

Figure Withheld Under 10 CFR 2.390

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FIGURE 2.6-1 LOCATION AND BOUNDARIES OF GEOLOGIC STUDY AREAS

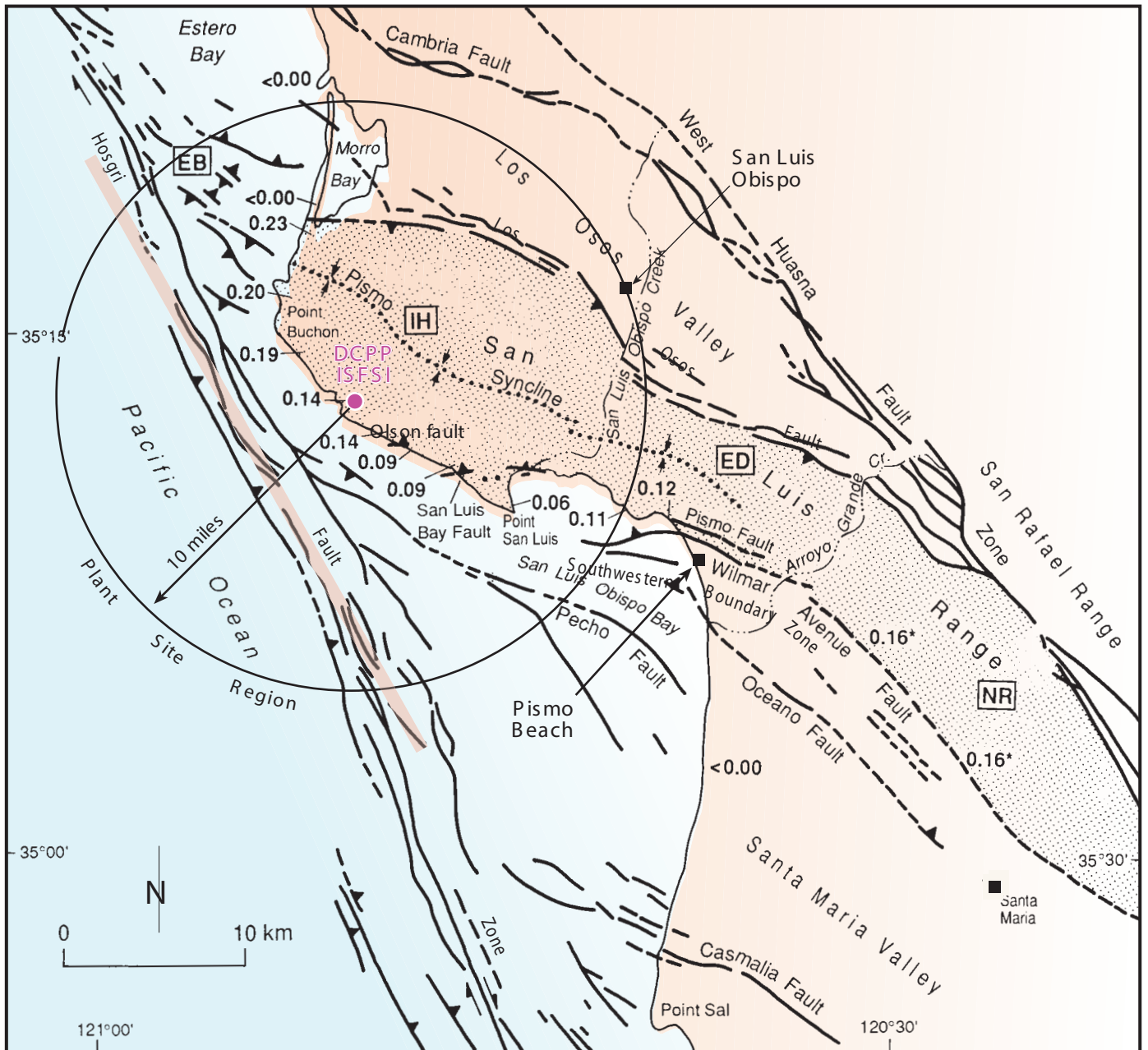


Northeast view of Diablo Canyon Power Plant and the ISFSI and CTF sites. The ISFSI is at the base of the slope to the right of the raw water reservoir. The CTF is directly southwest of the reservoirs. The extent of the 1971 borrow area excavation is indicated by the rocky area on the slope above the reservoir. The power plant and adjacent facilities are constructed on a marine terrace that is covered by Quaternary fan deposits. Photo roll WDP-1.

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FIGURE 2.6-2
DIABLO CANYON POWER PLANT
AND THE ISFSI AND CTF SITES

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FIGURE 2.6-3 SOUTHWARD VIEW OF THE ISFSI AND CTF SITES AND TRANSPORT ROUTE



(from PG&E, 1988)



EB



IH

0.14

ED

0.16*

NR

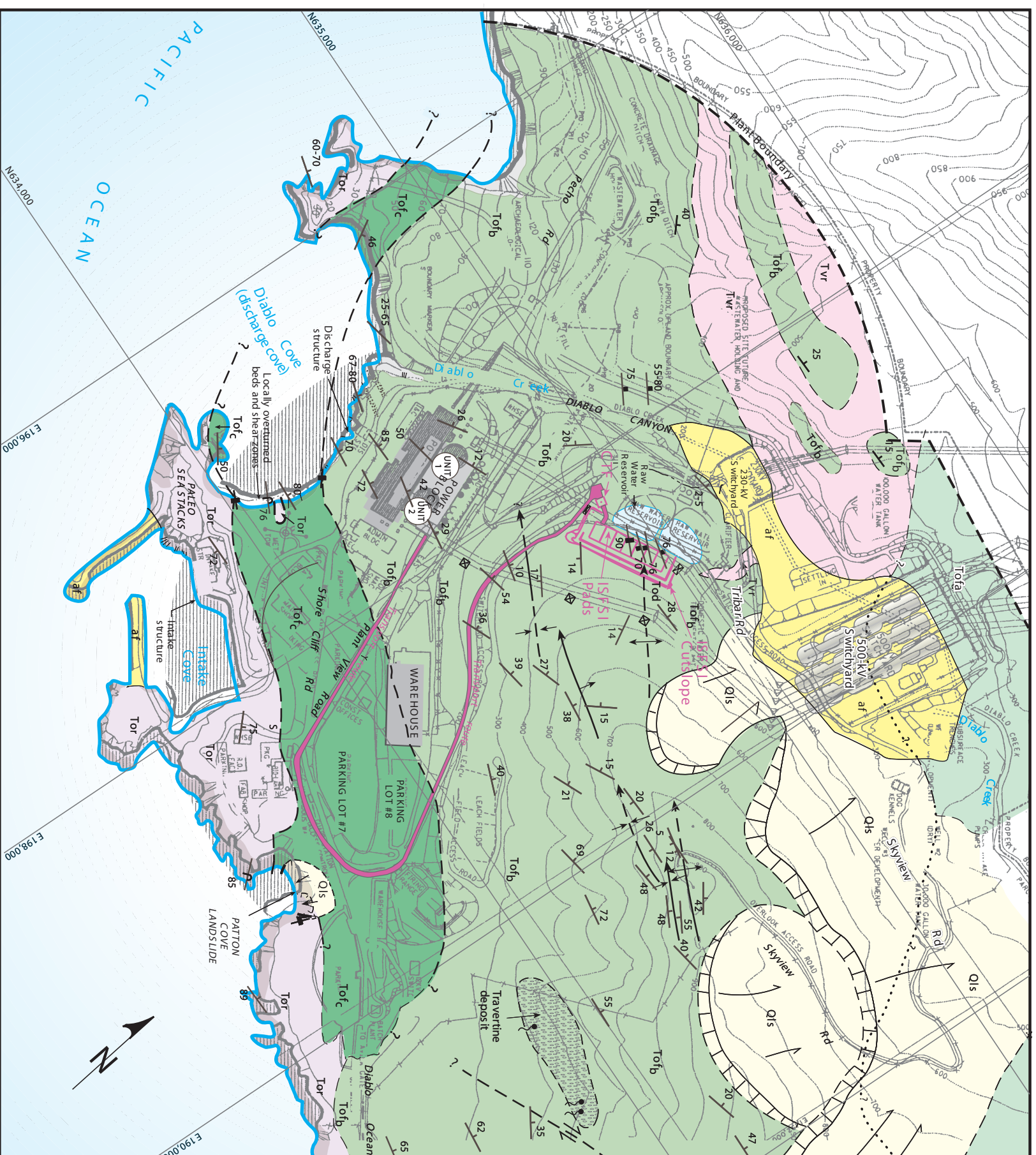
Average fault trend (338) used for ground motion analyses

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FIGURE 2.6-4
REGIONAL STRUCTURE MAP



Photo of Obispo Formation dolomite and sandstone strata exposed on the hillslope above the transport route on Reservoir Road. The ISFSI site is to the right of the raw water reservoir. Bedding dips into the hillslope on the west limb of the regional Pismo syncline and extends beneath the power block (off photo to lower left). A small parasitic syncline is manifest as the U-shaped strata directly below the ridge crest in the middle of the photo. Several debris-flow chutes (↓) form the gullies on the slope above Reservoir Road. Photo roll JLB-2.

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FIGURE 2.6-5 OBISPO FORMATION DOLOMITE AND SANDSTONE ON HILLSLOPE ABOVE RESERVOIR ROAD



Data sources

Base Maps:
 PG&E Civil Site Facilities Layout Plan (modified 1994)
 Topography from PG&E, 1986 (and later revisions), Plot plan drawing 471124

Geology modified from:
 C.A. Hall, Jr., W.G. Ernest, S. W. Prior, and J.W. Siese, 1979, Geologic map of the San Luis Obispo-San Sinton region, U.S. Geological Survey Miscellaneous Investigation 1-1097.
 C.A. Hall Jr., 1973, Geologic map of the Morro Bay South and Port San Luis Quadrangles, San Luis Obispo County, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-511, scale 1:24,000.

Explanation

- af Artificial fill (engineered), only major fills shown
 - Q1s Quaternary landslide deposits
 - TVr Volcanic rock (middle Miocene), diabase intrusive sills and dikes
- Obispo Formation*
 (lower and middle Miocene) - bedded dolomitic sandstone, siltstone, and claystone with tuffaceous beds, locally calcareous, some chert and volcanic rock lenses
- Member Tof - Sandstone and dolomite
 - Tof_a Unit a - diatomaceous siltstone and tuffaceous sandstone; yellow-brown to tan; thick to massive bedding
 - Tof_b Unit b - dolomitic dolomitic siltstone, dolomitic sandstone and sandstone, medium to very thick bedding
 - Tof_c Unit c - shale, claystone and siltstone, thin to medium bedding extensively sheared
 - Tor Member Tor - Volcanic rock, zeolitized and silicified tuff

- Bedrock fault or shear zone, dashed where approximate, queried where uncertain, arrows show sense of displacement
- Geologic contact, solid line where well-defined, dashed where approximate, queried and/or dotted where uncertain
- Cut or fill slope
- Large landslides. Arrows indicate direction of movement, hachures define head scarp. (Smaller landslides are not shown)
- 500-kV tower
- Generalized strike and dip of bedding
- Parasitic folds on south limb of Pismo syncline
- Axis of anticline, plunge indicated by larger arrow, dashed where approximately located
- Axis of syncline, plunge indicated by larger arrow, dashed where approximately located
- Axis of monocline, plunge indicated by larger arrow, dashed where approximately located
- Steep sea cliff
- Strike and dip of fault
- Spring

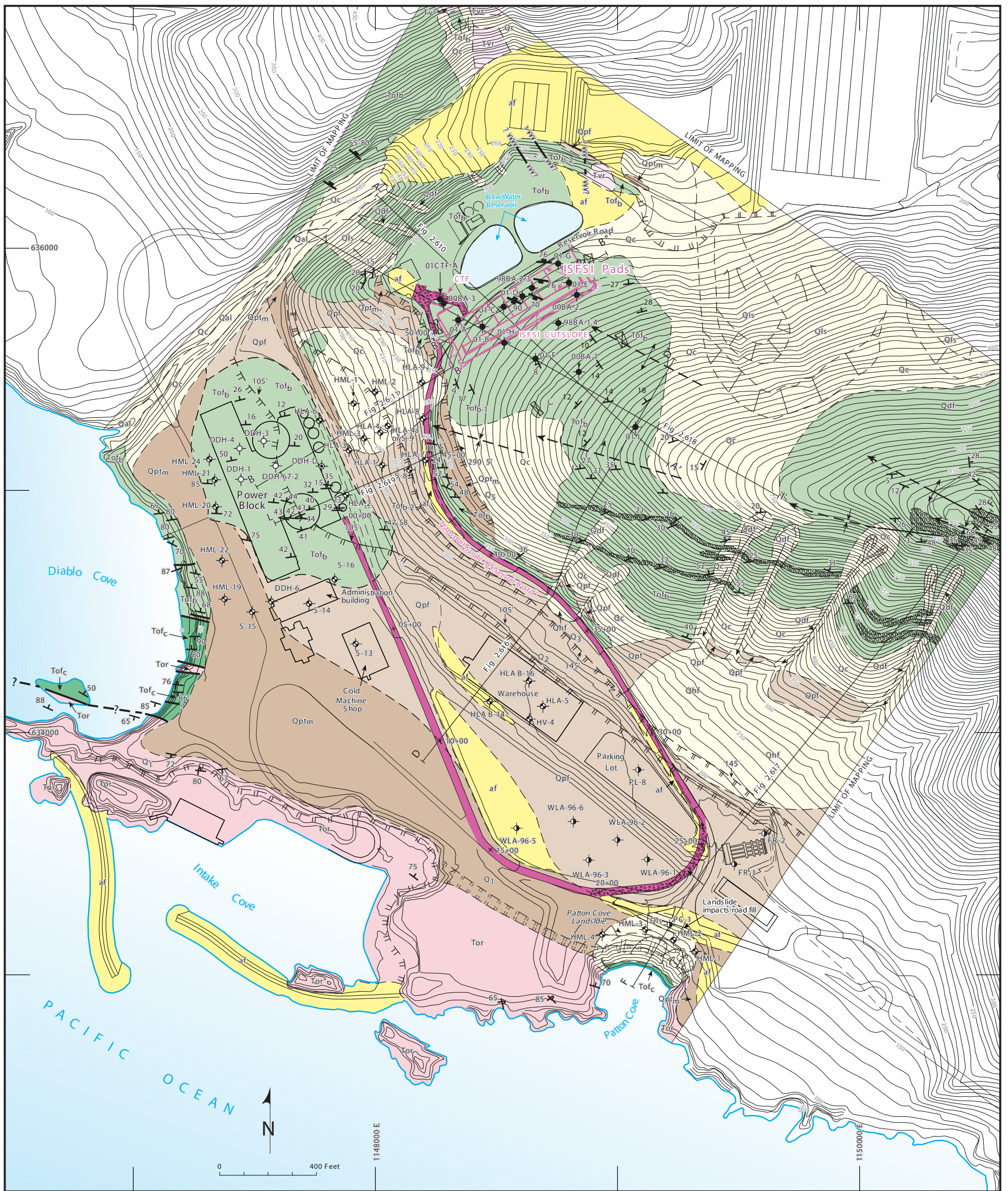
Note: Except for small faults at and near the ISFS1 site, only major geologic structures and bedrock units, and large landslides, are shown.

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FIGURE 2.6-6

GEOLOGIC MAP OF BEDROCK AND LANDSLIDES IN THE PLANT SITE AREA

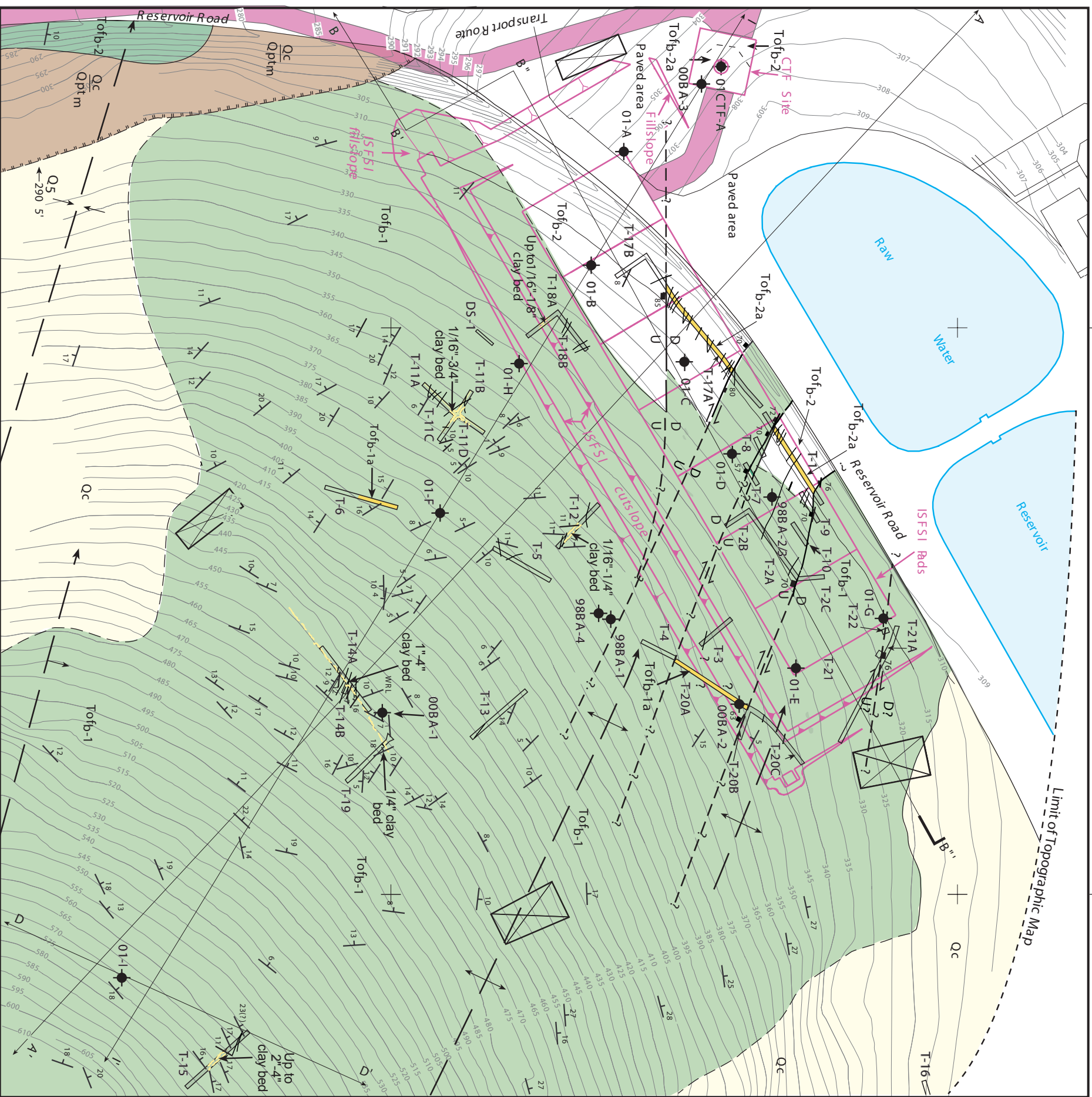


Explanation

Quaternary	af	Artificial fill (engineered)	— — — ?	Geologic contact, solid line where well-defined, dashed where approximate, queried where uncertain.	↖	Axis of monocline, larger arrow shows plunge, dashed where approximate	⊙	Boring from 1967 power block study
	Qal Qdf Qc Qls Qhf	Quaternary deposits - alluvium, debris flow, colluvium, landslide, Holocene colluvial fan NOTE: Only surficial deposits greater than about 5 feet thick shown	— — — ?	Fault, dashed where approximate, queried where uncertain	⊕	Buried shoreline, angle of marine terrace wave cut platform; number and elevation indicated	⊙	1977 boring DDH-D at power block
Tertiary	Qpf	Pleistocene colluvial fan	↗ ↘	Landslides, arrows indicate direction of movement, hachures define heads carp region	⊕	Footprint of 500-kV tower	⊙	Boring from previous HLA and HML studies
	Qptm	Pleistocene marine terrace deposit (inferred)	↖ ↗	Debris flow path	85	Strike and dip of fault	⊙	Boring for ISFSI investigations, WLA 1998 to 2001
	Tvr	Volcanic rock (middle Miocene), diabase intrusive sills and dikes	↖ ↗	Axis of syncline, larger arrow shows plunge, dashed where approximate	10	Strike and dip of bedding	⊙	Boring for ISFSI siting investigations, WLA 1996 to 1998
	Tofb	Member Tof, Unit b - dolomite, dolomitic siltstone, dolomitic sandstone, and sandstone, medium to thick bedded. <small>Prominent outcrops</small>	↖ ↗	Axis of anticline, larger arrow shows plunge, dashed where approximate	85	Overtuned bedding	⊕	Transport route; stippled where transport route will be underlain by new engineered fill
	Tofc	Member Tof, Unit c - shale, claystone and siltstone, thin to medium bedding, extensively sheared.	↖ ↗		⊕	Horizontal bedding	⊕	Geologic cross section
	Tor	Member Tor - volcanic rock, zeolitized and silicified tuff						

NOTE: The base topography for this map is a compilation of four different topographic maps: (1) the 1:2,400-scale Towill Corporation map based on 1966 aerial photography; (2) the 1986, 1:2,400-scale PG&E Plot Plan map; (3) 1970s era, 1:240-scale PG&E topographic/civil maps ("20-scale civil drawings"); and (4) the 2000-2001, 1:600 scale ISFSI Site map. These maps were merged and edited to eliminate map border conflicts and registered to the California State Coordinate System. Some of the maps listed above were received from PG&E Geoscience Department under letter of transmittal dated October 26, 2001 (PG&E Geosciences, 2001b).

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FIGURE 2.6-7
GEOLOGIC MAP OF THE ISFSI STUDY AREA AND TRANSPORT ROUTE VICINITY



E 1,148,500

E 1,149,000

Qc

Colluvium

Qptm

Marine terrace deposit (overlain by Qc)

Obispo Formation (lower and middle Miocene)

DOLomite UNIT

Tofb-1

Dolomite, clayey dolomite, dolomitic siltstone to fine-grained dolomitic sandstone, and limestone. The unit contains occasional discontinuous to continuous (tens to hundreds of feet) clay beds that are generally 1/32- to 1/2-inch thick, but locally are thicker. Rocks in this unit are moderately to well cemented, moderately hard to hard, moderately to slightly weathered, brittle and typically medium strong.

Tofb-1a

Friable dolomite and dolomitic siltstone of unit Tofb-1. These rocks typically have low hardness, are very weak to weak, and occur as discontinuous zones where weathering and/or alteration has been concentrated. Inferred lateral extent of friable zones is schematic.

SANDSTONE UNIT

Tofb-2

Fine to coarse-grained dolomitic sandstone and sandstone (arkosic to arenitic) with lesser dolomite beds. Detrital clasts are composed primarily of dolomitized feldspars, marine fossil fragments and volcanic rock fragments. Discontinuous clay beds that are generally less than 1/2-inch thick occur locally within the unit. The rocks are of low to medium hardness, moderately to well cemented and typically medium strong.

Tofb-2a

Friable sandstone of unit Tofb-2. These rocks typically are of low hardness are very weak to weak, and occur as discontinuous zones where weathering and/or alteration has been concentrated. Inferred lateral extent of friable zones is schematic.

6 S strike and dip of bedding



80 Minor fault dip indicated, dashed where inferred, queried where uncertain, arrows show relative sense of displacement, U-upthrown, D-downthrown



T-4 Exploratory trench, number indicated



DS-1 Discontinuity survey line in bulldozer cut



1/16" Clay bed, thickness indicated



Cutslope above and fill prism west of ISFSI pads



Geologic contact, solid line where well-defined, dashed where approximate



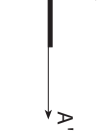
Boring for ISFSI, number indicated (initial number is year drilled, e.g. 01 was drilled in 2001)



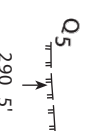
Axis of anticline, larger arrow shows plunge, dashed where approximate



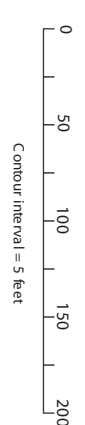
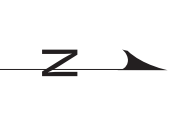
Geologic cross section, arrows indicate end of line is off the map area



Axis of monocline, larger arrow shows plunge, dashed where approximate



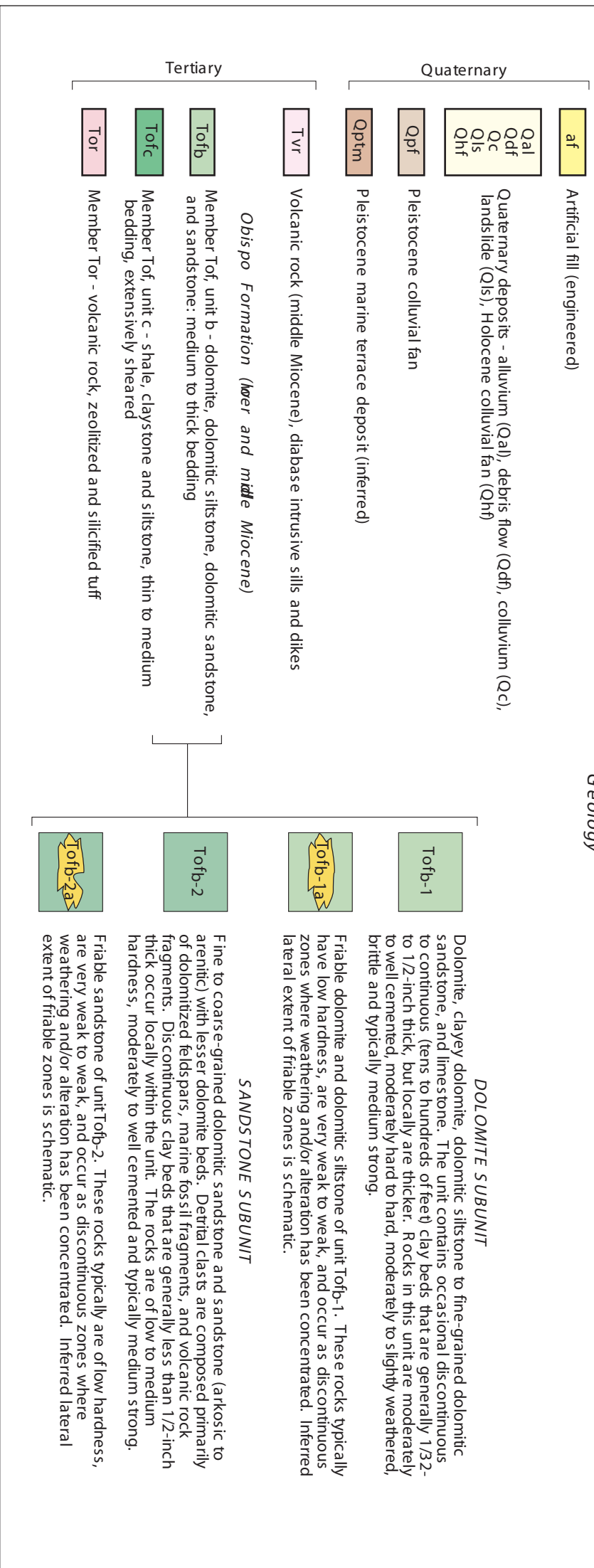
Notes:
 ISFSI geometry is based on PG&E Enercon Drwg. Base map from No. PGE-009-sk-001 dated 9/27/01.
 Geology not shown in paved area and reservoir area.



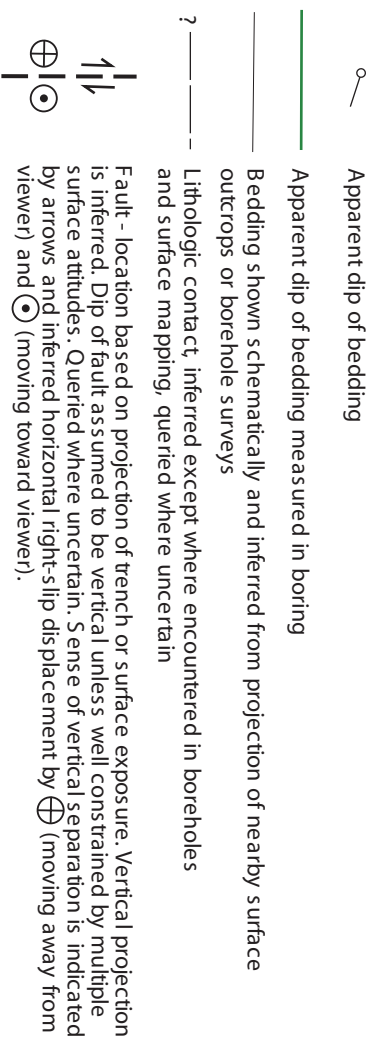
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FIGURE 2.6-8
GEOLOGIC MAP OF ISFSI AND CTF SITES

Explanation

Geology



Symbols



Clay, silty and sandy, tan to brown, some angular fragments within clay matrix, locally contains foraminifera, generally thin (1/16 to 1/2 inch). Clay beds more common and more laterally continuous in dolomite unit than in the sandstone unit

Clay bed - weight of solid line indicates bed thickness where encountered in borings or trenches, dashed line where inferred (no thickness indicated); queried where uncertain, clay beds projected beyond borings or trenches based on thickness (>1/4-inch thick beds projected 100 feet as solid line and 100 feet as dashed line, 1/8-inch to 1/4-inch thick beds projected 50 feet solid and 50 feet dashed, <1/8-inch thick beds projected 25 feet solid and 25 feet dashed) unless constrained to be shorter on adjoining boreholes and trenches.

01-H Exploration boring, number (01-H, initial number indicates year drilled) and depth (TD 30.5 feet) indicated

T-18 Exploration trench, number indicated; trenches are shown open if they cross section line, filled if projected into section line

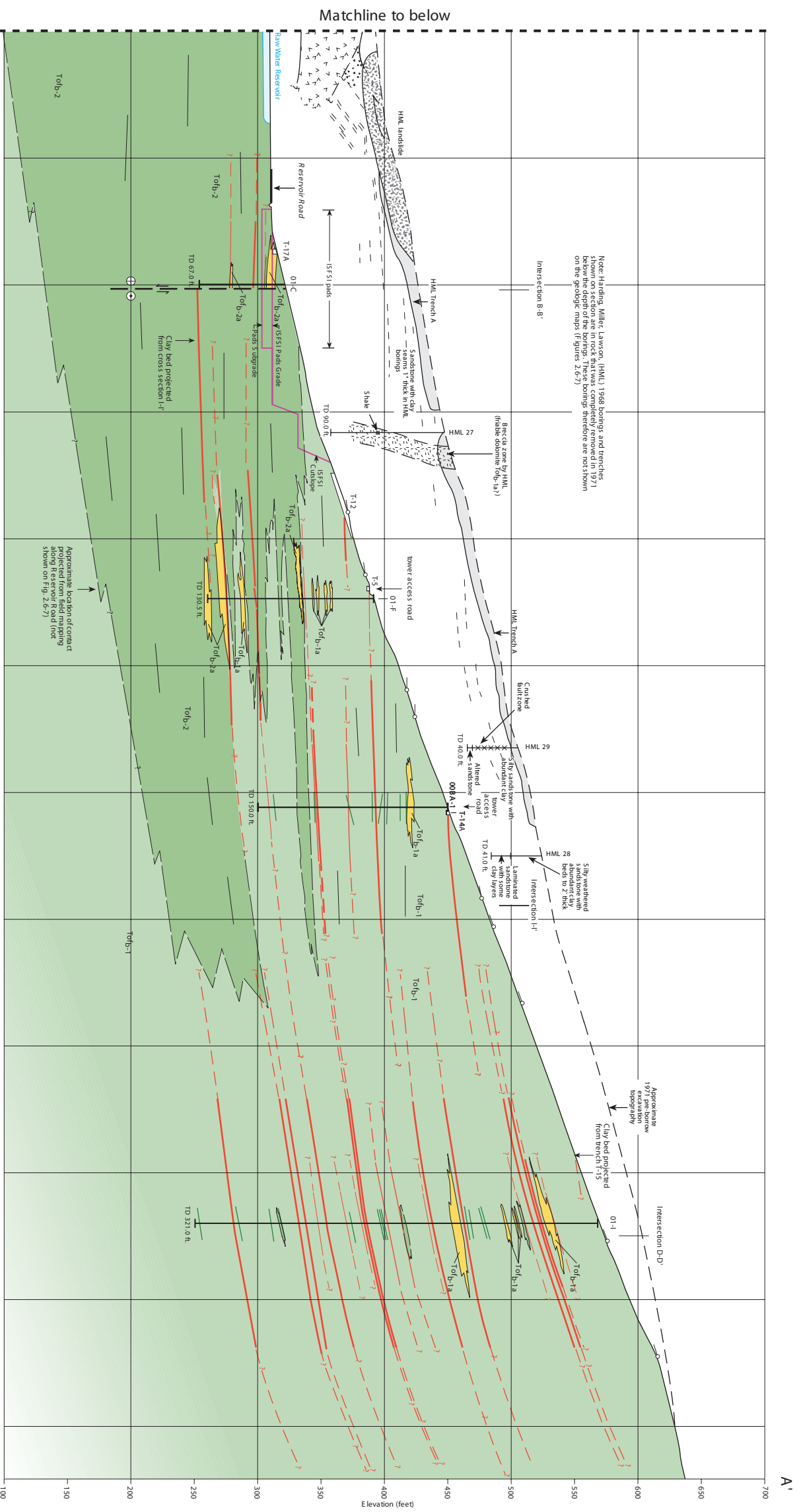
Groundwater elevation and date of measurement indicated

Pleistocene Marine Terraces Designation *

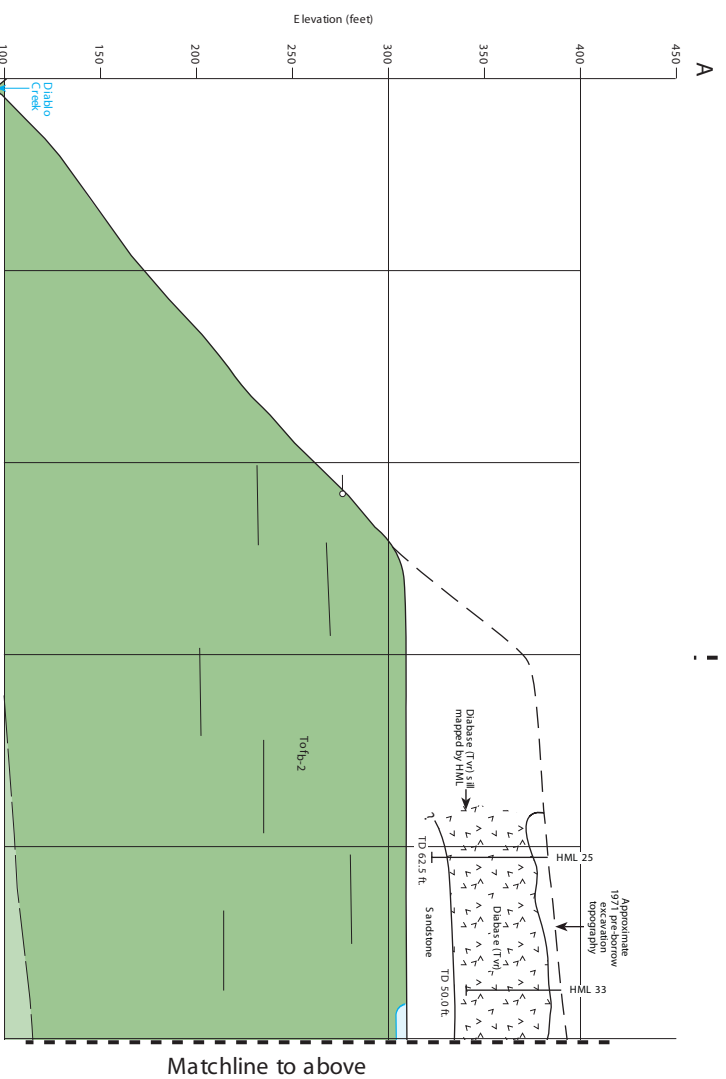
- Q 1 Oxygen Isotope Stage 5a marine terrace (80,000 years old)
- Q 2 Oxygen Isotope Stage 5e marine terrace (120,000 years old)
- Q 3 Oxygen Isotope Stage 7 marine terrace (210,000 years old)
- Q 4 Oxygen Isotope Stage 9 marine terrace (330,000 years old)
- Q 5 Oxygen Isotope Stage 11 marine terrace (430,000 years old)

* Ages and correlation of marine terraces based on K.L., Hansen, J.R., Westling, W.R., Lettis, K.I., Kelson and L. Mezger, 1994, Correlation, ages, and uplift rates of Quaternary marine terraces, in Alterman, I.B., McMullen, R.B., Cluff, L.S., and Slemmons, D.B., eds., *Seismotectonics of the Central California Coast Ranges: Boulder, Colorado, Geological Society of America Special Paper 292.*

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FIGURE 2.6-9
EXPLANATION FOR CROSS SECTIONS



- Notes
1. Location of cross section shown on Figures 2.6-7 and 2.6-8. Nearby borings are projected to cross section.
 2. See Figure 2.6-9 for explanation of geologic units.
 3. Horizontal scale = vertical scale.



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FIGURE 2.6-10
CROSS SECTION A-A'



Southward view of the ISFSI site, above the raw water reservoir. The 1971 borrow area cutslope is indicated by areas of bedrock exposure and brown grass. Trenches excavated for the ISFSI investigations are shown (trenches backfilled in April 2001). Trench T-16 is located to the left of the photo. Photo roll AR 3-25.

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FIGURE 2.6-12
SOUTHWARD VIEW OF ISFSI STUDY AREA