1 designates the pre-development locations where drainage discharges across the subdivision boundary at points A and B. The results of a field survey performed in August of 2007 are listed below and include an assessment of the conditions of off site, drainage facilities or drainage courses. Refer to the pictures at selected discharge points in Exhibit 3.

Point A and downstream: This is an unnamed intermittent drainage course flowing downstream to the south with a 32 acre watershed area. At point A, this drainage course is grass lined with some blackberry bushes and surrounding oaks. The flow line is stable with only minor erosion. The drainage course leaves the project boundary under a wire fence and continues south to a gravel driveway.

Point B and downstream: This is an unnamed intermittent drainage course flowing downstream to the south with a 55 acre watershed area. At point B, this drainage course has thick grass and no erosion. The drainage course leaves the project boundary under a split rail fence and continues south through a broad v shaped rip rap swale approximately 10 feet wide to a concrete driveway with two 15" diameter culverts. No downstream erosion is apparent.

Point C and downstream: This is the south road gutter of Sierra College Boulevard and it flows west. The watershed area is 1.5 acres.

Area D and downstream: Drainage run off from area D leaves the west property line as sheet flow with no defined drainage course.

Proposed Drainage Improvements

The existing drainage pattern and watershed boundaries are proposed to remain essentially the same with no significant areas being diverted to other drainage watersheds. This project proposes to develop the northwest corner of the property and add approximately 11.9 acres of impervious roof and parking lot area. Within watershed area B, there is an existing man-made pond (pond B1) that acts as a detention basin. This project proposes to continue using that pond as a detention basin, with a more restrictive concrete weir outlet. Drainage Map #1 and 2 lists the pond, dam and spillway data for this pond. Pond B1 will be designed to function in accordance with Placer County drainage and flood control standards. The detention basin outlet will be designed such that the downstream post development peak flows will be slightly less than the predevelopment peak flows.

The drainage system will generally consist of parking lot gutters, inlets and culverts directing drainage to temporary best management practices (BMP's) consisting of silt barriers and sediment basins. Permanent BMP's consist of rock slope protection, open clarifying basins and rock flow spreaders which discharge to a near sheet flow condition or to natural swales. Run off from roadway impervious surfaces will flow through BMP's prior to discharging off site or to on site wetlands, swales or ponds. No run off from the site will flow into the San Juan Water District water reservoir.

Impacts to Off Site Drainage and Proposed Mitigation

On site impacts: The project will impact, fill or disturb approximately 12.85 acres. The project will fill or disturb an undetermined amount of vernal pools that are waters of the U.S. The project will also disturb 0.03 acres of pond B1 outlet (see page C10). Part of the mitigation for this will include notifying the U.S. army corps of engineers as part of a nationwide 404 permit application and process.

Without more detention than presently provided by Pond B, peak run off from basin B would increase and affect downstream properties with deeper flows and higher velocities.

On site Mitigation: The vernal pools that are to remain undisturbed shall be surrounded with colored poly fence prior to the start of construction. A low profile permanent perimeter fence with signs should be constructed, since these pools are dry in the summer and have no identifying characteristic.

Off site impacts: The off site drainage summary Table 1 compares the before development to after development peak drainage flow to discharge points A and B. These points are shown on drainage maps #1 and #2 and further described below.

Point A and downstream: **Impact:** There is no increase to the peak drainage flow to this point.

Mitigation: No further mitigation is proposed other than the standard on site BMP improvements.

Point B and downstream : **Impact:** Without mitigation, the development will increase the peak run off at Point B. This increase will be mainly from impervious improvements increasing the run off and reducing the travel time of the drainage to this point. Pond B1 is proposed to remain and act as a detention pond. It is proposed to investigate the structural integrity of the dam at this pond.

CASE 1: If the dam is found to have the required integrity, including a non-seeping core, a new spillway is proposed with a lower spill elevation, to increase the available detention volume. A lower spill elevation will lower the pond's normal water surface by 1.8 feet. This could cause a loss of wetland habitat. The pond would be partially drained and there would be disturbance to the spillway area during construction. The drainage calculations herein are based on this case.

CASE 2: It is also possible that the dam will need to be rebuilt to meet structural requirements. If that were the case, it may be possible to rebuild the dam to an elevation 1.8 feet higher and set the new spillway at the same elevation as the existing. Then the normal pond's water surface would remain the same (no net loss), but the footprint of the dam would increase and there would be a loss of wetland habitat at the spillway. The dam would still remain non-jurisdictional with the State, but the larger footprint would be an impact to the surrounding environs. The entire pond would be drained and there would be disturbance to the pond during construction.

Mitigation: A new concrete weir is proposed at the spillway channel for CASE 1 or CASE 2. For either case, the pond spillway will discharge less than pre- development flow to Point B. Pond B1 will then function as a detention basin in accordance with Placer County drainage standards and the criteria listed in this report. For CASE 1, the US Army Corps 404 permit for the project will need to address the potential loss of wetland at the spillway and pond perimeter. For CASE 2, the dam slope should be planted with grass of like kind to the existing grass. Any trees removed should be

replanted with like kind in a compatible location. The 404 permit will need to address loss of wetland habitat at the spillway.

Point C and downstream : **Impact:** There is a decrease to the peak drainage flow at this point in the gutter of Sierra College Boulevard.
Mitigation: No further mitigation is proposed other than the standard on site BMP improvements and road frontage gutter improvements.

Area D and downstream : **Impact:** There is a decrease in the peak drainage flow from this area. The flow leaves the project as sheet flow with no identifiable flow channel.
Mitigation: No further mitigation is proposed other than the standard on site BMP improvements.

Water Quality and Erosion Control

Erosion controls consist of temporary and permanent erosion controls collectively labeled BMP's. Seeding, mulching and landscaping are proposed to stabilize disturbed soils.
Temporary BMP's: These will include straw logs, silt fence, water bars or diversion berms directing storm water to flow spreaders, gravel bags, straw mulch, and inlet filters. The primary sediment barriers are shown on the preliminary drainage plan. A gravel construction entry will reduce tracked mud onto Sierra College Boulevard. Sediment traps will be installed to protect wetlands and pond B1.
Permanent BMP's: These will include inlets, culverts, open clarifying basins, erosion mat lined, rock lined or seeded ditches, rock flow spreaders, and detention basins.
Detention basin Water Quality: The detention basin, pond B1, should continue with water quality equal to its existing state once construction is completed and soils are vegetated and stabilized. Refer to other environmental documents for proposed habitat management and mosquito/vector control for open water or wet areas.

Design Details and Criteria

1. Culverts 30" in diameter and less are designed for 50% blockage at the inlet, as in the case of a FES (flared end section). However where there is a grated inlet or OMP inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot enter through the inlet openings and then block the culvert).
2. Lined ditches, vegetative sediment basins or grass swales are sized for the 100 year storm flow with no overtopping, taking into consideration the slope of the water surface at curves in the ditches.
3. Where HEC-1 computer program is not used, the following Placer County formulas are used to determine peak discharge from contributing areas:

$$\text{Sheet flow : } t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

$$\text{Channel flow: } t_r = \frac{.00735Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

$$\text{Peak Discharge: } Q = qA - A_p F_i$$

SECTION B

SUMMARY TABLES

SUMMARY TABLE 1
COMPARISON OF BEFORE DEVELOPMENT FLOWS TO AFTER DEVELOPMENT FLOWS

Discharge Location	**Before Development Peak Flow cfs**					**After Development Peak Flow cfs**					**Remark**
See Drainage Maps	**Basin Size ac.**	**Q_2**	**Q_{10}**	**Q_{25}**	**Q_{100}**	**Basin Size ac.**	**Q_2**	**Q_{10}**	**Q_{25}**	**Q_{100}**	
Point A (basin A)	32.09		25		48.8	32.03		25		48.7	No change in flow
Point B (basin B1, B2)	55.1	6	20	29	46	56.96	6	18	26	44	Slight decrease in flow
Point C (basin C)	1.8		1.8		3.6	0.74		1.5		2.7	Slight decrease in flow
Point D (basin D)	0.91		1.4		2.7	0.09		0.2		0.4	Decrease in flow

Notes:

1. It is proposed to construct a more restrictive spillway weir at pond B1 in Basin B1. This will utilize the detention volume in pond B1 and enable the after development flows to point B to be lower than the before development flows.

SMALL WATERSHED PEAK FLOW WORKSHEET
FOR PLACER COUNTY
SUMMARY TABLE 2 - DRAINAGE AREAS BEFORE DEVELOPMENT

c:\engr\afacts\befdareas

Watershed Data						Time of Concentration											Flow			
refer to drainage map and soil type						Overland Flow				Channel Flow							see Exhibits 1a-1b			
Watershed Basin	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	$t_{r\ min.}$	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
A	400	32.09	32.09	C/D	0.18	600	0.062	0.5	25.05	18	1570	0.11	0.08	4	2.77	27.82	0.96	1.7	25.0	48.8
B1	430	44.14	44.14	C/D	0.16	See HEC - 1 calculations														
B2	330	10.96	10.96	C	0.23	See HEC - 1 calculations														
C	520	1.8	1.8	D	0.15	240	0.02	0.5	20.30	0.8	520	0.015	0.015	20	1.77	22.07	1.16	2.13	1.8	3.6
D	517	0.91	0.91	D	0.15	140	0.02	0.5	14.69	0.8	0	0.02	0.07	6	0.00	14.69	1.73	3.14	1.4	2.7
B1,B2	400	55.1	55.1	C/D	0.18	See HEC - 1 calculations														

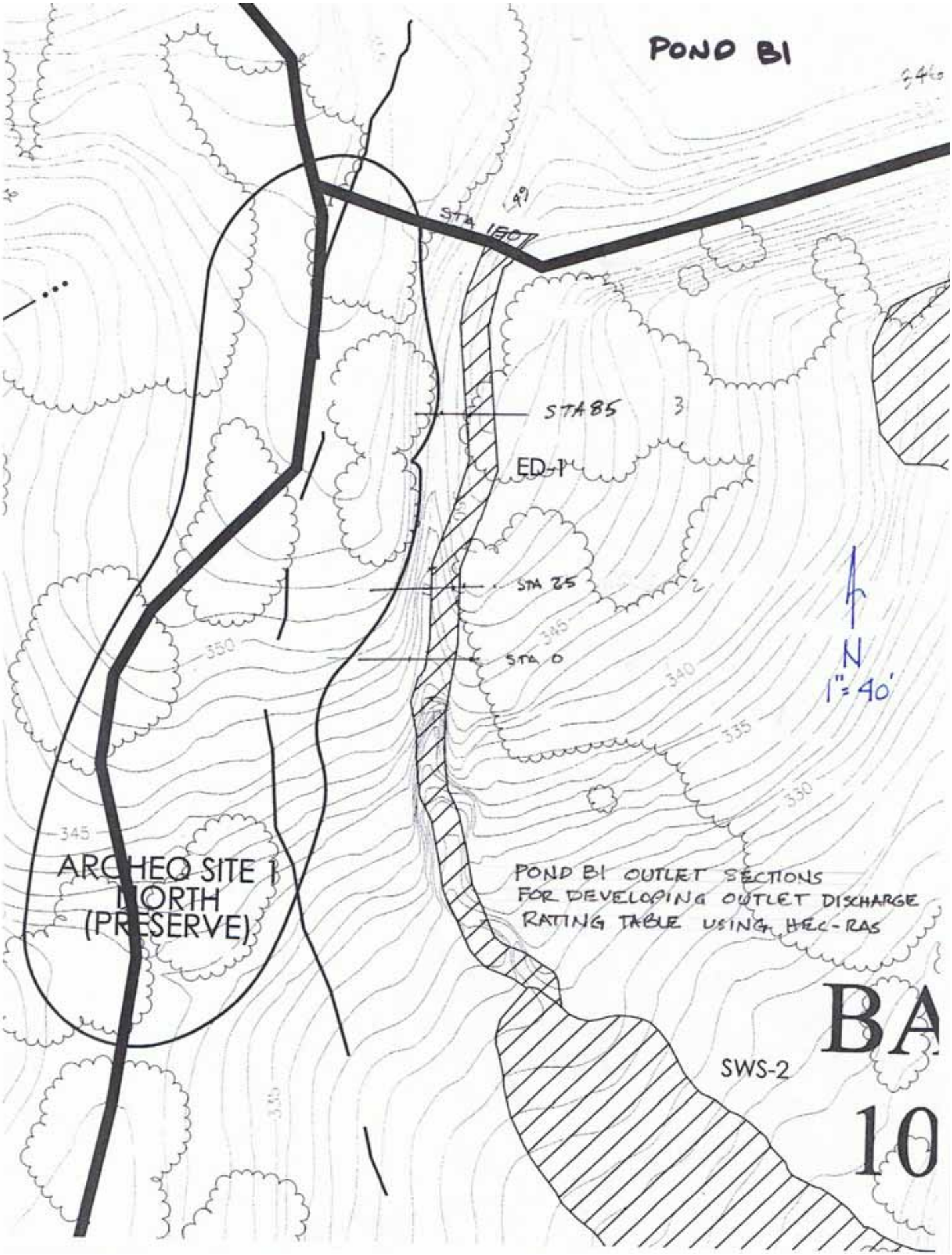
b2

SMALL WATERSHED PEAK FLOW WORKSHEET
FOR PLACER COUNTY
SUMMARY TABLE 3 - DRAINAGE AREAS AFTER DEVELOPMENT

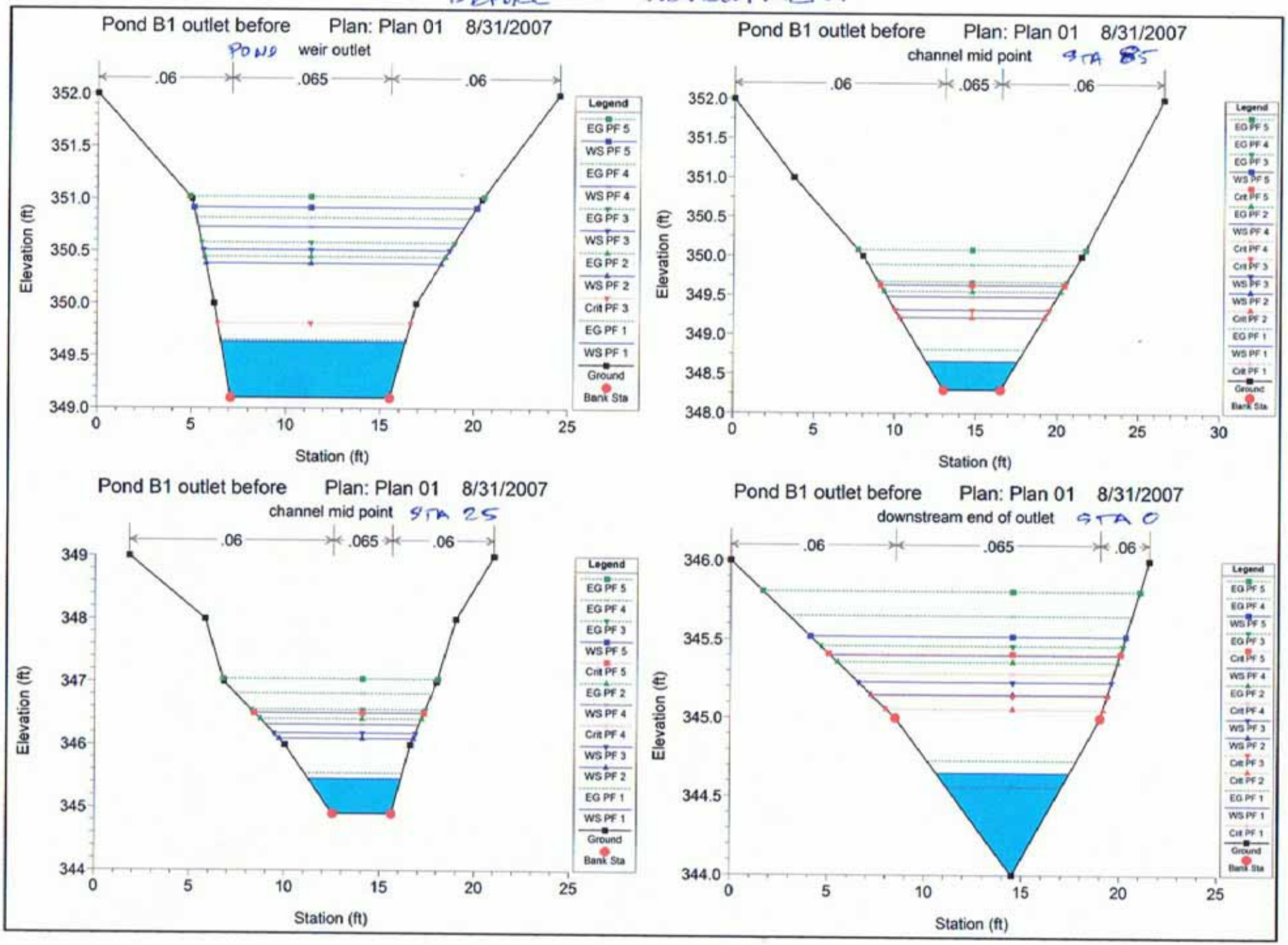
Watershed Data						Time of Concentration											Flow			
refer to drainage map and soil type						Overland Flow				Channel Flow							see Exhibits 1a-1b			
Watershed Basin	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	$t_{r\ min.}$	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
A	400	32.03	31.78	C/D	0.18	600	0.062	0.5	25.05	18	1570	0.11	0.08	4	2.77	27.82	0.96	1.7	25.0	48.7
B1	430	46	34.12	C/D	0.16	See HEC - 1 calculations														
B2	330	10.96	10.96	C	0.23	See HEC - 1 calculations														
C	520	0.74	0.51	D	0.15	50	0.02	0.5	7.92	0.4	520	0.015	0.015	20	2.11	10.02	2.1	3.8	1.5	2.7
D	517	0.09	0.09	D	0.15	12	0.02	0.5	3.36	0.8	0	0.02	0.07	6	0.00	5.00	2.54	4.98	0.2	0.4
B1,B2	400	56.96	45.08	C/D	0.18	See HEC - 1 calculations														

SECTION C

HEC-1 CALCULATIONS


POND B1
STA 160
STA 85
ED-1
STA 25
STA 0
N
1" = 40'
350
345
340
335
330
ARCHEO SITE 1
NORTH
(PRESERVE)
POND B1 OUTLET SECTIONS
FOR DEVELOPING OUTLET DISCHARGE
RATING TABLE USING HEC-RAS
SWS-2

BEFORE DEVELOPMENT



HEC-RAS Plan: Plan 01 River: Pond B1 Outlet Reach: 1 BEFORE DEVELOPMENT - EXISTING SPILLWAY

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	150	PF 1	5.00	349.10	349.63		349.65	0.005	1.06	4.85	9.76	0.26
1	150	PF 2	25.00	349.10	350.38		350.45	0.006	2.08	13.04	12.50	0.32
1	150	PF 3	30.00	349.10	350.51	349.81	350.58	0.006	2.24	14.67	13.10	0.33
1	150	PF 4	40.00	349.10	350.73		350.82	0.006	2.52	17.64	14.12	0.35
1	150	PF 5	50.00	349.10	350.92		351.02	0.007	2.76	20.40	15.01	0.36
1	85	PF 1	5.00	348.30	348.66	348.66	348.81	0.079	3.28	1.66	5.63	0.96
1	85	PF 2	25.00	348.30	349.22	349.22	349.55	0.056	5.14	5.72	8.92	0.94
1	85	PF 3	30.00	348.30	349.32	349.32	349.68	0.054	5.38	6.62	9.49	0.94
1	85	PF 4	40.00	348.30	349.49	349.49	349.89	0.051	5.81	8.30	10.48	0.94
1	85	PF 5	50.00	348.30	349.63	349.63	350.08	0.049	6.16	9.90	11.35	0.94
1	25	PF 1	5.00	344.90	345.46		345.55	0.025	2.45	2.24	4.88	0.58
1	25	PF 2	25.00	344.90	346.10		346.41	0.036	4.92	6.00	7.05	0.79
1	25	PF 3	30.00	344.90	346.18		346.56	0.040	5.40	6.63	7.45	0.84
1	25	PF 4	40.00	344.90	346.32	346.32	346.82	0.048	6.32	7.68	8.07	0.93
1	25	PF 5	50.00	344.90	346.51	346.51	347.05	0.045	6.68	9.26	8.92	0.93
1	0	PF 1	5.00	344.00	344.65	344.56	344.73	0.045	2.25	2.22	6.82	0.70
1	0	PF 2	25.00	344.00	345.15	345.06	345.36	0.046	3.65	6.95	12.15	0.80
1	0	PF 3	30.00	344.00	345.23	345.14	345.46	0.045	3.87	7.96	13.03	0.80
1	0	PF 4	40.00	344.00	345.40	345.28	345.65	0.038	4.08	10.33	14.90	0.76
1	0	PF 5	50.00	344.00	345.52	345.41	345.81	0.037	4.40	12.20	16.22	0.77

BEFORE DEVELOPMENT INPUT – BASIN B

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   17DEC08  TIME  14:32:29  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************
                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              * PDP Vers 1.6 8/13/94
              * I=BB2.DAT O=PBB2.DAT
              * Input File Name = BB2.DAT
   1          ID   AMAZING FACTS BASIN B
   2          ID   BEFORE DEVELOPMENT
   3          ID   2 YEAR STORM EVENT
   4          ID   C:\HEC1\AFACTS\BB2.DAT
   5          IT       5 17AUG07    1200     260
   6          IO       2       2
              * **********

   7          KK      B1
   8          KM   Basin runoff calculation for area B1
   9          BA   .0690
              * PI E=430 R=2
              *
              *  Placer Design Precipitation -  depths in inches
              *  Return period in years     2   Time interval in minutes     5
              *  Elevation in feet        430   W of Crest
              *  Duration in minutes     1300   Maximum depth at   650 minutes
              *  Cloudburst 1-hr Factor  1.00
              *
  10          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  11          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  12          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  13          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  14          PI   0.004   0.004   0.004   0.004   0.004   0.005   0.005   0.005   0.005   0.005
  15          PI   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.006   0.006
  16          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
  17          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.007   0.007
  18          PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
  19          PI   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008
  20          PI   0.009   0.009   0.009   0.009   0.009   0.009   0.010   0.010   0.010   0.010
  21          PI   0.011   0.011   0.011   0.012   0.012   0.012   0.013   0.013   0.015   0.016
  22          PI   0.017   0.018   0.019   0.020   0.022   0.024   0.028   0.031   0.044   0.133
  23          PI   0.060   0.036   0.028   0.026   0.023   0.021   0.020   0.018   0.017   0.017
  24          PI   0.016   0.015   0.013   0.013   0.012   0.012   0.011   0.011   0.011   0.011
  25          PI   0.010   0.010   0.010   0.010   0.009   0.009   0.009   0.009   0.009   0.009
  26          PI   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.007
  27          PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
  28          PI   0.007   0.007   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
  29          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
  30          PI   0.006   0.006   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
  31          PI   0.005   0.005   0.005   0.005   0.005   0.004   0.004   0.004   0.004   0.004
  32          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  33          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  34          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  35          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  36          LU       0     .14       0
  37          UK     600     .13      .5     100
  38          RK    1030    .095     .07            TRAP       8       5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          39          KK    Res1
          40          KM   Reservoir 1 routing operation
          41          RS       1    ELEV   349.1
          42          SA    1.38    1.71    1.91
          43          SE     347     350     352
          44          SQ       0       5      25      30      40      50
          45          SE   349.1  349.63  350.38  350.51  350.73  350.92
                      * **********

          46          KK     B1B
          47          KM   Kinematic wave channel routing from pt B1 to B
          48          RK    1020    .044     .07            TRAP       4       3
                      * **********

          49          KK      B2
          50          KM   Basin runoff calculatin for area B2
          51          BA   .0171
                      * PI E=330
                      *
                      *  Placer Design Precipitation -  depths in inches
                      *  Return period in years     2   Time interval in minutes     5
                      *  Elevation in feet        330   W of Crest
                      *  Duration in minutes     1300   Maximum depth at   650 minutes
                      *  Cloudburst 1-hr Factor  1.00
                      *
          52          PI   0.003   0.003   0.003   0.003   0.003   0.003   0.003   0.004   0.004   0.004
          53          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          54          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          55          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          56          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          57          PI   0.004   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
          58          PI   0.005   0.005   0.005   0.005   0.005   0.006   0.006   0.006   0.006   0.006
          59          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
          60          PI   0.006   0.006   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
          61          PI   0.007   0.007   0.007   0.007   0.008   0.008   0.008   0.008   0.008   0.008
          62          PI   0.008   0.009   0.009   0.009   0.009   0.009   0.009   0.010   0.010   0.010
          63          PI   0.010   0.011   0.011   0.011   0.012   0.012   0.013   0.013   0.015   0.016
          64          PI   0.017   0.018   0.019   0.020   0.021   0.024   0.027   0.031   0.043   0.132
          65          PI   0.060   0.035   0.028   0.025   0.023   0.021   0.019   0.018   0.017   0.016
          66          PI   0.015   0.015   0.013   0.012   0.012   0.011   0.011   0.011   0.011   0.010
          67          PI   0.010   0.010   0.010   0.009   0.009   0.009   0.009   0.009   0.008   0.008
          68          PI   0.008   0.008   0.008   0.008   0.008   0.008   0.007   0.007   0.007   0.007
          69          PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.006   0.006   0.006
          70          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
          71          PI   0.006   0.006   0.006   0.006   0.006   0.005   0.005   0.005   0.005   0.005
          72          PI   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.004
          73          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          74          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          75          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          76          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
          77          PI   0.004   0.004   0.004   0.003   0.003   0.003   0.003   0.003   0.003   0.003
          78          LU       0     .14       0
          79          UK     600     .16      .5     100
          80          RK     540    .059     .07    .004    TRAP       2       3
1                                                  HEC-1 INPUT                                                PAGE  3

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          81          RK    1020    .044     .07            TRAP       4       3
                      * **********

          82          KK    B1B2
          83          KM   Combining two hydrographs at point B
          84          HC       2
                      * **********
          85          ZZ
```

BEFORE DEVELOPMENT OUTPUT – BASIN B
Q2 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	11.	11.58	3.	1.	1.	.07		
+	ROUTED TO	Res1	4.	12.33	3.	1.	1.	.07		
+									349.55	12.33
+	ROUTED TO	B1B	4.	12.42	3.	1.	1.	.07		
+	HYDROGRAPH AT	B2	3.	11.50	1.	0.	0.	.02		
+	2 COMBINED AT	B1B2	6.	11.83	3.	1.	1.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	1.30	11.06	697.22	.40	5.00	11.06	695.00	.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1512E+01 OUTFLOW= .1477E+01 BASIN STORAGE= .2157E-01 PERCENT ERROR= .9

B1B	MANE	2.09	4.28	745.06	.39	5.00	4.28	745.00	.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1450E+01 EXCESS= .0000E+00 OUTFLOW= .1447E+01 BASIN STORAGE= .2587E-02 PERCENT ERROR= .0

B2	MANE	2.01	3.11	690.88	.42	5.00	3.10	690.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3903E+00 OUTFLOW= .3822E+00 BASIN STORAGE= .1479E-02 PERCENT ERROR= 1.7

*** NORMAL END OF HEC-1 ***

BEFORE DEVELOPMENT OUTPUT – BASIN B
Q10 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	32.	11.17	7.	2.	2.	.07		
+	ROUTED TO	Res1	16.	11.75	7.	2.	2.	.07		
+									350.04	11.75
+	ROUTED TO	B1B	16.	11.83	7.	2.	2.	.07		
+	HYDROGRAPH AT	B2	9.	11.17	2.	1.	1.	.02		
+	2 COMBINED AT	B1B2	20.	11.58	8.	3.	3.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	1.04	32.10	672.53	.99	5.00	32.07	670.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3703E+01 OUTFLOW= .3653E+01 BASIN STORAGE= .2395E-01 PERCENT ERROR= .7

B1B	MANE	1.45	15.92	708.18	.98	5.00	15.90	710.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3613E+01 EXCESS= .0000E+00 OUTFLOW= .3610E+01 BASIN STORAGE= .3699E-02 PERCENT ERROR= .0

B2	MANE	1.53	8.71	670.41	1.01	5.00	8.70	670.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9333E+00 OUTFLOW= .9230E+00 BASIN STORAGE= .1694E-02 PERCENT ERROR= .9

*** NORMAL END OF HEC-1 ***

BEFORE DEVELOPMENT OUTPUT – BASIN B
Q25 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	45.	11.08	10.	3.	3.	.07		
+	ROUTED TO	Res1	23.	11.67	9.	3.	3.	.07		
+									350.30	11.67
+	ROUTED TO	B1B	23.	11.67	9.	3.	3.	.07		
+	HYDROGRAPH AT	B2	12.	11.08	2.	1.	1.	.02		
+	2 COMBINED AT	B1B2	29.	11.42	11.	4.	4.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	.91	44.96	665.39	1.41	5.00	44.95	665.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .5233E+01 OUTFLOW= .5180E+01 BASIN STORAGE= .3634E-01 PERCENT ERROR= .3

B1B	MANE	1.40	22.89	701.43	1.39	5.00	22.88	700.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5115E+01 EXCESS= .0000E+00 OUTFLOW= .5112E+01 BASIN STORAGE= .4845E-02 PERCENT ERROR= .0

B2	MANE	1.45	12.28	668.04	1.43	5.00	12.20	665.00	1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1319E+01 OUTFLOW= .1307E+01 BASIN STORAGE= .2550E-02 PERCENT ERROR= .7

*** NORMAL END OF HEC-1 ***

BEFORE DEVELOPMENT OUTPUT – BASIN B
Q100 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	66.	11.08	13.	4.	4.	.07		
+	ROUTED TO	Res1	37.	11.50	13.	4.	4.	.07		
+									350.66	11.50
+	ROUTED TO	B1B	37.	11.50	13.	4.	4.	.07		
+	HYDROGRAPH AT	B2	18.	11.08	3.	1.	1.	.02		
+	2 COMBINED AT	B1B2	46.	11.42	16.	5.	5.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	.88	66.02	662.39	2.14	5.00	65.62	665.00	2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7945E+01 OUTFLOW= .7862E+01 BASIN STORAGE= .4754E-01 PERCENT ERROR= .4

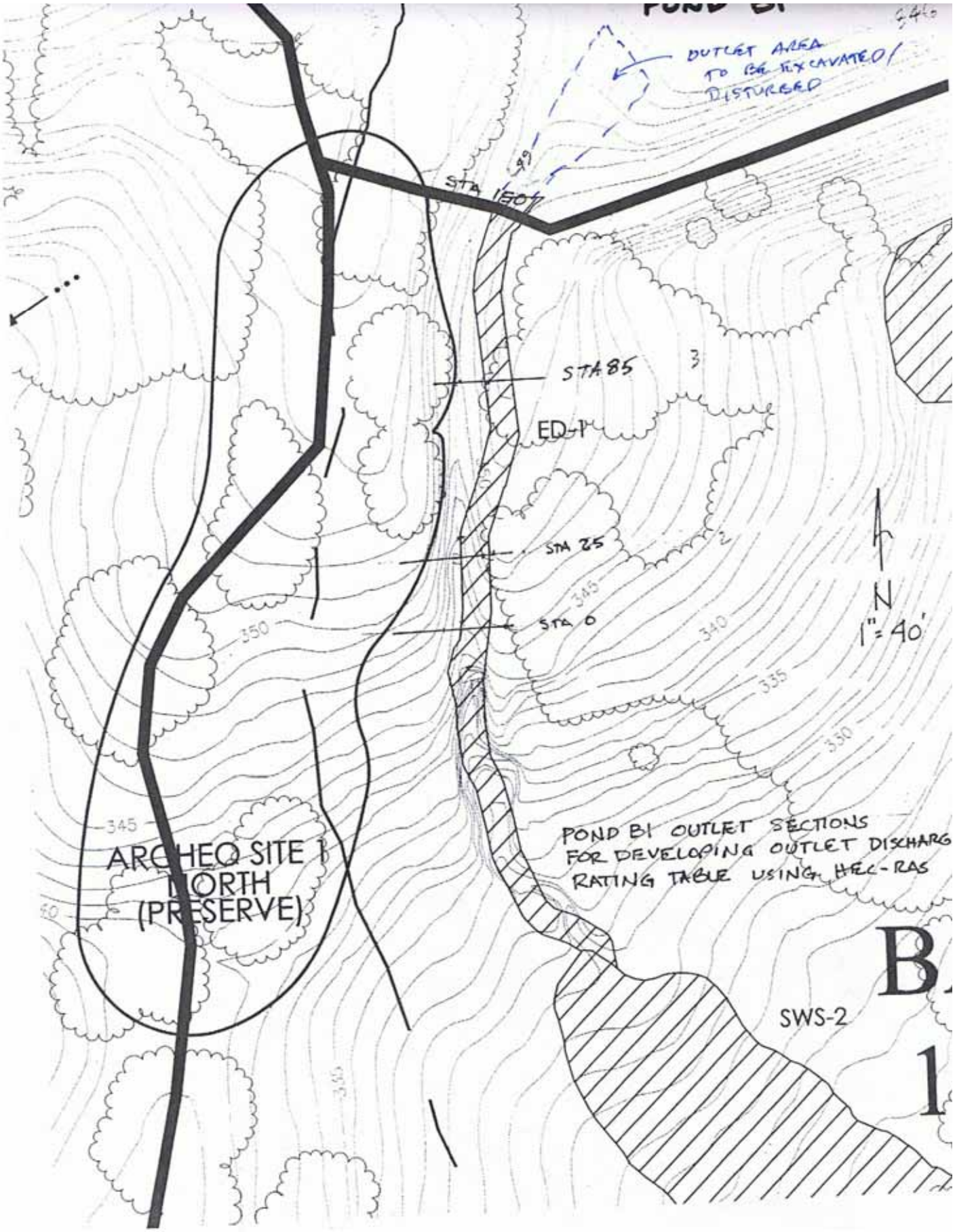
B1B	MANE	1.19	36.70	692.32	2.10	5.00	36.60	690.00	2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7752E+01 EXCESS= .0000E+00 OUTFLOW= .7746E+01 BASIN STORAGE= .8539E-02 PERCENT ERROR= .0

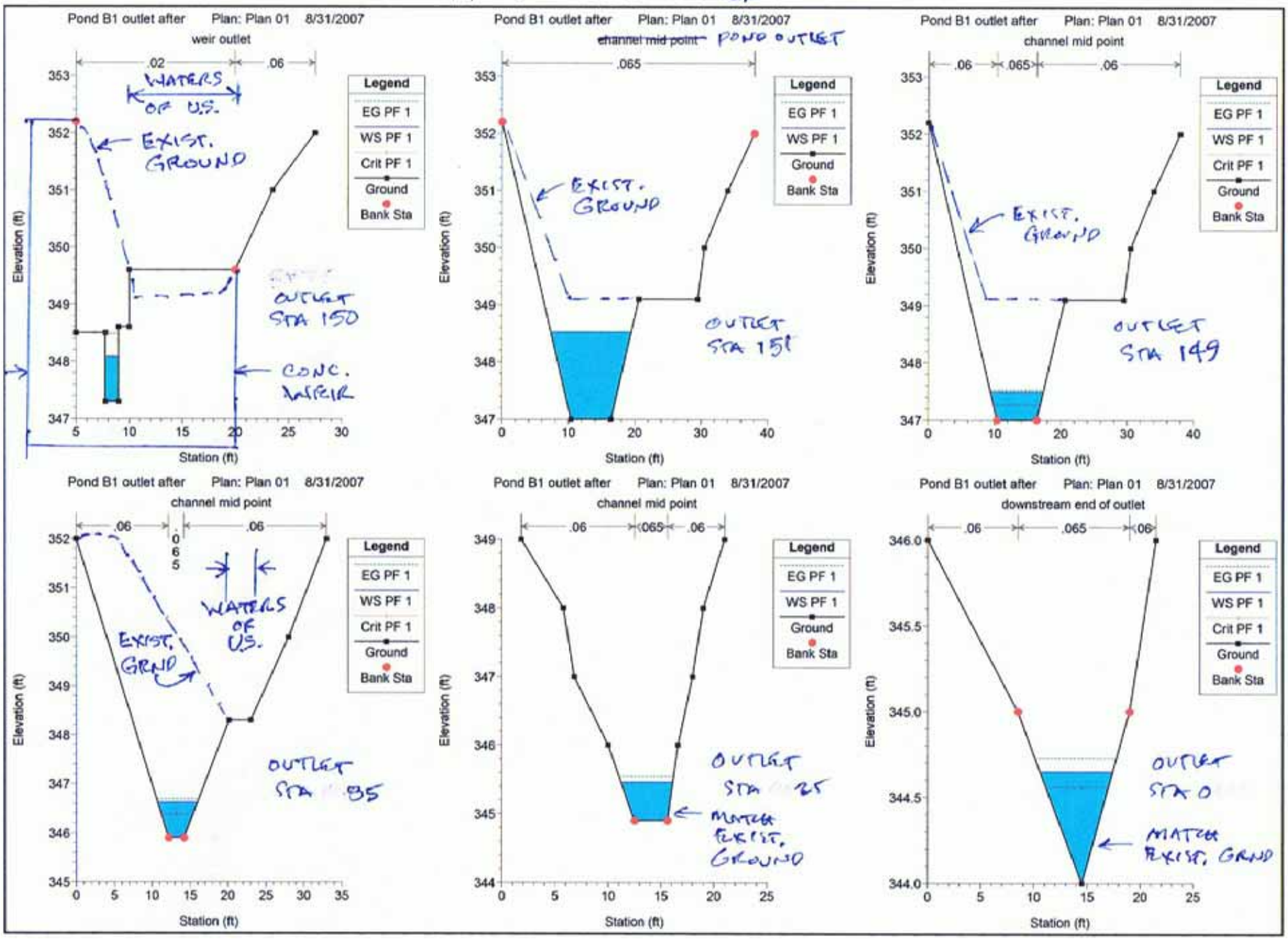
B2	MANE	1.27	18.09	665.04	2.16	5.00	18.09	665.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1991E+01 OUTFLOW= .1973E+01 BASIN STORAGE= .3390E-02 PERCENT ERROR= .7

*** NORMAL END OF HEC-1 ***


OUTLET AREA TO BE EXCAVATED/ DISTURBED
STA 160
STA 85
ED-1
STA 25
STA 0
N
1" = 40'
350
345
340
335
330
ARCHEO SITE 1 NORTH (PRESERVE)
POND B1 OUTLET SECTIONS FOR DEVELOPING OUTLET DISCHARG RATING TABLE USING HEC-RAS
SWS-2

AFTER DEVELOPMENT



HEC-RAS Plan: Plan 01 River: Pond B1 Outlet Reach: 1 AFTER DEVELOPMENT - NEW SPILLWAY

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	151	PF 1	5.00	347.00	348.53		348.53	0.000	0.36	13.82	12.11	0.06
1	151	PF 2	15.00	347.00	349.28		349.29	0.001	0.58	25.76	23.87	0.10
1	151	PF 3	25.00	347.00	349.69		349.70	0.001	0.70	35.82	25.15	0.10
1	151	PF 4	35.00	347.00	350.05		350.06	0.001	0.78	44.95	26.37	0.11
1	151	PF 5	104.00	347.00	350.88		350.92	0.002	1.51	68.82	30.95	0.18
1	150	PF 1	5.00	347.30	348.09	348.09	348.49	0.019	5.07	0.99	1.25	1.00
1	150	PF 2	15.00	347.30	348.93	348.93	349.26	0.013	4.56	3.29	5.00	0.99
1	150	PF 3	25.00	347.30	349.18	349.18	349.65	0.013	5.52	4.53	5.00	1.02
1	150	PF 4	35.00	347.30	349.42	349.42	350.00	0.013	6.10	5.74	5.00	1.00
1	150	PF 5	104.00	347.30	350.30	350.30	350.86	0.008	6.03	17.76	16.75	0.99
1	149	PF 1	5.00	347.00	347.49	347.27	347.53	0.012	1.54	3.43	7.96	0.39
1	149	PF 2	15.00	347.00	347.94		348.01	0.010	2.22	7.41	9.76	0.40
1	149	PF 3	25.00	347.00	348.26		348.35	0.010	2.61	10.73	11.04	0.41
1	149	PF 4	35.00	347.00	348.52		348.63	0.009	2.92	13.68	12.06	0.42
1	149	PF 5	104.00	347.00	349.63		349.82	0.008	4.02	34.32	24.96	0.44
1	85	PF 1	5.00	345.90	346.63	346.39	346.69	0.015	2.26	2.64	5.27	0.47
1	85	PF 2	15.00	345.90	347.15	346.80	347.26	0.014	3.14	6.04	7.64	0.49
1	85	PF 3	25.00	345.90	347.51		347.65	0.013	3.57	9.10	9.27	0.50
1	85	PF 4	35.00	345.90	347.81		347.96	0.012	3.86	11.99	10.58	0.49
1	85	PF 5	104.00	345.90	348.94		349.18	0.012	5.27	28.74	18.76	0.53
1	25	PF 1	5.00	344.90	345.46		345.55	0.025	2.45	2.24	4.88	0.58
1	25	PF 2	15.00	344.90	345.86		346.06	0.031	3.90	4.42	6.14	0.70
1	25	PF 3	25.00	344.90	346.10		346.41	0.036	4.92	6.00	7.05	0.79
1	25	PF 4	35.00	344.90	346.26	346.21	346.69	0.043	5.82	7.24	7.82	0.88
1	25	PF 5	104.00	344.90	347.23	347.23	347.94	0.039	7.95	16.84	11.66	0.92
1	0	PF 1	5.00	344.00	344.65	344.56	344.73	0.045	2.25	2.22	6.82	0.70
1	0	PF 2	15.00	344.00	344.98	344.87	345.12	0.045	2.97	5.04	10.29	0.75
1	0	PF 3	25.00	344.00	345.15	345.06	345.36	0.046	3.65	6.95	12.15	0.80
1	0	PF 4	35.00	344.00	345.30	345.21	345.55	0.044	4.08	8.89	13.80	0.80
1	0	PF 5	104.00	344.00	346.00	345.93	346.43	0.036	5.59	21.25	21.50	0.80

AFTER DEVELOPMENT INPUT – BASIN B

```
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *                                      *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   31AUG07  TIME  13:27:56  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************
                                                X     X  XXXXXXX   XXXXX           X
                                                X     X  X        X     X         XX
                                                X     X  X        X                X
                                                XXXXXXX  XXXX     X        XXXXX   X
                                                X     X  X        X                X
                                                X     X  X        X     X          X
                                                X     X  XXXXXXX   XXXXX          XXX

          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.
           THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
           THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
           NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
           DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
           KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                                   HEC-1 INPUT                                                   PAGE  1

          LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                         * PDP Vers 1.6 8/13/94
                         * I=AB2.DAT O=PAB2.DAT
                         * Input File Name = AB2.DAT
             1           ID   AMAZING FACTS BASIN B
             2           ID   AFTER DEVELOPMENT
             3           ID   2 YEAR STORM EVENT
             4           ID   C:\HEC1\AFACTS\AB2.DAT
             5           IT       5 17AUG07    1200     260
             6           IO       2       2
                         * **********

             7           KK      B1
             8           KM   Basin runoff calculation for area B1
             9           BA   .0719
                         * PI E=430 R=2
                         *
                         *  Placer Design Precipitation -  depths in inches
                         *  Return period in years     2   Time interval in minutes     5
                         *  Elevation in feet        430   W of Crest
                         *  Duration in minutes     1300   Maximum depth at   650 minutes
                         *  Cloudburst 1-hr Factor  1.00
                         *
            10           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            11           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            12           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            13           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            14           PI   0.004   0.004   0.004   0.004   0.004   0.005   0.005   0.005   0.005   0.005
            15           PI   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.006   0.006
            16           PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
            17           PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.007   0.007
            18           PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
            19           PI   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008
            20           PI   0.009   0.009   0.009   0.009   0.009   0.009   0.010   0.010   0.010   0.010
            21           PI   0.011   0.011   0.011   0.012   0.012   0.012   0.013   0.013   0.015   0.016
            22           PI   0.017   0.018   0.019   0.020   0.022   0.024   0.028   0.031   0.044   0.133
            23           PI   0.060   0.036   0.028   0.026   0.023   0.021   0.020   0.018   0.017   0.017
            24           PI   0.016   0.015   0.013   0.013   0.012   0.012   0.011   0.011   0.011   0.011
            25           PI   0.010   0.010   0.010   0.010   0.009   0.009   0.009   0.009   0.009   0.009
            26           PI   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.008   0.007
            27           PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
            28           PI   0.007   0.007   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
            29           PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
            30           PI   0.006   0.006   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
            31           PI   0.005   0.005   0.005   0.005   0.005   0.004   0.004   0.004   0.004   0.004
            32           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            33           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            34           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            35           PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
            36           LU       0     .14    25.8
            37           UK     600    .238      .5     100
            38           RK    1030    .095     .07            TRAP       8       5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  39          KK    Res1
  40          KM   Reservoir 1 routing operation
  41          RS       1    ELEV   347.3
  42          SA    1.27    1.38    1.71    1.91
  43          SE     346     347     350     352
  44          SQ       0       5      15      25      35     104
  45          SE   347.3  348.53  349.28  349.69  350.05  350.88
              * **********

  46          KK     B1B
  47          KM   Kinematic wave channel routing from pt B1 to B
  48          RK    1020    .044     .07            TRAP       4       3
              * **********

  49          KK      B2
  50          KM   Basin runoff calculatin for area B2
  51          BA   .0171
              * PI E=330
              *
              *  Placer Design Precipitation -  depths in inches
              *  Return period in years     2   Time interval in minutes     5
              *  Elevation in feet        330   W of Crest
              *  Duration in minutes     1300   Maximum depth at   650 minutes
              *  Cloudburst 1-hr Factor  1.00
              *
  52          PI   0.003   0.003   0.003   0.003   0.003   0.003   0.003   0.004   0.004   0.004
  53          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  54          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  55          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  56          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  57          PI   0.004   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
  58          PI   0.005   0.005   0.005   0.005   0.005   0.006   0.006   0.006   0.006   0.006
  59          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
  60          PI   0.006   0.006   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.007
  61          PI   0.007   0.007   0.007   0.007   0.008   0.008   0.008   0.008   0.008   0.008
  62          PI   0.008   0.009   0.009   0.009   0.009   0.009   0.009   0.010   0.010   0.010
  63          PI   0.010   0.011   0.011   0.011   0.012   0.012   0.013   0.013   0.015   0.016
  64          PI   0.017   0.018   0.019   0.020   0.021   0.024   0.027   0.031   0.043   0.132
  65          PI   0.060   0.035   0.028   0.025   0.023   0.021   0.019   0.018   0.017   0.016
  66          PI   0.015   0.015   0.013   0.012   0.012   0.011   0.011   0.011   0.011   0.010
  67          PI   0.010   0.010   0.010   0.009   0.009   0.009   0.009   0.009   0.008   0.008
  68          PI   0.008   0.008   0.008   0.008   0.008   0.008   0.007   0.007   0.007   0.007
  69          PI   0.007   0.007   0.007   0.007   0.007   0.007   0.007   0.006   0.006   0.006
  70          PI   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006   0.006
  71          PI   0.006   0.006   0.006   0.006   0.006   0.005   0.005   0.005   0.005   0.005
  72          PI   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.004
  73          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  74          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  75          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  76          PI   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004   0.004
  77          PI   0.004   0.004   0.004   0.003   0.003   0.003   0.003   0.003   0.003   0.003
  78          LU       0     .14       0
  79          UK     600     .16      .5     100
  80          RK     540    .059     .07    .004    TRAP       2       3
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  81          RK    1020    .044     .07            TRAP       4       3
              * **********

  82          KK    B1B2
  83          KM   Combining two hydrographs at point B
  84          HC       2
              * **********
  85          ZZ
```

AFTER DEVELOPMENT OUTPUT – BASIN B
Q2 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	18.	11.17	5.	2.	2.	.07		
+	ROUTED TO	Res1	4.	12.50	3.	1.	1.	.07		
+									348.33	12.50
+	ROUTED TO	B1B	4.	12.50	3.	1.	1.	.07		
+	HYDROGRAPH AT	B2	3.	11.50	1.	0.	0.	.02		
+	2 COMBINED AT	B1B2	6.	11.67	4.	2.	2.	.09		
1										

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	1.11	17.55	672.98	.81	5.00	17.52	670.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3261E+01 OUTFLOW= .3119E+01 BASIN STORAGE= .1292E+00 PERCENT ERROR= .4

B1B	MANE	2.04	4.20	753.79	.69	5.00	4.20	755.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2651E+01 EXCESS= .0000E+00 OUTFLOW= .2641E+01 BASIN STORAGE= .1163E-01 PERCENT ERROR= -.1

B2	MANE	2.01	3.11	690.88	.42	5.00	3.10	690.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .3903E+00 OUTFLOW= .3822E+00 BASIN STORAGE= .1479E-02 PERCENT ERROR= 1.7

AFTER DEVELOPMENT OUTPUT – BASIN B
Q10 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	42.	11.08	9.	3.	3.	.07		
+	ROUTED TO	Res1	13.	11.92	7.	3.	3.	.07		
+									349.13	11.92
+	ROUTED TO	B1B	13.	11.92	7.	3.	3.	.07		
+	HYDROGRAPH AT	B2	9.	11.17	2.	1.	1.	.02		
+	2 COMBINED AT	B1B2	18.	11.50	9.	3.	3.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	.90	41.99	664.50	1.57	5.00	41.81	665.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .6184E+01 OUTFLOW= .6003E+01 BASIN STORAGE= .1572E+00 PERCENT ERROR= .4

B1B	MANE	1.55	13.05	718.03	1.38	5.00	13.03	715.00	1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5296E+01 EXCESS= .0000E+00 OUTFLOW= .5282E+01 BASIN STORAGE= .1589E-01 PERCENT ERROR= .0

B2	MANE	1.53	8.71	670.41	1.01	5.00	8.70	670.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .9333E+00 OUTFLOW= .9230E+00 BASIN STORAGE= .1694E-02 PERCENT ERROR= .9

*** NORMAL END OF HEC-1 ***

AFTER DEVELOPMENT OUTPUT – BASIN B
Q25 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	57.	11.00	12.	4.	4.	.07		
+	ROUTED TO	Res1	20.	11.67	10.	4.	4.	.07		
+									349.49	11.67
+	ROUTED TO	B1B	20.	11.75	10.	4.	4.	.07		
+	HYDROGRAPH AT	B2	12.	11.08	2.	1.	1.	.02		
+	2 COMBINED AT	B1B2	26.	11.50	12.	5.	5.	.09		

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	.94	57.66	664.12	2.02	5.00	57.08	660.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .7952E+01 OUTFLOW= .7756E+01 BASIN STORAGE= .1630E+00 PERCENT ERROR= .4

B1B	MANE	1.45	20.08	703.39	1.80	5.00	20.07	705.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6915E+01 EXCESS= .0000E+00 OUTFLOW= .6895E+01 BASIN STORAGE= .1757E-01 PERCENT ERROR= .0

B2	MANE	1.45	12.28	668.04	1.43	5.00	12.20	665.00	1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1319E+01 OUTFLOW= .1307E+01 BASIN STORAGE= .2550E-02 PERCENT ERROR= .7

*** NORMAL END OF HEC-1 ***

AFTER DEVELOPMENT OUTPUT – BASIN B
Q100 STORM

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	B1	83.	11.00	15.	6.	6.	.07		
+	ROUTED TO	Res1	33.	11.50	14.	5.	5.	.07		
+									349.99	11.50
+	ROUTED TO	B1B	33.	11.50	14.	5.	5.	.07		
+	HYDROGRAPH AT	B2	18.	11.08	3.	1.	1.	.02		
+	2 COMBINED AT	B1B2	44.	11.33	17.	7.	7.	.09		
1										

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
B1	MANE	.84	83.47	660.37	2.81	5.00	83.40	660.00	2.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1098E+02 OUTFLOW= .1076E+02 BASIN STORAGE= .1740E+00 PERCENT ERROR= .4

B1B	MANE	1.27	33.32	692.81	2.54	5.00	33.25	690.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9744E+01 EXCESS= .0000E+00 OUTFLOW= .9725E+01 BASIN STORAGE= .2103E-01 PERCENT ERROR= .0

B2	MANE	1.27	18.09	665.04	2.16	5.00	18.09	665.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .0000E+00 EXCESS= .1991E+01 OUTFLOW= .1973E+01 BASIN STORAGE= .3390E-02 PERCENT ERROR= .7

*** NORMAL END OF HEC-1 ***

SECTION D

EXHIBITS

FIGURE 5-3A

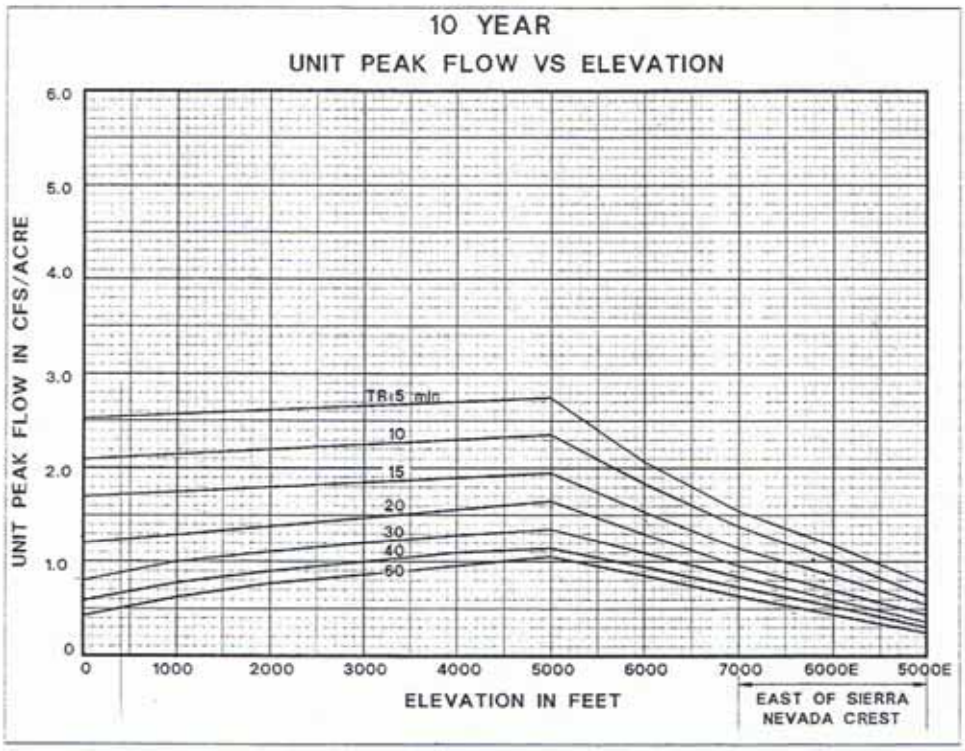


EXHIBIT 1a
UNIT PEAK FLOW VALUES

RE 5-3C

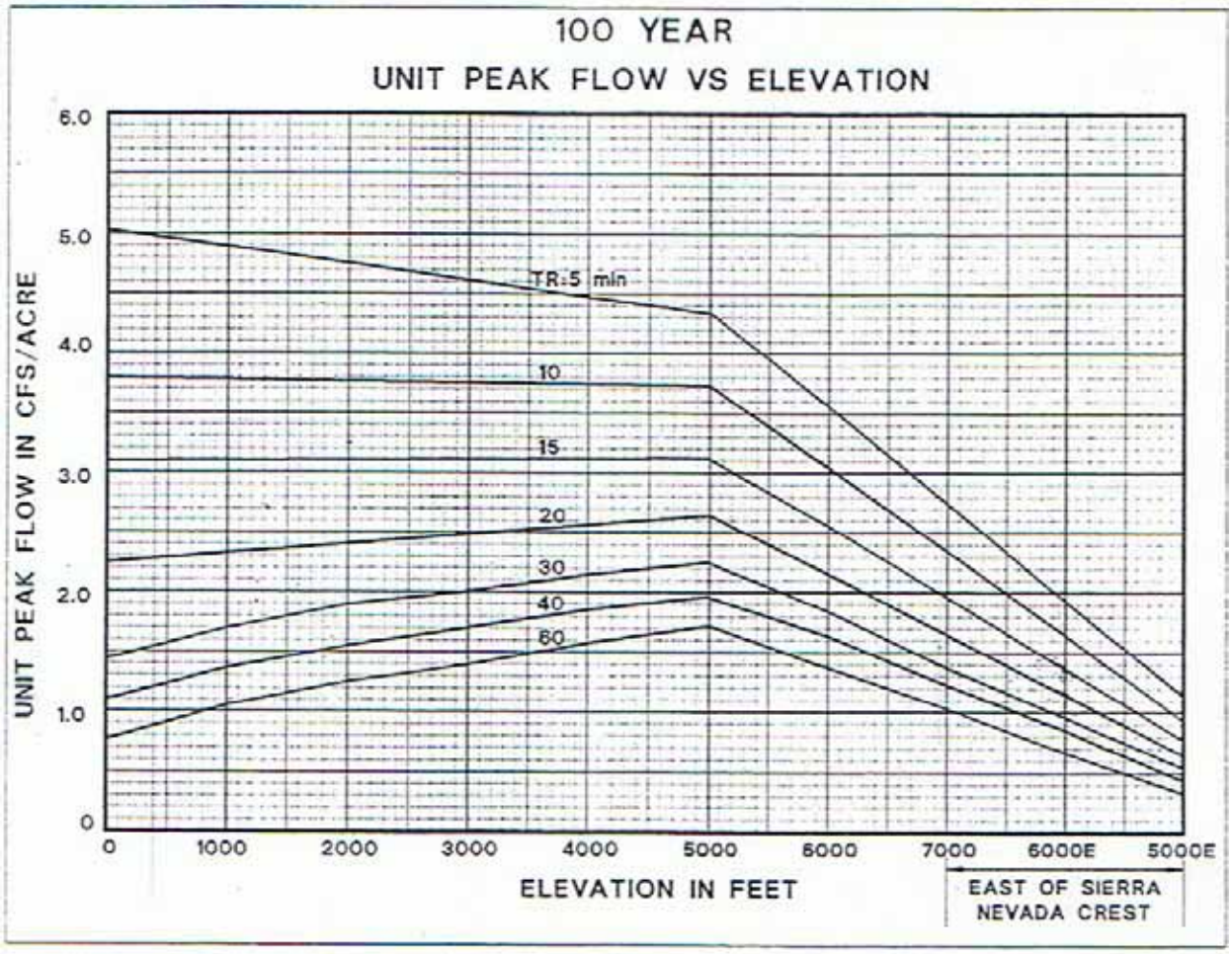


EXHIBIT 1b
UNIT PEAK FLOW VALUES

EXHIBIT 2

USDA SOIL TYPES AND SOIL MAP

TABLE 13.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness	Uncoated steel	Concrete
					Ft			In		In			
100, 101, 102, 103---------- Aiken	B	None---------	---	---	>6.0	---	---	>60	---	---	---	High-----	High.
104*:													
Alamo----------	D	Occasional	Long------	Dec-Apr	0-1.0	Perched	Dec-Apr	>60	---	20-40	Rip-pable	High-----	Low.
Fiddyment--------	D	None---------	---	---	>6.0	---	---	21-38	Rip-pable	20-37	Rip-pable	Moderate	Moderate
105---------- Alamo variant	D	None---------	---	---	1.0-2.5	Apparent	Dec-Apr	36-60	Rip-pable	---	---	High-----	Low.
106, 107, 108, 109, 110, 111---- Andregg	C	None---------	---	---	>6.0	---	---	24-40	Rip-pable	---	---	Moderate	Moderate
112*:													
Andregg----------	C	None---------	---	---	>6.0	---	---	24-40	Rip-pable	---	---	Moderate	Moderate
Rock outcrop.													
113*:													
Andregg----------	C	None---------	---	---	>6.0	---	---	24-40	Rip-pable	---	---	Moderate	Moderate
Shenandoah--------	D	None---------	---	---	1.0-2.5	Apparent	Dec-May	32-40	Rip-pable	---	---	High-----	High.
114---------- Auburn	C/D	None---------	---	---	>6.0	---	---	12-28	Hard	---	---	Moderate	Moderate
115*:													
Auburn----------	C/D	None---------	---	---	>6.0	---	---	12-28	Hard	---	---	Moderate	Moderate
Argonaut----------	D	None---------	---	---	>6.0	---	---	22-34	Rip-pable	---	---	High-----	Moderate
116*:													
Auburn----------	C/D	None---------	---	---	>6.0	---	---	12-28	Hard	---	---	Moderate	Moderate
Argonaut----------	D	None---------	---	---	>6.0	---	---	22-34	Rip-pable	---	---	High-----	Moderate
Rock outcrop.													
117*:													
Auburn----------	C/D	None---------	---	---	>6.0	---	---	12-28	Hard	---	---	Moderate	Moderate

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness	Uncoated steel	Concrete
					Ft			In		In			
141*:													
Fiddyment	D	None	---	---	>6.0	---	---	21-38	Rippable	20-37	Rippable	Moderate	Moderate
142*:													
Cometa	D	None	---	---	>6.0	---	---	>60	---	---	---	High	Moderate
Ramona	B	None	---	---	>6.0	---	---	>60	---	---	---	Moderate	Moderate
143 Dubakella	D	None	---	---	>6.0	---	---	21-33	Hard	---	---	High	Low.
144 Exchequer	D	None	---	---	>6.0	---	---	8-20	Hard	---	---	Low	Moderate
145*:													
Exchequer	D	None	---	---	>6.0	---	---	8-20	Hard	---	---	Low	Moderate
Rock outcrop.													
146 Fiddyment	D	None	---	---	>6.0	---	---	21-38	Rippable	20-37	Rippable	Moderate	Moderate
147*:													
Fiddyment	D	None	---	---	>6.0	---	---	21-38	Rippable	20-37	Rippable	Moderate	Moderate
Kaseberg	D	None	---	---	>6.0	---	---	11-21	Hard	10-20	Hard	Moderate	Moderate
148*:													
Henneke	D	None	---	---	>6.0	---	---	10-20	Hard	---	---	High	Moderate
Rock outcrop.													
149, 150 Horseshoe	B	None	---	---	>6.0	---	---	>60	---	---	---	High	High.
151*:													
Horseshoe	B	None	---	---	>6.0	---	---	>60	---	---	---	High	High.
Rubble land.													
152, 153 Inks	D	None	---	---	>6.0	---	---	12-20	Rippable	---	---	Moderate	Moderate
154*:													
Inks	D	None	---	---	>6.0	---	---	12-20	Rippable	---	---	Moderate	Moderate
Exchequer	D	None	---	---	>6.0	---	---	8-20	Hard	---	---	Low	Moderate
155 Inks variant	B	None	---	---	>6.0	---	---	30-54	Rippable	---	---	Moderate	Moderate

See footnote at end of table.

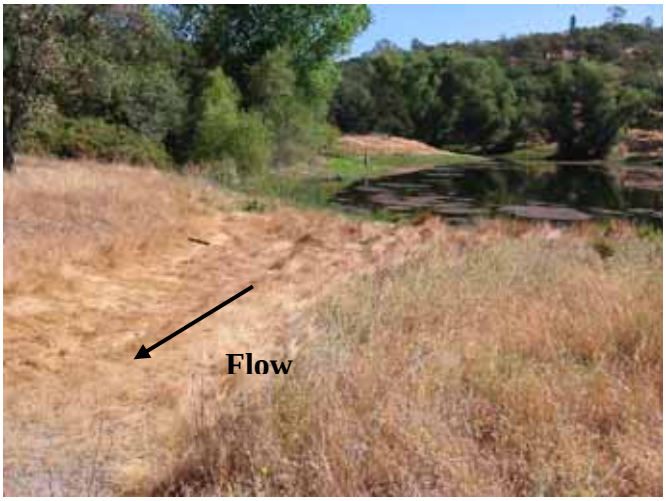
USDA SOIL MAP

USDA SOIL MAP

d5

EXHIBIT 3

PHOTOS



Outlet of onsite pond looking upstream

Basin A looking downstream

Basin B looking downstream

APPENDIX 14.0

Low Pressure (STEP) Sewer System Design Report
For
Amazing Facts Church
with
Annexation to Placer County SMD #2

June 11, 2009

Prepared By:

KING
ENGINEERING
INC.
PLANNING
ENGINEERING
CONSTRUCTION SUPPORT

563 Brunswick Road, Suite 11 Grass Valley, CA 95945
Phone (530) 272-8328 Fax (530) 272-6039

TABLE OF CONTENTS

	Page
1.0 PURPOSE AND PROPOSAL	1
2.0 PROJECT DESCRIPTION	3
3.0 DESIGN CRITERIA	3
4.0 DETERMINATION OF PROJECT'S ADWF	5
5.0 PLACER UGA ULTIMATE BUILDOUT CONCEPT	7
6.0 PEAK FLOW DERIVATION FOR PROJECT	7
7.0 MASTER STEP SEWER PLAN	10
8.0 IMPACTS AND MITIGATIONS	12
9.0 REFERENCES	16

TABLES:

TABLE 1 – DESIGN CRITERIA REFERENCES (SECT. 1.0)	2
TABLE 2 – CITY OF ROSEVILLE SEWER UNIT FACTORS (SECT. 3.01)	3
TABLE 3 – ESTIMATED UNIT SEWER FLOWS (SECT. 3.02)	3
TABLE 4 – PEAK FLOW DERIVATION METHODS (SECT. 3.05)	4
TABLE 5 – PROJECT ADWF BASED ON LAND USE (SECT. 4.01)	5
TABLE 6 – PROJECT EDU'S BASED ON BUILDING USE DATA (SECT. 4.02)	6
TABLE 7 – PROJECT ADWF BASED ON EDU'S (SECT. 4.03)	7
TABLE 8 – PROJECT INSTANTANEOUS PEAK SEWER FLOW (SECT. 6.01)	8
TABLE 9 - PROJECT DESIGN PEAK SEWER FLOW AND VOLUME (SECT. 6.02)	9
TABLE 10–IMPACTS TO EXISTING STEP SYSTEM HYDRAULICS (SECT. 8.02)	14

CALCULATIONS:

EXHIBIT 1 – EXIST STEP SYSTEM HYDRAULIC MODEL (SCHEMATIC LAYOUT)	18
HYDRAULIC SUMMARY TABLES H1-H2	19
EXHIBIT 2 – EXIST + PROJECT STEP HYDRAULIC MODEL	20
HYDRAULIC SUMMARY TABLES H3-H5	21
EXHIBIT 3 – EXIST + PROJECT + ULTIMATE STEP HYDRAULIC MODEL	24
HYDRAULIC SUMMARY TABLES H6-H8	25

FIGURES:

FIGURE 1-PROJECT PEAK SEWER FLOW DESIGN SCENARIO (GRAPH)
FIGURE 2- PROJECT SEWER PUMP STATION PROFILE
FIGURE 3- HYDRAULIC GRADE PROFILES – EXISTING STEP SYSTEM
FIGURE 4- HYDRAULIC GRADE PROFILES – (EXIST. + PROJECT)
FIGURE 5- HYDRAULIC GRADE PROFILES– (EXIST. + PROJECT + ULTIMATE)

APPENDIX:

EXAMPLES OF PEAK DESIGN FLOW DERIVATIONS FOR STEP SEWER SYSTEMS
PUMP CURVES FOR PROJECT PUMP STATION
LETTER FROM SPMUD – AVAILABLE CAPACITY IN SEWER

MAPS:

MAP 1 SMD 2 SERVICE AREA MAP FOR PROPOSED ANNEXATION AND CONCEPT SEWER SERVICE PLAN FOR PLACER UGA	(folded)
PRELIMINARY UTILITY PLAN	(folded)

1.0 PURPOSE AND PROPOSAL

Amazing Facts, Inc. proposes to locate a church and publishing facility on a 75.5 acre site on Sierra College Boulevard in Placer County, California. This report analyzes the hydraulics, presents the impacts and proposes mitigation measures required to connect this project to public sanitary sewer. This project would be required to annex to the Placer County Sewer Maintenance District #2 (SMD 2) and connect to the South Placer Municipal Utility District public sewer collection system.

Wastewater treatment is provided by the City of Roseville pursuant to the South Placer Wastewater Authority (SPWA) Operations Agreement for properties within the SPWA Service Area Boundary (SAB). SMD 2 also has a treatment contract with the City of Roseville. This site is not within the SPWA SAB, but is within the Placer Urban Growth Area (UGA) adjacent to the SAB. This UGA is surrounded by the SPWA SAB and is shown adjacent to the SMD 2 boundary on enclosed Map 1. The SPWA Wastewater Systems Evaluation Project treats the 630 acres in the Placer UGA as a point source in its hydraulic sewer model (ref. 5, Appendix S, TM9a). That sewer model is based on the SPWA 2005 proposed SAB combined with ten UGA's. That report did not expect the Placer UGA to be sewered at buildout due to steep topography and low development density (ref. 5, Appendix A, TM1b, Table 4). Even so, that report prudently assigned a flow for the Placer UGA based on an average dry weather flow (ADWF) of 10,000 gpd (ref.5, App. A, TM 1b, App. G, TM 3a, App. D, TM 2b). This report shows that this project will produce less than 10,000 gpd ADWF and fits within the Evaluation Project sewer model. An approval action for the modification of the SAB will be required by the SPWA after this project's environmental document is certified pursuant to CEQA.

This project proposes to connect to the existing STEP (septic tank effluent pumped) pressure sewer system in Cavitt Ranch Subdivision 900 feet to the west. That existing STEP system connects to the South Placer Municipal Utility District (SPMUD) gravity sewer manhole number RKLN 01 at Scarborough Drive. The church proposes to install an on site septic tank with pump tank and triplex alternating submersible, screened high head effluent pumps. SPMUD has stated in a letter, copied in the Appendix, that there is adequate collection sewer capacity for this project. This report analyzes the hydraulic capacity of the existing STEP system for this project. This report also analyzes any residual capacity in the STEP system for other property within the Placer UGA that could feasibly connect.

This report lists design criteria in Section 3. Section 3 also refers to referenced criteria listed in the Appendix. In Section 4, this report uses the criteria listed in Section 3 and the proposed land use and building use data to determine the project's ADWF. The project's ADWF is then derived in two ways as shown in Tables 5 and 7. In Section 6, this report uses criteria from Section 3 and the proposed building use data to derive the peak design flow to size the project's sewer pumps and on site pump storage tank. Section 7 describes the master sewer plan and hydraulic calculation results. Section 8 lists sewer impacts and mitigations for this project. In the Calculations Section, this report shows a schematic hydraulic model for each condition calculated and the hydraulic results are listed in the tables following the schematic models. Exhibit 1 shows the existing STEP system (31 EDU) alone. Exhibit 2 shows the existing (31 EDU) + project STEP system with one and two church pumps on. Exhibit 3 shows the existing (31 EDU) + project + ultimate (34 EDU) STEP system with two church pumps on. The Appendix lists examples of peak design flow derivations and shows the selected project sewer pump curve. Map #1 shows the proposed annexation to SMD 2. It shows the present SMD 2 boundary, the project site, the Placer UGA and the residual capacity

for ultimate service for the proposed STEP system. Table 1 below conveniently lists the references used to derive the ADWF and peak design flows. References are listed in Section 9.

TABLE 1
DESIGN CRITERIA REFERENCES

Category of Study	Reference (listed in Section 9) and Reason for its Use
1. Determine if this project's projected average daily sewer flow fits within the 10,000 gpd ADWF assigned by SPWA for the Placer UGA.	1. Reference 4 (City of Roseville Code) is used to determine sewer units SU's for this project. This derivation is shown in Section 4, Table 6. SU's are calculated by multiplying the area of each use by the unit SU per 1000 square feet. Roseville SU's are equivalent to SPWA DU's for this study purpose. One residence is assigned 1 SU or 1 DU. 2. Ref. 5 (Appendix G, TM 3a, Table 1) is used as one way to compute the project's ADWF by land use or occupancy. The ADWF is calculated by multiplying the flow factor for each type of occupancy by the area of use. Table 5 in Section 4 shows this derivation. 3. Ref. 5 (Appendix G, TM 3a) is used as another way to compute the project's ADWF by converting the calculated project DU's to ADWF using the unit factor of 190 gpd per DU. Table 7 in Section 4 shows this derivation.
2. Determine the design peak flow for the STEP residential services. The design flow is used to size infrastructure.	Table 4 in Section 3 presents different methods for calculating design peak flow for a STEP system. The method presented by e/One is the method selected, but is adapted for centrifugal service pumps.
3. Determine this project's peak sewer flow and volume to size the church sewer pumps and pump tank. This is a wet weather peak flow. Figure 1 shows a plausible scenario of pumping and sewage storage during the design maximum use period.	1. Ref. 6 (Uniform Plumbing Code) and Ref. 2 (Metcalf & Eddy) to determine peak flow by fixture unit or use. Tables 8 and 9 in Section 6 show these derivations. The required peak pump flow is a function of the peak flows and storage provided over the design maximum 4 hour use period. See Figure 1.
	2. Ref. 3 Orenco Systems pump curves are used to model this project's pumping capacity. The Appendix shows the selected pump curve.
4. Model the STEP sewer hydraulics with peak residential and project flows. These schematic pipe models are shown in the Calculations Section and the following Tables list the hydraulic information.	1. The hydraulics are performed by the Haestad waterCAD program, using Hardy Cross analysis and Hazen Williams formula, with a pipe roughness C factor of 120. The different hydraulic scenarios are listed in the calculations. Figures 3 through 5 show the design hydraulic profiles in the existing and proposed STEP system.

2.0 PROJECT DESCRIPTION

The project will consist of a church and publishing office with warehouse built in three phases. There will be a Multi-Use/Publishing building, a Resource Center Building, a Sanctuary and an Office Building. The size of these buildings will total 207,030 square feet. Table 6 in Section 4 lists the sizes of and uses for each building in more detail.

3.0 DESIGN CRITERIA

3.01 TABEL 2

CITY OF ROSEVILLE SEWER UNIT FACTORS

(THESE NUMBERS ARE USED IN SECTION 4 TO DETERMINE PROJECT'S ADWF)

(Ref. 4)

Type of Occupancy	Sewer Unit (SU) Factor
Residence	1 SU per residence (This is equivalent to 1 SPWA DU per residence)
Church - without kitchen	1/6 SU per 1000 s.f.
Office	1/3 SU per 1000 s.f.
Warehouse	1 SU per 5 employees
Multi-Use area with kitchen (maximum possible sewer use for this area is treated as a café or restaurant factor)	2 SU per 1000 s.f.

3.02 TABLE 3

ESTIMATED UNIT SEWAGE FLOWS

(THESE NUMBERS ARE USED IN SECTION 6 TO DETERMINE PROJECT'S PEAK SEWER FLOW)

Type of Occupancy	Assigned unit flow gallons	Reference
Office - per employee	15 per employee (includes visitors)	Ref. 2 (Metcalf & Eddy)
Warehouse – per employee	15 per employee (treat as office)	Ref. 2 (Metcalf & Eddy)
Church - per seat with kitchen waste	7 per seat or occupant for multiple seatings	Ref. 6 (Uniform Plumbing Code)
Sanctuary or Chapel or special event - per seat without kitchen waste	5 per seat or occupant	Ref. 6 (UPC)

3.04 DESIGN FLOW DERIVATION USED FOR SIZING STEP SYSTEM PIPELINES

There are several methods or equations from which to determine the peak flow design for a pumped STEP system. Three of these methods are presented in Table 4 below and compared to the existing Cavitt Ranch design.

3.05 **TABLE 4**

PEAK FLOW DERIVATION METHODS

(COMPARISON OF METHODS SHOWN FOR CAVITT RANCH STEP SYSTEM)

Derivation Method	**No. of EDU'S**	**Derivation of Peak Flow**	**Peak Flow** gpm	**Remarks**
Cavitt Ranch Design	31	Unconventional method (Note 1)	120	Unconventional method with unreliable results (Note 1)
Environment/One	31	6(10+20)/2 (Note 2)	90	This is the selected method for this report. It is adapted for centrifugal service pumps.
Battelle Institute	31	Per Graph for DU (Note 3)	42	Reasonable flow, but higher flow is selected for project to avoid under sizing pipes
Terry Bounds	31	31(380x3.6)/1440 + 20 (Note 4)	50	Reasonable flow, but higher flow is selected for project to avoid under sizing pipes

Notes:

1. The Cavitt Ranch design used an unconventional method. It assumed 2/3 of the pumps are on at one time, discharging 10 gpm per pump. In an unconventional way, it did not correctly accumulate flows from branches. Because of this method, it derived some hydraulic grade lines that decreased as they proceeded upstream. It derived gravity flow in pipes that should have been pressure flow. This report considers the existing hydraulic design results to be unreliable.
2. Environment/One uses a simple chart that lists the probable number of service sewer pumps on at one time. This was derived from a study done in Albany and is listed in the Appendix. Although this was derived for positive displacement pumps with small on site storage tanks, it can reasonably be adapted to STEP centrifugal pumps with large on site storage. If anything, this method should result in slightly over sizing the peak design flow. Since minimum velocities for septic effluent is not so critical, it should be better to slightly oversize as compared to undersize. Low head centrifugal pumps are assumed to discharge 20 gpm. High head centrifugal pumps are assumed to discharge 10 gpm. When both types of pumps could be on simultaneously, 15 gpm is the assumed average discharge per pump. Note that for 31 services, 6 pumps are presumed to be pumping simultaneously. This method is used for this project because it is easy to use and does not undersize the design flows.
3. Battelle Institute presents the results of their flow studies in a graph that is included in the Appendix. For a small number of pumps, this may derive slightly low design flows.
4. Terry Bounds provides a linear equation to determine peak flow. There is a base pump flow included in the equation so that small branch flows are not undersized. This equation is listed in the Appendix. Into this equation, we have inserted an average daily flow of 380 gpd/EDU with a peaking factor of 3.6. This is consistent with the criteria in TM 3a. We have used a base pump flow, D = 20 gpm. We have used this equation in previous designs and believe it gives reasonable design flows, but we have selected the method described in Note 2 to be sure we have not undersized the project pump station.
5. Other derivations not listed herein generally provide design flows that are too small for this number of services.

Since effluent in STEP lines is solids free, the minimum velocity at design flow should be allowed to be low, with 2 fps being a preferred minimum. The minimum STEP sewer line size shall be 2" diameter. The design velocity may typically be less than 2 fps in the 2" lines. Ref. 5, TM 3a allows

a maximum velocity of 10 fps in force mains. We have kept design velocities below 8 fps in the STEP mains.

3.06 PROJECT SEWER PUMP SYSTEM CRITERIA

The proposed sewer pump system shall comply with the planning level criteria listed in Ref. 5, TM 3a, Attachment B. This project's sewer pumps shall be sized for peak wet weather flow and shall be high head, screened effluent pumps, designed to pump septic tank effluent. Two sewer pumps shall alternate with a lead/lag float control operation. A redundant third pump shall be on standby. The pump tank shall have up to 24 hours of storage capacity with no back up generator. Residential STEP service pumps should be able to deliver at least 6 gpm during design flow conditions.

4.0 DETERMINATION OF PROJECT'S ADWF

We present two methods for deriving the project's ADWF. Table 5 shows a derivation based on land use and flow factors listed in Ref. 5, TM 3a, Attachment B. Table 5 uses a project size of 75 acres for Amazing Facts. It also prorates the land use based on building sizes and frequency of use per week to derive an ADWF.

4.01 TABLE 5
PROJECT ADWF BASED ON LAND USE
(SEE TABLE 7 DERIVATION OF ADWF BASED ON BUILDING USE DERIVED EDU'S)

LAND USE	% OF PROJECT SIZE	FREQUENCY OF USE	FLOW FACTOR (Ref. 5)	DERIVATION OF ADWF
Commercial (96,000 s.f. of publishing use)	11.1%	4/7 days per week	850 gpd/acre	11.1% x 75 x 4/7 x 850 = 4043 gpd
Light Industrial (11,220 s.f. of warehouse use)	1.3%	4/7 days per week	850 gpd/acre	1.3% x 75 x 4/7 x 850 = 474 gpd
Church (99,810 s.f. of church use)	11.6%	3/7 days per week	660 gpd/acre	11.6% x 75 x 3/7 x 660 = 2461 gpd
Open Space (56 acres)	76%		0 gpd/acre	
TOTALS	**100%**			**6,978 gpd**

4.02

TABLE 6
PROJECT EDU'S BASED ON BUILDING USE DATA
(AND CITY OF ROSEVILLE SEWER UNIT FACTORS – REF. 4)

Project Phase	**Building**	**Building Uses**	**Size of Use** s.f.	**Unit SU Factor** (From Table 2, Section 3)	**Day of Week for Use**	**Estimated Sewer Units (SU)**	
						Mon-Th SU's	Saturday SU's
1	Publishing/ Multi-Use 96,000 s.f.	1. Publishing offices & work area	38,560	.33/1000	M-Th	12.9	
		2. Church Office	4,980	.33/1000	M-Th	1.7	
		3. Chapel – 90 seats	1,960	.17/1000	3 days mid week	.3	
		4. Non-simultaneous multi use – 324 table seating or 624 assembly seating or sports floor area (includes kitchen area)	7,900	.17/1000	Sat or special event mid week	1.3	15.8
		5. Classrooms, stage, reception and remainder of building	42,600	.17/1000	Sat		7.1
	Resource Center	Warehouse for books/multi-media – 6 employees	11,220	1/5 empl.	M-Th	1.2	
2	Sanctuary	Church and classrooms	89,810	.17/1000	Sat -9 am to 1 pm		15
3	Office	Office	10,000	.33/1000	M-Th	3.3	
TOTALS – All Phases			207,030			21	38

NOTES:

1. SU's are calculated as shown and are equal to SPWA DU's and Placer County's EDU's.
2. The maximum expected sewer units are shown by the day of the week they are generated.
3. There is no occupancy or building use proposed for Friday or Sunday.
4. The average ultimate number of DU's over the week is derived as follows:
   Phase 1: (18 Du x 4 + 23 DU)/7 days = 14 DU's
   Phase 1 and 2: (18 Du x 4 + 38 DU)/7 days = 16 DU's
   All 3 Phases: (21Du x 4 + 38DU)/7 days = 18 DU's.

4.03 **TABLE 7**

PROJECT ADWF BASED ON EDU'S

(COMPARE TO TABLE 5 DERIVATION OF ADWF BASED ON LAND USE)

Project Phase	Average DU'S From Table 6 above (Note 1)	Unit ADWF per DU (ref. 5, App. G, TM 3a)	Total ADWF
1	14	190 gpd/DU	2,660 gpd
2	2	190 gpd/DU	380 gpd
3	2	190 gpd/DU	380 gpd
All 3 Phases Total	18	190 gpd/DU	3,420 gpd

NOTES:

1. The average DU's from Table 6 are used since the derived total ADWF will be compared to the SPWA ADWF, which is an average daily flow.

The derivations presented in Tables 5 and 7 predict a project ADWF between 3,420 and 6978 gpd. This project's ADWF fits within the SPWA model for the Placer UGA ADWF of 10,000 gpd. The maximum remaining ADWF of 6,580 gpd (up to 34 DU's) will be accommodated in the STEP system sizing and reserved for the rest of the Placer UGA as discussed below.

5.0 PLACER UGA ULTIMATE BUILD OUT CONCEPT

Map 1 also shows the concept sewer service plan for the Placer UGA. The maximum STEP system service pumping head that will produce at least 6 gpm is about 315 feet. This fact limits the area in the Placer UGA that can connect to the existing STEP system to this project and about 240 acres of undeveloped property to the east of this project. This is shown as future STEP Service Area "A" on Map 1. The remaining 34 DU's are assigned to these 240 acres. The Preliminary Utility Plan and hydraulic calculations take into account these future DU's in the infrastructure sizing.

The remaining 310 acres of the Placer UGA are already subdivided or developed. It is probable that public sewer would be extended to these lots only if there were failing septic systems. These lots are too low in elevation or too far away to be efficiently served by the proposed STEP system. These lots would most likely be served as shown by a gravity sewer extension along Cavitt Stallman Road.

6.0 PEAK FLOW DERIVATION FOR PROJECT

This report derives the project peak flow by assigning a design sewer volume during a four hour maximum use period, proposed to occur on Saturday. Table 8 shows the instantaneous peak flow based on plumbing fixture units. Table 9 shows the maximum estimated sewer volume produced during the maximum use period on Saturday between 9 am and 1 pm based on occupancy. Peak flows derived in Tables 8 and 9 are plotted in a plausible scenario during the maximum use period in graph format in Figure 1. The Figure 1 graph shows how the proposed church pumps and storage volume will accommodate the fluctuations in sewer flow during the maximum use period. The church pumps are designed to be pumping simultaneous to the ultimate peak flow from 65 residential pumps (65 ultimate EDU's).

6.01 **TABLE 8**

PROJECT INSTANTANEOUS PEAK SEWER FLOW

(PLUMBING FIXTURE UNIT METHOD)

OCCUPANCY And PLUMBING FIXTURES	**PLUMBING SEWER FIXTURE UNITS (F.U.) PER FIXTURE**	**TOTAL F.U.**	**INSTANTANEOUS PEAK FLOW gpm** (Ref. 6, App. A, Chart A-3)
Church Sanctuary/Classrooms			
18 WC flushometer valves	See below		
5 Urinals	See below		
20 Lavatories	1	20	
2 showers	2	4	
Multi-Use/Classrooms			
18 WC flushometer valves	(36 total =115 +310)	425	
5 Urinals	(10 total = 58+25)	83	
24 Lavatories	1	24	
Kitchen			
1 kitchen sink	1.5	1.5	
2 food prep sinks	1.5	3	
1 dishwasher	1.5	1.5	
Misc. appliances		2	
Total (Flow figured at 95% of instantaneous water demand)		564	145 gpm

NOTES: This result is used to plot plausible flow rates in Figure 1. A peak sewer flow of 95% of the peak water demand is used to account for some consumption and flow attenuation.

6.02 **TABLE 9**

PROJECT DESIGN PEAK SEWER FLOW AND VOLUME

Type of Occupancy	**Building Size** square feet	**Time of Occupancy**	**Occupants**	**Unit wastewater produced** gallons/occupant (Ref. 2 and 6)	**Total wastewater volume Phase I** gallons	**Total wastewater volume All Phases** gallons
Church:						
Phase I Classrooms, Multi-Use & Support	54,350 s.f.	9AM to 1PM Saturday	1,300 occupants	7	9,100	9,100
Phase II Sanctuary	89,810 s.f.		2,000 occupants	7	-	14,000
On site infiltration & Misc.					100	100
Total design sewage volume produced in 4 hour period					9,200	23,200
Average Flow rate over 4 hour period (gpm)					9,200/240 = 38 gpm	23,200/240 = 97 gpm
Proposed Pump Rates are conservatively shown in Figure 1 to vary between 60 and 80 gpm for the ultimate flow conditions. (The hydraulic model predicts pump flow rates between 65 and 91 gpm)						

NOTES:

1. The proposed pump system complies with the criteria listed in Section 3.
2. This sizing is based on the maximum use, with a meal, by 3,300 occupants occurring over a 4 hour period.
3. Total Storage volume provided in pump tank above all pumps-off level = 23,400 gallons. This volume will contain the maximum design sewer volume from Friday through Sunday (23,200 gallons) with all pumps off.
4. Figures 1 and 2 show how this design pump tank volume of 23,200 gallons is used over this maximum use period. A triplex pump system is proposed. Up to two pumps will run simultaneously while the third pump is on stand by. Each pump will have its own pump event counter and hour meter, so operators can check for proper pump operation and proper alternation sequencing.
5. Figure 1 shows a plausible pumping scenario for this maximum use period. There is additional safety factor in that the church pumps will likely pump at higher flow rates, since the 65 residential pumps will not actually maintain a peak flow rate over this entire four to five hour period.
6. Figure 2 shows the storage volumes in the pump tank between each float level. These volumes are 1170 gallons between all pumps off and lead pump on and 2340 gallons between lag pump on and lead pump on and 8000 gallons between high water alarm and lag pump on. There is also 11,600 gallons of reserve volume above high water alarm.
7. Phase 3 is not included since it is non simultaneous office flow occurring mid week only.

7.0 MASTER STEP SEWER PLAN

Map 1 shows the overall service area boundary proposed for the annexation of this project to SMD 2. Map 1 also shows the Placer UGA concept sewer service plan. Map 1 also shows the existing Cavitt Ranch STEP system and the 31 residential EDU's that it serves. Map 1 also shows the STEP system extension required for this project and a potential future STEP system extension for up to 34 future residential EDU's in the Placer UGA. The attached Preliminary Utility Plan shows the proposed on site sewer plan with connections to the existing STEP system. The attached calculations provide the basis for the proposed on site and STEP system for this project.

Description of on site master sewer plan components:

This project is proposed to be built in three phases. Placer County ESD is requiring that the on site sewer system be sized and built for the ultimate occupancy in the first phase of construction. As shown in the attached Preliminary Utility Plan, the on site sewer system will consist of the following:

1. Gravity flow sewer collection lines from each building to a common septic tank
2. Grease trap tank for the kitchen in the Multi-Use Building
3. Septic tank is sized to remove solids so that the sewer effluent pumps are pumping solids-free effluent to the STEP system. The septic tank effluent flows to the pump vaults with attached storage tank.
4. Pump station consists of pump tank with triplex, high head screened effluent pump system, control panel, float controls and alarms. The pump tank has reserve storage capacity for up to three days of project sewer flow to account for power outages. Design shall include pump counters and pump hour meters so that sewer flow can be estimated by maintenance personnel. As built plans and an operation and maintenance manual will be provided.

The master STEP sewer plan is hydraulically analyzed using schematic pipe layouts. The different pumping scenarios and the effects to the existing system are shown in the Calculations Section of this report as follows:

Existing System: Exhibit 1 shows a schematic pipe layout for the existing STEP system in Cavitt Ranch, using the design flows derived by Murray Smith & Associates. This exhibit shows numbered pipes and junctions. The following hydraulic pipe and junction data tables show the modeled flows, pressures and hydraulic data for this STEP system. The hydraulic profile in Figure 3 shows the design hydraulic grades for this existing STEP system. This report considers those design hydraulic grades to be unreliable. This report presents a rational basis for revising the existing STEP hydraulics and designing the proposed STEP system as described below.

Proposal: Existing STEP system plus Amazing Facts Project

This project proposes to upsize 1,500 lineal feet of existing 3" STEP sewer line with 4" pipe as shown on the Preliminary Utility Plan. This replaced section of 3" STEP sewer line is between King Ranch Place and Cavitt Ranch Place. This is necessary to provide the capacity for the church pumped flow and to minimize the effect of raising the pump head on the existing Cavitt Ranch residential sewer pumps. The design pump heads for the church and Cavitt Ranch would be excessively high if this section of 3" sewer line were left in place. In addition, Placer County is requiring that the 3" pipe under Sierra College Drive be upsized to 4" (Pipe P-7 in Exhibits 2 and 3). This will insure that pipe diameters do not decrease in a downstream direction. Exhibit 2 shows

a schematic pipe layout for the existing STEP system plus Project. This report calculates different flows and hydraulic grades than those shown on the Record Drawings for Cavitt Ranch. The hydraulic results of the proposed design flows are shown in the data tables following Exhibit 2. Flow results are shown for 1 and 2 project pumps running. The results of these calculations are used to determine the impacts to the Cavitt Ranch STEP pumps already in operation as discussed in Section 8.

Accommodation for future: Existing STEP system plus Project plus Ultimate Development

Exhibit 3 shows a schematic pipe layout for this scenario. The ultimate development added to the church flow consists of 34 future EDU's from the Placer UGA, east of the Amazing Facts Project. Flow results are shown for 2 project pumps running with simultaneous peak residential flow from 65 EDU's. Conservative project pump discharge rates are shown in Figure 1 to determine the storage volume utilized in the project pump tank. Figure 2 shows emergency reserve volume provided in the project pump tank.

Hydraulic Calculations and Conclusions

The hydraulic calculations for the STEP sewer system are performed with the Haestad WaterCad computer program based on a Hardy Cross analysis and Hazen Williams formula. The Hardy Cross analysis calculates flows and pressures, given the inflows at various junctions, the known elevation of the point of discharge and the project pump hydraulic data. The Hazen Williams formula calculates the head loss in the pipes due to friction. That formula, in English units, is expressed as: $V=1.318\ CR^{0.63}\ S^{0.54}$. V is velocity, C is the pipe friction coefficient, R is hydraulic radius and S is the head loss per foot of pipe or head loss gradient. Three operating conditions are presented. They are (1) The existing STEP system design in Cavitt Ranch prepared by Murray Smith & Associates and (2) The existing + project condition and (3) The existing + project + ultimate condition. The STEP sewer system is shown in a schematic exhibit of pipes and nodes. Each exhibit is followed by hydraulic data summary tables showing design pressures, flow rates and velocities for the STEP system. Project pump input data shown in Tables H5 and H8 is taken from three points on the PF5007 pump curve shown in the Appendix. All other input data for junction inflow, pipe sizes, friction C values and elevations are listed along with output data in the hydraulic data summary tables. From these calculations, this report concludes:

Existing STEP system plus Project:

1. There will be an increase to some of the design hydraulic grades in the existing Cavitt Ranch STEP system. The Cavitt Ranch design hydraulic grades shown on the Record Drawings are not considered reliable. Placer County has inventoried nine existing residential pumps in Cavitt Ranch. Table 10 in Section 8 lists two existing residential pumps that will need to be replaced by this project as mitigation to the increased head caused by this project.
2. This project's minimum design pumping rate with two pumps on is 111 gpm.
3. The design peak flow to the SPMUD system at MH RKLN 01 for this scenario is 201 gpm. This is the new flow rate reported to SPMUD for their review of system capacity.

Existing STEP system plus project plus ultimate:

1. Peak flow from 34 potential, future EDU's from Placer UGA is added to this project's pumped flow.
2. The impact to the existing Cavitt Ranch residential sewer pumps is the same as listed in the scenario above. The two residential pumps proposed to be replaced by this project will be sized for the maximum derived pumping head.
3. This project's minimum design pumping rate with two pumps on is 91 gpm.
4. The design peak flow to the SPMUD system at MH RKLN 01 for this scenario is 196 gpm. This is nearly the same as the scenario above because the church pump discharge flow rate will decrease by an amount nearly equal to the increase in peak flow from the 34 future EDU's. There are no additional impacts to the hydraulics of the system.

8.0 IMPACTS AND MITIGATIONS

8.01 Annexation to SMD 2

Impact:

Sewer service to this project represents an impact to Placer County SMD 2, the SPMUD sewer system and the SPWA system. Without annexation, there would be disorder. Annexation is the process needed to assess the impacts, determine the available capacity, collect the fees and update the mapping to the sewer system.

Mitigation:

Annexation of this project's property will be required in order to allow sewer service through Placer County SMD 2. Placer County Board of Supervisor's approval will be required for annexation into SMD 2 after approval by SPWA for modification of its service area boundary. In addition, modification of the agreement between SPMUD and Placer County is required.

8.02 Collection/ Conveyance System

Impact 1. Existing and proposed STEP Sewer System:

1. There is a recurring service maintenance user fee charged to the Project by the Sewer District for maintenance and emergency response. The current fee is $24.40 per month per EDU, which is in addition to the normal maintenance and operations fee. The project's EDU count is 14 for phase 1 and 18 for all phases as derived in Table 6 above.

2. With this project connecting to the existing STEP sewer system and no pipe upsizing provided, there would be an increase in the design hydraulic grade for the existing STEP system. This could be an adverse effect to the existing pumps unless mitigated.

Mitigation 1. Existing and proposed STEP Sewer System:

1. The cost of the on-lot component of the STEP system will be borne by the Project Applicant (Amazing Facts, Inc.).
2. Paved access shall be provided to each sewer manhole and STEP system equipment. Such access shall have a structural section designed for HS20 loadings with a minimum structural section of 3" AC over 8" AB unless otherwise approved by Placer County Environmental Engineering, minimum width of 12 feet with one foot wide AB shoulders and a minimum centerline radius of 50 feet. Configurations shall provide for access by County sewer maintenance vehicles and shall either be a through connector road or shall

have an applicable turnaround. The project will need to provide easement rights for County personnel‘s access and hold the County harmless for damages that may occur due to maintenance and vehicle access. On site STEP service and tank locations and paved access shall be identified on the project improvement plans.

3. The Project Applicant will be responsible for replacing about 1,500 feet of existing 3 inch STEP sewer main with 4 inch pressure pipe from Cavitt Ranch Place to Manhole RKLN 01 to partially offset increases to the existing STEP system hydraulic grade. Since some of these sewer lines are to be replaced in the King’s Ranch Place Intersection, the work may necessarily be done at night to reduce impacts to traffic control. The 3” pipe replacement under Sierra College Boulevard may be done by pipe bursting procedure, if open cut excavation is infeasible due to interference with existing utilities. The maximum increase in design pressure at any location is 16.5 feet (7 psi). The maximum design pressure will occur at Polo Ranch Place, in Cavitt Ranch and will be 108 psi, an increase of 2 psi above the original design. All STEP system piping in Cavitt Ranch is PVC, schedule 40, which is designed to withstand this pressure.
4. Placer County shall approve improvement plans for the design of the on site and off site sewer system. Project Applicant shall obtain easement and encroachment permit for off site STEP main to be built along and under Sierra College Boulevard. Improvement plans for construction of public sewer is subject to review and approval by the Placer County Facilities Services Environmental Engineering Division, Placer County ESD and SPMUD. Note that a maintenance agreement for the STEP tank will be completed with Environmental Engineering Division before improvement plans are approved.
5. Table 10 below shows an inventory of the changes to the Cavitt Ranch STEP system design hydraulic grade elevations proposed by this project. Table 10 also shows an inventory of nine existing residential sewer pumps and their design heads. The pump at lot 5 was incorrectly sized for the existing design and should be replaced with a P1010 pump by others, since it is not the responsibility of this project. Using the criteria listed in Section 3, this report calculates that the original design heads for lots 10, 12 and 16 are over 40 feet too high. That means these pumps may be operating off their curves. If these pumps are working satisfactorily, they can remain in place. Otherwise, they should be replaced with model P1005 FC (flow control). The model P1005 FC would have to be added to the Placer County maintenance inventory, since it is not currently being used. The Amazing Facts Project will have negligible effect to these pumps as demonstrated by the calculation on page 17.
6. The pumps at lot 27 and 29 are shown in Table 10 to be upsized by this project to mitigate the increase in design pump head. At these two lots, this project will be responsible for the cost of the replacement pump, all appurtenant equipment and cost of installation of the replaced pump (Placer County will actually do the work of installing the pumps and appurtenant equipment).
7. It is recommended that the design hydraulic grade elevations shown on the Cavitt Ranch Record Drawings be replaced with those elevations listed in Table 10.

TABLE 10
IMPACTS TO EXISTING STEP SEWER SYSTEM CAUSED BY AMAZING FACTS PROJECT
INCLUDING HYDRAULIC AND SERVICE PUMP INVENTORY AT CAVITT RANCH

	Existing Hydraulic Design Data Prepared By Murray Smith & Associates					**Proposed Hyd. Design Data**			
Cavitt Ranch Lot #	Existing Service Elevation ft.	Existing Design Hydraulic Grade at Service ft.	TDH- Total Design Head at Service ft.	Existing Pump Model	Design Pump Head ft.	Proposed Design Hydraulic Grade at Service ft.	Proposed TDH - Total Design Head at Service ft.	Difference in TDH ft.	Remarks
1	259.5	504.5	245			510	250.5	5.5	
2	257.5	503.5	246			509.5	252	6	
3	264	501	237	P1010	231	507.6	243.6	6.6	Exist. P1010 pump ok at 238' design head
4	264.1	503.1	239			509.1	245	6	
5	269.2	504.2	235	P2010	none	509.8	240.6	5.6	Pump improperly sized for exist. head. Should be same a lot 3. Change to P1010 (note 3)
6	405.2	503.2	98			495.6	90.4	-7.6	
7	409	506	97			496	87	-10	
8	404.2	504.2	100			495.8	91.6	-8.4	
9	400	503	103			495.5	95.5	-7.5	
10	438.5	532.5	94	P1005	104	488.6	50.1	-43.9	Exist. P1005 pump, 60' design head, see note 2
11	437	535	98			489.1	52.1	-45.9	
12	442.1	529.1	87	P1005	93	487.8	45.7	-41.3	Exist. P1005 pump, 52' design head, see note 2
13	448.8	496.8	48			478.5	29.7	-18.3	
14	464.1	478.1	14			473.3	9.2	-4.8	
15	488.2	492.2	4			508.7	20.5	16.5	
16	439	529	90	P1005	101	487.8	48.8	-41.2	Exist. P1005 pump, 60' design head, see note 2
17	446.2	511.2	65			482.6	36.4	-28.6	
18	430.2	488.2	58			476	45.8	-12.2	
19	446.3	485.3	39			475.1	28.8	-10.2	
20	480.7	509.7	29	WEO5H	31	517.5	36.8	7.8	Exist. WEO5H pump ok at 39' design head
21	470.5	518.5	48			518.8	48.3	0.3	
22	464.2	521.2	57	WE15H	71	519	54.8	-2.2	Exist. WE15H pump ok at 69' design head
23	464.2	521.2	57			519	54.8	-2.2	
24	457.4	520.4	63			519	61.6	-1.4	
25	462	518	56			518.7	56.7	0.7	
26	462.7	515.7	53			518.3	55.6	2.6	
27	466.4	508.4	42	WEO512	none	517.6	51.2	9.2	**Upsize pump to WEO7 or P1005FC**
28	479.5	505.5	26			517	37.5	11.5	
29	495.8	499.8	4	WEO3L	9	516	20.2	16.2	**Upsize pump to PKP 350 or P1005 FC**
30	495.4	495.4	0			512.5	17.1	17.1	
31	492.5	492.5	0			508.7	16.2	16.2	

Notes:

1) These pump models are from Orenco Systems, Inc. (1-800-348-9843). The WE and WE0 series are older low head effluent pump models and the PEF series are equivalent newer models.
2) The original design heads for lots 10, 12 and 16 are over 40' too high. The existing pumps may presently be operating off their pump curves. If they are working, then leave in place. Otherwise replace with P1005FC (not in current County inventory). Amazing Facts Project will have negligible effect on these pumps, per mitigation 1.5 on page 13 and calculation on page 17.
3) This pump is incorrectly sized for existing head. It should be changed to a P1010 pump. This is not the responsibility of the Amazing Facts Project, since there is no new impact if the pump were the correct one.

4) The PKP 350 and P1005FC are not pump models that Placer County currently uses in their inventory. The PKP 350 is the closest to the existing pump in horsepower and installation layout.

Impact 2. Existing SPMUD Gravity Sewer Collection System:

The gravity sewer collection system is operated and maintained by the South Placer Municipal Utility District. Unless there is sufficient hydraulic capacity in the existing gravity sewer system, the additional wastewater peak flow from this project may be an adverse impact. In 2007, SPMUD stated in a letter, copied in the Appendix, that there was adequate collection sewer capacity for this project. However, since then the project has revised some building sizes and increased the design peak sewer flows, an updated letter will be request from SPMUD.

Mitigation 2. Existing SPMUD Gravity Sewer Collection System:

Prior to improvement plan approval, the applicant shall submit an updated available capacity letter from SPMUD to Placer County. SPMUD and SMD 2 shall approve a modification to their Wastewater Services Agreement to account for this project.

8.03 Existing Wastewater Treatment Plant

Impact:

Wastewater treatment is provided by the City of Roseville pursuant to the SPWA Operations Agreement for properties within the SPWA SAB. SMD 2 also has a treatment contract with the City of Roseville. This site is not within the SPWA SAB, but is within the Placer UGA adjacent to the SAB. The SPWA 2007 Wastewater Systems Evaluation Project treats the 630 acres in the Placer UGA as a "point source" in its hydraulic sewer model. For the Placer UGA, the Evaluation Project modeled an average dry weather flow (ADWF) of 10,000 gallons per day (gpd). This project (all phases) will produce between 3,420 and 6978 gpd ADWF and fits within the Evaluation Project model.

This project is proposed as a STEP service. The effluent from STEP services has lower biochemical oxygen demand (BOD) and suspended solids (SS) compared to that from a gravity sewer service. The benefit of these lower constituents may be partially offset by the need for the WWTP to periodically take pumped septic tank effluent from this project's septic tank. There is an existing chemical building at King Ranch Place that is able to mitigate odors from the STEP sewer lines, if needed. Placer County is requiring the 3" meter that controls chemical injection to be upsized to a 4" meter.

Mitigation:

Prior to service, an approval action for the modification of the SAB to include this property will be required by the SPWA after this project's environmental document is certified. The project's septic and grease trap tanks shall be maintained to minimize pump screen plugging and to minimize solids form being pumped into the STEP system. These tanks' bottom solids levels and top scum thicknesses shall be periodically checked and the contents pumped in accordance with the requirements of the Placer County Facilities Services Environmental Engineering Division. Typically the grease trap tank contents will be sent to a licensed grease rendering facility. The existing chemical building dosing capacity shall be reviewed to determine if it is sufficient for the proposed increased flows.

D. Recycled Water

Impact and Mitigation:

The SPWA Evaluation Project states that all UGA's must provide their own recycled water storage. There is no infrastructure for recycled water anywhere close to the Placer UGA, but it is assumed that this project, once brought into the SPWA Service Area Boundary, would be included in all aspects of any applicable future expansion of the SPWA recycled water project.

9.0 REFERENCES

1. Bounds, T.R., (1996) "Alternative Sewer Design" Orenco Systems, Inc.
2. Metcalf & Eddy, Inc. *Wastewater Engineering: Treatment, Disposal, Reuse.* New York: McGraw Hill,1991
3. Orenco Systems, Inc. 2008 pump curves
4. *Sewer Rates and Charges*, City of Roseville Municipal Code, Chapter 14.16
5. *South Placer Regional Wastewater and Recycled Water Systems Evaluation Final Repor*t, 2007, RMC
6. Uniform Plumbing Code, (2000), IAPMO, Walnut, CA.

HYDRAULIC CALCULATIONS

The following hydraulic calculations for the STEP sewer system are performed with the Haestad WaterCad computer program based on a Hardy Cross analysis and Hazen Williams formula. The Hardy Cross analysis calculates flows given the inflows at various junctions, the known elevation of the point of discharge and the project pump hydraulic data. The Hazen Williams formula calculates the head loss in the pipes due to friction. That formula, in English units, is expressed as: $V=1.318\ CR^{0.63}\ S^{0.54}$. V is velocity, C is the pipe friction coefficient, R is hydraulic radius and S is the head loss per foot of pipe or head loss gradient. Three operating conditions are presented. They are (1) The existing STEP system (31 EDU) design in Cavitt Ranch and (2) The existing (31 EDU) + project condition and (3) The existing (31 EDU) + project + ultimate condition (34 EDU). The STEP sewer system is shown in a schematic exhibit of pipes and nodes. Each exhibit is followed by hydraulic data summary tables showing design pressures, flow rates and velocities for the STEP system. Project pump input data shown in Tables H5 and H8 is taken from three points on the PF5007 pump curve shown in the Appendix. All other input data for junction inflow, pipe sizes, friction C values and elevations are listed along with output data in the hydraulic data summary tables.

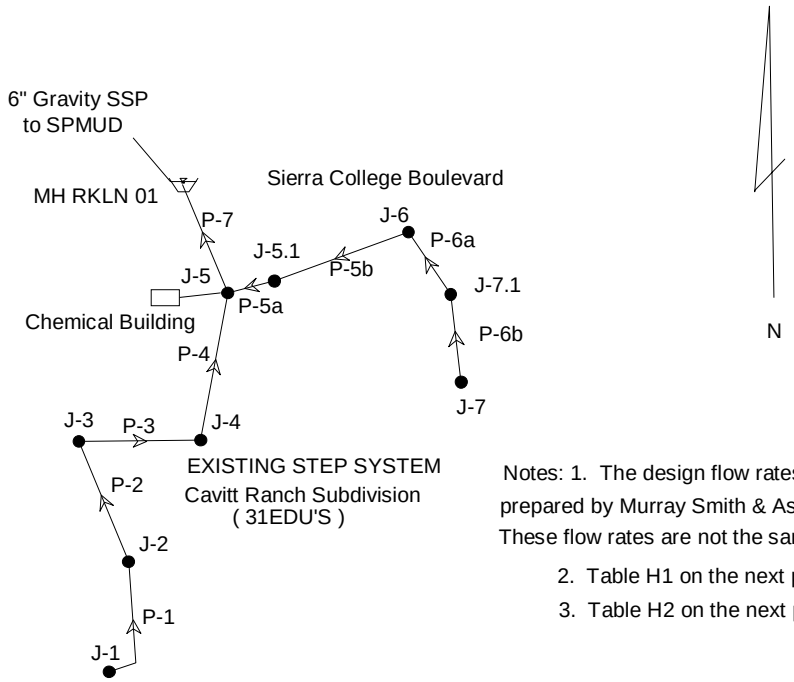
Mitigation 1.5 on page 13 refers to the following calculation that is derived from the hydraulic calculations listed in this section. The Amazing Facts Project is predicted to slightly reduce the design head loss in Pipe P-7 and also the design head to the existing service pumps at lots 10, 12 and 16 in Cavitt Ranch Subdivision as follows. The original design flow in the 3” pipe P-7 is 120 gpm (Note that the criteria in this report would predict 90 gpm in the original P-7). At 120 gpm, the head loss in Pipe P-7 calculates to 0.0436 x 108’ = 4.7 feet. The proposed design head loss in Pipe P-7, after upsizing to 4” schedule 80, is calculated at 201 gpm to be 0.0399x108’= 4.3 feet. The total predicted reduction in design head to lots 10, 12 and 16 is 0.4’ which is negligible to the pump performance. The design criteria in this report predicts that the original design head for these pumps is over 40 feet too high and that is the reason this report concludes that those pumps are probably performing off their pump curves. The pumps may still perform under these conditions and still not draw too many amps of current. It may be possible to leave these pumps in place, if they are presently working satisfactorily at less than design flow conditions.

EXHIBIT 1

SMD #2 EXISTING STEP SYSTEM - CAVITT RANCH ALONE

HYDRAULIC MODEL SCHEMATIC LAYOUT

June 11, 2009



Notes: 1. The design flow rates and hydraulic grades are those shown on the Cavitt Ranch Record Drawings, prepared by Murray Smith & Associates. They are not considered to be reliable values.
These flow rates are not the same as those used in the proposed hydraulic models shown in Exhibits 2 and 3.

2. Table H1 on the next page lists the junction elevations and pressures.
3. Table H2 on the next page lists the pipe data, flows and friction losses.

HYDRAULIC DATA SUMMARIES FOR EXISTING STEP SYSTEM AT CAVITT RANCH

TABLE H1

EXISTING STEP SYSTEM DESIGN HYDRAULIC SUMMARY - JUNCTIONS

Existing STEP System (31 EDU) - See Exhibit 1

Label	Elevation (ft)	Type	Inflow (gpm)	Design Hydraulic Grade (ft)	Design Pressure (psi)	Remarks
J-1	261	Inflow	40	505.6	105.91	
J-2	407.8	Inflow	20	486.1	33.9	
J-3	440.9	Inflow	0	488.7	20.7	
J-4	437	Inflow	120	531.2	40.79	
J-5	466.6	Inflow	0	478.23	5.04	
J-5.1	468	Inflow	0	468	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-6	490.8	Inflow	0	491	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-7	463	Inflow	90	519.6	24.5	
J-7.1	495	Inflow	0	496.5	0.6	gravity flow shown in pipes P-5a, P-5b and P-6a

TABLE H2

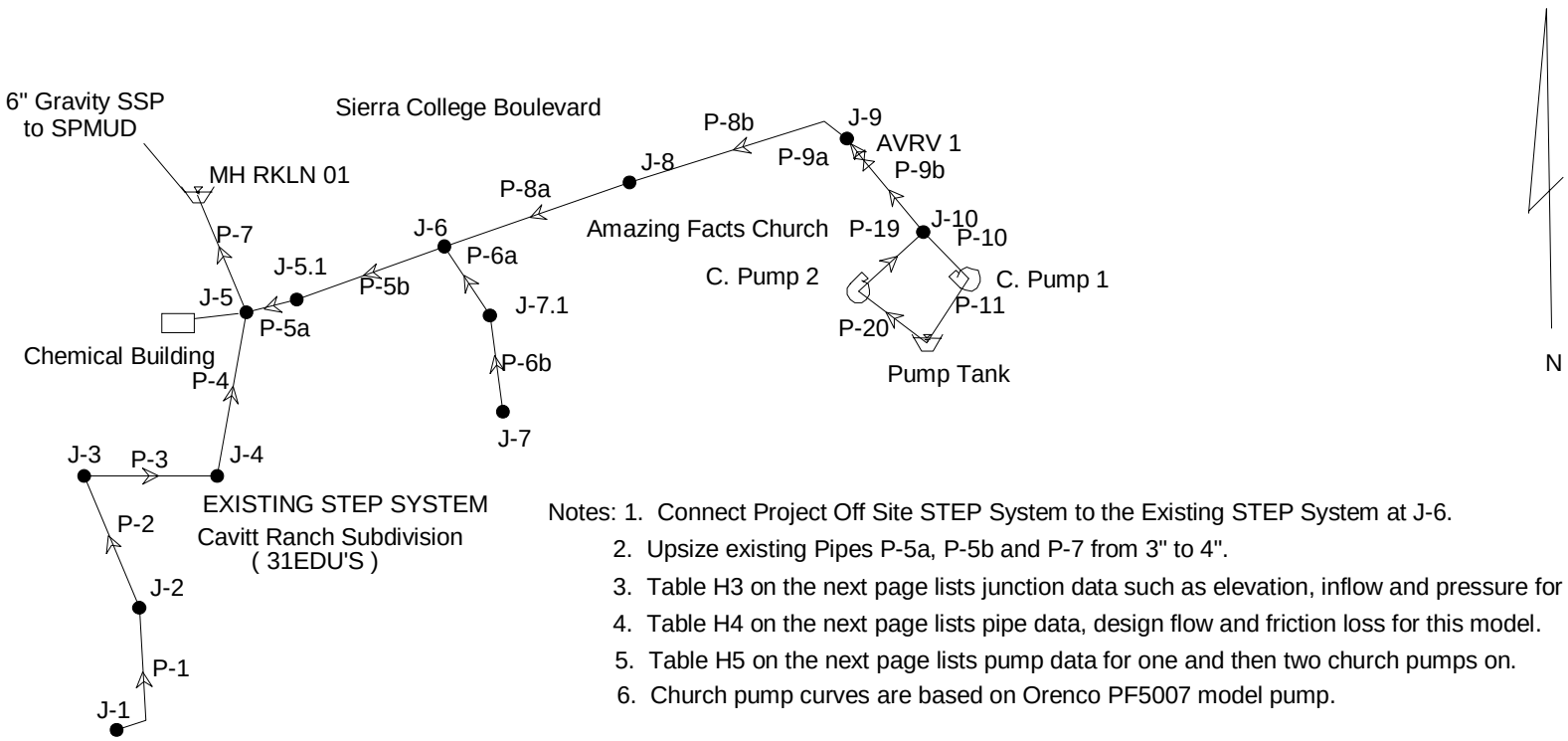
EXISTING STEP SYTEM DESIGN HYDRAULIC SUMMARY - PIPES

Existing STEP System (31 EDU) - See Exhibit 1

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Velocity (ft/s)	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-1	1,408.00	2.5	PVC	130	2.64	Open	40	505.6	486.1	19.5	13.9
P-2	1,450.00	3	PVC	130	2.65	Open	60	486.1	488.7	-2.6	11.3
P-3	410	3	PVC	130	2.65	Open	60	488.7	531.2	-42.5	11.3
P-4	1,386.00	3	PVC	130	5.5	Open	120	531.2	478.23	52.97	43.6
P-5a	100.00	3	PVC	130	4.07	Open	90	468	478.23	gravity flow	25
P-5b	1,302.00	3	PVC	130	4.07	Open	90	491	478.23	gravity flow	25
P-6a	590	3	PVC	130	4.07	Open	90	496.5	491	gravity flow	25
P-6b	900.00	3	PVC	130	4.07	Open	90	519.6	496.5	23.1	25
P-7	108.00	3	PVC	130	5.5	Open	120	478.23	467.15	11.08	43.6

EXHIBIT 2

SMD #2 STEP SYSTEM - CAVITT RANCH PLUS AMAZING FACTS CHURCH
HYDRAULIC MODEL SCHEMATIC LAYOUT
June 11, 2009



Notes: 1. Connect Project Off Site STEP System to the Existing STEP System at J-6.
2. Upsize existing Pipes P-5a, P-5b and P-7 from 3" to 4".
3. Table H3 on the next page lists junction data such as elevation, inflow and pressure for this model.
4. Table H4 on the next page lists pipe data, design flow and friction loss for this model.
5. Table H5 on the next page lists pump data for one and then two church pumps on.
6. Church pump curves are based on Orenco PF5007 model pump.

TABLE H3
EXISTING STEP SYSTEM PLUS PROJECT HYDRAULIC SUMMARY - JUNCTIONS

See Exhibit 2 For Schematic Pipe Layout

For Convenient Comparison Purposes, the Existing STEP System Junction DesignData is copied into this Table.

Junct Label	Junction Elevation (ft)	No. of EDU's @ junct	Type of Flow at Junction	Junction Inflow (gpm)	Hydraulic Grade at Junction (ft)	Pressure at Junct (psi)	Remarks
Existing STEP System Design (31 EDU)							
J-1	261		Inflow	No calc	505.6	105.91	
J-2	407.8		Inflow	No calc	486.1	33.9	
J-3	440.9		Inflow	No calc	488.7	20.7	
J-4	437		Inflow	No calc	531.2	40.79	
J-5	466.6		Inflow	No calc	478.23	5.04	
J-5.1	468		Inflow	No calc	468	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-6	490.8		Inflow	No calc	491	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-7	463		Inflow	No calc	519.6	24.5	
J-7.1	495		Inflow	No calc	496.5	0.6	gravity flow shown in pipes P-5a, P-5b and P-6a
Existing SMD #2 STEP System (31 EDU) plus Project (single pump on)							
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model							
J-1	261	9	Inflow	30	508.98	107.29	
J-2	407.8	0	Inflow	0	494.89	37.68	
J-3	440.9	1	Inflow	10	489.88	21.19	
J-4	437	8	Inflow	20	487.46	21.83	
J-5	466.6	0	Inflow	-30	470.17	1.54	Where two branches join, flow may be subtracted from system to account for probablistic model for the number of pumps on simultaneously
J-5.1	468	0	Demand	0	471.53	1.53	
J-6	490.8	0	Demand	0	489.18	-0.7	gravity flow in portion of pipes P5 and P8
J-7	463	9	Inflow	30	500.72	16.32	
J-7.1	495	4	Inflow	30	497.29	0.99	
J-8	506	0	Demand	0	493.21	-5.53	gravity flow in portion of pipes P5 and P8
J-9	515	0	Demand	0	496.09	-8.18	gravity flow in portion of pipes P5 and P8
J-10	479	0	Demand	0	522.7	18.91	
Existing SMD #2 STEP System (31 EDU) plus Project (two pumps on)							
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model							
J-1	261	9	Inflow	30	510.52	107.96	
J-2	407.8	0	Inflow	0	496.43	38.35	
J-3	440.9	1	Inflow	10	491.42	21.86	
J-4	437	8	Inflow	20	489	22.5	
J-5	466.6	0	Inflow	-30	471.71	2.21	Where two branches join, flow may be subtracted from system to account for probablistic model for the number of pumps on simultaneously
J-5.1	468	0	Demand	0	474.02	2.6	
J-6	490.8	0	Demand	0	504.07	5.74	
J-7	463	9	Inflow	30	515.61	22.76	
J-7.1	495	4	Inflow	30	512.18	7.43	
J-8	506	0	Demand	0	513.95	3.44	
J-9	515	0	Demand	0	521.02	2.6	
J-10	479	0	Demand	0	538.73	25.84	

TABLE H4
EXISTING STEP SYSTEM PLUS PROJECT HYDRAULIC SUMMARY - PIPES

See Exhibit 2 for Schematic Pipe Layout

For Convenient Comparison Purposes, the Existing STEP System Pipe Summary Data is copied into this Table

Pipe Label	Pipe Length (ft)	Pipe Diameter (in)	Pipe Material	Hazen-Williams C	Velocity (ft/s)	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
Existing SMD #2 STEP System											
P-1	1,408.00	2.5	PVC	130	2.64	Open	40	505.6	486.1	19.5	13.9
P-2	1,450.00	3	PVC	130	2.65	Open	60	486.1	488.7	-2.6	11.3
P-3	410	3	PVC	130	2.65	Open	60	488.7	531.2	-42.5	11.3
P-4	1,386.00	3	PVC	130	5.5	Open	120	531.2	478.23	52.97	43.6
P-5a	100.00	3	PVC	130	4.07	Open	90	468	478.23	gravity flow	25
P-5b	1,302.00	3	PVC	130	4.07	Open	90	491	478.23	gravity flow	25
P-6a	590	3	PVC	130	4.07	Open	90	496.5	491	gravity flow	25
P-6b	900.00	3	PVC	130	4.07	Open	90	519.6	496.5	23.1	25
P-7	108.00	3	PVC	130	5.5	Open	120	478.23	467.15	11.08	43.6
Existing SMD #2 STEP System (31 EDU) plus Project (single pump on)											
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model											
P-1	1,408.00	2.46	PVC	120	2.03	Open	30	508.98	494.89	14.09	10.01
P-2	1,450.00	3.06	PVC	120	1.31	Open	30	494.89	489.88	5.01	3.46
P-3	410	3.06	PVC	120	1.75	Open	40	489.88	487.46	2.41	5.89
P-4	1,386.00	3.06	PVC	120	2.62	Open	60	487.46	470.17	17.3	12.48
P-5a	100	4.02	PVC	120	3.25	Open	128.63	471.53	470.17	1.36	13.56
P-5b	1,302.00	4.02	PVC	120	3.25	Open	128.63	489.18	471.53	17.66	13.56
P-6a	590	3	PVC	120	2.72	Open	60	497.29	489.18	8.11	13.74
P-6b	900	3	PVC	120	1.36	Open	30	500.72	497.29	3.43	3.81
P-7	108	3.82	PVC	120	4.44	Open	158.63	470.17	467.4	2.77	25.64
P-8a	950	4.02	PVC	120	1.73	Open	68.63	493.21	489.18	4.03	4.24
P-8b	680	4.02	PVC	120	1.73	Open	68.63	496.09	493.21	2.88	4.24
P-9a	1	3.06	PVC	120	2.99	Open	68.63	496.11	496.09	0.02	15.99
P-9b	450	3.06	PVC	120	2.99	Open	68.63	522.7	515.5	7.2	16.01
P-10	50	2	PVC	120	0	Open	0	522.7	522.7	0	0
P-11	5	2	PVC	120	0	Open	0	478	478	0	0
P-19	50	2	PVC	120	7.01	Open	68.64	529.06	522.7	6.35	127.04
P-20	5	2	PVC	120	7.01	Open	68.64	478	477.36	0.64	127.04
Existing SMD #2 STEP System (31 EDU) plus Project (2 pumps on)											
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model											
P-1	1,408.00	2.46	PVC	120	2.03	Open	30	510.52	496.43	14.09	10.01
P-2	1,450.00	3.06	PVC	120	1.31	Open	30	496.43	491.42	5.01	3.46
P-3	410	3.06	PVC	120	1.75	Open	40	491.42	489	2.41	5.89
P-4	1,386.00	3.06	PVC	120	2.62	Open	60	489	471.71	17.3	12.48
P-5a	100	4.02	PVC	120	4.33	Open	171.43	474.02	471.71	2.31	23.08
P-5b	1,302.00	4.02	PVC	120	4.33	Open	171.43	504.07	474.02	30.06	23.08
P-6a	590	3	PVC	120	2.72	Open	60	512.18	504.07	8.11	13.74
P-6b	900	3	PVC	120	1.36	Open	30	515.61	512.18	3.43	3.81
P-7	108	3.82	PVC	120	5.64	Open	201.43	471.71	467.4	4.31	39.9
P-8a	950	4.02	PVC	120	2.82	Open	111.43	513.95	504.07	9.88	10.4
P-8b	680	4.02	PVC	120	2.82	Open	111.43	521.02	513.95	7.07	10.4
P-9a	1	3.06	PVC	120	4.86	Open	111.43	521.06	521.02	0.04	39.31
P-9b	450	3.06	PVC	120	4.86	Open	111.43	538.73	521.06	17.67	39.27
P-10	50	2	PVC	120	5.69	Open	55.72	543.05	538.73	4.32	86.34
P-11	5	2	PVC	120	5.69	Open	55.72	478	477.57	0.43	86.34
P-19	50	2	PVC	120	5.69	Open	55.72	543.05	538.73	4.32	86.34
P-20	5	2	PVC	120	5.69	Open	55.72	478	477.57	0.43	86.34

TABLE H5

EXISTING STEP SYSTEM PLUS PROJECT HYDRAULIC SUMMARY - PROJECT PUMPS

Existing SMD #2 STEP System (31 EDU) plus Project (single pump on) - See Exhibit 2													
		Pump Curve Data											
Pump Label	**Pump Elevation** (ft)	**Shutoff Head** (ft)	**Shutoff Discharge** (gpm)	**Design Head** (ft)	**Design Discharge** (gpm)	**Maximum Operating Head** (ft)	**Maximum Operating Discharge** (gpm)	**Control Status**	**Intake Pump Grade** (ft)	**Discharge Pump Grade** (ft)	**Pump Discharge** (gpm)	**Pump Head** (ft)	**Calculated Water Power** (Hp)
C. Pump 1	474	110	0	81	40	61	60	Off	478	522.7	0	0	0
C. Pump 2	474	110	0	81	40	61	60	On	477.36	529.06	68.64	51.69	0.9

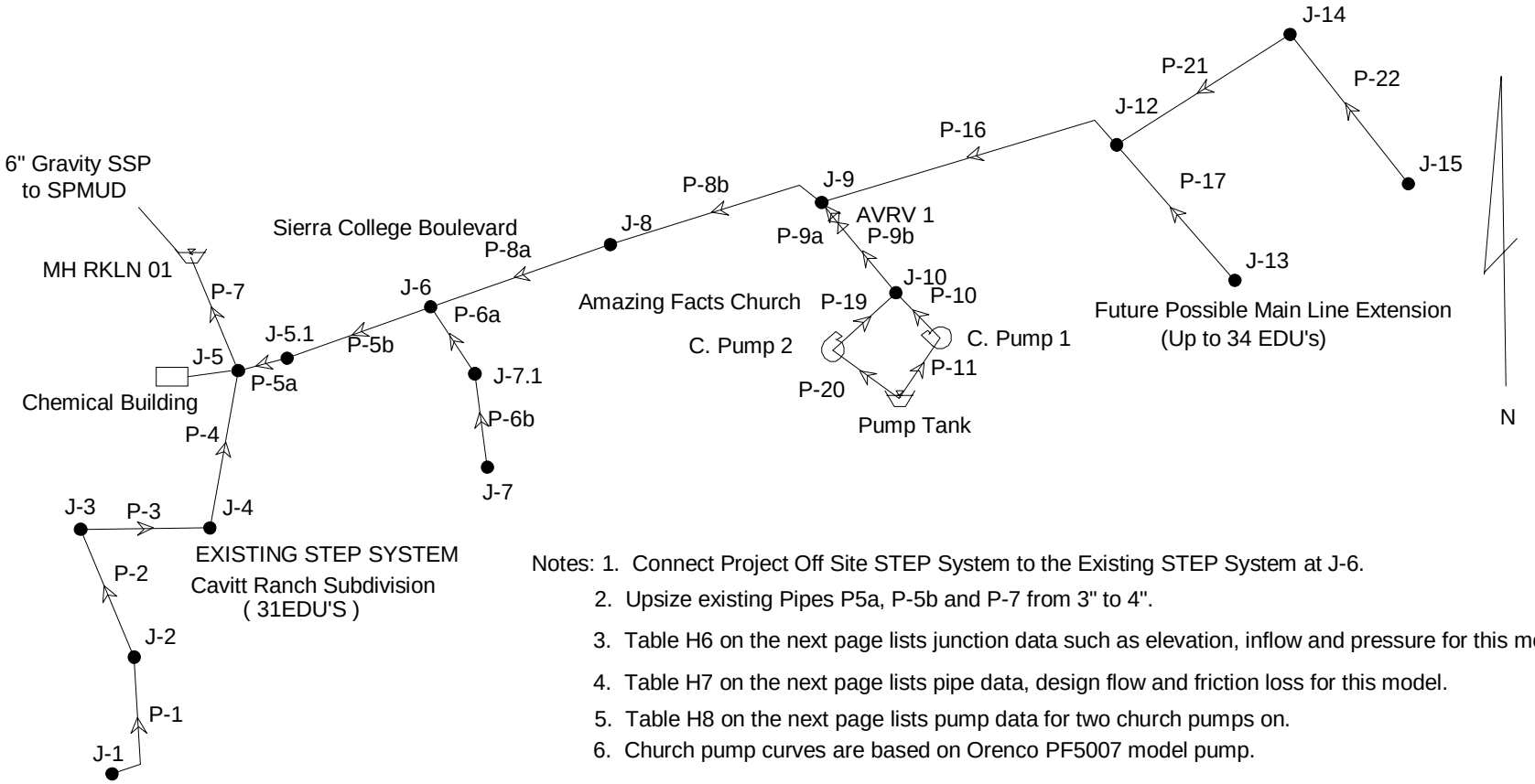
Existing SMD #2 STEP System (31 EDU) plus Project (two pumps on) - See Exhibit 2													
C. Pump 1	474	110	0	81	40	61	60	On	477.57	543.05	55.72	65.48	0.92
C. Pump 2	474	110	0	81	40	61	60	On	477.57	543.05	55.72	65.48	0.92
										Total Discharge =	111.44		

EXHIBIT 3

SMD #2 STEP SYSTEM - CAVITT RANCH, AMAZING FACTS CHURCH AND ULTIMATE SERVICE AREA

HYDRAULIC MODEL SCHEMATIC LAYOUT

June 11, 2009



Notes: 1. Connect Project Off Site STEP System to the Existing STEP System at J-6.

2. Upsize existing Pipes P5a, P-5b and P-7 from 3" to 4".

3. Table H6 on the next page lists junction data such as elevation, inflow and pressure for this model.

4. Table H7 on the next page lists pipe data, design flow and friction loss for this model.

5. Table H8 on the next page lists pump data for two church pumps on.

6. Church pump curves are based on Orenco PF5007 model pump.

TABLE H6
EXISTING STEP SYSTEM PLUS PROJECT PLUS ULTIMATE
HYDRAULIC SUMMARY - JUNCTIONS

See Exhibit 3

For Convenient Comparison Purposes, the Existing STEP System Junction Summary Data is copied into this Table.

Junct Label	Junction Elevation (ft)	No. of EDU's @ junct	Type of Flow at Junction	Junction Inflow (gpm)	Hydraulic Grade at Junction (ft)	Pressure at Junct (psi)	Remarks
Existing STEP System Design (31 EDU)							
J-1	261		Inflow	No calc	505.6	105.91	
J-2	407.8		Inflow	No calc	486.1	33.9	
J-3	440.9		Inflow	No calc	488.7	20.7	
J-4	437		Inflow	No calc	531.2	40.79	
J-5	466.6		Inflow	No calc	478.23	5.04	
J-5.1	468		Inflow	No calc	468	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-6	490.8		Inflow	No calc	491	0	gravity flow shown in pipes P-5a, P-5b and P-6a
J-7	463		Inflow	No calc	519.6	24.5	
J-7.1	495		Inflow	No calc	496.5	0.6	gravity flow shown in pipes P-5a, P-5b and P-6a
Existing SMD #2 STEP System (31 EDU) plus Project plus Ultimate Services (34 EDU) (two project pumps on)							
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model							
J-1	261	9	Inflow	30	510.33	107.87	
J-2	407.8	0	Inflow	0	496.24	38.26	
J-3	440.9	1	Inflow	10	491.23	21.77	
J-4	437	8	Inflow	20	488.81	22.42	
J-5	466.6	0	Inflow	-45	471.52	2.13	Where two branches join, flow may be subtracted from system to account for probablistic model for the number of pumps on simultaneously
J-5.1	468	0	Demand	0	474.08	2.63	
J-6	490.8	0	Inflow	-30	507.49	7.22	Where two branches join, flow may be subtracted from system to account for probablistic model for the number of pumps on simultaneously
J-7	463	9	Inflow	30	519.02	24.24	
J-7.1	495	4	Inflow	30	515.59	8.91	
J-8	506	0	Demand	0	524.93	8.19	
J-9	515	0	Demand	0	537.41	9.7	
J-10	479	0	Demand	0	549.71	30.59	
J-12	536	7	Inflow	-10	561.73	11.13	Where two branches join, flow may be subtracted from system to account for probablistic model for the number of pumps on simultaneously
J-13	305	9	Inflow	30	593.68	124.9	
J-14	350	9	Inflow	10	574.73	97.23	
J-15	325	9	Inflow	30	592.04	115.54	

TABLE H7
EXISTING STEP SYSTEM PLUS PROJECT PLUS ULTIMATE HYDRAULIC SUMMARY - PIPES

See Exhibit 3 for Schematic Pipe Layout

For Convenient Comparison Purposes, the Existing STEP System Pipe Summary Data is copied into this Table

Pipe Label	Pipe Length (ft)	Pipe Diameter (in)	Pipe Material	Hazen-Williams C	Velocity (ft/s)	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
Existing SMD #2 STEP System Design (31 EDU)											
P-1	1,408.00	2.5	PVC	130	2.64	Open	40	505.6	486.1	19.5	13.9
P-2	1,450.00	3	PVC	130	2.65	Open	60	486.1	488.7	-2.6	11.3
P-3	410	3	PVC	130	2.65	Open	60	488.7	531.2	-42.5	11.3
P-4	1,386.00	3	PVC	130	5.5	Open	120	531.2	478.23	52.97	43.6
P-5a	100.00	3	PVC	130	4.07	Open	90	468	478.23	gravity flow	25
P-5b	1,302.00	3	PVC	130	4.07	Open	90	491	478.23	gravity flow	25
P-6a	590	3	PVC	130	4.07	Open	90	496.5	491	gravity flow	25
P-6b	900.00	3	PVC	130	4.07	Open	90	519.6	496.5	23.1	25
P-7	108.00	3	PVC	130	5.5	Open	120	478.23	467.15	11.08	43.6
Existing SMD #2 STEP System (31 EDU) plus Project plus Utimate Services (34 EDU) (2 pumps on)											
The Design Flows in the Existing Cavitt Ranch STEP system have been changed based on a Rational Design for this model											
P-1	1,408.00	2.46	PVC	120	2.03	Open	30	510.33	496.24	14.09	10.01
P-2	1,450.00	3.06	PVC	120	1.31	Open	30	496.24	491.23	5.01	3.46
P-3	410	3.06	PVC	120	1.75	Open	40	491.23	488.81	2.41	5.89
P-4	1,386.00	3.06	PVC	120	2.62	Open	60	488.81	471.52	17.3	12.48
P-5a	100	4.02	PVC	120	4.59	Open	181.49	474.08	471.52	2.57	25.66
P-5b	1,302.00	4.02	PVC	120	4.59	Open	181.49	507.49	474.08	33.4	25.66
P-6a	590	3	PVC	120	2.72	Open	60	515.59	507.49	8.11	13.74
P-6b	900	3	PVC	120	1.36	Open	30	519.02	515.59	3.43	3.81
P-7	108	3.82	PVC	120	5.5	Open	196.49	471.52	467.4	4.12	38.11
P-8a	950	4.02	PVC	120	3.83	Open	151.49	524.93	507.49	17.44	18.36
P-8b	680	4.02	PVC	120	3.83	Open	151.49	537.41	524.93	12.48	18.36
P-9a	1	3.06	PVC	120	3.99	Open	91.49	537.44	537.41	0.03	27.28
P-9b	450	3.06	PVC	120	3.99	Open	91.49	549.71	537.44	12.27	27.26
P-10	50	2	PVC	120	4.67	Open	45.75	552.7	549.71	3	59.93
P-11	5	2	PVC	120	4.67	Open	45.75	477.5	477.2	0.3	59.92
P-16	1,500.00	2.9	PVC	120	2.91	Open	60	561.73	537.41	24.31	16.21
P-17	2,400.00	2.32	PVC	120	2.28	Open	30	593.68	561.73	31.95	13.31
P-19	50	2	PVC	120	4.67	Open	45.75	552.7	549.71	3	59.93
P-20	5	2	PVC	120	4.67	Open	45.75	477.5	477.2	0.3	59.92
P-21	1,700.00	2.9	PVC	120	1.94	Open	40	574.73	561.73	13	7.65
P-22	1,300.00	2.32	PVC	120	2.28	Open	30	592.04	574.73	17.31	13.31

TABLE H8
EXISTING STEP SYSTEM PLUS PROJECT PLUS ULTIMATE HYDRAULIC SUMMARY - PROJECT PUMPS

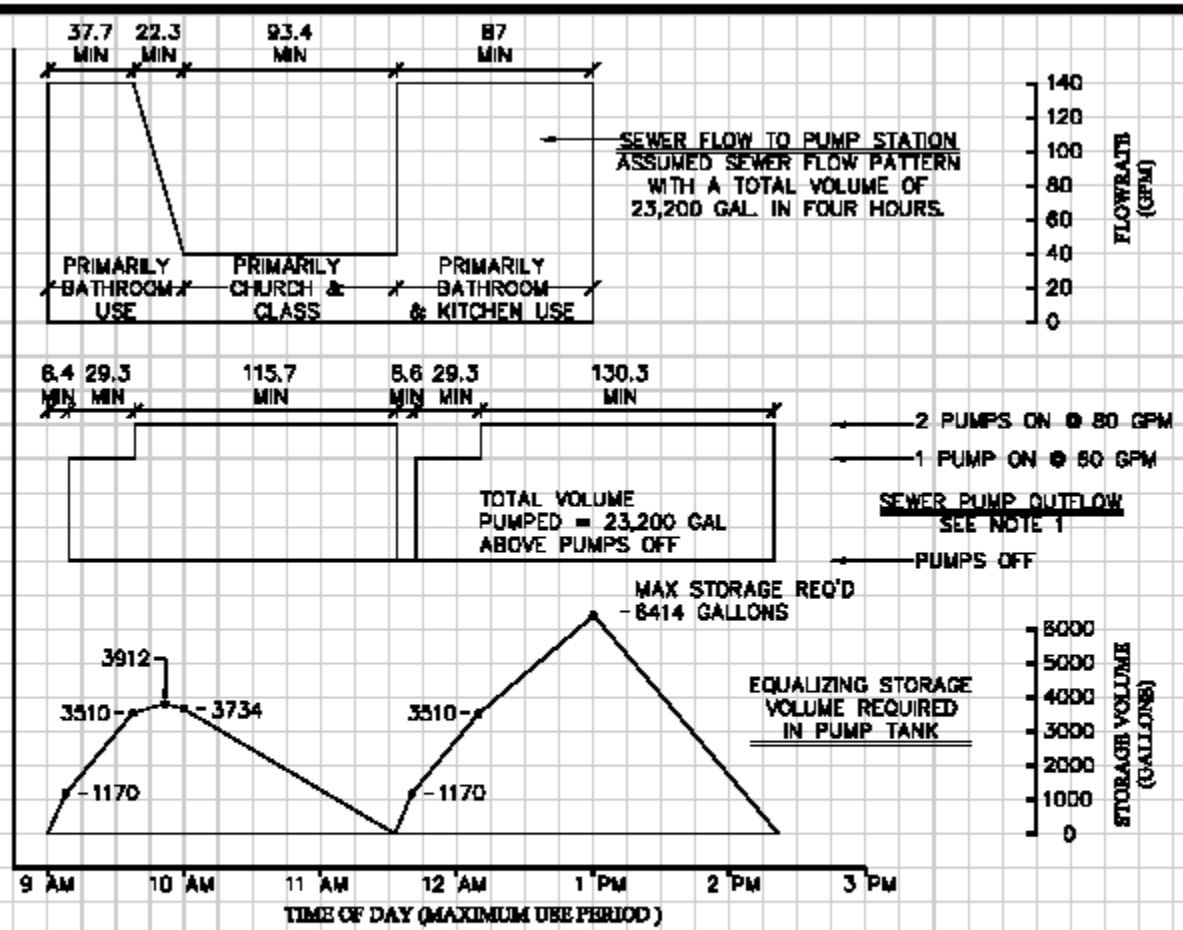
Existing SMD #2 STEP System (31 EDU) plus Project Plus Ultimate Services (34 EDU) (two pumps on) - See Exhibit 3

		Pump Curve Data											
Pump Label	**Pump Elevation** (ft)	**Shutoff Head** (ft)	**Shutoff Discharge** (gpm)	**Design Head** (ft)	**Design Discharge** (gpm)	**Maximum Operating Head** (ft)	**Maximum Operating Discharge** (gpm)	**Control Status**	**Intake Pump Grade** (ft)	**Discharge Pump Grade** (ft)	**Pump Discharge** (gpm)	**Pump Head** (ft)	**Calculated Water Power** (Hp)
C. Pump 1	474	110	0	81	40	61	60	On	477.2	552.7	45.75	75.5	0.87
C. Pump 2	474	110	0	81	40	61	60	On	477.2	552.7	45.75	75.5	0.87
										Total Discharge =	91.5		

FIGURES

FIGURE 1-PROJECT PEAK SEWER FLOW DESIGN SCENARIO (GRAPH)
FIGURE 2- PROJECT SEWER PUMP STATION PROFILE

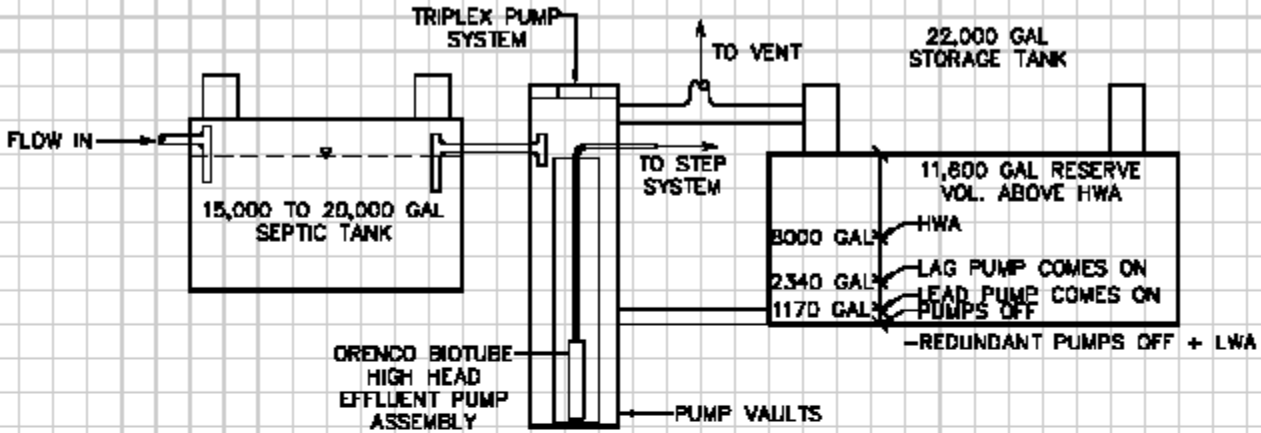
HYDRAULIC GRADE PROFILES
FIGURE 3- EXISTING STEP SYSTEM (31 EDU)
FIGURE 4- EXIST. (31 EDU) + PROJECT
FIGURE 5- EXIST. (31 EDU) + PROJECT + ULTIMATE (34 EDU)



NOTES: 1. SEWER PUMP FLOWRATE IS CALCULATED CONSERVATIVELY FOR SIMULTANEOUS PEAK DESIGN RESIDENTIAL STEP PUMP FLOW. OVER THIS 5 HOUR PERIOD, ACTUAL RESIDENTIAL FLOWRATES WILL USUALLY BE LESS THAN PEAK, SO CHURCH PUMPS ARE EXPECTED TO ACTUALLY PUMP BETWEEN 60 GPM AND 110 GPM.

FIGURE 1

AMAZING FACTS PROJECT PEAK SEWER FLOW DESIGN
SCENARIO BASED ON FOUR HOUR MAXIMUM USE PERIOD

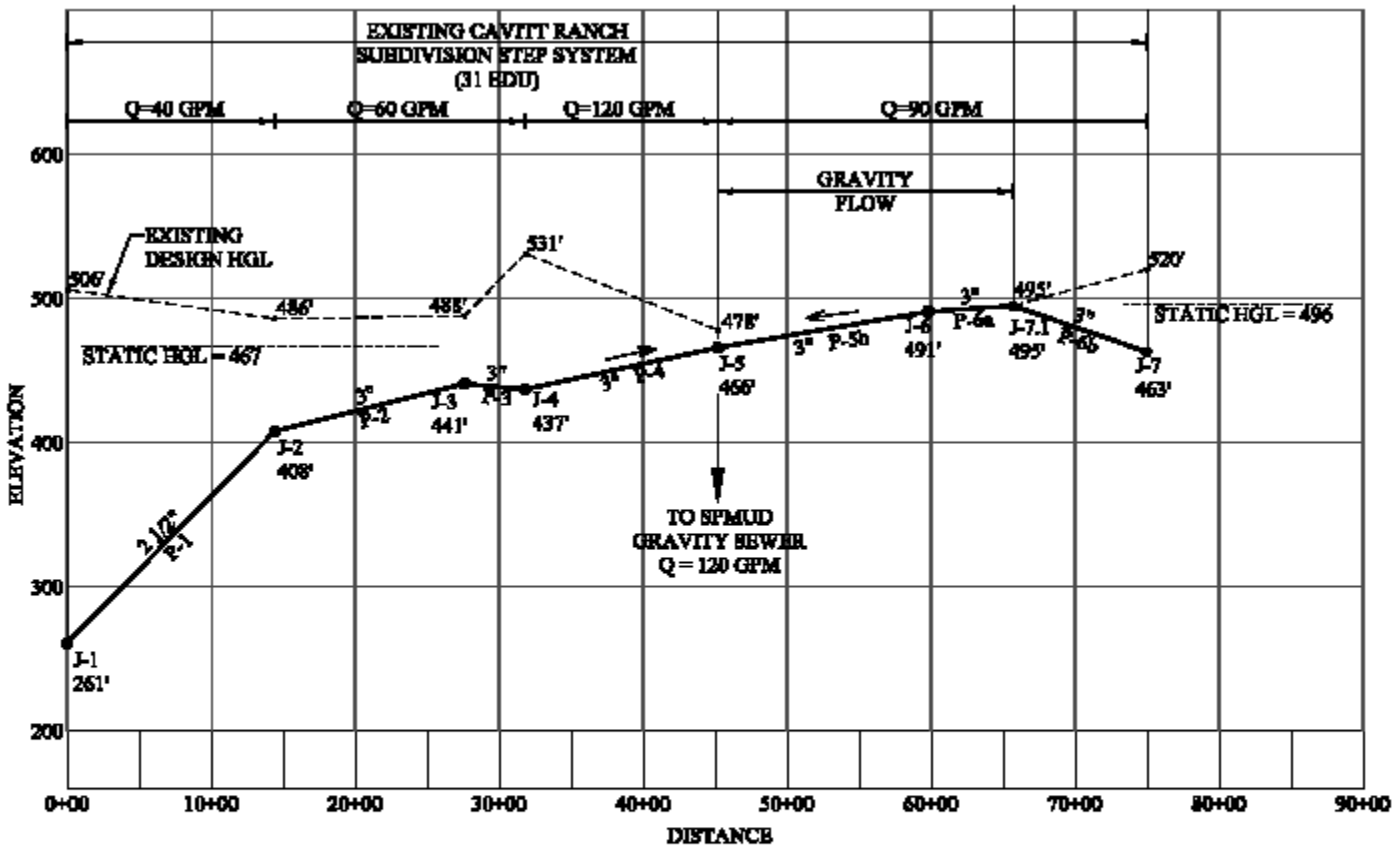


LEGEND

HWA = HIGH WATER ALARM
LWA = LOW WATER ALARM

NOTES:
1. FLOAT LEVELS ARE ADJUSTABLE.
2. TOTAL STORAGE IN STORAGE TANK AND PUMP VAULTS IS 23,200 GALLONS MINIMUM (ABOVE THE PUMPS OFF LEVEL).

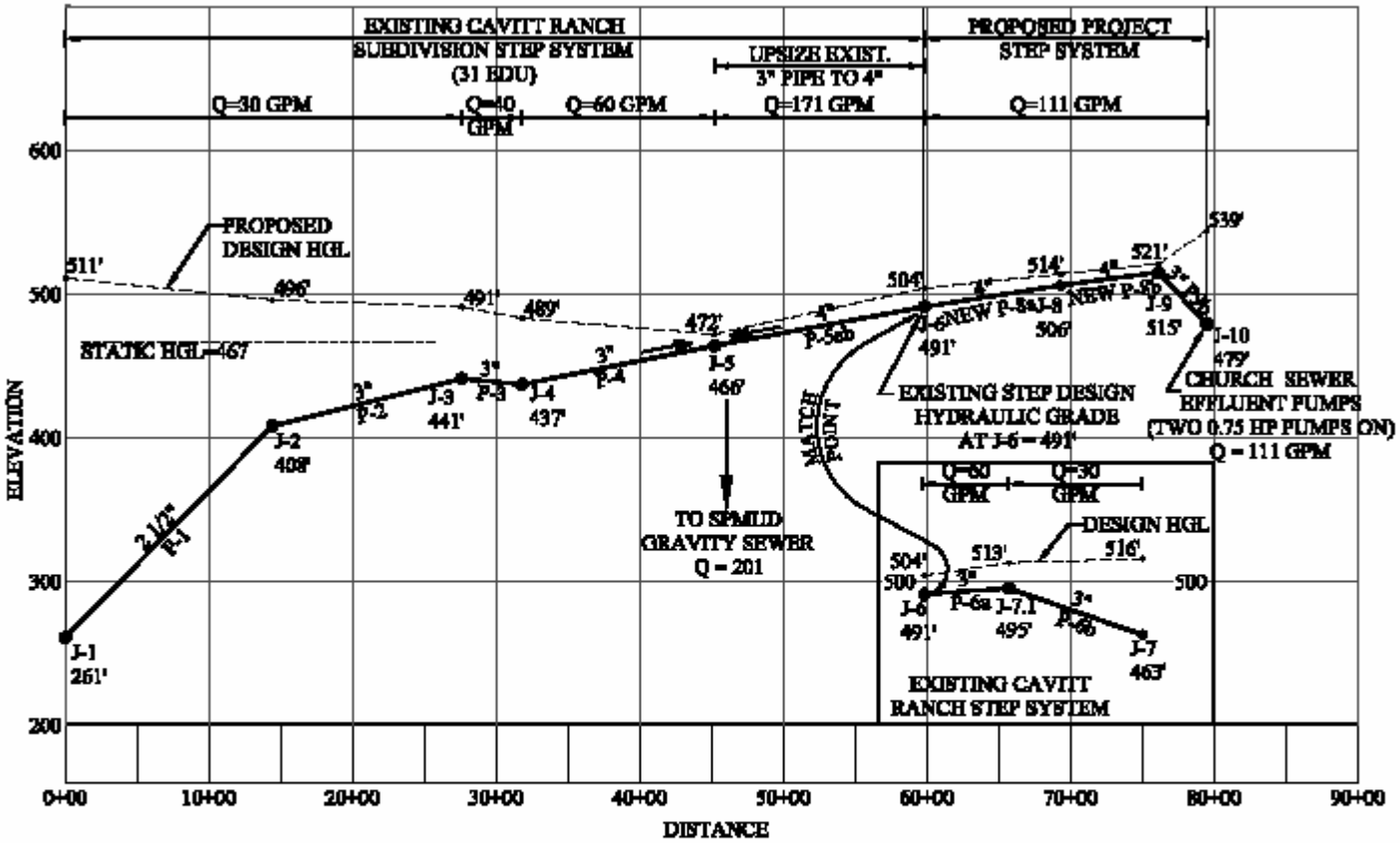
FIGURE 2
AMAZING FACTS PROJECT SEWER PUMP STATION PROFILE



SCALE:
1"=1000' HORIZONTAL
1"=100' VERTICAL

FIGURE 3

EXISTING STEP SYSTEM (31 EDU)
HYDRAULIC DESIGN BY MURRAY SMITH & ASSOCIATES
PLACER COUNTY SEWER MAINTENANCE DISTRICT #2 STEP
SEWER SYSTEM HYDRAULIC GRADE LINE AT DESIGN FLOW



SCALE:
1"=1000' HORIZONTAL
1"=100' VERTICAL

FIGURE 4
EXISTING STEP SYSTEM (31 EDU) + PROJECT
PLACER COUNTY SEWER MAINTENANCE DISTRICT #2 STEP
SEWER SYSTEM HYDRAULIC GRADE LINE AT DESIGN FLOW

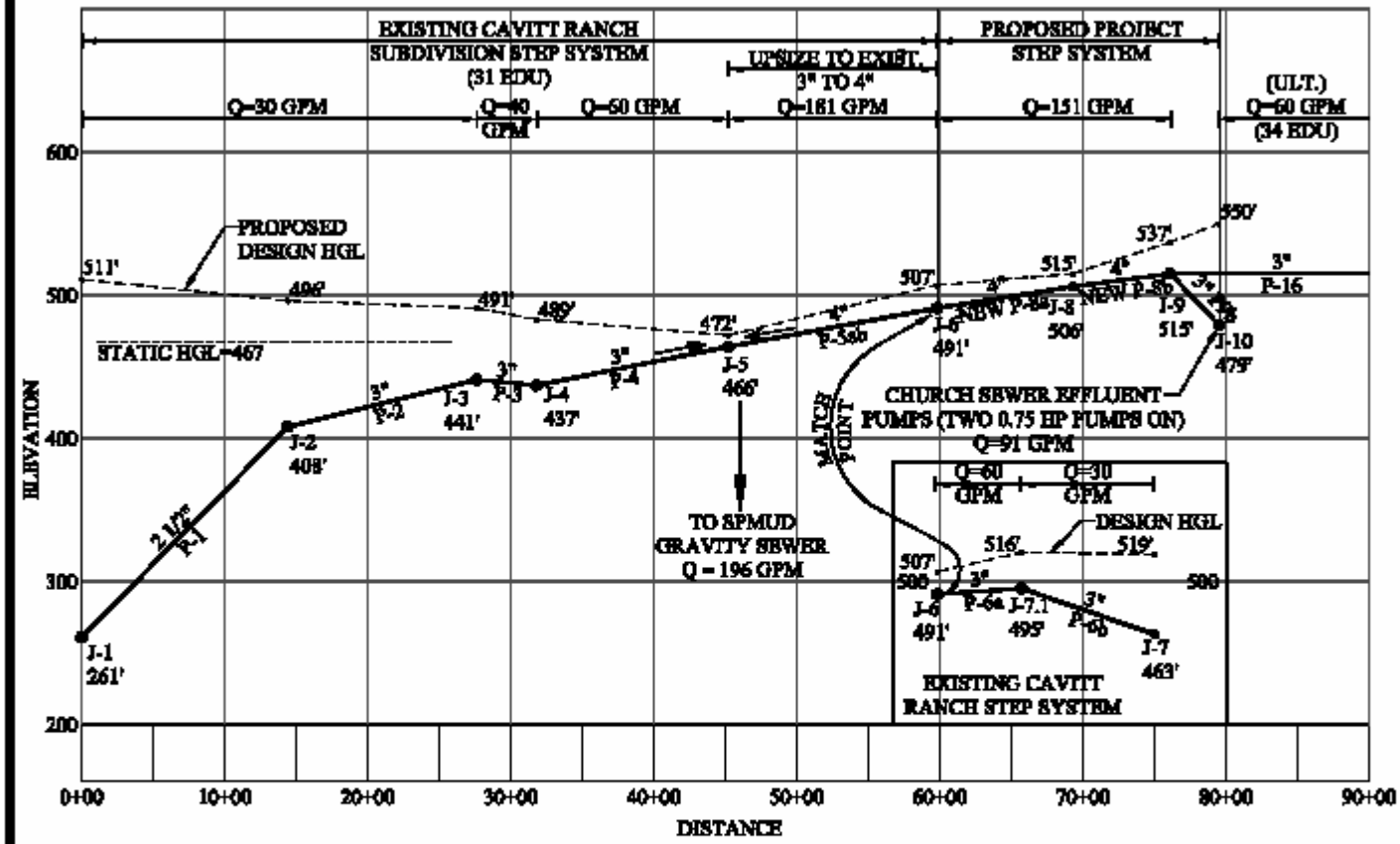


FIGURE 5

EXISTING STEP SYSTEM (31 EDU) + PROJECT + ULTIMATE (34 EDU)
PLACER COUNTY SEWER MAINTENANCE DISTRICT #2 STEP
SEWER SYSTEM HYDRAULIC GRADE LINE AT DESIGN FLOW

APPENDIX

1. Examples of Peak Design Flow Derivations for STEP sewer systems (as referenced in Table 4, Section 3 of this report)
    a) Environment/One Table 4 showing the maximum number of sewer pumps operating simultaneously, based on probabilistic model.
    b) Battelle Institute Design Flow graph for deriving peak design flow for STEP system
    c) Terry Bounds Equation adapted for this project's peak flow criteria.

2. Pump curves for Project pump station: Orenco Systems, Inc. PF 5007 high head effluent pump curve.
3. South Placer Municipal Utility District's letter of available sewer capacity

DESIGN FLOWS FROM ENVIRONMENT/ONE DESIGN GUIDELINES

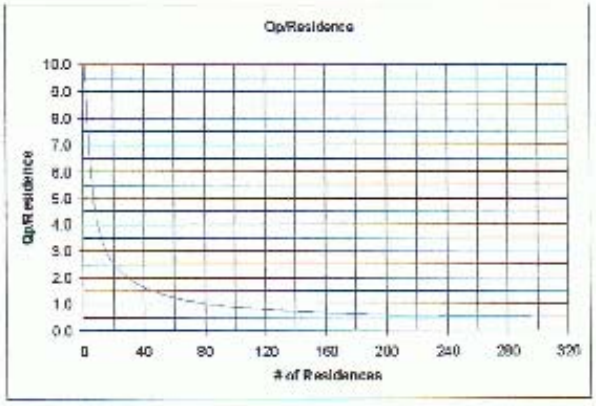
Table 1 Peak Ratios and Design Flows from Environment/One Design Guidelines

Number of Grinder Pumps or Houses Connected (*)	Midpoint of Range	Likely Maximum Number Operating Simultaneously (*)	Ratio	(Peak) Design Discharge Using 12 gpm pumps	Peak Flow/House (gpm)
1	1.0	1.00	1.00	12	12.00
2-3	2.5	2.00	0.80	24	9.60
4-9	6.5	3.00	0.46	36	5.54
10-18	14.0	4.00	0.29	48	3.43
19-30	24.5	5.00	0.20	60	2.45
31-50	40.5	6.00	0.15	72	1.78
51-80	65.5	7.00	0.11	84	1.28
81-113	97.0	8.00	0.08	96	0.99
114-146	130.0	9.00	0.07	108	0.83
147-179	163.0	10.00	0.06	120	0.74
180-212	196.0	11.00	0.06	132	0.67
213-245	229.0	12.00	0.05	144	0.63
246-278	262.0	13.00	0.05	156	0.60
279-311	295.0	14.00	0.05	168	0.57
312-344	328.0	15.00	0.05	180	0.55

* Environment/One Published Data

The dramatic increase in flow recommended by this design procedure becomes quite evident when the data is plotted. Figure 9 shows how the design flow per residence rises from about 0.5 gpm for more than 200 houses to in the range of 10 gpm for less than 10 houses.

Figure 9 Environment/One Design Flows/Residence



Effluent Sewer Pipe Selection w/ Battelle Flows

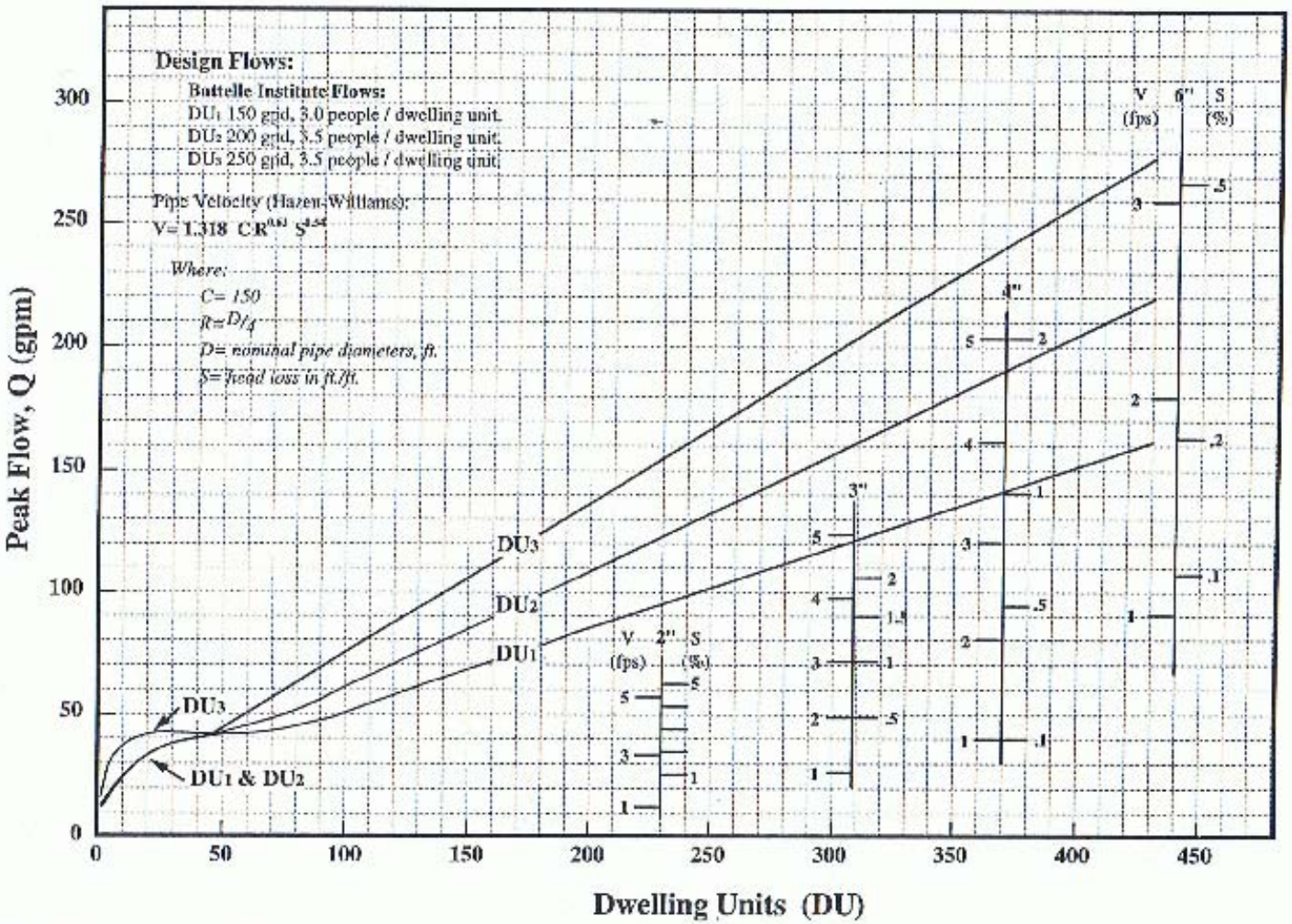


FIG. 1

DESIGN FLOW EQUATION FOR STEP SEWER SYSTEMS
(Bounds, Ref.1)

$Q_p = (DU)\ Q_{ADWF}\ (PF)/1440 + D$

Where:

Q_p	= total design peak flow in gpm for STEP system	
DU	= number of dwelling units	
Q_{ADWF}	= average day dry weather unit flow factor of 2x190 gpd per DU	(Ref. 5, TM 3a)
(PF)	= peaking factor equal to 3.6 for STEP system services	(Ref. 5, TM 3a)
D	= Base pump flow: use 20 gpm for STEP system residential services plus the peak flow from this project's sewer pumps.	

Example: Design flow for 31 EDU's

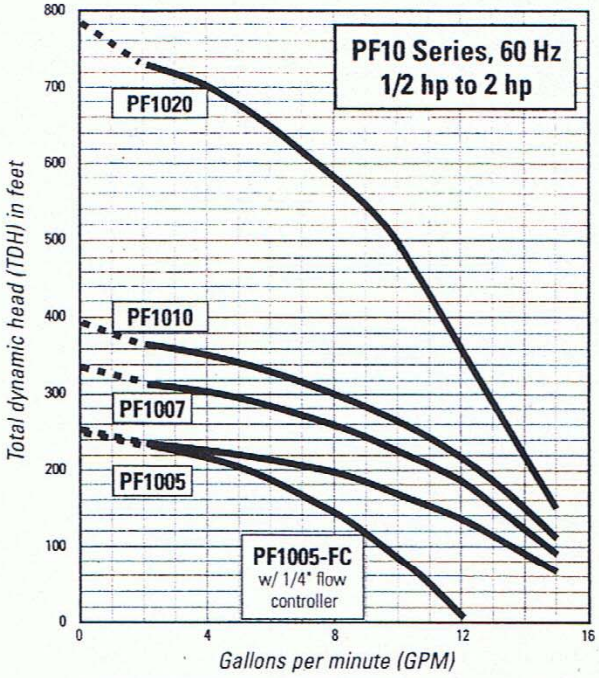
$Q_p = 31(380x3.6)/1440 + 20 = 50$ gpm

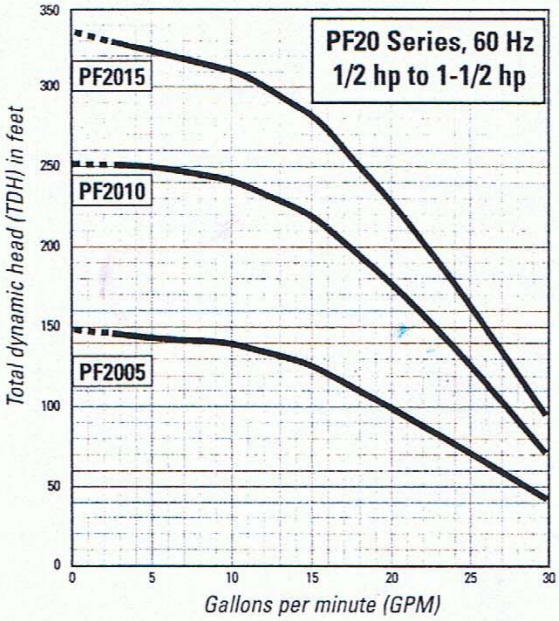
PF Series High-Head Effluent Pumps (continued)

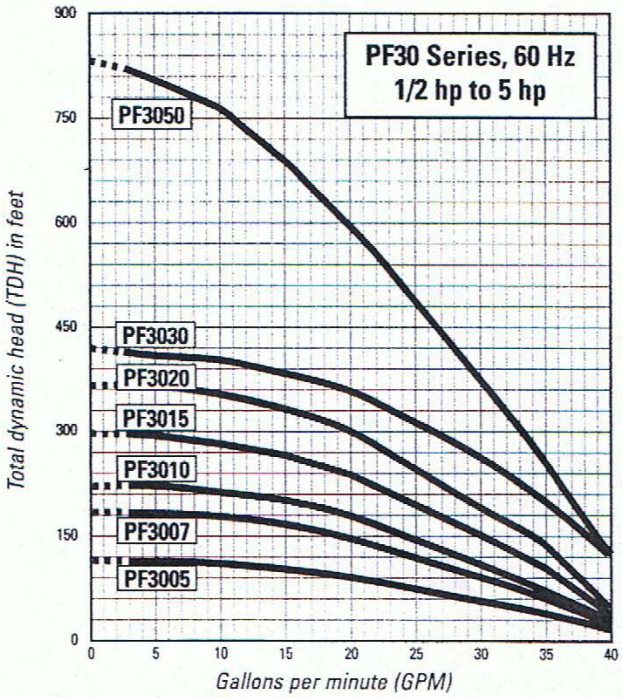
Using a Pump Curve

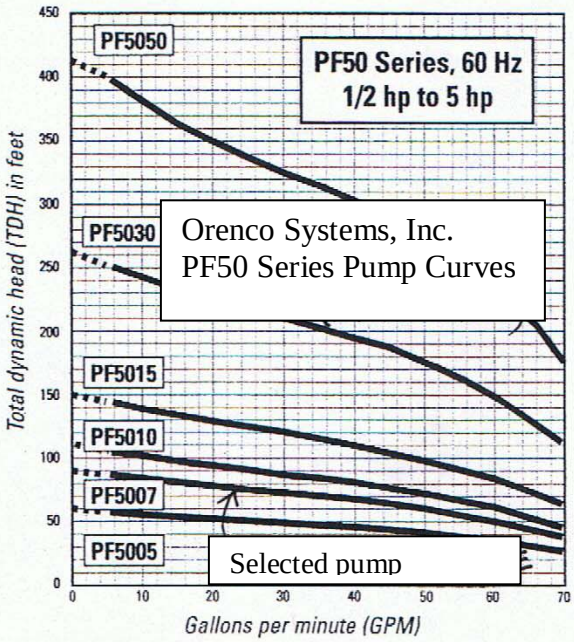
A *pump curve* helps you determine the best pump for your system. Pump curves show the relationship between flow (gpm or L/sec) and pressure (total dynamic head, or TDH), providing a graphical representation of a pump's optimal performance range. Pumps perform best at their *nominal flow rate* — the value, measured in gpm (or L/sec), expressed by the first two numerals in an Orenco pump nomenclature. At low flow rates, TDH varies from pump to pump, so it is represented as a dashed line in the pump curves. For most accurate pump specification, use Orenco's PumpSelect™ software.

60 Hz Models









© 2008 Orenco Systems® Inc.

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

October 4, 2007

King Engineering, Inc.
563 Brunswick Road, Suite 11
Grass Valley, CA 95945

Attention: Mr. George Hansen

Subject: Amazing Facts Church
Sierra College Blvd.
APN: 046-050-006

Dear George:

The information you provided under your correspondence dated September 19, 2007 has been reviewed. Please be advised that SPMUD's sewers through the Highlands project have adequate capacity to accommodate the flows from the church and adjoining property.

As was discussed, in order for the flows to be conveyed through SPMUD's sewers, the property would need to be annexed by Placer County into their SMD No. 2 area. Since SPMUD and Placer County have an existing agreement for SPMUD to accept flows from this part of SMD 2, this would be the most appropriate process rather than by a separate annexation into SPMUD through the LAFCO process. The existing agreement would require a minor modification to reflect the addition of the area into SMD2.

Enclosed is a copy of the existing agreement for your information. As you continue to work with Placer County on this matter, I remain available to offer my assistance. In the meantime, if you have any questions or a need for more information, please don't hesitate to call.

Sincerely,

Richard R. Stein
Engineering Manager

RRS:jag

Encl.

CC: Ed Wydra – Placer County

RECEIVED
OCT 05 2007
KING ENGINEERING

P.O. BOX 45 - 3671 TAYLOR RD. • LOOMIS, CALIFORNIA 95650 • PHONE (916) 652-5877

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

RECEIVED
JUL 08 2009
KING ENGINEERING

July 7, 2009

King Engineering, Inc.
563 Brunswick Rd
Suite 11
Grass Valley CA 95945

Attention: Mr. George Hansen

Subject: Amazing Facts Church
Sierra College Blvd.
SPMUD Sewer Capacity

Dear George:

Regarding your letter dated June 11, 2009 and the Step Sewer System Design Report, please be advised that the SPMUD Sewer Collections System has adequate capacity to accommodate the 201 gpm peak flow from this area (existing Cavitt Ranch Estates, proposed Amazing Facts Church, and potential 34 future EDU') s.

As a reminder, upon completion of the County's Annexation of the area into its SMD2, the existing SPMUD/County Agreement will need to be amended. Also, SPMUD will need to review and approve that aspect of the improvement plan related to the modification of the connection to Manhole RKLN01.

If there are any questions or a need for more information, please don't hesitate to call.

Sincerely,

Richard Stein
Engineering Manager

RS/jag

5807 SPRINGVIEW DRIVE • ROCKLIN, CALIFORNIA 95677 • PHONE (916) 786-8555 • FAX (916) 786-8553

APPENDIX 15.0

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT
of
AMAZING FACTS PROPERTY

Sierra College Boulevard and Nightwatch Drive
APNs 046-050-006 and 008
Placer County, California

Prepared for:

Shearer & Associates
1404 NE 134th Street, Suite 200
Vancouver, Washington 98685

Prepared by:

Holdrege & Kull
792 Searls Avenue
Nevada City, California 95959

Project No. 3307A-01
June 13, 2007

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

Project No. 3307A-01
June 13, 2007

Shearer & Associates
1404 NE 134th Street, Suite 200
Vancouver, Washington 98685

Attention: Rod Shearer

Reference: ***Amazing Facts Property***
Sierra College Boulevard and Nightwatch Drive
APNs 046-050-006 and 008
Placer County, California

Subject: ***Phase I Environmental Site Assessment***

Dear Mr. Shearer,

In accordance with our proposal dated April 20, 2007, Holdrege & Kull (H&K) completed a Phase I environmental site assessment (ESA) of the Amazing Facts property on Sierra College Boulevard in Placer County, California. The Placer County Assessor's parcel numbers (APNs) for the approximately 75-acre site are 046-050-006 and 008. This report summarizes our research and review of records pertaining to the site, interviews with the current property owner, and our site reconnaissance.

Qualifications of Environmental Professional

We declare that, to the best of our professional knowledge and belief, we meet the definition of "environmental professional" as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the "all appropriate inquiries" in general conformance with the standards and practices set forth in 40 CFR Part 312.

(530) 478-1305 • FAX (530) 478-1019 • E-mail: handk@HandK.net • 792 Searls Avenue • Nevada City, CA 95959 • A California Corporation

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report, please contact either of the undersigned.

Sincerely,

HOLDREGE & KULL

Prepared by:	Reviewed by:
Janis E. Johnson Staff Geologist	Larry Friend, P.G. 7905 Senior Geologist

copies: 3 to Shearer & Associates

F:\1 Projects\3307 Amazing Facts\3307A-01 Amazing Facts ESA\3307A-01.ESA.wpd

TABLE OF CONTENTS

LIST OF ACRONYMS vi

INTRODUCTION 1
Purpose 1
Scope of Services 1

SITE DESCRIPTION 2
Site Location and Legal Description 2
Current Site Uses/Operations 2
Current Uses on Adjacent Properties 2

USER PROVIDED INFORMATION 3
Title Records 3
Environmental Liens or Activity and Use Limitations 3
User Questionnaire 3
Owner/Site Manager/Occupant Information 3
Reason for Performing Phase I ESA 3

RECORDS REVIEW 3
Standard Environmental Records Sources 3
Additional Environmental Records Sources 4
Placer County Assessor’s and Recorder's Offices 4
Placer County Planning Department 4
Placer County Department of Environmental Health 4
Placer County Building Department 4
Physical Setting Sources 5
Regional Physiographic Conditions 5
Geologic Conditions 5
Soil Conditions 5
Groundwater Conditions 6
Nearest Surface Water 6
Historical Use Information on the Property and Surrounding Properties . . 7
Aerial Photos 7
1952 7
1961 7
1984 7
1993 7
1999 8

Sanborn Fire Insurance Maps 8
Historical Topographic Maps 8

SITE RECONNAISSANCE 9
Methodology and Limiting Conditions 9
Site Visit Observations 9

INTERVIEWS 10
Interview with Owner/Site Manager 10
Interview with Local Engineer 11
Interview with Local Government Officials 11

FINDINGS 11

OPINION 12

DATA GAPS / DEVIATIONS 12

CONCLUSIONS 13

LIMITATIONS 13

REFERENCES 15

FIGURES
Figure 1 Site Vicinity Map
Figure 2 Parcel Map

SITE PHOTOGRAPHS

APPENDIX
The EDR Radius Map with Geocheck (Environmental Data Resources, April 25, 2007)
The EDR Aerial Photo Decade Package (Environmental Data Resources, April 26, 2007)
Topographic Map Report (Environmental Data Resources, April 26, 2007)

LIST OF ACRONYMS

APN	Assessor's Parcel Number
ASTM	American Society for Testing and Materials
AUL	Activity and Use Limitation
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
EDR	Environmental Database Resources, Inc.
ESA	Environmental site assessment
H&K	Holdrege & Kull
MSL	Mean sea level
MYBP	Million years before present
PCDEH	Placer County Department of Environmental Health
RWQCB	California Regional Water Quality Control Board
USGS	United States Geological Survey

INTRODUCTION

Purpose

The purpose of our site assessment was to evaluate whether there is evidence of recognized environmental conditions which may have impacted or could potentially impact the subject property. We based our evaluation on site reconnaissance, local research, and information provided by an environmental database firm. We performed our environmental site assessment using American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (Designation: E1527-05) as a guideline. The E1527-05 document has been identified in the U.S. Environmental Protection Agency publication entitled *Standards and Practices for All Appropriate Inquiries; Final Rule (40 CFR Part 312)* as an acceptable guidance document for performing ESAs that satisfy the federal requirements for the conduct of all appropriate inquiries under section 101(35)(B) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

Scope of Services

To perform this Phase I ESA, we researched the history of the site and the area within the immediate vicinity (generally, within a mile radius of the site). We based our report on information provided by Environmental Data Resources, Inc. (EDR) an environmental database research firm. The EDR report (included in the Appendix) provided federal and state information that meets ASTM standards for environmental site assessments. In addition, we researched local records at the following agencies:

1. Placer County Recorder's Office
2. Placer County Community Development Agency
3. Placer County Planning Department
4. South Placer Fire Department

We performed a cursory site reconnaissance, reviewed historical aerial photographs of the area, and reviewed parcel and title information for the subject parcel. We also discussed past site activities and history of the property with the current property owner, and submitted a user questionnaire regarding historical site activities to a representative of the property owner.

SITE DESCRIPTION

Site Location and Legal Description

The approximately 75-acre subject property is located southeast of the intersection of Sierra College Boulevard and Nightwatch Drive in Placer County, California. Figure 1 is a site vicinity map showing the property location. Figure 2 is a parcel map of the subject property. Two parcels comprise the site: Placer County Assessor's parcel numbers (APNs) 046-050-006 (69.1 acres) and 008 (5.9 acres). Hereafter, these parcels are referred to as parcels 6 and 8. The site is located in an unincorporated portion of Placer County near the city limits of Rocklin and Loomis. The site is located in the southwest quarter of Section 28, Township 11 North, Range 7 East of the Rocklin Quadrangle map (United States Geological Survey (USGS), 7.5 minute series, 1967, photorevised 1981). According to the Rocklin Quadrangle map, site elevations range from approximately 310 feet above mean sea level (MSL) in the southwestern corner of the site to 525 feet above MSL in the northeastern corner.

Current Site Uses/Operations

At the time of our visit, the project site was unoccupied. The site boundaries were marked by fences and several unpaved roads were present within the site. Two of the roads were accessed from Sierra College Boulevard, one of which led to San Juan Water District property adjacent to the northeastern property corner. A third road led from Oak Hill Lane near the southwestern property corner to a pond in the southern central portion of the site.

Site vegetation typically consisted of grasses, forbs, California buckeye, oak and gray pines. We observed an area of ornamental shrubs, fruit trees (orange) and grape vines northwest of the pond.

Current Uses on Adjacent Properties

The site is bordered by San Juan Water District property at the northeastern corner and by rural residential property to the east and south. At the time of H&K's site visit, a large home was under construction on property to the west. The site is bordered by Sierra College Boulevard to the north, and across it, is Sierra View Office park and a residential subdivision.

USER PROVIDED INFORMATION

Title Records

H&K performed title history research at the Placer County Assessor's and Recorder's Offices. Our research is summarized in the Records Review section on page 3.

Environmental Liens or Activity and Use Limitations

Research of environmental liens and AULs was not included in our scope of investigation. In addition, the property owner representative did not indicate knowledge of recorded environmental liens or AULs for the subject property.

User Questionnaire

Additional information regarding current or historically recognized environmental conditions associated with the subject property is summarized in the user questionnaire, included as Appendix B.

Owner/Site Manager/Occupant Information

The current owner of the site is Amazing Facts Inc. We discussed current and historical activities at the subject property with Mr. Alan Renick of Amazing Facts Inc.

Reason for Performing Phase I ESA

We understand that Placer County Community Development Agency (CDA) requires completion of a Phase I ESA prior to approving proposed site development.

RECORDS REVIEW

Standard Environmental Records Sources

The EDR report did not list any federal or state listed sites within the search distance (generally a mile or less) from the subject property.

Additional Environmental Records Sources

Placer County Assessor's and Recorder's Offices

We researched records at the county recorder's office to ascertain title history of the subject parcels. Placer County had title records dating back to 1982 for the subject parcels. According to the recorder's office, the APNs for the subject site are 046-050-006 and 008. The current site owner is Amazing Facts Inc. Previous site owners listed with Placer County include Verner G. Kokila, Marshall L. and Marian M. Garrett, Calvin V. Kokila, Sierra College Partners LLC, and John M. and Nancy Kehriotis.

Title information prior to 1982 was not "practically reviewable" at the Placer County Assessor's and Recorder's offices according to ASTM standards.

Placer County Planning Department

According to the Placer County Planning Department, the subject parcels are zoned F-B-X 20-acre minimum. This zoning designation is for farm sites with a minimum building site size of 20 acres.

Placer County Department of Environmental Health

The Placer County Department of Environmental Health (PCDEH) reported that they do not have any records on file for the subject property (or the neighboring San Juan Water District property) regarding hazardous materials, hazardous waste generation or underground storage tanks.

Placer County Building Department

Building department records indicate that two permits are on file for parcel 6. A permit was finalized in 1971 for construction of a 912 square foot dwelling. The dwelling was located approximately 200 feet northwest of the pond. The permit also included the construction of a septic system leach field southwest of the dwelling. A permit for demolition of the dwelling was filed in 2003 and finalized in 2005.

The building department did not have any building permits on file for parcel 8.

Physical Setting Sources

Regional Physiographic Conditions

The subject site is situated at the base of the western foothills of the Sierra Nevada physiographic province. Approximate site elevations range from 310 feet above MSL to 525 feet MSL. Regional physiographic conditions generally consist of gently to moderately rolling oak woodland terrain.

Geologic Conditions

We reviewed the Geologic Map of the Sacramento Quadrangle (California Division of Mines and Geology, 1987) for information about site geology. The map indicates that early Pliocene-late Miocene age andesitic conglomerate, and mudflow breccia (lahar) of the Mehrten Formation underlie the northern portion of the site. Andesite is a volcanic rock, which forms when lava cools at the earth's surface. The Miocene and Pliocene epochs occurred between 22 to 5 and 5 to 2 million years before present (MYBP), respectively.

The southern portion of the site is underlain by Mesozoic dioritic rocks. Diorite is a plutonic rock that forms when magma cools beneath the earth's surface. The Mesozoic era occurred between 248 and 65 MYBP.

Soil Conditions

We reviewed the *Soil Survey of Placer County, California, Western Part* prepared by the USDA Soil Conservation Service in 1980. The soil survey indicates that the subject property is located in an area containing Andregg coarse sandy loam, Exchequer very stony loam, and Inks cobbly loam.

The Andregg soil is described as a moderately deep, rolling, well drained soil underlain by weathered granitic bedrock. Typically, the surface layer consists of grayish brown, coarse sandy loam to a depth of 15 inches, underlain by pale brown and very pale brown, coarse sandy loam to a depth of 29 inches. Surface runoff is medium.

The Exchequer soil is described as shallow, somewhat excessively drained, very stony soil underlain by hard andesitic breccia. Typically, the surface soil consists of

brown, very stony loam and cobbly loam, which extends to an approximate depth of 11 inches below the ground surface (bgs). Surface runoff is medium.

The Inks soil is a shallow, well drained cobbly soil underlain by andesitic conglomerate. Typically, the surface soil consists of approximately 5 inches of yellowish brown cobbly loam overlying brown, very cobbly clay loam to a depth of approximately 18 inches. Surface runoff is medium to rapid.

Groundwater Conditions

We did not perform a subsurface groundwater investigation at the site. Our experience in the foothill region has been that groundwater lies at various depths below ground surface depending on the hydrogeologic conditions. In many cases, groundwater is controlled by bedrock fractures. This results in groundwater depths and conditions that are virtually unpredictable without performing a hydrogeologic investigation. In other cases, groundwater may lie in perched zones above resistant rock or impermeable soil.

We are not aware of any groundwater wells located at the subject property. We anticipate that groundwater may be relatively shallow in the vicinity of the on-site pond.

Nearest Surface Water

A pond is located in the central portion of the subject property. At the time of our site visit, in May 2007, a natural drainage channel contained minor water flowing to the pond through the northeast portion of the site. No water was observed downstream of the pond.

According to the USGS Rocklin Quadrangle map, a tributary of Miners Ravine flows from northeast to southwest near the southeastern property corner.

The Boardman Canal is located approximately 1000 feet northeast of the site at an approximate elevation of 400 feet above MSL. The Boardman Canal is part of the water conveyance system managed by the Placer County Water Agency. The canal directs flow to the west and southwest in the site vicinity.

Historical Use Information on the Property and Surrounding Properties

Aerial Photos

We reviewed aerial photographs from the following years to help identify past land use on and around the subject site: 1952, 1961, 1984, 1993 and 1999. Following are descriptions of the site and surrounding property as they appeared in the photographs we reviewed.

1952

In the 1952 photograph, the site vicinity is undeveloped. Sierra College Boulevard to the north of the site and Oak Hill Lane to the south had not been constructed. Orchards are visible in the area surrounding Boardman Canal to the north of the site. The site vicinity is characterized by open grasslands and oak woodlands. Apparent fence lines mark the western and southern boundaries of the site. Apparent livestock trails are visible in the southern portion of the site and in a wooded area near the northern site boundary.

1961

The 1961 photo appears relatively similar to the 1952 photo. However, an apparent unpaved road is visible in southwestern corner of the site leading to a small clearing in the center of the site.

1984

By 1984, Sierra College Boulevard had been constructed to the north of the site. A pond is visible in the central portion of the site near the terminus of the unpaved road that leads from the southwestern corner of the site. An unpaved road is visible along the southern shore of the pond. An area apparently cleared of vegetation is visible directly northeast of the site. An unpaved road forms the eastern property boundary.

1993

By 1993, significant residential development had occurred in the areas north of Boardman Canal to the north of the site. However, the subject site appears relatively unchanged from the 1993 photo.

1999

By 1999, significant development had occurred between Sierra College Boulevard and Boardman Canal to the north of the site. However, the subject site appears relatively unchanged from the 1993 photo.

Sanborn Fire Insurance Maps

Historical fire insurance maps published by the Sanborn Company are available for most municipalities. However, EDR indicated that Sanborn maps of the site were not available.

Historical Topographic Maps

EDR provided us with copies of historical topographic USGS quadrangle maps from 1954, 1967 and 1981 (the latter one of which was photorevised from the 1967 map). All of the maps are reproduced from the 7.5 minute series; a 15-minute Auburn Quadrangle map from 1954 was also included.

The 1954 map depicts an unpaved road leading from Cavitt Stallman Road (south of the site) to a structure in the southwestern corner of the site. Another unpaved road is shown winding through property to the east of the site. Sierra College Boulevard had not yet been constructed. The Boardman Canal is depicted north of the site. A benchmark labeled “Rocklin” at 519 feet above MSL is shown along the eastern property boundary and another benchmark at 527 feet above MSL is shown near the northern property boundary. The existing pond had not been constructed.

The 1967 map indicates that the structure in the southwestern corner of the site had been removed. The unpaved road leading from Cavitt Stallman Road had been extended farther north into the subject property. A paved road is depicted leading from Cavitt Stallman Road to a structure east of the site. Sierra College Boulevard had been constructed.

The 1981 map shows the existing pond in the southern half of the site. A structure is depicted to the west of the pond at the terminus of an unpaved road leading from Cavitt Stallman Road through the southwestern corner of the site.

SITE RECONNAISSANCE

Methodology and Limiting Conditions

We performed our site reconnaissance on May 18, 2007. Due to the size of the site and coverage of mature grasses, we were not able to observe all areas of the ground surface.

Site Visit Observations

During our site visit, we observed surface conditions at the site and portions of surrounding properties visible from the site. The following paragraphs summarize our observations.

Topography at the site is characterized by relatively flat-lying areas in the general northern and southern thirds of the site, separated by a moderately steep slope. The northern portion of the site is nearly 200 feet higher in elevation than the southern portion. A north-south trending drainage swale cuts across the northern half of the property and discharges to a man-made pond in the central portion of the site. Vegetation typically consisted of tall grasses, oaks and gray pines.

At the northern site boundary, two unpaved roads entered the site from Sierra College Boulevard, one of which led to San Juan Water District property adjacent to the northeastern property corner. The second, less used road paralleled the fence along the western property boundary.

We observed several areas of ground disturbance in the northern third of the site. We understand that exploratory trenching was performed in early May as part of a geotechnical investigation; several of the areas of ground disturbance appeared to be a result of that trenching. Vegetation was beginning to become established on other areas of ground disturbance, indicating that the disturbance had taken place prior to geotechnical trenching. We observed several survey stakes with decaying survey tape in the northern portion of the site and noted that the trees on-site were marked with metal survey tags.

An area surrounding two trees, approximately 25 feet in diameter, at the northern edge of the slope had been charred. Minor vegetation had become established in the charred area.

An overgrown road led down the slope from the western property boundary to a man-made pond in the central portion of the site. We observed a segment of abandoned power lines that led to a flat-lying area approximately 200 feet northwest of the pond. Abandoned ornamental shrubs, grape vines and orange trees were located at the perimeter of the flat-lying area. A functioning water spigot, surrounded by a stack of three automobile tires, was located nearby.

Near the eastern shore of the pond, we observed an empty, rusted, crushed storage tank measuring approximately 4 feet long and 3 feet in diameter with a spigot on one end. We did not observe evidence of spills or staining on the ground surface in the vicinity of the tank.

Remnants of a wooden bridge were located across the outfall of the pond. Farther downstream were the concrete and wooden remains of a possible spillway structure. No water was observed flowing from the pond. An unpaved road led from the pond to the southwest corner of the site. The road crossed residential property to the south of the site and continued to Oak Hill Lane. A gate across Oak Hill Lane prohibited access across the adjacent residential property and the site.

INTERVIEWS

Interview with Owner/Site Manager

We discussed site history with Mr. Alan Renick, chief financial officer with Amazing Facts, Inc., the site owner. Mr. Renick stated that he understood that a house, which previously occupied parcel 6, burned down at some point. He was aware of vernal pools at the site and the occurrence of a small grass fire in 2006 on the northern portion of the site (parcel 8).

We requested that Mr. Renick complete a standard questionnaire regarding historical site activities. We did not receive the completed questionnaire by the time this report was completed.

Interview with Local Engineer

We made several attempts to contact Mr. Reg King of King Engineering, who we understand has been involved with surveys at the site. King Engineering's involvement has focused on the northern portion of the site. Mr. King stated that he

is unaware of any subsurface investigations performed at site prior to H&K's geotechnical investigation. He understands that the previous site owner had proposed to develop the site and may have conducted a tree survey, and possibly, a subsurface investigation. He mentioned that an archaeological survey has identified several archaeological sites in the southern portion of the property.

Interview with Local Government Officials

According to Fire Marshal Bob Richardson of the South Placer Fire Department, the fire department has maintained electronic records of department incidents for the last seven years. The incident records are filed by street address. The fire department has no records of incidents at parcel 6 (6750 Oak Hill Lane). No records were identified for parcel 8, as no street address has been assigned to that parcel.

FINDINGS

Our findings are summarized below.

1. Our review of federal, state and local records did not identify documented environmental conditions associated with the subject property.

2. The subject property was undeveloped at the time of our site visit, but showed evidence of former habitation in the central portion of the site and ground disturbance in the northern portion of the site.

3. An empty, smashed, rusted storage tank was observed near the eastern shore of the pond. The former use and contents of the tank are unknown.

4. Some of the areas of ground disturbance in the northern portion of the site appear to be the result of exploratory trenching during a recent geotechnical investigation. We were unable to determine the source of older areas of ground disturbance.

5. A small wildfire had charred a limited area of vegetation in the northern portion of the site. The local fire department could not provide us with information regarding the source of the fire. We did not observe deleterious debris in the charred area that would suggest materials other than vegetation were burned.

Based on the small size of the charred area, this feature may be considered a "de minimis" environmental condition.

OPINION

The following are our professional opinions based on the findings of our Phase I ESA.

1. We could not determine past activities with respect to the structures formerly located at the site that were identified during the course of our research. Abandoned underground utilities that remain at the site could include onsite septic tanks, leach fields and fuel storage tanks.

2. The apparent ground disturbance observed in the northern portion of the site may be associated with previous subsurface investigation related to site development. As we were unable to confirm whether previous subsurface investigation was performed on-site, the areas of former ground disturbance may be considered a suspect environmental condition.

3. The rusted storage tank observed near the pond is considered a suspect environmental condition as we were unable to determine its former use and contents. Tanks of this type are often used for water storage. However, our experience has been that this type of tank is also commonly associated with fuel storage.

4. Our opinion is that the de minimis condition associated with the former wildfire identified on the subject property do not require further characterization.

DATA GAPS / DEVIATIONS

We did not review aerial photographs prior to the 1960s.

Title information prior to 1977 for the subject property was not reviewed. We were unable to determine land use at the site prior to 1971 (the date of the earliest building department record).

Research of environmental liens and AULs was not included in our scope of investigation.

Not all areas of ground surface could be observed due to abundant coverage of mature grasses. Other features may be present that were not readily observable.

We did not receive a completed owner questionnaire by the time this report was issued.

CONCLUSIONS

We performed a Phase I ESA of APNs 05-330-06, 07 and 10 in Nevada County, California in general conformance with the scope and limitations of ASTM Practice E 1527-05. Any exceptions to, or deletions from, this practice are described in the "Data Gaps/Deviations" and "Limitations" sections of this report. This assessment revealed no evidence of environmental conditions in connection with the property except for the following: suspect recognized environmental conditions were identified in connection with areas of former ground disturbance in the northern portion of the site and an empty, rusted storage tank near the pond. If the areas of former ground disturbance are related to previous geotechnical or similar investigation, the potential environmental conditions associated with these disturbances would not like be significant. If the tank had previously been used for fuel storage on-site, the potential exists for environmental impact to the site resulting from possible fuel releases, in which case soil sampling may be warranted.

LIMITATIONS

We have presented the above information as it has been presented to us. We cannot assume responsibility for the completeness or accuracy of the information we reviewed or received. The information provided in our report is not meant to be comprehensive, to identify all potential concerns, or to eliminate the risk involved in property acquisition. We have used our judgement and experience to arrive at our conclusions. Therefore, our conclusions are not to be considered scientific certainties. Environmental conditions may exist at the site that were not identified or encountered as a result of our Phase I ESA.

Our scope of services did not include identifying the presence of lead paint, endangered species, geologic hazards, archeological sites, or ecologically sensitive areas (e.g., vernal pools and wetlands).

Because research information is continually updated, the accounts presented in this report can become outdated with time. In addition, site conditions can change, potentially rendering our conclusions invalid or obsolete. Therefore, we do not recommend relying on the accuracy of this report after 90 days of the date issued. At that time, we recommend updating this report to reflect any new available information. We can assist in updating this report, should this process be necessary.

We have prepared and issued this report for the exclusive use of our client. The information, conclusions and recommendations presented apply only to the subject property. H&K are not responsible for any other party's interpretations of the reported information.

We have performed this work in accordance with present, regional, generally accepted standards of care. This report does not represent a legal opinion. No warranty is expressed or implied.

REFERENCES

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation: E 1527-05; November 2005.

California Division of Mines and Geology, Geologic Map of the Sacramento Quadrangle, 1987.

California Division of Mines and Geology, map included with State Mineralogist's Report XXXVII, SMR 37, 1942.

California State Mining Bureau, Register of Mines and Minerals for Eleven Sierra Nevada Counties, 1898-1905, 1905.

Code of Federal Regulations, 40 CFR Part 312, November 1, 2005.

Environmental Data Resources, Inc., Aerial Photo Decade Package, April 26, 2007.

Environmental Data Resources, Inc., The EDR-Radius Map with GeoCheck, April 25, 2007.

Environmental Data Resources, Inc., Sanborn Map Report, April 24, 2007.

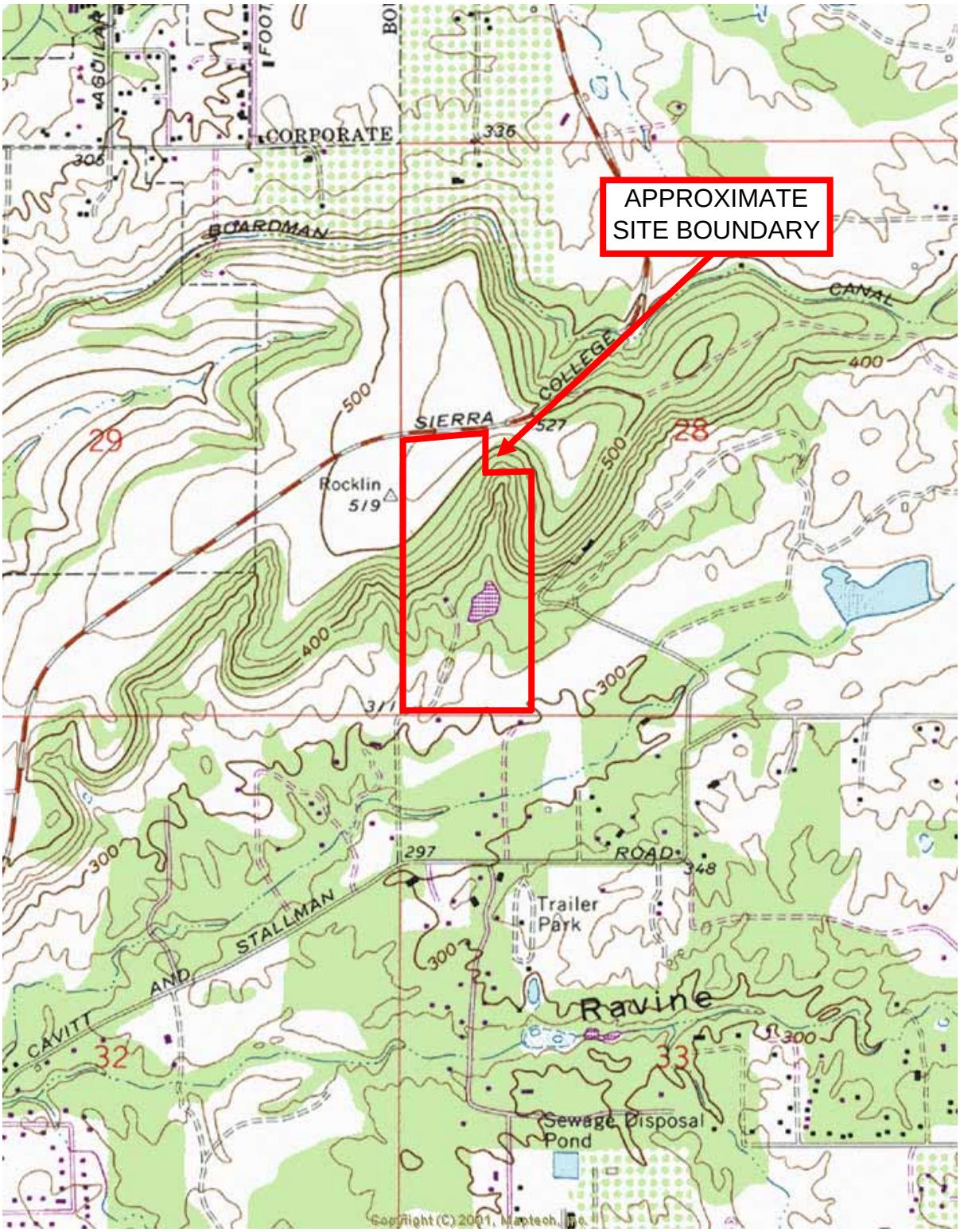
United States Department of Agriculture Soil Conservation Service, Soil Survey of Placer County, California, Western Part, 1980.

United States Geologic Survey, Rocklin Quadrangle, 7.5 minute series, 1967, photorevised 1981.

FIGURES

Figure 1 **Site Location Map**

Figure 2 **Parcel Map**



NO SCALE

SOURCE: ROCKLIN QUADRANGLE MAP (USGS 1967, PHOTOREVISED 1981)

HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS
792 Searls Avenue • Nevada City, CA 95959
(530) 478-1305 • FAX (530) 478-1019

SITE LOCATION MAP

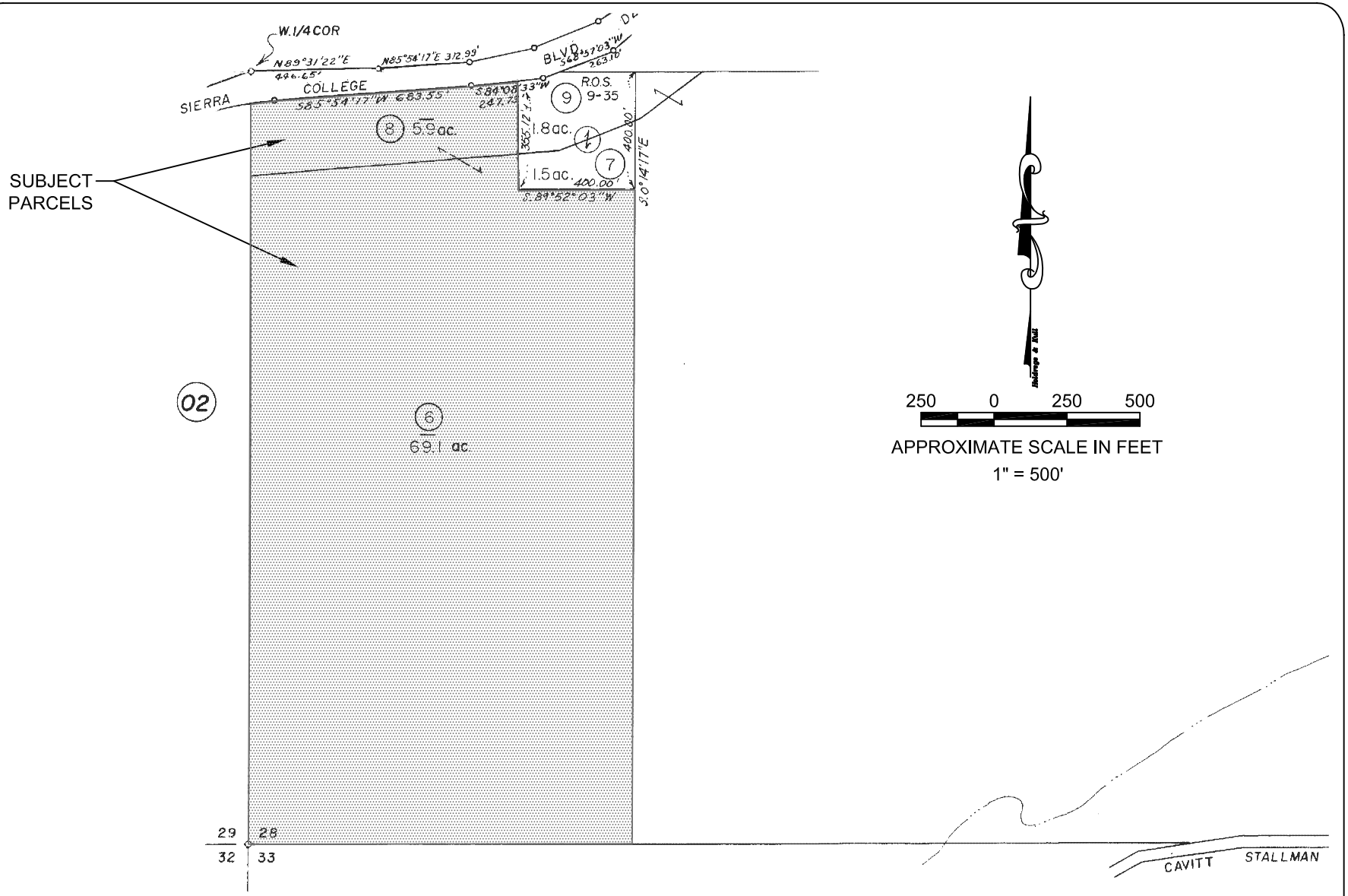
PROPOSED AMAZING FACTS SITE

PLACER COUNTY, CALIFORNIA

PROJECT NO. 3307A-01

JUNE 2007

FIGURE 1



HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS
792 SEARLS AVENUE
NEVADA CITY, CA 95959
(530) 478-1305 FAX 478-1019

PARCEL MAP

AMAZING FACTS PROPERTY

PLACER COUNTY, CALIFORNIA

DRAWN BY: DFD	CHECKED BY: JEJ
PROJECT NO.: 3307A-01	
DATE: MAY 2007	
FIGURE NO.: 2	

SITE PHOTOGRAPHS

Photo 1. Area of localized ground disturbance near northwest property corner.

Photo 2. Tires surrounding water spigot; on-site pond in background.

Photo 3. Decrepit bridge across pond outfall.

Photo 4. Rusted, holey storage tank near pond.

APPENDIX

The EDR Radius Map with Geocheck (Environmental Data Resources, April 25, 2007)

The EDR Aerial Photo Decade Package (Environmental Data Resources, April 26, 2007)

Topographic Map Report (Environmental Data Resources, April 26, 2007)

The EDR Radius Map
with GeoCheck®

Amazing Facts
Sierra College Blvd/Nightwatch Drive
Roseville, CA 95746

Inquiry Number: 1911969.2s

April 25, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	7
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-11
Physical Setting Source Map Findings	A-12
Physical Setting Source Records Searched	A-16

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2007 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

SIERRA COLLEGE BLVD/NIGHTWATCH DRIVE
ROSEVILLE, CA 95746

COORDINATES

Latitude (North):	38.772800 - 38˚ 46' 22.1''
Longitude (West):	121.210900 - 121˚ 12' 39.2''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	655425.0
UTM Y (Meters):	4292877.0
Elevation:	518 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	38121-G2 ROCKLIN, CA
Most Recent Revision:	1981

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
Delisted NPL ..... National Priority List Deletions
NPL LIENS ..... Federal Superfund Liens
CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned
CORRACTS ..... Corrective Action Report
RCRA-TSDF ..... Resource Conservation and Recovery Act Information
RCRA-LQG ..... Resource Conservation and Recovery Act Information

EXECUTIVE SUMMARY

RCRA-SQG	Resource Conservation and Recovery Act Information
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
LUCIS	Land Use Control Information System
DOT OPS	Incident and Accident Data
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
US CDL	Clandestine Drug Labs
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

HIST Cal-Sites	Historical Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
SWF/LF	Solid Waste Information System
CA WDS	Waste Discharge System
WMUDS/SWAT	Waste Management Unit Database
Cortese	"Cortese" Hazardous Waste & Substances Sites List
SWRCY	Recycler Database
LUST	Geotracker's Leaking Underground Fuel Tank Report
CA FID UST	Facility Inventory Database
SLIC	Statewide SLIC Cases
UST	Active UST Facilities
HIST UST	Hazardous Substance Storage Container Database
AST	Aboveground Petroleum Storage Tank Facilities
CA PLACER CO. MS	Master List of Facilities
SWEEPS UST	SWEEPS UST Listing
CHMIRS	California Hazardous Material Incident Report System
Notify 65	Proposition 65 Records
DEED	Deed Restriction Listing
VCP	Voluntary Cleanup Program Properties
CLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
CDL	Clandestine Drug Labs

EXECUTIVE SUMMARY

RESPONSE State Response Sites
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
ENVIROSTOR EnviroStor Database
SAN DIEGO CO. SAM Environmental Case Listing

TRIBAL RECORDS

INDIAN RESERV Indian Reservations
INDIAN LUST Leaking Underground Storage Tanks on Indian Land
INDIAN UST Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

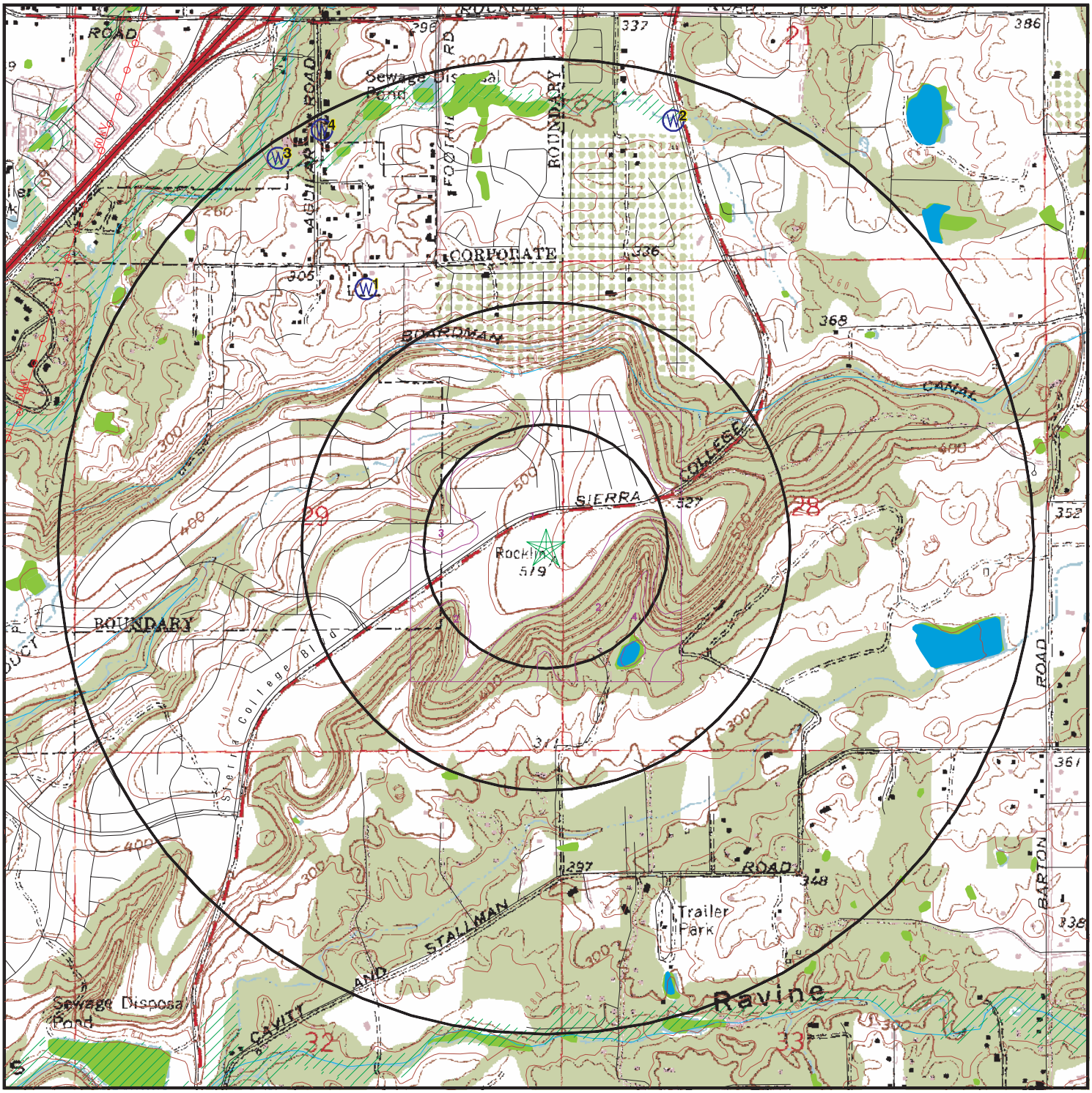
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
EXXON SERVICE STATION/SWC STANDARD RANCH	CA FID UST, SWEEPS UST
SOUTHERN PACIFIC (ROUNDHOUSE)	CERC-NFRAP
ROCKLIN DUMP	CERC-NFRAP
NIKKEL PROPERTY	LUST, SLIC
DAWSON OIL CARDLOCK	UST
MORGAN'S ORCHARD	VCP
CHEVRON STATION NO 205777	RCRA-SQG, FINDS, HAZNET
JOHN'S AUTOMOTIVE REPAIR	CA PLACER CO. MS
RESIDENCE-UST REMOVAL	CA PLACER CO. MS
RESIDENCE-UST REMOVAL	CA PLACER CO. MS
MORGAN'S ORCHARD	ENVIROSTOR

OVERVIEW MAP - 1911969.2s



0 1/4 1/2 1 Miles

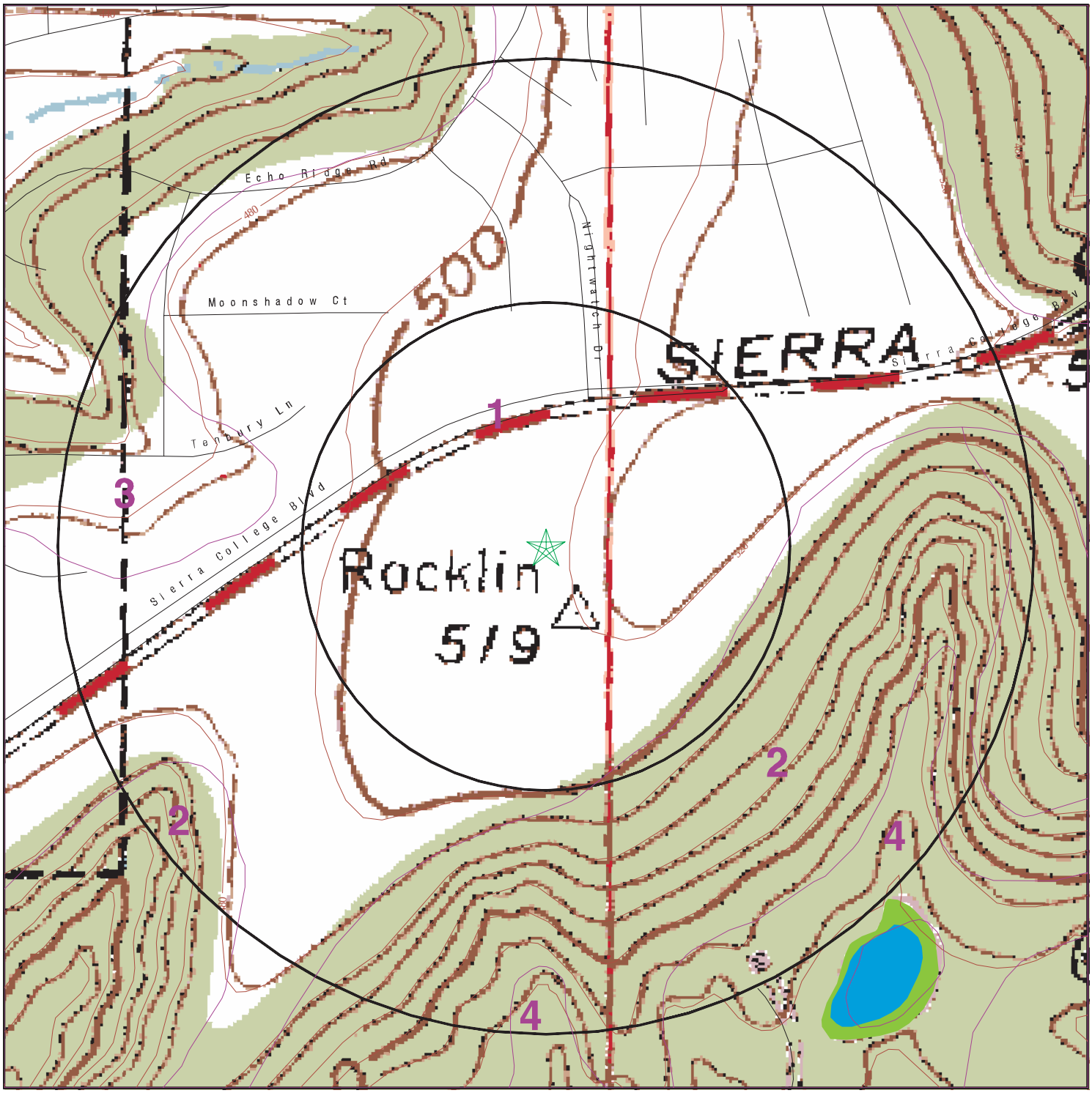
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Amazing Facts	CLIENT:	Holdrege & Kull Consultants
ADDRESS:	Sierra College Blvd/Nightwatch Drive Roseville CA 95746	CONTACT:	Janis Johnson
		INQUIRY #:	1911969.2s
LAT/LONG:	38.7728 / 121.2109	DATE:	April 25, 2007 7:56 pm

Copyright © 2007 EDR, Inc. © 2007 Tele Atlas Rel. 07/2006.

DETAIL MAP - 1911969.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Amazing Facts ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville CA 95746 LAT/LONG: 38.7728 / 121.2109	CLIENT: Holdrege & Kull Consultants CONTACT: Janis Johnson INQUIRY #: 1911969.2s DATE: April 25, 2007 7:56 pm

Copyright © 2007 EDR, Inc. © 2007 Tele Atlas Rel. 07/2006.

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
DOT OPS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
STATE AND LOCAL RECORDS								
Hist Cal-Sites		1.000	0	0	0	0	NR	0
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LUST		0.500	0	0	0	NR	NR	0
CA FID UST		0.250	0	0	NR	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
PLACER CO. MS		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Notify 65		1.000	0	0	0	0	NR	0
DEED		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
RESPONSE		1.000	0	0	0	0	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
ENVIROSTOR		1.000	0	0	0	0	NR	0
SAN DIEGO CO. SAM		0.500	0	0	0	NR	NR	0
TRIBAL RECORDS								
INDIAN RESERV		1.000	0	0	0	0	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0
EDR Historical Auto Stations		0.250	0	0	NR	NR	NR	0
EDR Historical Cleaners		0.250	0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Distance (ft.) Elevation	Site	Database(s)	EDR ID Number EPA ID Number
	NO SITES FOUND		

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LOOMIS	S107736774	MORGAN'S ORCHARD	SOUTH OF INTERSTATE HWY 80, APPROXIMATELY 1 MILE N	95650	ENVIROSTOR
LOOMIS	S107770186	MORGAN'S ORCHARD	SOUTH OF INTERSTATE HWY 80, APPROXIMATELY 1 MILE N	95650	VCP
ROCKLIN	U003786053	DAWSON OIL CARDLOCK	HWY 49 AT MISSOURI FLAT	95677	UST
ROCKLIN	1003879731	SOUTHERN PACIFIC (ROUNDHOUSE)	CORNER OF FIRST & ROCKLIN RD.	95677	CERC-NFRAP
ROCKLIN	1003878030	ROCKLIN DUMP	ROCKLIN RD	95677	CERC-NFRAP
ROCKLIN	1006805094	CHEVRON STATION NO 205777	4211 SIERRA	95677	RCRA-SQG, FINDS, HAZNET
ROCKLIN	S104915381	JOHN'S AUTOMOTIVE REPAIR	2288 SIERRA MEADOWS A DR	95677	CA PLACER CO. MS
ROCKLIN	S106715824	RESIDENCE-UST REMOVAL	SIERRA COLLEGE RD	95677	CA PLACER CO. MS
ROCKLIN	S106715825	RESIDENCE-UST REMOVAL	SIERRA COLLEGE RD	95677	CA PLACER CO. MS
ROCKLIN	S101589785	EXXON SERVICE STATION/SWC STANDARD RANCH	5 STAR BLVD	95677	CA FID UST, SWEEPS UST
ROSEVILLE	S108086711	NIKKEL PROPERTY	EAST OF ROSEVILLE ROAD		LUST, SLIC

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/25/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 01/31/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 09/27/2006
Date Data Arrived at EDR: 11/01/2006
Date Made Active in Reports: 11/22/2006
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 02/23/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/28/2006
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 01/31/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 11/28/2006
Date Data Arrived at EDR: 12/19/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 41

Source: EPA
Telephone: 703-603-8960
Last EDR Contact: 03/21/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/20/2006
Date Data Arrived at EDR: 01/29/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 29

Source: EPA
Telephone: 703-603-8960
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 01/04/2007
Date Data Arrived at EDR: 01/18/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 40

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

RCRA: Resource Conservation and Recovery Act Information

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/13/2006
Date Data Arrived at EDR: 06/28/2006
Date Made Active in Reports: 08/23/2006
Number of Days to Update: 56

Source: EPA
Telephone: (415) 495-8895
Last EDR Contact: 04/18/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Quarterly

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 01/24/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 47

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/24/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 11/28/2006
Date Data Arrived at EDR: 01/17/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 41

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/17/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Annually

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/24/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/24/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/08/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 09/20/2006
Date Made Active in Reports: 11/22/2006
Number of Days to Update: 63

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Varies

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/29/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/12/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Semi-Annually

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 08/23/2006
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 35

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/10/2007
Date Data Arrived at EDR: 01/24/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 34

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/27/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/08/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 82

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 03/20/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2004
Date Data Arrived at EDR: 06/22/2006
Date Made Active in Reports: 08/23/2006
Number of Days to Update: 62

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 03/20/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 02/26/2007
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 02/26/2007
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Quarterly

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2004
Date Data Arrived at EDR: 05/11/2006
Date Made Active in Reports: 05/22/2006
Number of Days to Update: 11

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/12/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/06/2006
Date Data Arrived at EDR: 02/02/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Quarterly

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 02/14/2007
Date Data Arrived at EDR: 02/28/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 41

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/28/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 01/08/2007
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 3

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/29/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: No Update Planned

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/30/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/31/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/17/2006
Date Data Arrived at EDR: 11/29/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 43

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 03/02/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/11/2007
Date Data Arrived at EDR: 01/26/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 32

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Quarterly

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/15/2006
Date Data Arrived at EDR: 12/28/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 32

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/28/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Semi-Annually

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/18/2007
Date Data Arrived at EDR: 01/23/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 35

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/06/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/26/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: No Update Planned

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 02/27/2007
Date Data Arrived at EDR: 02/28/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/29/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/12/2007
Date Data Arrived at EDR: 03/15/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 22

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/15/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Quarterly

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 12/19/2006
Date Data Arrived at EDR: 12/19/2006
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 36

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 03/21/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 05/29/2001
Date Made Active in Reports: 07/26/2001
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 01/08/2007
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 04/11/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Quarterly

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 01/09/2007
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/11/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Quarterly

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 01/01/2007
Date Data Arrived at EDR: 01/23/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/25/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Quarterly

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 02/05/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Varies

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 04/12/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/27/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 04/06/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 02/12/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 01/09/2007
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/11/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 04/06/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 02/12/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 04/05/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/06/2006
Date Data Arrived at EDR: 04/06/2006
Date Made Active in Reports: 05/11/2006
Number of Days to Update: 35

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 04/03/2007
Next Scheduled EDR Contact: 07/03/2007
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 03/13/2007
Date Data Arrived at EDR: 03/14/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 23

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 03/12/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Annually

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 01/09/2007
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 14

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/11/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Semi-Annually

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 02/05/2007
Date Data Arrived at EDR: 02/06/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 43

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 02/09/2007
Date Data Arrived at EDR: 02/09/2007
Date Made Active in Reports: 03/23/2007
Number of Days to Update: 42

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 01/29/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/23/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

NOTIFY 65: Proposition 65 Records
Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/12/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: No Update Planned

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 01/15/2007
Date Data Arrived at EDR: 01/16/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 42

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/05/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/27/2007
Date Data Arrived at EDR: 02/28/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 04/18/2005
Date Data Arrived at EDR: 04/18/2005
Date Made Active in Reports: 05/06/2005
Number of Days to Update: 18

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 04/10/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/13/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 24

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/13/2007
Next Scheduled EDR Contact: 04/23/2007
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/07/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Varies

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 02/27/2007
Date Data Arrived at EDR: 02/28/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/20/2006
Date Made Active in Reports: 01/03/2007
Number of Days to Update: 44

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 02/06/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2004
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/11/2006
Number of Days to Update: 27

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/17/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Varies

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 02/27/2007
Date Data Arrived at EDR: 02/28/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Quarterly

SAN DIEGO CO. SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 01/24/2007
Date Data Arrived at EDR: 02/27/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 38

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 04/04/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/08/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/19/2007
Date Data Arrived at EDR: 02/27/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 36
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 34
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 02/21/2007
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 12/19/2006
Date Data Arrived at EDR: 12/19/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 41
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/06/2006
Date Data Arrived at EDR: 10/04/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 35
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Minnesota, Mississippi and North Carolina.

Date of Government Version: 08/24/2006
Date Data Arrived at EDR: 09/11/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 58
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/04/2005
Date Data Arrived at EDR: 01/21/2005
Date Made Active in Reports: 02/28/2005
Number of Days to Update: 38

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

Date of Government Version: 08/24/2006
Date Data Arrived at EDR: 09/11/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 58

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

Date of Government Version: 12/02/2004
Date Data Arrived at EDR: 12/29/2004
Date Made Active in Reports: 02/04/2005
Number of Days to Update: 37

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

Date of Government Version: 02/19/2007
Date Data Arrived at EDR: 02/27/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 36

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/04/2007
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land
A listing of underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

Date of Government Version: 01/11/2007
Date Data Arrived at EDR: 01/12/2007
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Semi-Annually

INDIAN UST R9: Underground Storage Tanks on Indian Land

Date of Government Version: 12/19/2006
Date Data Arrived at EDR: 12/19/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 41

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

Date of Government Version: 09/06/2006
Date Data Arrived at EDR: 10/04/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 35

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/31/2007
Date Data Arrived at EDR: 02/02/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 25

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 02/02/2007
Date Data Arrived at EDR: 02/02/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 47

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/27/2007
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 36

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 02/26/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/13/2007
Date Data Arrived at EDR: 01/16/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 42

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/16/2007
Next Scheduled EDR Contact: 05/07/2007
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 12/06/2006
Date Data Arrived at EDR: 12/07/2006
Date Made Active in Reports: 01/04/2007
Number of Days to Update: 28

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/12/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 05/16/2006
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/31/2006
Date Data Arrived at EDR: 12/29/2006
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 26

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 11/13/2006
Next Scheduled EDR Contact: 02/12/2007
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 02/13/2007
Date Data Arrived at EDR: 03/09/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 28

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 02/13/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/01/2006
Date Data Arrived at EDR: 04/06/2006
Date Made Active in Reports: 05/11/2006
Number of Days to Update: 35

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 03/14/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Varies

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 12/04/2006
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 02/12/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 12/14/2006
Date Data Arrived at EDR: 12/15/2006
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 39

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/20/2007
Date Data Arrived at EDR: 02/21/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 02/12/2007
Next Scheduled EDR Contact: 05/14/2007
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 01/26/2007
Date Data Arrived at EDR: 02/20/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 01/29/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2007
Date Data Arrived at EDR: 01/10/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 04/09/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 04/09/2007
Date Data Arrived at EDR: 04/10/2007
Date Made Active in Reports: 04/24/2007
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 04/09/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Annually

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/20/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/07/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/20/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/07/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities

Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 03/20/2007
Date Made Active in Reports: 04/12/2007
Number of Days to Update: 23

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/07/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities

List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/17/2007
Date Data Arrived at EDR: 01/18/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 40

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 02/06/2007
Date Data Arrived at EDR: 02/07/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 20

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 02/06/2007
Date Data Arrived at EDR: 02/07/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 42

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Contaminated Sites

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 01/31/2007
Date Data Arrived at EDR: 02/16/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 11

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 01/31/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 01/31/2007
Date Data Arrived at EDR: 02/15/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 12

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 01/31/2007
Next Scheduled EDR Contact: 04/30/2007
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 01/04/2007
Date Data Arrived at EDR: 01/05/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 19

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2005
Date Data Arrived at EDR: 05/18/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 29

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 04/05/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 11/01/2006
Date Data Arrived at EDR: 01/03/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 21

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 03/08/2007
Date Data Arrived at EDR: 03/13/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 24

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 03/08/2007
Date Data Arrived at EDR: 03/13/2007
Date Made Active in Reports: 04/12/2007
Number of Days to Update: 30

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 03/05/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 04/06/2007
Date Data Arrived at EDR: 04/10/2007
Date Made Active in Reports: 04/24/2007
Number of Days to Update: 14

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 04/02/2007
Next Scheduled EDR Contact: 04/16/2007
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 01/24/2007
Date Data Arrived at EDR: 01/25/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 33

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/09/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/09/2007
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/09/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 09/29/2006
Date Data Arrived at EDR: 10/02/2006
Date Made Active in Reports: 10/25/2006
Number of Days to Update: 23

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Varies

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 12/07/2006
Date Data Arrived at EDR: 12/07/2006
Date Made Active in Reports: 01/03/2007
Number of Days to Update: 27

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/04/2007
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 01/08/2007
Date Data Arrived at EDR: 02/06/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Quarterly

Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 01/02/2007
Date Data Arrived at EDR: 01/16/2007
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 7

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/26/2007
Next Scheduled EDR Contact: 06/25/2007
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/22/2007
Date Data Arrived at EDR: 01/23/2007
Date Made Active in Reports: 02/27/2007
Number of Days to Update: 35

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/23/2007
Next Scheduled EDR Contact: 07/23/2007
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 12/31/0005
Date Data Arrived at EDR: 01/05/2006
Date Made Active in Reports: 01/31/2006
Number of Days to Update: 26

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 11/28/2006
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/11/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 09/05/2006
Date Made Active in Reports: 10/05/2006
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/19/2007
Next Scheduled EDR Contact: 05/21/2007
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 11/28/2006
Date Data Arrived at EDR: 01/09/2007
Date Made Active in Reports: 01/24/2007
Number of Days to Update: 15

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/14/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 12/28/2006
Date Data Arrived at EDR: 01/23/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 57

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/10/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 02/05/2007
Date Data Arrived at EDR: 02/20/2007
Date Made Active in Reports: 03/21/2007
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/12/2007
Next Scheduled EDR Contact: 07/16/2007
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2004
Date Data Arrived at EDR: 02/17/2006
Date Made Active in Reports: 04/07/2006
Number of Days to Update: 49

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 03/16/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 01/01/2007
Date Data Arrived at EDR: 01/04/2007
Date Made Active in Reports: 02/13/2007
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/05/2007
Next Scheduled EDR Contact: 07/02/2007
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 10/26/2006
Date Data Arrived at EDR: 11/29/2006
Date Made Active in Reports: 01/05/2007
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 03/02/2007
Next Scheduled EDR Contact: 05/28/2007
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/17/2006
Date Made Active in Reports: 06/06/2006
Number of Days to Update: 81

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/16/2007
Next Scheduled EDR Contact: 06/11/2007
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 04/11/2006
Date Data Arrived at EDR: 10/31/2006
Date Made Active in Reports: 12/18/2006
Number of Days to Update: 48

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 03/19/2007
Next Scheduled EDR Contact: 06/18/2007
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/17/2006
Date Made Active in Reports: 05/02/2006
Number of Days to Update: 46

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 04/24/2007
Next Scheduled EDR Contact: 07/09/2007
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

© 2007 Tele Atlas North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

AMAZING FACTS
SIERRA COLLEGE BLVD/NIGHTWATCH DRIVE
ROSEVILLE, CA 95746

TARGET PROPERTY COORDINATES

Latitude (North):	38.77280 - 38˚ 46' 22.1''
Longitude (West):	121.2109 - 121˚ 12' 39.2''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	655425.0
UTM Y (Meters):	4292877.0
Elevation:	518 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	38121-G2 ROCKLIN, CA
Most Recent Revision:	1981

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

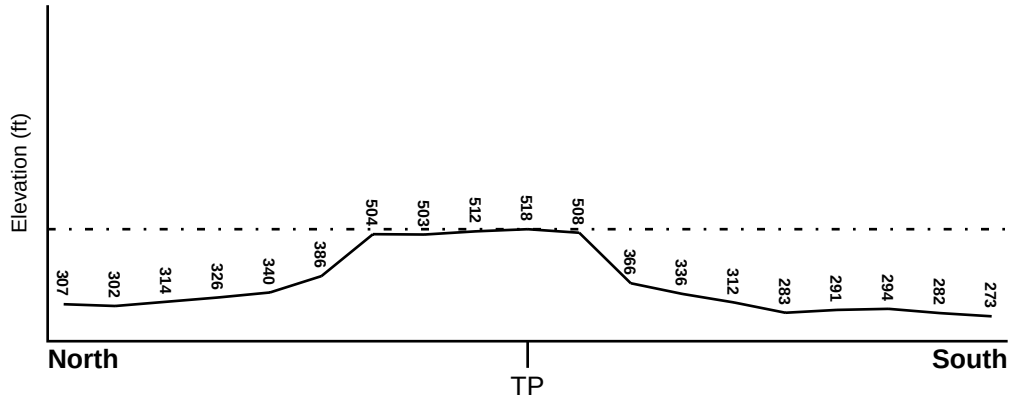
TOPOGRAPHIC INFORMATION

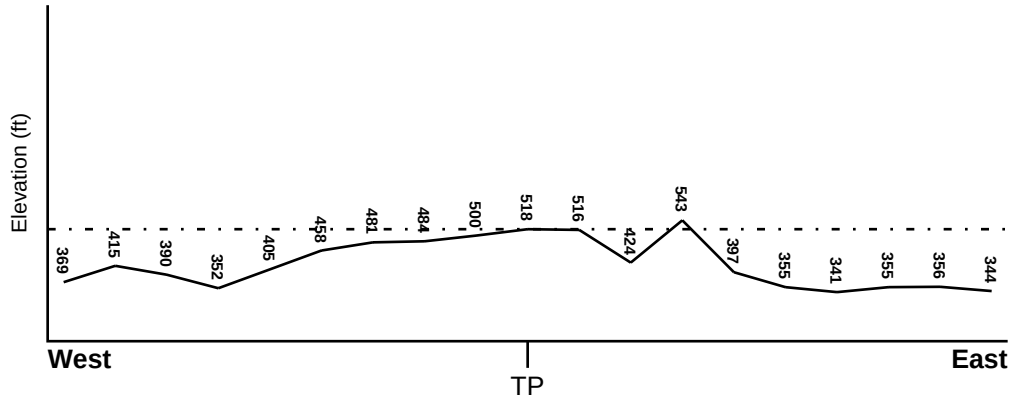
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 518 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
PLACER, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	0602390481D
Additional Panels in search area:	0602420010C 0602390477C 0602430009D

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
ROCKLIN	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

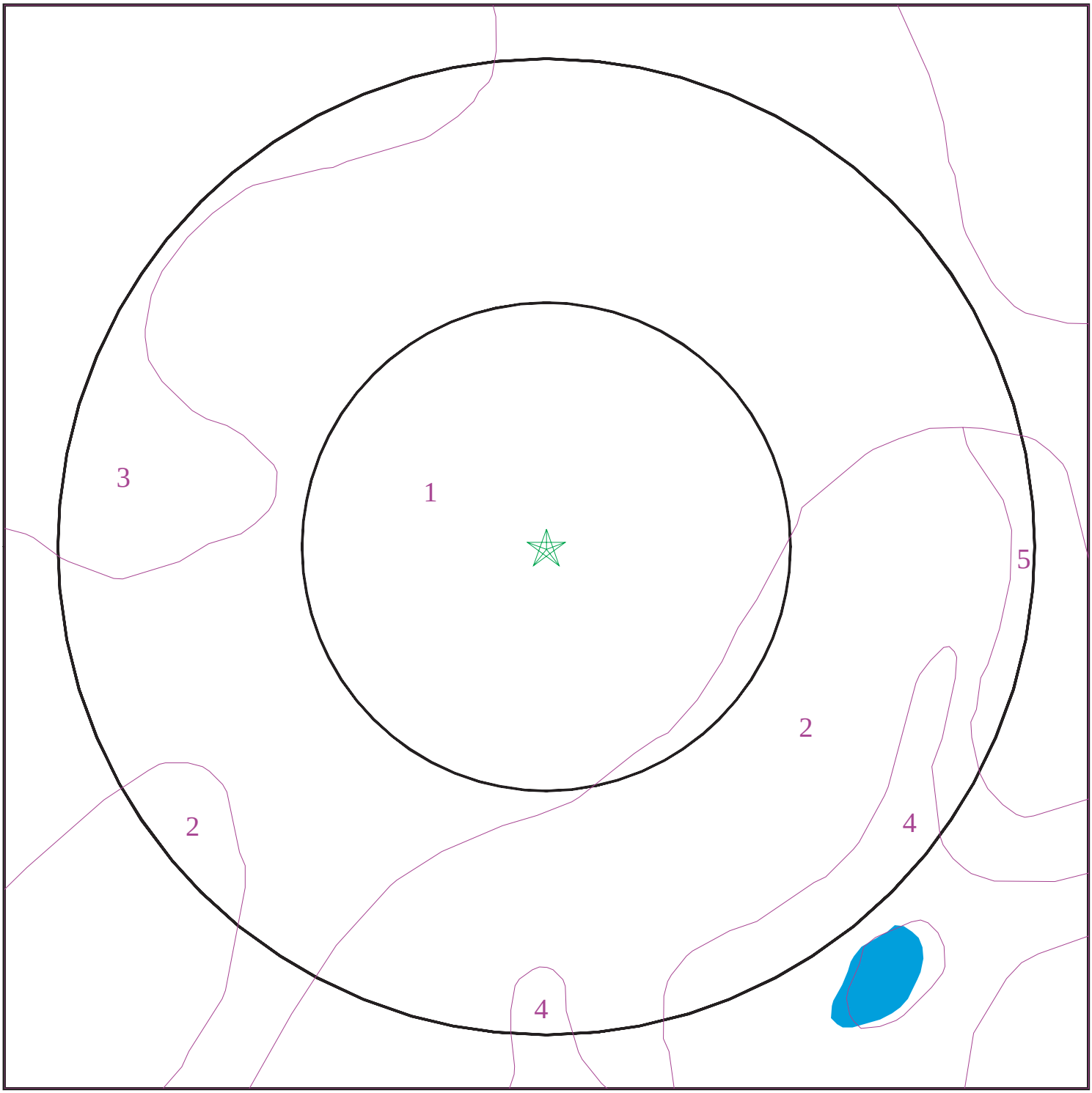
Era:	Mesozoic
System:	Jurassic
Series:	Jurassic
Code:	Jg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Jurassic granitic rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 1911969.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Amazing Facts	CLIENT:	Holdrege & Kull Consultants
ADDRESS:	Sierra College Blvd/Nightwatch Drive Roseville CA 95746	CONTACT:	Janis Johnson
		INQUIRY #:	1911969.2s
LAT/LONG:	38.7728 / 121.2109	DATE:	April 25, 2007 7:56 pm

Copyright © 2007 EDR, Inc. © 2007 Tele Atlas Rel. 07/2006.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: EXCHEQUER

Soil Surface Texture: very stony - loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat excessive. Soils have high hydraulic conductivity and low water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: LOW

Depth to Bedrock Min: > 8 inches

Depth to Bedrock Max: > 20 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	11 inches	very stony - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
2	11 inches	15 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

Soil Map ID: 2

Soil Component Name: INKS

Soil Surface Texture: cobbly - loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 10 inches

Depth to Bedrock Max: > 20 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	5 inches	cobbly - loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
2	5 inches	18 inches	very cobbly - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
3	18 inches	22 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

Soil Map ID: 3

Soil Component Name: INKS

Soil Surface Texture: cobbly - loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 10 inches

Depth to Bedrock Max: > 20 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	5 inches	cobbly - loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
2	5 inches	18 inches	very cobbly - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
3	18 inches	22 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

Soil Map ID: 4

Soil Component Name: ANDREGG

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 20 inches

Depth to Bedrock Max: > 40 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	15 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 7.30 Min: 5.60

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
2	15 inches	29 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 6.50 Min: 5.60
3	29 inches	33 inches	weathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

Soil Map ID: 5

Soil Component Name: INKS

Soil Surface Texture: cobbly - loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 10 inches

Depth to Bedrock Max: > 20 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	5 inches	cobbly - loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
2	5 inches	18 inches	very cobbly - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60
3	18 inches	22 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3224960	1/2 - 1 Mile NW
2	USGS3224797	1/2 - 1 Mile NNE
4	USGS3224795	1/2 - 1 Mile NNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

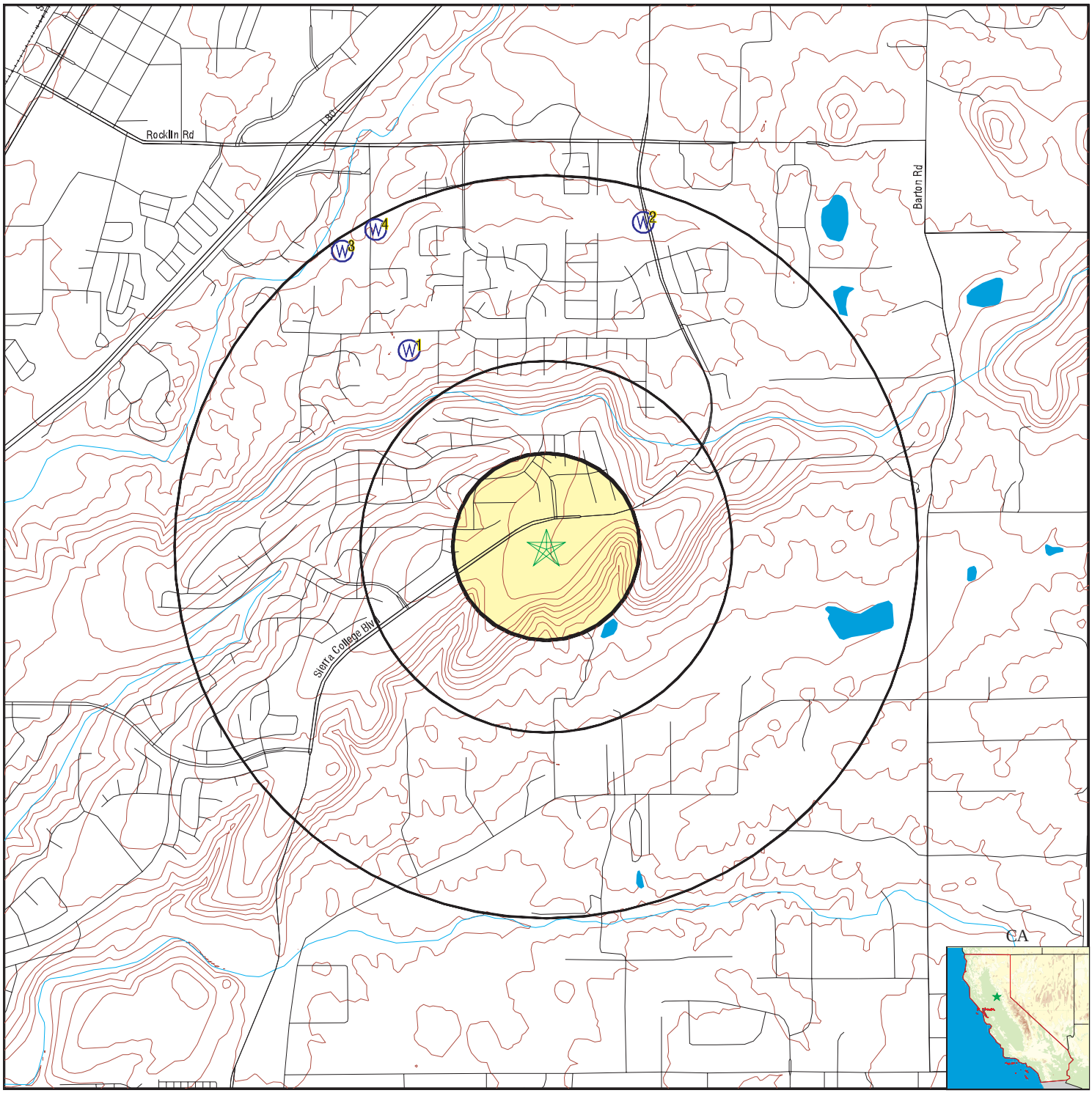
MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
3	10383	1/2 - 1 Mile NW

PHYSICAL SETTING SOURCE MAP - 1911969.2s



0 1/4 1/2 1 Miles

- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

SITE NAME: Amazing Facts	CLIENT: Holdrege & Kull Consultants
ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville CA 95746	CONTACT: Janis Johnson INQUIRY #: 1911969.2s
LAT/LONG: 38.7728 / 121.2109	DATE: April 25, 2007 7:56 pm

Copyright © 2007 EDR, Inc. © 2007 Tele Atlas Rel. 07/2006.

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **NW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3224960**

Agency cd:	USGS	Site no:	384650121130001
Site name:	011N007E29B001M		
Latitude:	384650		
Longitude:	1211300	Dec lat:	38.78045639
Dec lon:	-121.21772661	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	061
Country:	US	Land net:	Not Reported
Location map:	ROCKLIN	Map scale:	24000
Altitude:	310.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower American. California. Area = 299 sq.mi.		
Topographic:	Undulating		
Site type:	Ground-water other than Spring	Date construction:	19800126
Date inventoried:	19820721	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	BASEMENT COMPLEX OF PRETERTIARY AGE		
Well depth:	150	Hole depth:	150
Source of depth data:	driller		
Project number:	0479423712		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1982-09-16
Water quality data end date:	1982-09-16	Water quality data count:	1
Ground water data begin date:	1980-01-26	Ground water data end date:	1982-07-21
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1982-07-21	6.93		1980-01-26	20.00	

2 **NNE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3224797**

Agency cd:	USGS	Site no:	384708121121801
Site name:	011N007E21M001M		
Latitude:	384708		
Longitude:	1211218	Dec lat:	38.78545631
Dec lon:	-121.20605968	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	061
Country:	US	Land net:	Not Reported
Location map:	ROCKLIN	Map scale:	24000
Altitude:	317.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower American. California. Area = 299 sq.mi.		
Topographic:	Undulating		
Site type:	Ground-water other than Spring	Date construction:	19770817
Date inventoried:	19820721	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	BASEMENT COMPLEX OF PRETERTIARY AGE		
Well depth:	247	Hole depth:	247
Source of depth data:	driller		
Project number:	0479423712		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1982-09-16
Water quality data end date:	1982-09-16	Water quality data count:	1
Ground water data begin date:	1982-07-21	Ground water data end date:	1982-07-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1982-07-21	2.91	

Note: The site had been pumped recently.

3
NW
1/2 - 1 Mile
Lower

CA WELLS **10383**

Water System Information:

Prime Station Code:	11N/07E-20P01 M	User ID:	31C
FRDS Number:	3100052001	County:	Placer
District Number:	61	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	384704.0 1211312.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	3100052		
System Name:	CREEKSIDE VILLAGE APTS		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
4 **NNW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3224795**

Agency cd:	USGS	Site no:	384707121130601
Site name:	011N007E20K001M		
Latitude:	384707		
Longitude:	1211306	Dec lat:	38.78517851
Dec lon:	-121.21939338	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	061
Country:	US	Land net:	Not Reported
Location map:	ROCKLIN	Map scale:	24000
Altitude:	280.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Lower American. California. Area = 299 sq.mi.		
Topographic:	Undulating		
Site type:	Ground-water other than Spring	Date construction:	19810206
Date inventoried:	19820721	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	104	Hole depth:	104
Source of depth data:	driller		
Project number:	0479423712		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1982-07-21	Ground water data end date:	1982-07-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1982-07-21	5.53	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
95746	3	0	0.00

Federal EPA Radon Zone for PLACER County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for PLACER COUNTY, CA

Number of sites tested: 68

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.466 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.500 pCi/L	100%	0%	0%
Basement	3.043 pCi/L	71%	29%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2007 Tele Atlas North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

The EDR Aerial Photo Decade Package

Amazing Facts
Sierra College Blvd/Nightwatch Drive
Roseville, CA 95746

Inquiry Number: 1911969.5

April 26, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report AS IS. Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2007 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

Date EDR Searched Historical Sources:

Aerial Photography April 26, 2007

Target Property:

Sierra College Blvd/Nightwatch Drive

Roseville, CA 95746

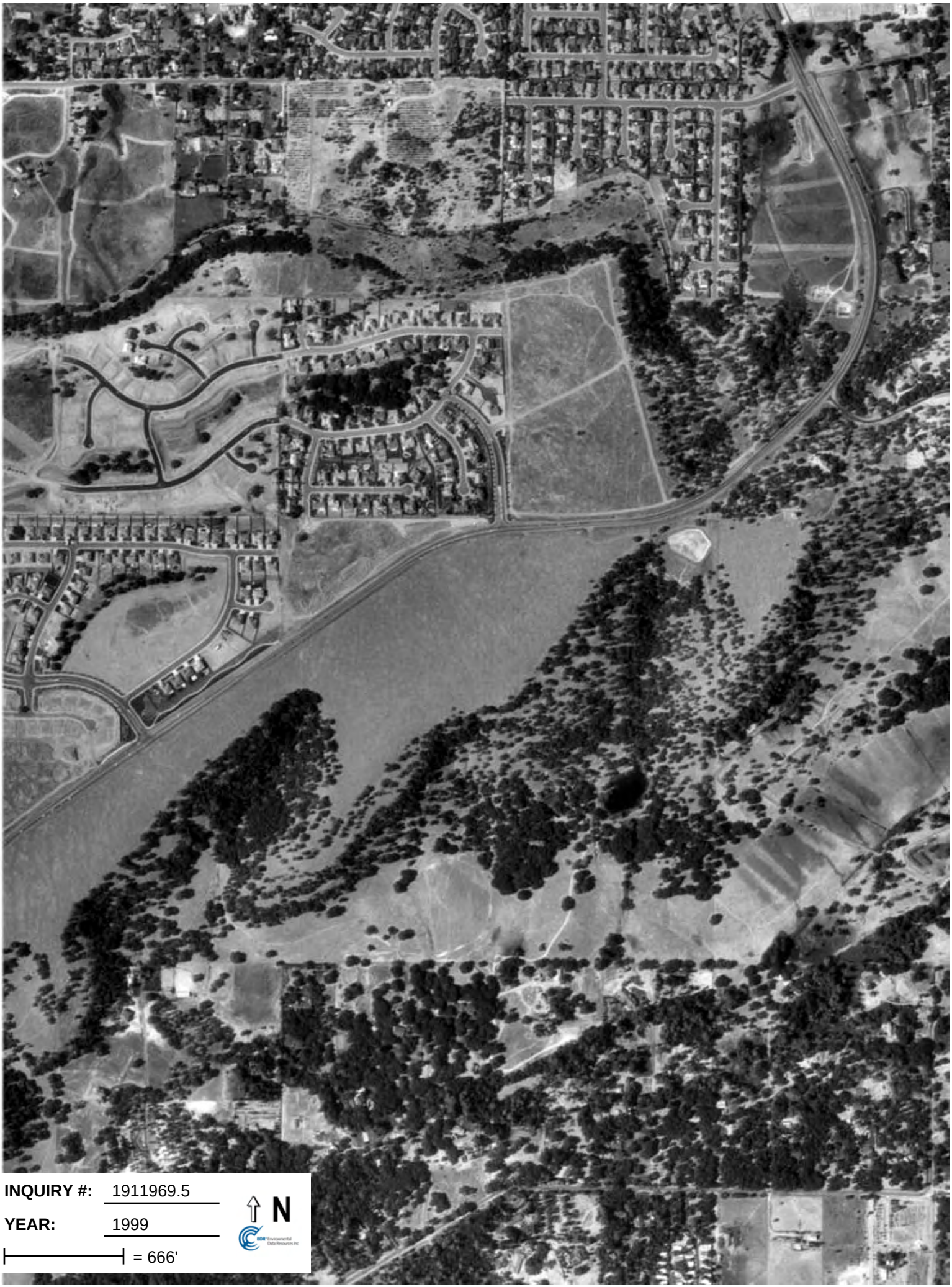
Year	***Scale***	***Details***	***Source***
1952	Aerial Photograph. Scale: 1"=555'	Flight Year: 1952	Southwestern
1961	Aerial Photograph. Scale: 1"=555'	Flight Year: 1961	Cartwright
1984	Aerial Photograph. Scale: 1"=690'	Flight Year: 1984	WSA
1993	Aerial Photograph. Scale: 1"=666'	Flight Year: 1993	USGS
1999	Aerial Photograph. Scale: 1"=666'	Flight Year: 1999	USGS

INQUIRY #: 1911969.5
YEAR: 1952
= 555'
N

INQUIRY #: 1911969.5
YEAR: 1961
= 555'
N

INQUIRY #: 1911969.5
YEAR: 1984
= 690'
N

INQUIRY #: 1911969.5
YEAR: 1993
= 666'
N


INQUIRY #: 1911969.5
YEAR: 1999
= 666'
N

EDR Historical Topographic Map Report

Amazing Facts
Sierra College Blvd/Nightwatch Drive

Roseville, CA 95746

Inquiry Number: 1911969.4

April 26, 2007

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Rd
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

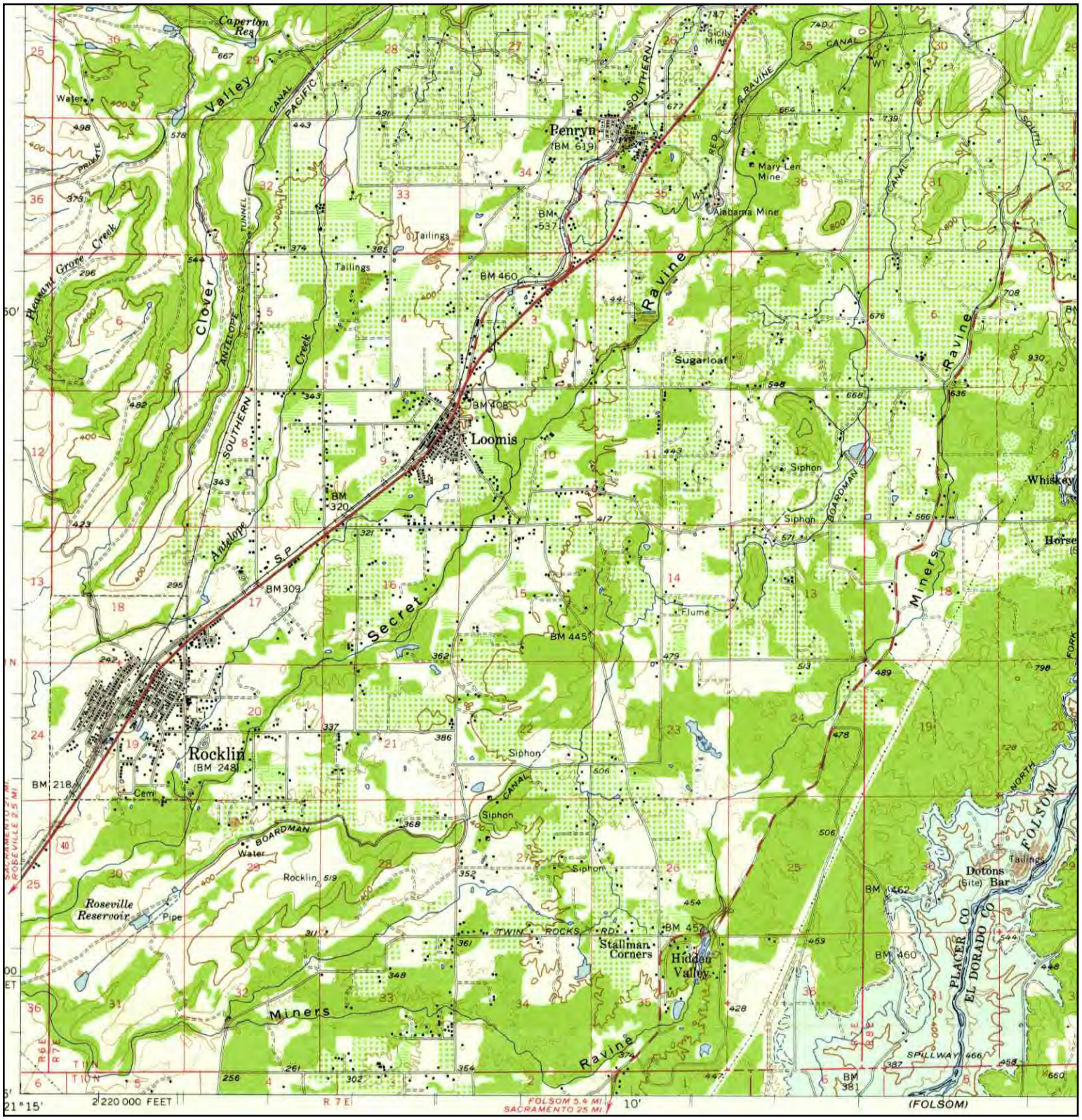
Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report AS IS. Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2007 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

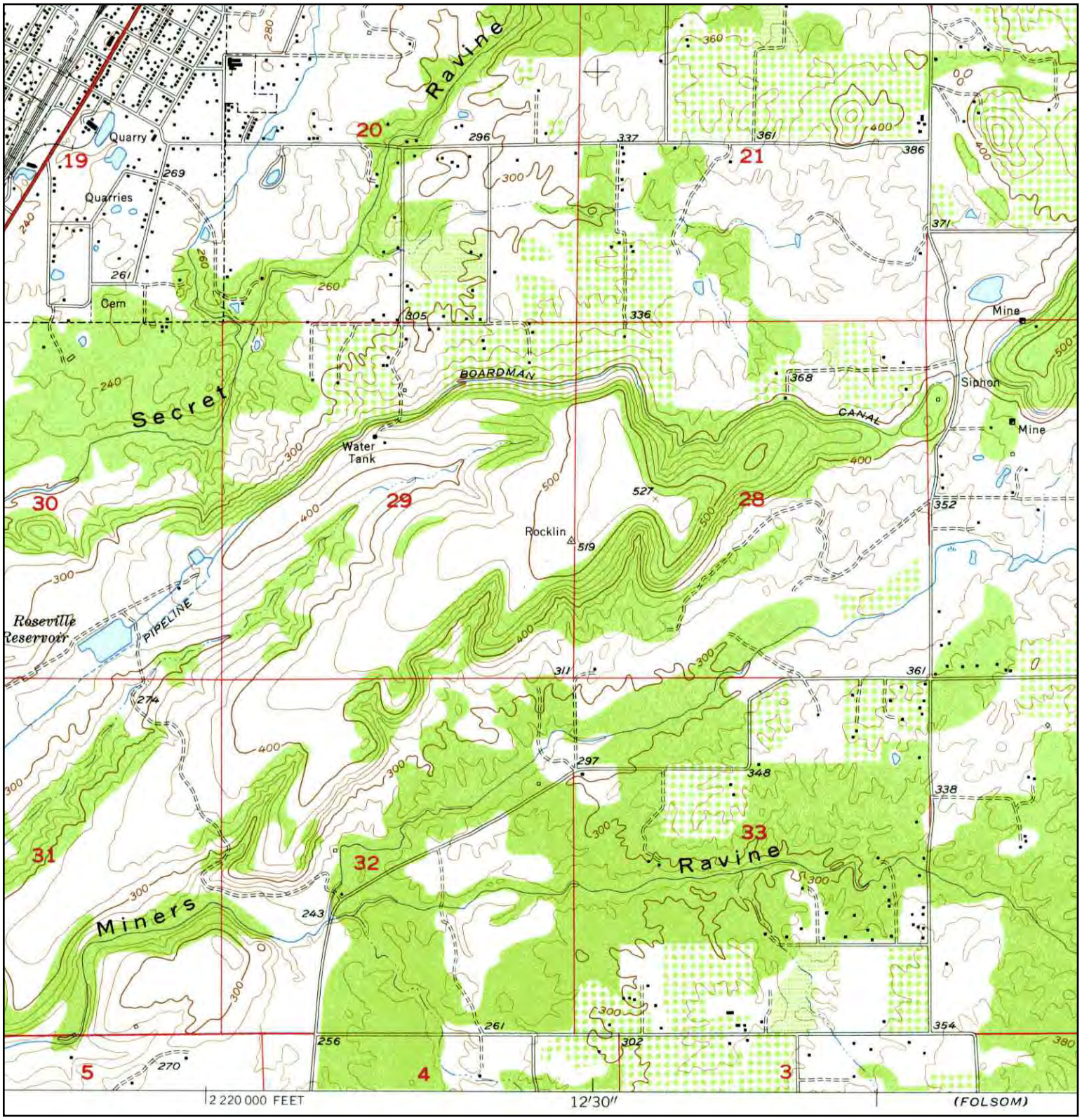
EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

Historical Topographic Map



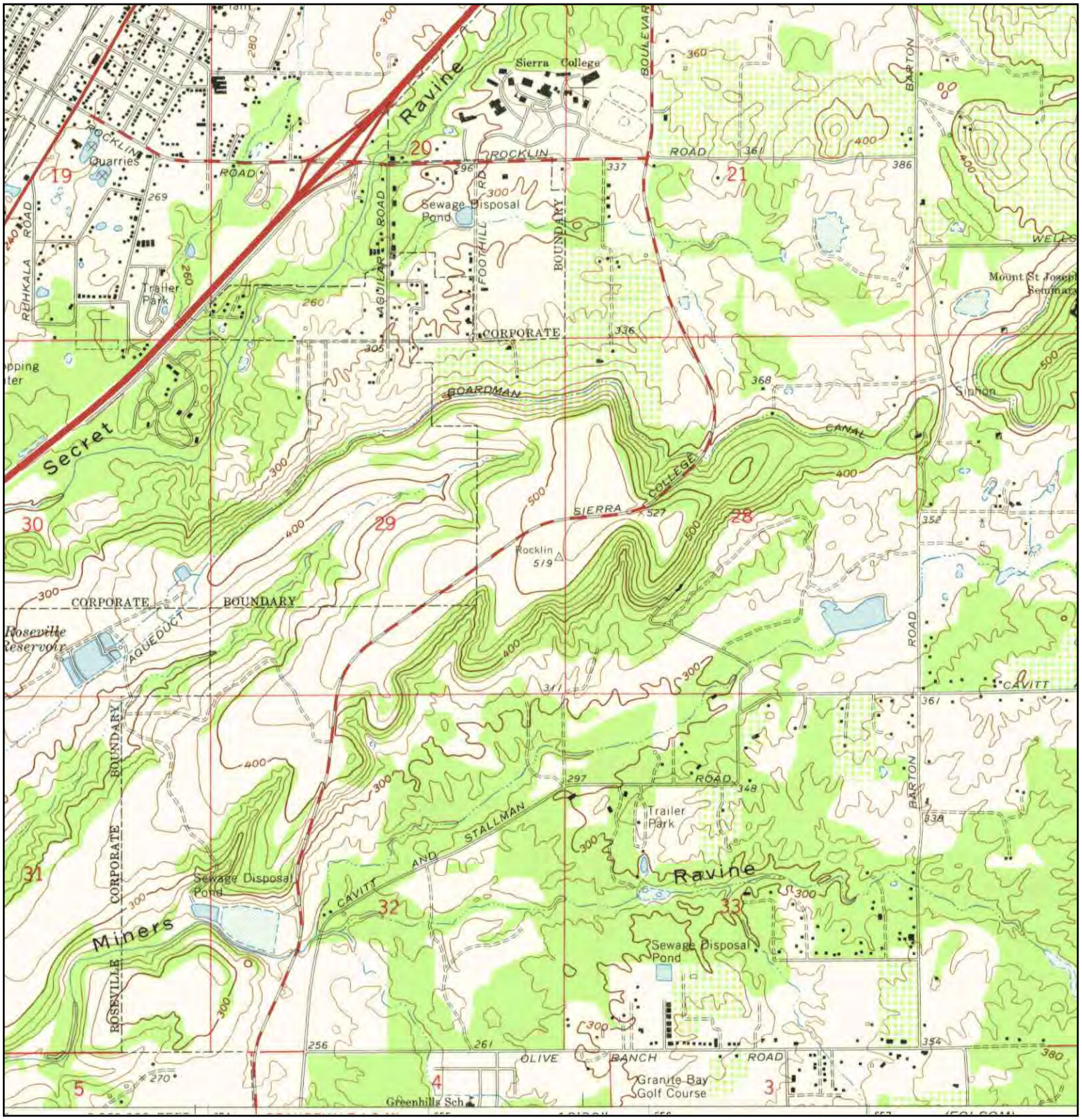
N	TARGET QUAD NAME: AUBURN MAP YEAR: 1954 SERIES: 15 SCALE: 1:62500	SITE NAME: Amazing Facts ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville, CA 95746 LAT/LONG: 38.7728 / 121.2109	CLIENT: Holdrege & Kull Consultants CONTACT: Janis Johnson INQUIRY#: 1911969.4 RESEARCH DATE: 04/26/2007

Historical Topographic Map



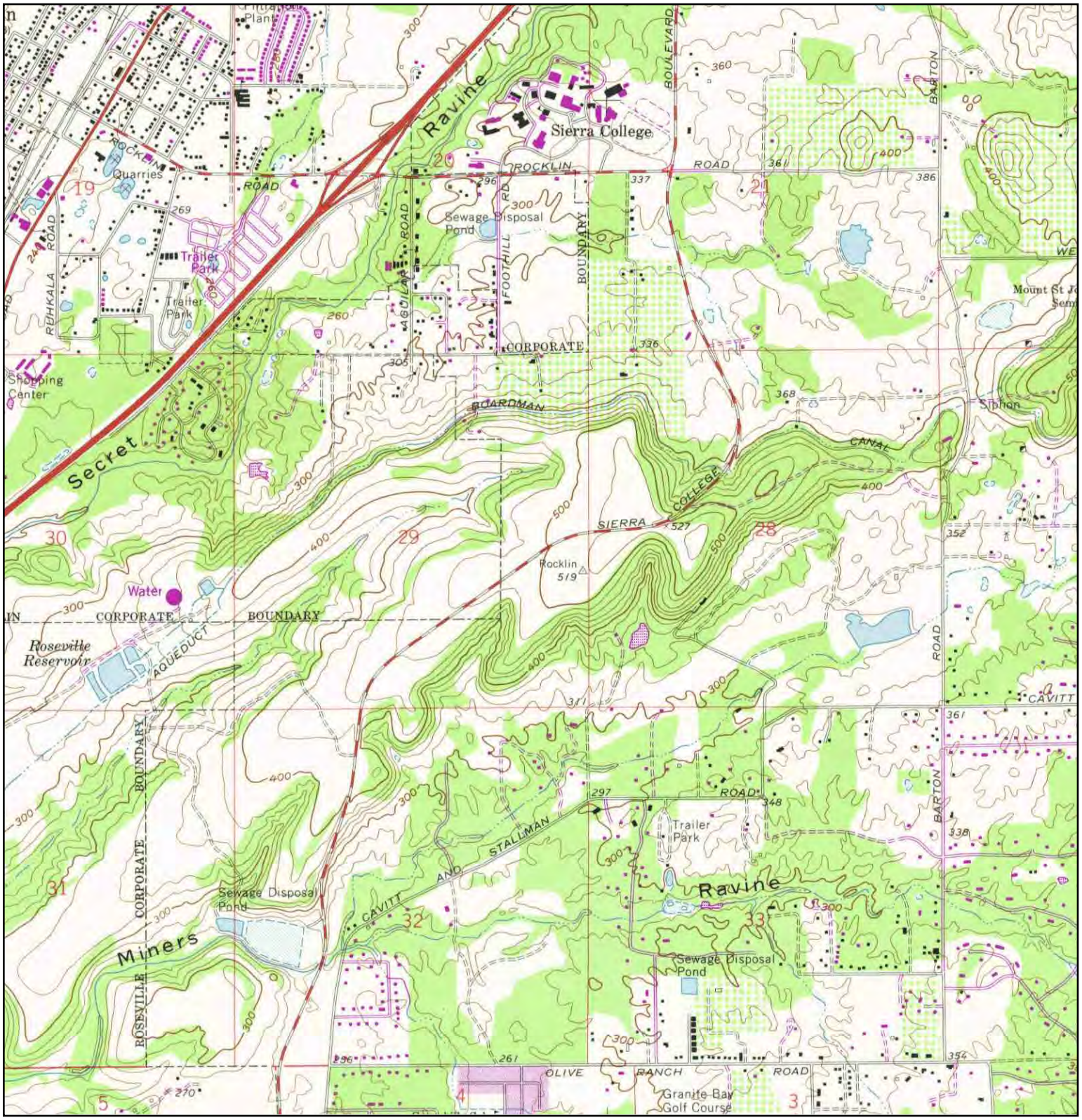
N	TARGET QUAD NAME: ROCKLIN MAP YEAR: 1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Amazing Facts ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville, CA 95746 LAT/LONG: 38.7728 / 121.2109	CLIENT: Holdrege & Kull Consultants CONTACT: Janis Johnson INQUIRY#: 1911969.4 RESEARCH DATE: 04/26/2007

Historical Topographic Map



N	TARGET QUAD NAME: ROCKLIN MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Amazing Facts ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville, CA 95746 LAT/LONG: 38.7728 / 121.2109	CLIENT: Holdrege & Kull Consultants CONTACT: Janis Johnson INQUIRY#: 1911969.4 RESEARCH DATE: 04/26/2007

Historical Topographic Map



N	TARGET QUAD NAME: ROCKLIN MAP YEAR: 1981 PHOTOREVISED FROM:1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Amazing Facts ADDRESS: Sierra College Blvd/Nightwatch Drive Roseville, CA 95746 LAT/LONG: 38.7728 / 121.2109	CLIENT: Holdrege & Kull Consultants CONTACT: Janis Johnson INQUIRY#: 1911969.4 RESEARCH DATE: 04/26/2007