PDGHAD

REGULAR MEETING AGENDA
PAJARO DUNES GEOLOGIC HAZARD ABATEMENT DISTRICT
VIRTUAL MEETING via ZOOM

Governor Newsom through CA Executive Order N-33-20 (issued on March 19th, 2020) issued a shelter-in-place order for the State of California. The order was further strengthened by the County of Santa Cruz Health Officer Order issued on March 31st, 2020 which discourages residents from traveling (even between their own properties) for non-essential reasons. CA Executive Order N-25-20 allows for modifications to the Brown Act ensuring that public meetings can continue under this order through telephone or video conferencing.

Saturday, August 8th, 2020 9:00 a.m.

Zoom Meeting ID: 886 7764 1868
Zoom Meeting PW: 206798

See below the agenda for how to download Zoom for a computer or smartphone (both audio and video available) or to participate via dial-in telephone (audio only). Also, please review the etiquette guidelines and reminders. If you have any questions please contact the District Clerk at pdghad@gmail.com

A. OPEN SESSION CALL TO ORDER – PLEDGE OF ALLEGIANCE

Roll Call

John Cullen, President
David Ferrari, Vice-President
Jim Griffin, Secretary
Raphael Kraw, Treasurer
Jack Feinstein, Director
Sarah Mansergh, Clerk

B. MEMBER COMMENTS

Matters under the jurisdiction of the Board and not on the posted agenda, may be addressed by members of the public before the Board for consideration. However, California law prohibits the Board from taking action on any matter which is not on the posted agenda unless it is determined to be an emergency by the Board of PDGHAD. Any person wishing to address the Board during the Member Comment period shall be permitted to be heard for up to 3 minutes, A) individuals may speak only once and B) the Board is unable to address any owner comments in depth, but may choose to direct the Clerk to follow-up on the matter for a future meeting.

C. PRESIDENT'S REMARKS

The President will use this opportunity to inform the public of issues affecting the District and other items of a general nature not otherwise provided for on this agenda.

1. **2020 Regular Meeting Dates**
   November 14th
   December 12th

D. CONSENT CALENDAR

All matters listed on the Consent Calendar are considered to be routine by the Board of Directors and will be enacted by one motion at the appropriate time. There will be no separate discussion on these items. If discussion is desired, that item will be removed from the Consent Calendar and will be considered separately.

1. Approval of meeting minutes of May 16th, 2020 and July 28th, 2020.

E. TREASURER'S REPORT

2. Financial Reports
   - Financial Report through June 30th, 2020
   - Warrant listing

F. MEETING reports

3. Meetings attended by Directors at District expense since the last meeting of the Board (per AB1234 requirements). Such reports may be made orally or in writing.

G. NEW BUSINESS

4. ITEM-Update on County application for grading permit
   a. Board report
   b. Public comment
   c. Board discussion
   d. Board action /direction

5. ITEM-Review Conflict of Interest Code for the PDGHAD Board
   a. Board report
   b. Public comment
   c. Board discussion
   d. Board action /direction

6. ITEM-Consider continuing Line of Credit with Santa Cruz County Bank
   a. Board report
   b. Public comment

c. Board discussion
d. Board action /direction

7. ITEM – Consider engaging Hutchinson and Bloodgood to perform the annual audit for the fiscal year ending June 30th, 2020
   a. Board report
   b. Public comment
   c. Board discussion
   d. Board action /direction

8. ITEM – Consider contract update for District Clerk
   a. Board report
   b. Public comment
   c. Board discussion
   d. Board action /direction

H. DIRECTORS COMMENTS AND CONCERNS

Members of the Board of Directors may address items of concern at this time, and may request that items be placed on future agendas in accordance with the By-laws of the Board.

I. ADJOURNMENT

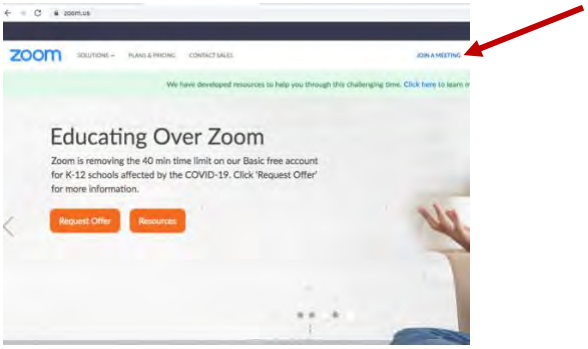
The next Meeting of the Board of Directors is scheduled for November 14th, 2020, at 9:00 a.m. online via Zoom and if possible at the offices of the Pajaro Dunes Geologic Hazard Abatement District, Board Room, Pajaro Dunes, 2661 Beach Road, Watsonville, CA 95076. Individuals who require special accommodations are requested to contact the District Clerk by calling (831) 818-9253, no less than 72 hours prior to the meeting or in the case of a Special Meeting, as soon as possible after the Agenda is posted. Copies of the agenda will be available 72 hours prior to the meeting and may be obtained by contacting the District at (831) 761-7744. All meetings are noticed and conducted in accordance with the Ralph M. Brown Act

Zoom Meeting Set-up for PDGHAD meeting

You can join Zoom with your computer or with your smartphone. Please download the program (as described below) for your preferred instrument and call Sarah to verify usability.

Computer:

1) Go to zoom.us



2) Click Join a Meeting (red arrow)
3) It will prompt you to download and run Zoom (The program should open automatically. If it doesn't then go to your programs and start it manually)
4) Click Join a Meeting
5) Meeting ID: see agenda
6) Choose a Name and Click Join
7) Test Password: see agenda
8) You will be admitted to the meeting and can use the designated public participation times to ask a question verbally or the chat feature (bubble icon on lower menu) at any time to ask questions that can be read out during the public comment period.

Smartphone:

1) Go to your application download center
2) Download "Zoom Cloud Meetings" by Meet Happy

3) Click "Join a Meeting"
4) Enter Meeting ID: see agenda
5) Enter Password: see agenda
6) You will be admitted to the meeting and can use the designated public participation times to ask a question verbally or the chat feature (click on the 3 dots More button on the bottom right and select chat) at any time to ask questions that can be read out during the public comment period.

Telephone (audio only):

1) Call: Dial by your location
   669 900 9128 US (San Jose)
   888 788 0099 US Toll-free
   877 853 5247 US Toll-free
2) Enter the Meeting ID: See agenda
3) Enter the Meeting PW: See agenda
4) Follow the instructions
5) You can send questions (or ask for assistance) outside of the public comment period to pdghad@gmail.org to be read during the discussion public comment time.

Some etiquette-

1) We can see you:
   a. Warn your household members they may be on video
   b. Leave the phone/computer where it is when taking a break
2) Turn down ambient music/noises
3) Mute yourself when you are not speaking to us (you will be muted upon entering the meeting and during presentations). You can use the chat feature to ask questions when muted.
4) Unmute when you are speaking to us

Some common solutions:

Want to see everyone in gallery view (everyone at once)?

Computer: Click Gallery View on the top right menu
Smart phone: Swipe left

Camera not showing the correct view?

Computer: Go to the Video icon on the bottom left of your computer screen and click on the ^ to open the menu to switch your camera.
Smartphone: Cick the camera reverse button on the top menu

PDGHAD

REGULAR MEETING MINUTES
PAJARO DUNES GEOLOGIC HAZARD ABATEMENT DISTRICT
VIRTUAL MEETING via ZOOM

Governor Newsom through CA Executive Order N-33-20 (issued on March 19th, 2020) issued a shelter-in-place order for the State of California. The order was further strengthened by the County of Santa Cruz Health Officer Order issued on March 31st, 2020 which discourages residents from traveling (even between their own properties) for non-essential reasons. CA Executive Order N-25-20 allows for modifications to the Brown Act ensuring that public meetings can continue under this order through telephone or video conferencing.

Saturday, May 16th, 2020 9:00 a.m.

Zoom Meeting ID: 883-7608-4276
Zoom Meeting PW: 011472

See below the agenda for how to download Zoom for a computer or smartphone (both audio and video available) or to participate via dial-in telephone (audio only). Also, please review the etiquette guidelines and reminders. If you have any questions please contact the District Clerk at pdghad@gmail.com

A. OPEN SESSION CALL TO ORDER – PLEDGE OF ALLEGIANCE

Roll Call

John Cullen, President-**present**
David Ferrari-Vice President-**present**
Jim Griffin, Secretary-**present**
Raphael Kraw, Treasurer-**present**
Jack Feinstein, Director-**present**
Sarah Mansergh, Clerk-**present**

Roger Montgomery P83, Gary Merdon H48, Gloria George P61, Roy Lave H109, Steve Erickson, Arthur Charmichael and Jean Locke, Mickey Woode.

Wendy Cumming (accountant), Mike Rodriguez (attorney) and Dan Peluso (consulting engineer)

B. MEMBER COMMENTS

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Board of PDGHAD. Any person wishing to address the Board during the Member Comment period shall be permitted to be heard for up to 3 minutes, A) individuals may speak only once and B) the Board is unable to address any owner comments in depth, but may choose to direct the Clerk to follow-up on the matter for a future meeting.

C. PRESIDENT'S REMARKS

The President will use this opportunity to inform the public of issues affecting the District and other items of a general nature not otherwise provided for on this agenda.

A. **Overview of online meeting layout and how to actively participate**
B. **2020 Regular Meeting Dates**
   August 8th
   November 14th
   December 12th

C. **Directors -submit yearly Form 700 to the County Clerk's office by July-online preferred.**

D. CONSENT CALENDAR

All matters listed on the Consent Calendar are considered to be routine by the Board of Directors and will be enacted by one motion at the appropriate time. There will be no separate discussion on these items. If discussion is desired, that item will be removed from the Consent Calendar and will be considered separately.

1. Approval of meeting minutes of February 8th, 2020 and April 11th, 2020.

Raphael moves to approve the minutes, David Ferrari seconds.
Roll call vote: John C.-aye, Raphael-K. aye, David F.-aye Jack F.-aye, Jim G.-aye

E. TREASURER'S REPORT

2. Financial Reports
   - Financial Report through April 30th, 2020
   - Warrant listing
   - Investment Policy

Reviewed the financial report through April 30th, 2020.

F. MEETING reports

3. Meetings attended by Directors at District expense since the last meeting of the Board (per AB1234 requirements). Such reports may be made orally or in writing.

No meetings attended.

G. NEW BUSINESS

4. ITEM-Update on County application for grading permit.
   a. Board report
   b. Public comment

c. Board discussion
d. Board action /direction

Submitted preliminary 30% permit plans for guidance from the County Planning Dept. The County wanted to add the geotechnical reports to the plan, packet was sent on to the County containing the documents created thus far. Cone penetration test sounding was validated, geologic maps and other data that will be included in the geotechnical report has been reviewed. Dan and team will work on completing the geotechnical report for the August meeting

Jack moves to approve the expenditure for completing the work for the report and items required by the County. David seconds.
David F.-aye, John-C.aye, Jim G.-aye, Jack- F.aye, Raphael K.-aye.

5. ITEM – Approve budget for FY 2020/21
a. Board report
b. Public comment
c. Board discussion
d. Board action /direction

David Ferrari moves to approve the budget as presented, Raphael seconds. John C.-Aye David F.- aye, Jack F.-aye, Jim G.-aye. Raphael K-aye. Motion is carried.

6. ITEM – Approve resolution calling for an election for Directors in November General Election.
a. Board report
b. Public comment
c. Board discussion
d. Board action /direction

David Ferrari moves to approve the resolution ordering an election. Raphael K. seconds.
Roll call Raphael-aye John-aye, David-aye, Jack aye, Jim-aye
Resolution is approved.

H. DIRECTORS COMMENTS AND CONCERNS

Members of the Board of Directors may address items of concern at this time, and may request that items be placed on future agendas in accordance with the By-laws of the Board.

I. ADJOURNMENT

The next Meeting of the Board of Directors is scheduled for August 8th, 2020, at 9:00 a.m. at the offices of the Pajaro Dunes Geologic Hazard Abatement District, Board Room, Pajaro Dunes, 2661 Beach Road, Watsonville, CA 95076. Individuals who require special accommodations are requested to contact the District Clerk by calling (831) 818-9253, no less than 72 hours prior to the meeting or in the case of a Special Meeting, as soon as possible after the Agenda is posted. Copies of the agenda

will be available 72 hours prior to the meeting and may be obtained by contacting the District meetings are noticed and conducted in accordance with the Ralph M. Brown Act

PDGHAD

SPECIAL MEETING MINUTES
PAJARO DUNES GEOLOGIC HAZARD ABATEMENT DISTRICT
VIRTUAL MEETING via ZOOM

Governor Newsom through CA Executive Order N-33-20 (issued on March 19th, 2020) issued a shelter-in-place order for the State of California. The order was further strengthened by the County of Santa Cruz Health Officer Order issued on March 31st, 2020 which discourages residents from traveling (even between their own properties) for non-essential reasons. CA Executive Order N-25-20 allows for modifications to the Brown Act ensuring that public meetings can continue under this order through telephone or video conferencing. As such, the Pajaro Dunes Geologic Hazard Abatement District will be hosting their regularly scheduled April 11th, 2020 meeting online via the Zoom platform and encourages residents to participate from their current location via video conference or telephone.

Tuesday, July 28th, 2020 6:00 p.m.

Zoom Meeting ID: 830 5516 0576
Passcode: 320022

Participation information and the meeting packet will be available at www.pdghad.org. If you have any questions please contact the District Clerk at pdghad@gmail.com

A. OPEN SESSION CALL TO ORDER – PLEDGE OF ALLEGIANCE

Roll Call

John Cullen, President-**present**
David Ferrari, Vice-President-**present**
Jim Griffin, Secretary-**present**
Jack Feinstein, Director-**not present**
Raphael Kraw, Director-**present**
Sarah Mansergh, Clerk-**present**

Also present-Michael Rodriguez, GHAD attorney

B. MEMBER COMMENTS

Matters under the jurisdiction of the Board and not on the posted agenda, may be addressed by members of the public before the Board for consideration. However, California law prohibits the Board from taking action on any matter which is not on the posted agenda unless it is determined to be an emergency by the Board of PDGHAD. Any person wishing to address the Board during the Member Comment period shall be permitted to be heard for up to 3 minutes, A) individuals may speak only once and B) the Board is unable to address any owner comments in depth, but may choose to direct the Clerk to follow-up on the matter for a future meeting.

C. NEW BUSINESS

1. ITEM- Rescind and replace Resolution 2020-01 calling for an election for Directors in the November General Election.

a. Board report
b. Public comment
c. Board discussion
d. Board action /direction

Jim Griffin moves to approve the Resolution 2020-02 to replace the previously approved Resolution. Raphael seconds.
Roll Call Vote:
John Cullen-aye, Jim Griffin-aye, Raphael Kraw-aye and David Ferrari-aye. Motion passes.

H. DIRECTORS COMMENTS AND CONCERNS

Members of the Board of Directors may address items of concern at this time, and may request that items be placed on future agendas in accordance with the By-laws of the Board.

I. ADJOURNMENT

The next Meeting of the Board of Directors is scheduled for August 8th, 2020, at 9:00 a.m. at the offices of the Pajaro Dunes Geologic Hazard Abatement District, Board Room, Pajaro Dunes, 2661 Beach Road, Watsonville, CA 95076. Individuals who require special accommodations are requested to contact the District Clerk by calling (831) 818-9253, no less than 72 hours prior to the meeting or in the case of a Special Meeting, as soon as possible after the Agenda is posted. Copies of the agenda will be available 72 hours prior to the meeting and may be obtained by contacting the District at (831) 761-7744. All meetings are noticed and conducted in accordance with the Ralph M. Brown Act

Pajaro Dunes Geologic Hazard Abatement District
Balance Sheet
As of June 30, 2020

	Jun 30, 20
ASSETS	
Current Assets	
Checking/Savings	
100000 · SCCB Zone 1 - 3957	49,724
100001 · SCCB Zone 2 - 3965	68,724
100002 · SCCB Z1 Emerg - 1877	254,184
100003 · SCCB LTD- 0208	49,147
100400 · Union Bank Bond Holding	324,088
Total Checking/Savings	745,867
Accounts Receivable	
120000 · Assessments Receivable	213,450
Total Accounts Receivable	213,450
Other Current Assets	
121500 · Prepaid Insurance	14,023
121600 · Prepaid Expenses	1,000
Total Other Current Assets	15,023
Total Current Assets	974,340
Fixed Assets	
150000 · Riverwall	3,000,000
160000 · Accumulated Depreciation	-1,550,000
Total Fixed Assets	1,450,000
TOTAL ASSETS	**2,424,340**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
200000 · Accounts Payable	27,730
Total Accounts Payable	27,730
Other Current Liabilities	
220000 · Accrued Interest	21,983
255000 · Unearned Revenue	10,675
Total Other Current Liabilities	32,658
Total Current Liabilities	60,388
Long Term Liabilities	
285000 · Bonds Payable Z2	1,165,000
286000 · Bonds Payable Discount Z2	-52,250
286500 · Amort. Bond Discount Z2	31,861
Total Long Term Liabilities	1,144,611
Total Liabilities	1,204,999
Equity	
30000 · Opening Balance Equity	608,448
32000 · Retained Earnings	450,480
Net Income	160,414
Total Equity	1,219,342
TOTAL LIABILITIES & EQUITY	**2,424,341**

Note ~ GHAD owns $15k of rock that is stored at Granite Rock

Pajaro Dunes Geologic Hazard Abatement District
Profit & Loss Budget vs. Actual
July 2019 through June 2020

	Zone 1			
	Jul '19 - Jun 20	Budget	$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
410000 · Assessment Income	132,037	132,070	(33)	100%
410020 · Emergency Reserve Fund	175,000	175,000	-	100%
410050 · Assess. Income PDA Stairs	3,930	3,930	-	100%
Total Income	310,967	311,000	(33)	100%
Expense				
610155 · Postage and Mailings	152	1,500	(1,348)	10%
61510 · Advertising	-	500	(500)	0%
615115 · Office Expense	-	550	(550)	0%
615140 · Audit Expense	9,000	10,000	(1,000)	90%
61518 · Clerk	3,923	8,400	(4,477)	47%
615415 · Accounting	14,396	18,000	(3,604)	80%
615416 · Assessment Admin. Expense	3,395	8,000	(4,605)	42%
615617 · Website Maintenance	660	1,500	(840)	44%
615650 · Officer Election	-	2,475	(2,475)	0%
615655 · Dues	-	500	(500)	0%
615656 · Board/Clerk Education	-	2,200	(2,200)	0%
616500 · Legal Fees	9,240	18,000	(8,760)	51%
617250 · Seawall Inspections	2,506	6,000	(3,494)	42%
619010 · Technical Consulting Costs	70,916	118,375	(47,459)	60%
628500 · Insurance Expense	12,500	15,000	(2,500)	83%
629030 · SBA Repayment to PHA Z2	-			
629900 · Bond Fee Expense	-			
650000 · Bank Service Charges	1,034			
750000 · Depreciation Expense Z2	-			
Total Expense	127,722	211,000	(83,278)	61%
Net Ordinary Income	183,245	100,000	83,245	183%
Other Income/Expense				
Other Income				
410070 · Interest & Penalty Income	1,031	50	981	2,062%
Total Other Income	1,031	50	981	2,062%
Other Expense				
855000 · Interest Expense	-	-	-	0%
955500 · Interest Bond Discount	-			
Total Other Expense	-	-	-	0%
Net Other Income	1,031	50	981	2,062%
Net Income	**184,276**	**100,050**	**84,226**	**184%**

Pajaro Dunes Geologic Hazard Abatement District
Profit & Loss Budget vs. Actual
July 2019 through June 2020

	Zone 2			
	Jul '19 - Jun 20	Budget	$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
410000 · Assessment Income	235,293	235,293	-	100%
410020 · Emergency Reserve Fund	-			
410050 · Assess. Income PDA Stairs	1,254	1,254	-	100%
Total Income	236,547	236,547	-	100%
Expense				
610155 · Postage and Mailings	-			
61510 · Advertising	-			
615115 · Office Expense	-			
615140 · Audit Expense	-			
61518 · Clerk	705	2,597	(1,892)	27%
615415 · Accounting	-			
615416 · Assessment Admin. Expense	442	1,039	(597)	43%
615617 · Website Maintenance	-			
615650 · Officer Election	-			
615655 · Dues	-			
615656 · Board/Clerk Education	-			
616500 · Legal Fees	-			
617250 · Seawall Inspections	-			
619010 · Technical Consulting Costs	-			
628500 · Insurance Expense	-			
629030 · SBA Repayment to PHA Z2	92,856	92,856	-	100%
629900 · Bond Fee Expense	635	635	-	100%
650000 · Bank Service Charges	188	500	(312)	38%
750000 · Depreciation Expense Z2	100,000	100,000	-	100%
Total Expense	194,826	197,627	(2,801)	99%
Net Ordinary Income	41,721	38,920	2,801	107%
Other Income/Expense				
Other Income				
410070 · Interest & Penalty Income	576	150	426	384%
Total Other Income	576	150	426	384%
Other Expense				
855000 · Interest Expense	64,071	64,071	-	100%
955500 · Interest Bond Discount	2,088	2,088	-	100%
Total Other Expense	66,159	66,159	-	100%
Net Other Income	(65,583)	(66,009)	426	99%
Net Income	**(23,862)**	**(27,089)**	**3,227**	**88%**

Pajaro Dunes Geologic Hazard Abatement District
Profit & Loss Budget vs. Actual
July 2019 through June 2020

	TOTAL			
	Jul '19 - Jun 20	Budget	$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
410000 · Assessment Income	367,330	367,363	(33)	100%
410020 · Emergency Reserve Fund	175,000	175,000	-	100%
410050 · Assess. Income PDA Stairs	5,184	5,184	-	100%
Total Income	547,514	547,547	(33)	100%
Expense				
610155 · Postage and Mailings	152	1,500	(1,348)	10%
61510 · Advertising	-	500	(500)	0%
615115 · Office Expense	-	550	(550)	0%
615140 · Audit Expense	9,000	10,000	(1,000)	90%
61518 · Clerk	4,628	10,997	(6,369)	42%
615415 · Accounting	14,396	18,000	(3,604)	80%
615416 · Assessment Admin. Expense	3,837	9,039	(5,202)	42%
615617 · Website Maintenance	660	1,500	(840)	44%
615650 · Officer Election	-	2,475	(2,475)	0%
615655 · Dues	-	500	(500)	0%
615656 · Board/Clerk Education	-	2,200	(2,200)	0%
616500 · Legal Fees	9,240	18,000	(8,760)	51%
617250 · Seawall Inspections	2,506	6,000	(3,494)	42%
619010 · Technical Consulting Costs	70,916	118,375	(47,459)	60%
628500 · Insurance Expense	12,500	15,000	(2,500)	83%
629030 · SBA Repayment to PHA Z2	92,856	92,856	-	100%
629900 · Bond Fee Expense	635	635	-	100%
650000 · Bank Service Charges	1,222	500	722	244%
750000 · Depreciation Expense Z2	100,000	100,000	-	100%
Total Expense	322,548	408,627	(86,079)	79%
Net Ordinary Income	224,966	138,920	86,046	162%
Other Income/Expense				
Other Income				
410070 · Interest & Penalty Income	1,607	200	1,407	804%
Total Other Income	1,607	200	1,407	804%
Other Expense				
855000 · Interest Expense	64,071	64,071	-	100%
955500 · Interest Bond Discount	2,088	2,088	-	100%
Total Other Expense	66,159	66,159	-	100%
Net Other Income	(64,552)	(65,959)	1,407	98%
Net Income	**160,414**	**72,961**	**87,453**	**220%**

Pajaro Dunes Geologic Hazard Abatement District
Bank Account Activity
As of June 30, 2020

	Type	Date	Num	Name	Debit	Credit	Balance
100000 · SCCB Zone 1 - 3957							**53,226.17**
	Bill Pmt -Check	05/15/2020	1390	Jarvis, Fay, & Gibson, LLP		1,060.00	52,166.17
	Bill Pmt -Check	05/15/2020	1391	Sarah Mansergh		1,204.22	50,961.95
	Bill Pmt -Check	05/15/2020	1392	Wendy L. Cumming, CPA		1,237.50	49,724.45
Total 100000 · SCCB Zone 1 - 3957					0.00	3,501.72	49,724.45
100001 · SCCB Zone 2 - 3965							**84,559.53**
	Bill Pmt -Check	05/15/2020	1336	Pelican Home Owner's Association		15,476.00	69,083.53
	Bill Pmt -Check	05/15/2020	1337	Sarah Mansergh		359.70	68,723.83
Total 100001 · SCCB Zone 2 - 3965					0.00	15,835.70	68,723.83
100002 · SCCB Z1 Emerg - 1877							**254,184.23**
Total 100002 · SCCB Z1 Emerg - 1877							254,184.23
100003 · SCCB LTD- 0208							**49,142.58**
	Deposit	05/31/2020			4.16		49,146.74
Total 100003 · SCCB LTD- 0208					4.16	0.00	49,146.74
100400 · Union Bank Bond Holding							**324,027.88**
	Deposit	05/31/2020			50.00		324,077.88
	Deposit	06/30/2020			10.00		324,087.88
Total 100400 · Union Bank Bond Holding					60.00	0.00	324,087.88
TOTAL					**64.16**	**19,337.42**	**745,867.13**

CE&G
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6455 Almaden Expwy., Suite 100| San José | CA 95120
23785 Cabot Blvd., Suite 321 | Hayward | CA 94545
www.caleng.com

DRAFT GEOTECHNICAL DESIGN REPORT

ROCK REVETMENT REPAIR
LOTS 1-12, 94-103, AND 107
PAJARO DUNES RESORT
WATSONVILLE, CALIFORNIA

CE&G DOCUMENT: 190781-001

3 AUGUST 2020

Prepared for:

Pajaro Dunes GHAD
John Cullen, President of the Board
2661 West Beach Road
Watsonville, California 95076

Chris Hockett, P.E., G.E.
Principal Engineer

Kevin Loeb, P.G.
Project Geologist

Reviewed by:

Dan Peluso, P.E., G.E.
Principal Engineer

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 GENERAL

This report presents design and construction recommendations for repair of a nearly 2,000 foot-long segment of existing rock revetment (seawall) adjacent to lots 1 to 12, lots 94 to 103, and lot 107 at the Pajaro Dunes Resort, located at the west end of Shell Road in Watsonville, California. The approximate location of the project site is shown on Figure 1, Site Location Map. The report also summarizes the selection of geotechnical strength parameters and slope stability analyses for the proposed repair as well as temporary excavation shoring and house or deck underpinning design parameters. The services provided to complete this report were undertaken at the request of the Pajaro Dunes Geologic Hazards Assessment District (PDGHAD).

It is understood that most of the communications with agency officials have been with the California Coastal Commission (Ryan Moroney, Sharif Traylor) and Santa Cruz County Planning Department (Kathleen Molloy, Carolyn Burke, Jeff Nolan). Other agency stakeholders include the following agencies and individuals:

- Deidre Whalen, Monterey Bay National Marine Sanctuary
- Grace Kato, State Lands Commission
- Chris Spohrer and Todd Allen, California State Parks

There are some new staff at the Santa Cruz County Planning Department, including Jeff Nolan, County Geologist, who replaced Joe Hanna upon his retirement.

1.2 PURPOSE AND SCOPE OF SERVICES

The purpose of this report is to present the geologic and geotechnical conditions of the site, previous reports by other consultants, engineering analyses, geotechnical considerations and design and construction recommendations for the project.

The scope of work included:

1. Completion of an office study to identify and evaluate relevant geologic and geotechnical information available for the site relevant to the rock revetment, including published geologic maps and reports, and unpublished geotechnical information in our files regarding the site and vicinity.

2. Slope stability analysis to evaluate stability of the recommended revetment repair at various stages before, during and following construction for the revetment repair.

3. Preparation of this geotechnical design report.

1.3 TOPOGRAPHIC AND SURVEY INFORMATION

Elevations included in previous reports and on plans reference the 1929 National Geodetic Vertical Datum (NGVD 29). At the site location, the NGVD 29 elevation values are 2.7 feet lower than the corresponding North American Vertical Datum (NAVD 88) elevation values. Elevations in this report are presented using the NAVD 88 datum with the corresponding NGVD 29 elevations shown in parentheses.

2.0 PROJECT DESCRIPTION

2.1 SITE DESCRIPTION

2.1.1 Pajaro Dunes Development

The Pajaro Dunes community is comprised of private single-family residences, including detached residences as well as groups of townhouses and condominiums. These buildings were constructed along a narrow strip of land bounded by the Pacific Ocean on the southwest, by the Pajaro River on the southeast, and Watsonville Slough on the northeast. It is understood that development of the community began in the late 1960s.

2.1.2 Existing Revetment Configuration

Following several episodes of severe coastal erosion in the 1970s and 1980s, approximately 6,000 feet of rock revetment was constructed in three segments between 1986 and 1988 along the ocean-side of the development. In addition, there is a steel sheet pile wall approximately 715 feet long that was constructed along the inland Pajaro River side of the development in 2003. This steel sheet pile wall is referred to as the "river wall".

The 6,000 foot-long rock revetment is comprised of approximately 110,000 tons of rock slope protection (RSP). In general, the rocks vary between 4 feet and 6 feet as measured in their longest dimension. The average rock is estimated to weigh about 8 tons.

The top of the revetment varies in elevation from 19.5 to 22.0 feet above mean sea level and the base of the revetment is at elevation -2.0 feet mean sea level (NGVD 29); this is at approximate elevation +0.7 feet (NAVD 88). The revetment face is sloped between 1.5H:1V (horizontal:vertical) and 2.0H:1V. The toe of the rock revetment was constructed adjacent to the property line, separating the Pajaro Dunes development form the State of California Park Lands.

Pedestrian access from Pajaro Dunes properties to the beach within the limits of the project is provided by through four timber boardwalks constructed in common areas between lots 4 and 5, 10 and 11, 93 and 94, and 98 and 99. The boardwalks lead to timber stairs that descend over the rock slope protection revetment to the beach below.

2.1.3 Existing Revetment Damage

The rock revetment has been repeatedly damaged by coastal erosion, occurring during relatively severe winter storms since its original construction at least two times: in 2002/2003 and in 2004. A 400-foot-wide section of the revetment was affected in the

vicinity of Lots 98 through 104 and a 135-foot-wide section was affected in the vicinity of Lots 15, 54, and 55. Apparently, during the 2004 storm event, much of the beach became severely eroded and the toe of the revetment became exposed and undermined along these sections.

Following each damaging storm event, emergency repairs were implemented in the form of placing RSP in selected areas along the revetment. The repaired area in 2003 measured a total length of approximately 420 feet of revetment using approximately 675 tons of RSP. The repaired area in 2004 measured a total length of approximately 55 feet of revetment using approximately 185 tons of RSP.

The California State Parks Department gave permission to the Pajaro Dunes GHAD to temporarily place approximately 450 tons of rock slope protection on their property fronting lots 98 to 103 with the understanding that the rocks would be removed as part of a future permanent repair. One of the objectives of this project is to remove the encroaching rock slope protection and utilize it in the revetment repair.

2.2 PROJECT DESCRIPTION

This project will focus on repairing damage to a nearly 2,000 foot-long segment of rock revetment along the western property boundary of lots 1 to 12, lots 94 to 103, and lot 107 as well as removing rocks encroaching on State property fronting lots 98 to 103. The repair will deepen the existing revetment foundation to reduce the potential for movement resulting from settlement and instability caused by coastal erosion undermining the revetment during large storm events. The Pajaro Dunes development and the approximate location of the proposed repair area are shown in Figure 2, Site Plan.

Construction will consist of the following items:

- Timber boardwalks and stairs in conflict with the repair will be removed prior to construction and reconstructed after construction.

- There are existing rocks (boulders) previously placed on the State Beach property as part of previous emergency repair efforts and are currently concealed beneath the beach sand. These rocks will be removed from State property and stockpiled.

- Temporary excavation shoring and in-situ rock stabilization measures will be designed and installed by the Contractor to facilitate removal of enough of the existing rock revetment to facilitate excavation for the deepened revetment foundation. Shoring is currently envisioned to include temporary sheet piles.

- Selected residences and other improvements in close proximity to the planned excavations will be underpinned and/or otherwise stabilized to allow for the temporary excavations.

- A 10-foot wide excavation will be made beneath the existing revetment toe along the State property boundary into the underlying sand to an elevation of – 5.0 feet NAVD 88 (-7.7 feet NGVD 29).

- The excavation will be backfilled to an elevation of +3.8 feet NAVD 88 (1.1 feet NGVD 29) with two layers of 10-foot wide Tensar Triton® Marine Cell. Each Marine Cell will consist of a geogrid basket backfilled with small-diameter rock slope protection (RSP), and separated from the adjacent sand by filter fabric.

- The stockpiled revetment rocks will be placed on the new Marine Cell foundation, and will be placed to restore the pre-construction top-surface configuration of the revetment.

3.0 GEOLOGY

3.1 REGIONAL SETTING

The project site lies within the Coast Ranges geomorphic province of California. This province is characterized by northwest-southeast trending mountain ranges and intervening valleys such as that occupied by San Francisco Bay and Salinas Valley. The site is located northwest of Salinas valley, along the coast of Monterey Bay.

3.1.1 Geologic Setting

The geologic setting is shown on the Regional Geology Map, Figure 3. The distribution of geologic materials in the site vicinity has much to do with Monterey Bay, immediately southwest along the site boundary and the Watsonville Slough to the northeast.

The project site is located along a mapped contact between Holocene aged basin deposits and dune sand deposits (Brabb and others, 1997). The basin deposits generally consist of "unconsolidated, plastic, organic-rich clay and silty clay". The dune sand deposits generally consist of "unconsolidated, well-sorted (poorly graded), fine- to medium-grained sand". Later mapping, by Wagner and others (2002) also shows the site as being underlain by dune sand, and shows Quaternary basin deposits, associated with the Pajaro River and Watsonville Slough on the northeast side of the site.

3.2 REGIONAL GROUNDWATER

We are not aware of regional groundwater mapping that encompasses the site. However, groundwater beneath the project site is likely at or close to sea level and is likely strongly influenced by tidal fluctuations.

3.3 FAULTING AND SEISMICITY

No active earthquake faults are mapped as passing through the project area (Wentworth and others, 2006).

3.3.1 Active Faults

The project site is located south of the greater San Francisco Bay Area, which is recognized as one of the more seismically active regions of California. The right-lateral strike-slip San Andreas fault system controls the northwest-southeast structural grain of the Coast Ranges. The fault system marks the major boundary between two of earth's major tectonic plates, the Pacific Plate to the west and the North American Plate to the east. The Pacific

Plate is moving north relative to the North American plate at approximately 40 mm/yr in the Bay Area (WGCEP, 2003).

The transform boundary between these two plates has resulted in a broad zone of multiple, subparallel faults within the North American Plate, along which right-lateral strike-slip faulting predominates. In this broad transform boundary, the San Andreas Fault accommodates less than half of the average total relative plate motion. Much of the remainder in the greater South Bay and Monterey Bay Area is distributed across faults such as the Tularcitos, Chupines, San Gregorio-Hosgri, Monte Vista-Shannon, Sargent, Berrocal, Hayward (southern segment), Calaveras, and Zayante-Vergeles fault zones.

It is likely that the project site will experience strong ground shaking along one or more of the nearby active faults during the design lifetime of the project. Table-1 shows the approximate distances between the project site and various major surface fault traces. Some seismogenic faults (capable of generating significant earthquakes) near the site include the San Gregorio, San Andreas, and Zayante-Vergeles faults.

Table 3-1. Distances to Selected Major Active Faults

Fault Name	Approximate Distance and Direction from Site to the nearest Surface Fault Traces
Zayante-Vergeles	10.6 km northeast
San Andreas	15.3 km northeast
Monterey Bay-Tularcitos	18.3 km west-southwest
Sargent	19.5 km northeast
Reliz	19.6 km south
San Gregorio	27.8 km west-southwest
Calaveras	32.7 km northeast

3.3.2 Tsunami Hazards

Tsunamis are large scale sea waves caused by displacements in large water bodies by various means, including, but not limited to, earthquakes along subduction zones and submarine landslides. Areas most prone to tsunami hazards generally lie on coastal regions with elevations near sea level.

According to Santa Cruz County (2011), the project site is located within a Tsunami Coastal Inundation Area (County of Santa Cruz, Emergency Management GIS web page (**Error! Hyperlink reference not valid.**), accessed June 2020).

3.3.3 Liquefaction and Seismic Densification

Soil liquefaction is a phenomenon in which saturated, cohesionless soils (generally sands) lose their strength due to the build-up of excess pore water pressure during cyclic loading, such as that induced by earthquakes. Soils most susceptible to liquefaction are saturated, clean, loose, fine-grained sands and silts. The primary factors affecting soil liquefaction include: 1) intensity and duration of seismic shaking; 2) soil type and relative density; 3) overburden pressure; and 4) depth to ground water.

According to Santa Cruz County (2011), the project site is located in an area of high to very high liquefaction potential (County of Santa Cruz, Emergency Management GIS web page (**Error! Hyperlink reference not valid.**), accessed June 2020).

Based on subsurface information contained in the Haro Kusinich report (11 February 2008), we judge the potential for liquefaction at this site to be low. The soil and groundwater conditions necessary for seismically induced liquefaction were generally not encountered. Loose silty sand was also encountered, but above the water table (sea level).

Seismic densification is the densification of unsaturated, loose to medium dense granular soils due to strong vibration such as that resulting from earthquake shaking. The potential for seismic densification is considered low to moderate for the shallow (upper 3 to 6 feet) of the soil profile. We note that the proposed repair would remove these soils in the area of the repair. The deeper sand that was encountered are generally cohesive and/or too dense for seismically induced densification.

4.0 PREVIOUS REPORTS AND LETTERS

4.1 GENERAL

The Pajaro Dunes development has in the past utilized the engineering services of Haro Kasunich & Associates (HKA) and Arup North America, Ltd. (Arup) for annual inspections as well as engineering design of repair alternatives. Key staff at HKA had worked on the original design and construction of the revetment since before the rock revetment was constructed in the late 1980s. Following engineering services by HKA, Arup prepared repair and maintenance recommendations and initial repair design for a segment of the revetment. This repair design has undergone initial reviews by stakeholder agencies. Following is a summary of previous engineering services by HKA and Arup.

4.2 HARO KUSUNICH & ASSOCIATES

As part of the analysis by HKA, 22 cone penetration tests (CPT) were performed on the State Parks Beach adjacent to the rock revetment in December 2007 and were presented in their report, dated February 11, 2008. The CPT locations are shown on Figure 2, "Site Plan." The CPT soundings were pushed between 7 and 59 feet below the ground surface. Based on hand notations on the logs, the ground elevation at each of the CPT locations varies between +6.7 and +10.7 feet NAVD 88 (+4.0 and +8.0 feet NGVD 29). The CPT logs are included in Appendix A, "CPT Soundings." A geologic profile along the rock revetment based on the CPT soundings is shown on Figure 4, Geologic Profile.

Of these 22 CPTs, 6 locations were explored near the vicinity of the proposed 2,000 foot-long segment of existing rock revetment. Based on these soundings, HKA noted a typically 5-foot-thick layer of loose dune sand that extends to approximately elevation +5.1 feet NAVD 88 (+2.4 feet NGVD 29) in the vicinity of the repair study area. Beneath the dune sand is a comparatively dense layer of sand that is approximately 20 feet thick. The evaluation of all the CPT soundings indicated that this layer consistently occurs below elevation +4.1 NAVD 88 (+1.4 feet NGVD 29) at Pajaro Dunes and becomes very dense at about elevation -1.3 feet NAVD 88 (-4.0 feet NGVD 29). This was used as the design elevation for the dense sand layer and no subsurface data are available extending inland past the revetment.

No soil laboratory testing was included in the referenced reports by HKA and Arup.

HKA evaluated eight alternatives to repair the rock revetment. However, none of the alternatives are recommended for the project due to conflicts with existing structures and property boundary constraints as well as California Coastal Commission permit conditions.

4.3 ARUP NORTH AMERICA, LTD.

Arup prepared a geotechnical report for the project in 2015 using the subsurface information included in the HKA report. Three repair alternatives were considered and were based on:

- previous damage/seawall movement
- the gradient of the seawall
- existing distress/movement of the seawall
- the proximity of homes to the seawall
- a recent topographic survey

Three alternatives were developed and evaluated:

1) Triton® Marine Cell Reinforced Toe
2) Gabion Basket Reinforced Toe
3) Geogrid Reinforced Toe

Arup recommended Alternative 1: Triton® Marine Cell Reinforced Toe. This recommended alternative

5.0 ENGINEERING ANALYSES

5.1 DESIGN PARAMETERS

5.1.1 Strength Parameters

Based on review of previous reports and available in-situ soil data, the following soil parameters were selected to be used in our slope stability analysis. The revetment and sand layers were assumed to be free draining, so drained parameters are used in the analyses.

Table 1. Soil Parameters

Material	Unit Weight (pcf)	Effective Friction Angle, φ' (degrees)	Effective Cohesion, c' (psf)
Dune Sand	120	33	–
Dense Sand	130	38	–
Revetment	165	45	–
Marine Cell backfilled with X Class RSP	165	55	–

The revetment was assumed to have an effective friction angle of 45 degrees using Mohr–Coulomb criteria. In general, the slope stability shall exhibit the possible situations of designed repair under both static and seismic loadings. However, the size of revetment rock could be in the range of 2.8'-5' in minimum dimensions, as mentioned in HKA report, which would exceed the normal size definition of gravels or cobbles (several inches). Therefore, the revetment materials may exhibit rock-like behavior in lieu of soil-like behavior. It may not be appropriate to employ Mohr–Coulomb strength criterion in analyzing the stability of slopes composed of rock-like materials. However, due to limited information of revetment properties and model limitations, Mohr–Coulomb criteria was still used in current analysis, which are also consistent with the analysis by HKA and Arup.

5.1.2 Seismic Parameters

Using USGS Unified Hazard Tool, the peak ground acceleration considered at the site is determined as 0.53 g with a 5% exceedance in 50 years. Following special publication 117A from California Geological Survey, the pseudo-static seismic coefficients were calculated as 0.265 and 0.201 under threshold displacements of 5 cm and 15 cm, respectively.
A coefficient of 0.201 was selected for seismic slope stability analysis (See Appendix B).

5.2 SLOPE STABILITY ANALYSIS

The revetment was analyzed under the following three loading conditions:

5.2.1 Static and Seismic Loading

Beach sand at an approximate elevation of +11 feet NAVD88 (+8.0 feet NGVD 29) at the revetment sloping gently toward the shoreline with the groundwater at an elevation +4.5 feet NAVD88 (+1.8 feet NGVD 29).

5.2.2 Scour During Extreme Storm

Scour to elevation of -0.3 feet NAVD88 (-3.0 feet NGVD 29). Groundwater at +12.0 NAVD 88 (+9.3 feet NGVD 29).

5.2.3 Scour After Extreme Storm

Scour to elevation of -0.3 feet NAVD88 (-3.0 feet NGVD 29). Groundwater at +4.5 feet (+1.8 feet NGVD 29). This condition considers the stability of the revetment with significant scour after a storm event before emergency repairs are completed (if necessary).

5.3 ANALYSES RESULTS

The stability analysis results are summarized in Table 2, expressed in terms of factor of safety. Detailed results are included in Appendix C. Note that there are 2 sub-cases considered in post-storm conditions; global stability and localized stability.

Table 2. Slope Stability Analysis – Minimum Factors of Safety (FS)

Condition	Static FS	Seismic FS
Static and Seismic Loading – Repaired Revetment	1.7	1.2
Severe Scour During Extreme Storm Repaired Revetment	1.6	
Severe Scour After Extreme Storm (Global) Repaired Revetment	1.7	
Severe Scour After Extreme Storm (Localized Stability) Repaired Revetment	0.6	
Static Loading After Extreme Storm (Global) Existing Revetment	0.7	

The slope stabilities are analyzed using the Limit Equilibrium Software, SLIDE 2018 (RocScience). It is concluded that the proposed repaired revetment will have acceptable safety factors under both static and considered seismic loadings during normal operation. During considered storm and post-storm events, the proposed repair is determined to be stable when global failure is considered. However, local failures of the slope are possible under both static and seismic loadings. We conclude that some relatively minor maintenance of the revetment may be required following significant scour from a major storm and coastal erosion event.

5.4 CONCLUSIONS

From the observations of our annual inspections, the survey performed by Bowman and Williams in February 2013and the results of our engineering analyses, we conclude the following:

1. Based on our annual inspection, monitoring of the revetment should be continued on an annual basis. Particular attention should be given to the areas previously identified as areas to be considered for future repairs.
2. Lots 97, 98, and 99 are in most need of repair, and should be repaired first.
3. Other areas that should be considered next for repair, in order of importance, include the portions of the seawall adjacent to the following lots: Lots 100 thru 104, Lots 94 & 95, Lots 1 & 107, Lot 3, Lot 6, and Lots 8 & 9.
4. We concluded that the repair design using Triton® Marine Cells will provide the most protection for the least cost of the reinforcing options evaluated, effectively nearly doubling the safety factor of the area proposed to be repaired under storm scour conditions comparable to those in prior storm events such as occurred in 2003-2004. A typical repair cross section is shown in Figure 5.
5. The repair design focuses on reinforcing and deepening the toe of the revetment in the proposed area of repair as the primary measure to improve the revetment stability under scour conditions.
6. Based on our analyses, severe scour during a storm event is the greatest concern for the current revetment configuration. Deepening the toe of the revetment addresses concerns related to scour and deep slope failures passing underneath the revetment toe.
7. The extent of the repair was selected to address the areas most needing of repairs first. If it is decided to expand the extent of the repair, the same design configuration applies.

6.0 REPAIR DESIGN

6.1 GENERAL SUMMARY

The site is geologically and geotechnically suitable for the planned repair, provided that the recommendations presented in this report are followed. The recommendations were developed based on the following primary geotechnical considerations:

- Revetment Stability
- Scour Depth

Geotechnical recommendations for design and construction of the proposed repair are presented in the "Recommendations" Section of this report.

6.2 SEISMIC HAZARDS

Large magnitude earthquakes and strong ground shaking are likely to affect the project area within the design lifetime of the proposed improvements. Peak ground shaking parameters are presented in Section 5.1.2 and should be considered in the design of the proposed improvements. Local ground-modifying effects of high intensity ground shaking are considered secondary seismic effects. Our review of these processes is presented below.

- In our judgment, the potential for fault ground rupture or coseismic faulting to significantly affect the proposed improvements is low.
- In our judgment, the potential for seismically induced ground deformation to significantly affect the proposed improvements is low.
- In our judgment, the potential for soil liquefaction to significantly affect the proposed project is low to medium.

6.3 SCOUR DEPTH

The depth of scour during the storm was determined at elevation -0.3 feet NAVD88, which was taken from the referenced HKA 2008 report.

6.4 DESIGN CONFIGURATION

The repair design seeks to restore the slope gradient of the seawall within the repair area to its original design configuration and provide a deepened toe into the previously identified dense sand layer. In addition, the reconstructed toe would be reinforced to provide additional stability, particularly during a severe storm driven scour event. The area of repair is shown on Figure 2, Site Plan.

As described above, this repair scheme is intended to increase the factor of safety of the seawall during a coastal erosion event from less than 0.6 (less than 1.0 represents failure) to greater than 1.3 during the storm and immediately following the storm event (following dissipation of excess pore water pressures) to greater than 1.5.

Because the gradient of the seawall in the repair area has been steepened due to previous coastal erosion, the current repair design includes placement of additional riprap to flatten the slope to its original design gradient of between 1.5 to 1 and 2 to 1 (horizontal to vertical). All of the permanent structures will be physically within the existing Pajaro Dunes development property area with no encroachment into California Park's Department lands.

Additionally, the cause of the over-steepening/slumping of the seawall was erosion of the foundation soils below the toe of the seawall at El. -1.0 feet NAVD88. To mitigate future erosion below the seawall toe, we recommend deepening of the seawall toe and placement of rock to this level. Additionally, due to space constraints from the nearby property line adjacent to the State Park lands, we recommend the deepened portion of the toe be supported by Triton® Marine Cells to encapsulate the rock and reduce lateral migration if exposed by a coastal erosion event. A typical repair cross section is shown in Figure 5.

6.5 WORK ITEMS

We anticipate the following work items will be undertaken as part of the repair operation:

1. Pre-construction meeting between owner's representatives, contractor, engineer, and County representative to discuss the details of the repair.
2. Mobilize construction equipment.
3. Establish work area, lay-down areas, and place fencing and other necessary items to protect the work area.
4. Placement of temporary shoring as required.
5. Excavate soil (sand) to expose slots of the revetment toe. The length of the slots will be determined by the contractor based on constructability and stability.

6. Remove existing riprap at the toe of the revetment to expose the underlying separation/filter fabric.
7. Inspect the filter fabric for reuse; replace as needed.
8. Excavate to Elevation -5.0 feet NAVD88 or as directed by the Site Engineer. The bottom of the excavation shall penetrate into the dense sand layer described above in this report.
9. Place filter fabric across bottom of excavation.
10. Place Triton® Marine Cells and fill with rock.
11. Place riprap to final revetment configuration.
12. Place sand to backfill excavation.
13. Remove temporary shoring, if needed.
14. Remove fencing and cleanup work area.
15. Demobilize construction equipment.

7.0 RECOMMENDATIONS

7.1 EARTHWORK

7.1.1 Clearing

Prior to construction, areas within the project area should be cleared of designated existing improvements, deleterious materials, debris, and obstructions. After clearing, organic laden soils should be stripped. Organic laden soils are defined as soils with more than 3 percent by weight of organic content. The required stripping depth should be determined in the field by the geotechnical engineer at the time of construction. Stripped material may be stockpiled for use in landscape areas or otherwise removed from the site.

7.1.2 Material for Backfill

In general, on-site soils with an organic content of less than 3 percent by weight, free of any hazardous or deleterious materials, may be used as general engineered fill to achieve project grades, except when special material is required. All import fills should be approved by the project geotechnical engineer prior to delivery to the site. At least 5 working days prior to importing to the site, a representative sample of the proposed import fill should be delivered to our office for evaluation.

7.1.3 Recompaction of Excavated Soil

Engineered fill should be placed in horizontal lifts between 8 to 12 inches in thickness, completely saturated and compacted using a vibratory plate to a minimum relative compaction of 90% of maximum dry density determined by ASTM Test Method D1557, latest edition.

7.1.4 Wet Weather Construction

If construction is to be performed during the winter rainy months, the owner and contractors should be fully aware of the potential impact of wet weather. Rainstorms can cause delay to construction and damage to previously completed work by flooding excavations.

The contractor should be responsible to protect the work area to avoid damage by rainwater. Standing pools of water should be pumped out immediately. We recommend the contractor submit a wet weather construction plan that outlines procedures to be employed to protect the work area to minimize damage by rainstorms.

7.1.5 Excavations

Excavations for this project will generally include excavations for construction of the deepened revetment toe. Construction, shoring, and bracing of excavations should comply with the current CAL-OSHA safety standards and local jurisdiction. The stability and safety of excavations, braced or unbraced, is the responsibility of the contractor.

7.1.6 Equipment

We anticipate the existing soils (beach sand) along the rock revetment can be excavated with light to moderate effort using conventional grading equipment, such as excavators, loaders, or backhoes. Placement of riprap will require equipment capable of moving and carefully placing of rock up to 5 tons each.

7.1.7 Equipment Access

Four possible access routes have been identified:

1. Existing road through State Park lands on the northwest side of the development and drive southeast along beach.
2. Beach Road right-of-way and drive along beach.
3. From Willet Circle to the beach through Lot 101.
4. From Puffin Lane through Lot 141 and Pelican Point common area.

Based on the biotic report prepared by Biotic Resources Group, dated May 29, 2013, using the existing road through the State Park land will have the smallest environmental impact. Access through the Beach Road right-of-way, Willet Circle and Puffin Lane could impact native dune scrub vegetation. If any native dune scrub is removed, revegetation will have to be replaced at a 1:1 mitigation ratio.

Additionally, access through the Beach Road right-of-way could significantly affect a colony of Monterey spineflower. Access through Puffin Lane is restricted to occur only between September 1 and March 1 to avoid potential disturbance to the western snowy plover nesting colony.

Access to the jobsite will require equipment capable of driving on beach sand and permission from the State Park will be required to drive along the beach. Route 1 above is deemed to minimize any biotic impact.

7.1.8 Groundwater

All proposed dewatering systems should be reviewed and approved by the Engineer prior to their implementation. Groundwater is expected at depths ranging from approximately 6 to 8 feet below current grade.

7.2 REVETMENT REPAIR

The repair is intended to address the following primary geotechnical considerations:

- Improve static, seismic, and post-scour stability by flattening the revetment slope inclination to 1.5H:1.

- Reduce the potential for undermining of the revetment by increasing the embedment of the revetment foundation such that the bottom of the foundation is at an elevation of –5.0 feet NAVD 88 (-7.7 NGVD 29).

Additionally, due to space constraints from the nearby property line adjacent to the State Park lands, we recommend the foundation of the revetment consist of two layers of 10-foot diameter Triton® Marine Cells manufactured by Tensar International Corporation which are backfilled with rock to reduce the potential of lateral migration if exposed by a coastal erosion event.

Rock placed on top of the marine cell foundation should be graded by weight, weighing a minimum of 8,000 pounds with no more than 20% heavier than 10,000 pounds.

7.3 SHORING AND TEMPORARY EXCAVATION

As shown on the typical section in the plans, temporary shoring is required to excavate rock revetment on state property and to repair revetment toe. Careful adjustment of shoring alignment shall be made by contractor to avoid existing rock revetments. When necessary, removal of existing revetment from slope may be allowed to install temporary shoring. Before removing revetment from existing slope, contractor shall evaluate the influences of removal on slope stability and foundation stability of adjacent houses.

The design of temporary excavation shoring should be the responsibility of the contractor. Shoring design should be completed for the contractor by a qualified California-registered civil engineer and then submitted to the Engineer for review and approval prior to construction. It is recommended that all temporary shoring be designed in conformance with the State of California, Department of Transportation, Trenching and Shoring Manual.

The soil conditions within the project are within the anticipated excavation depths of up to approximately 15 feet, the soils are predominantly loose to medium dense, poorly graded sand and silty sand. Shoring will be required and, due to the loose soil conditions and lack of fines content, it is possible unshored excavations may not stay open long enough to install speed shores or trench boxes. Other methods of shoring should be considered, such as installation of temporary sheet piles.

Shoring design should be based on OSHA Type C Soil. The impact of elevated groundwater conditions on the temporary shoring can be mitigated by implementing contractor-designed dewatering measures and designing the shoring to be watertight and to account for the loading imposed by the groundwater in accordance with the recommendations provided herein.

Shoring should be designed to resist hydrostatic pressures in combination with static (braced) earth pressures. Construction induced vibrations should be minimized during shoring placement.

7.3.1 Lateral Earth Pressures

Static lateral earth pressure will be imposed on all shored excavations and below grade structures, including pump stations and manholes. Table 7-1 summarizes the lateral earth pressures recommended for use in design of unbraced temporary shoring. Active pressure should be assumed for conditions where the top of the wall is free to deflect up to ½ inch. Passive pressure should be ignored for a depth of 24 inches and may be utilized to resist overturning and sliding. Where structures will be located below groundwater, hydrostatic pressures should be added to the passive lateral earth pressure values shown in Table 7-1. As noted previously, the design of unbraced shoring will likely be controlled by deflections. As a result, calculations should also consider allowable ground deformations.

Table 7-1: Lateral Earth Pressures – Unbraced Shoring

Pressure Type	Above Groundwater Level (Equiv. Fluid Pressure)	Below Groundwater Level (Equiv. Fluid Pressure)
Active	37 pcf	80 pcf
At-Rest	56 pcf	89 pcf
Passive	390 pcf	250 pcf

If the temporary shoring will be braced, a rectangular or trapezoidal loading diagram such as those recommended by Terzaghi & Peck, Tschebortarioff, and others (Caltrans Trenching and Shoring Manual and FHWA GEC No. 4) should be used. These methods generally correlate the earth pressure load to a percentage of the unit weight of the soil times the height of the excavation. The method and loading should be determined by the contractor and provided to the Engineer for review.

Surcharge loading from construction equipment and temporary storage of materials can be modeled as a minimum uniform ground pressure of 250 psf or higher as otherwise determined by the contractor's shoring design engineer.

7.3.2 Installation and Removal of Shoring

To reduce the potential for vibration induced settlements during construction, it is recommended that the contractor monitor the soils encountered during excavation and at a minimum avoid the generation of vibrations at locations where loose cohesionless soils are encountered. Settlement of adjacent improvements during the removal of shoring should be minimized and should be monitored during removal.

7.4 EXISTING ROCK REMOVAL FROM STATE PARKS PROPERTY

We understand that, based on records from HKA, rock from the 2003 and 2004 emergency repairs is present on State Park lands beneath the current beach level adjacent to Lots 15, 54, 55, 98, 99, 100, 102, 103 and 104. This rock shall be removed from State property and stockpiled or reused in the repair. Approximately 860 tons of rock was previously placed on State Parks Property for temporary emergency stabilization of the rock revetment. Removing this rock is considered part of the maintenance and repair activities. Removal of this rock may require additional placement of temporary shoring to facilitate excavations required to recover the rock. The Contractor will be responsible for placement of temporary shoring as required for this aspect of the project.

Where the existing rock revetment is steeper than 1.7:1 (horizontal to vertical), the construction should be staged such that a maximum length of the revetment of 20 feet of the repair (measured at the base of the excavation) is constructed at a time.

7.5 HOUSE AND DECK UNDERPINNING

Residential structures and decks are located in close proximity to the existing revetment. To reduce the potential for structures and decks to become unstable during construction, it is recommended that these structures within 20 feet from the top of the revetment be underpinned by using pipe piles or helical piles, such as Chance Anchors, or equivalent.

The underpinning system should be design by the Contractor. Shop drawings of the underpinning system, including acceptance criteria for depth and load capacity, should be submitted Cal Engineering & Geology for review prior to construction. The shop drawings should be signed and stamped by the Contractor's Civil Engineer registered in the State of California.

7.6 BEACH ACCESS STAIRS

The four beach access stairs and boardwalks in conflict with the repair should be removed and replaced in-kind. The stairs, boardwalks, and their foundations should be reconstructed using all new materials. The reconstructed stairs should match the original stair materials and configuration and shall be in conformance with current building code standards.

8.0 LIMITATIONS

The conclusions and recommendations presented in this report are based on the information provided regarding the planned construction, and the results of the geologic mapping, subsurface exploration, and testing, combined with interpolation of the subsurface conditions between CPT sounding locations. Site conditions described in the text of this report are those existing at the time of our last field reconnaissance and are not necessarily representative of the site conditions at other times or locations. This information notwithstanding, the nature and extent of subsurface variations between CPT soundings may not become evident until construction. If variations are encountered during construction, Cal Engineering & Geology, Inc. should be notified promptly so that conditions can be reviewed and recommendations reconsidered, as appropriate.

It is the Owner's responsibility to ensure that recommendations contained in this report are carried out during the construction phases of the project. The findings of this report should be considered valid for a period of three years unless the conditions of the site change. After a period of three years, CE&G should be contacted to review the site conditions and prepare a letter regarding the applicability of this report.

This report presents the results of a geotechnical and geologic investigation only and should not be construed as an environmental audit or study. The evaluation or identification of the potential presence of hazardous materials at the site was not requested and was beyond the scope of this investigation and report.

The conclusions and recommendations contained in this report are valid only for the project described in this report. We have employed accepted geotechnical engineering procedures, and our professional opinions and conclusions are made in accordance with generally accepted geotechnical engineering principles and practices. This standard is in lieu of all other warranties, either expressed or implied.

9.0 REFERENCES

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Haro, Kasunich and Associates (2008c), Report, Pajaro Dunes Revetment Repair and Improvement Plan, Pajaro Dunes, Santa Cruz County, California, September 16, 2008.

Haro, Kasunich and Associates (2008d), Plans, 14 sheets, Revetment Repair and Maintenance Plan, Long Term Revetment Modifications, Pajaro Dunes Geologic Hazard Abatement District, Pajaro Dunes, Santa Cruz County, California, December 10, 2008.

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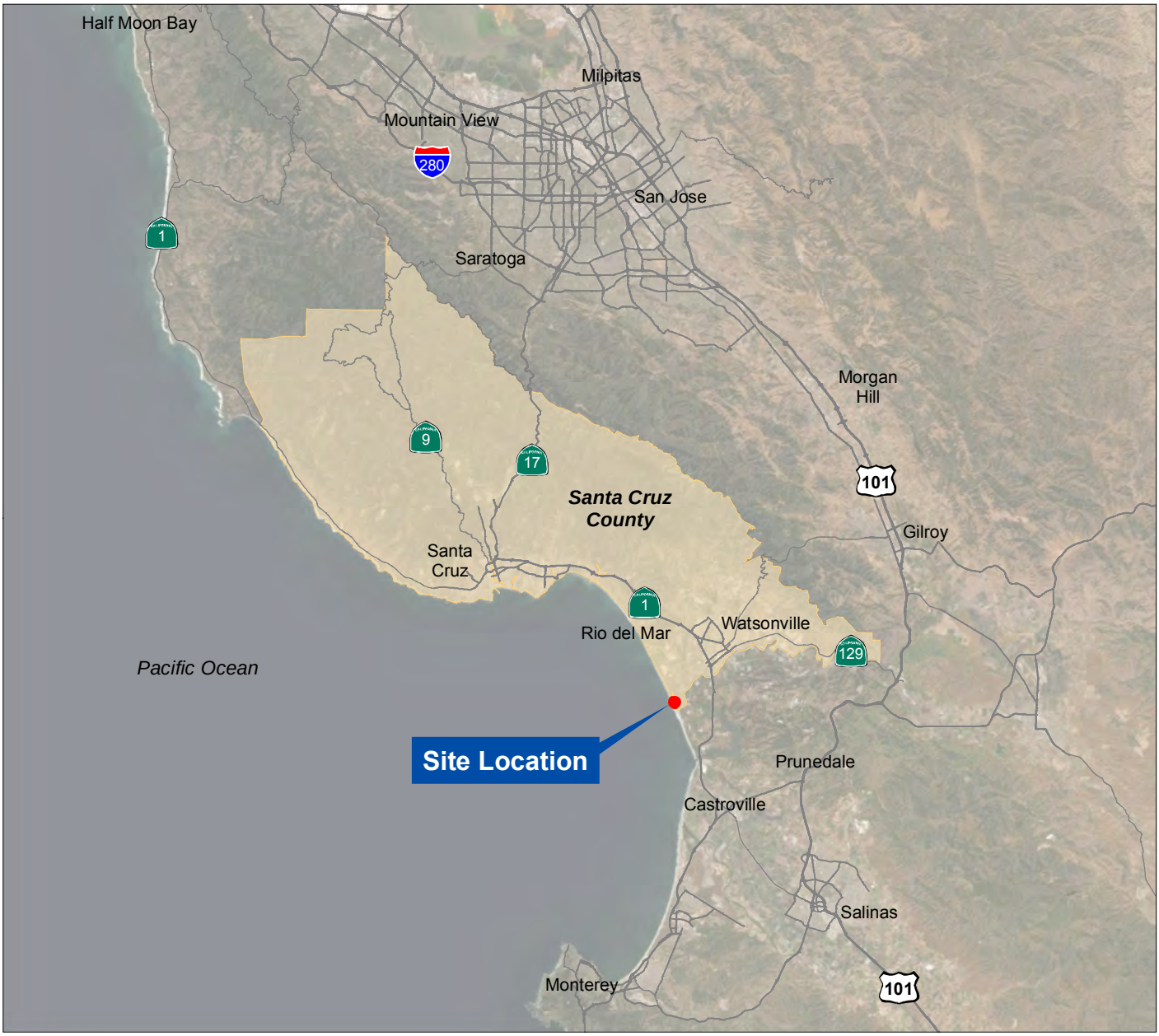
FIGURES



BASEMAP REFERENCE

1. HIGHWAY CENTERLINES FROM CALTRANS CALIFORNIA ROAD SYSTEM, DOWNLOADED ON 2/18/2020.
2. ORTHOIMAGERY FROM ESRI (MAXAR), 2018.

N

0 5 10 20
MILES

CE&G
CAL ENGINEERING & GEOLOGY

6455 Almaden Expwy.
Suite 100
San Jose, CA 95120
Phone: (408) 440-4542

PAJARO DUNES SEAWALL
ANNUAL INSPECTION OF ROCK REVETMENT AND RIVER WALL
SANTA CRUZ COUNTY, CALIFORNIA

SITE LOCATION MAP

190781	JUNE 2020	FIGURE 1

\\granite\CEG Master Files\2019\190780-PajaroDunesGHAD-SeawallMonitoring\GIS\ArcGIS\190781-Fig1-SiteLocation.mxd; 6/15/2020; kdrozynska

Cone Penetrometer Testing Probe with date of fieldwork	Location Seaward of landing, house or condo unit (ft)	Surface Elevation (feet) (NGVD29)	CPT Probe Depth Below Grade (ft)
1a -12/07/2007	72' W upcst Cypress strwy	6.9	6.6
1b -12/07/2007	93' W upcst Cypress strwy	5.8	12.7
1c - 12/07/2007	108' W upcst Cypress strwy	4.0	13.3
1d -12/20/2007	127' W upcst Cypress strwy	4.6	13.1
1e - 12/20/2007	146' W upcst Cypress strwy	4.2	11.7
2a - 12/07/2007	104' W dwcst Cypress strwy	5.0	50.4
3a -12/07/2007	103' W Avocet strwy	5.2	40.0
4a - 12/07/2007	100' W upcst Plover strwy	4.0	50.1
5a -12/19/2007	111' W Pelican A #24	7.0	40.3
6a - 12/19/2007	107' W Pelican A #5	7.4	40.2
7a - 12/19/2007	120' W upcst cm House #140	8.3	40.0
8a - 12/19/2007	106' W dwcst cm House #71	8.4	40.2
9a -12/19/2007	91' W dwcst Puffin strwy	8.0	40.1
10a -12/19/2007	88' W upcst Puffin strwy	7.1	40.2
11a -12/19/2007	92' W Shearwater strwy	6.2	36.6
12a -12/19/2007	82' W Cormorant strwy	6.6	40.4
13a -12/20/2007	69' W dwcst Willet strwy	7.7	58.5
14a -12/20/2007	72' W upcst Willet strwy	8.3	39.0
15a -12/20/2007	76' W dwcst Sanderling strwy	7.1	40.0
16a -12/20/2007	83' W upcst Sanderling strwy	6.8	13.3
16b - 12/20/2007	97' W upcst Sanderling strwy	5.5	40.1
17a -12/20/2007	85' W Plover strwy	6.2	40.3

REFERENCES

1. CPT LOCATIONS FROM ARUP, REPORT NAMED "PAJARO DUNES GHAD, PAJARO DUNES, REVETMENT REPAIR DESIGN: INITIAL PHASE" DATED 08/30/2013, FIGURE A-1.

LEGEND

17a — CPT LOCATION BY HARO, KASUNICH AND ASSOCIATES, 2007

101 — PARCELS OF INTEREST

250 0 250 500
SCALE FEET

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Walnut Creek, CA 94596
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ROCK REVETMENT REPAIR
PAJARO DUNES GHAD
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA

SITE PLAN

190781	JUNE 2020	FIGURE 2

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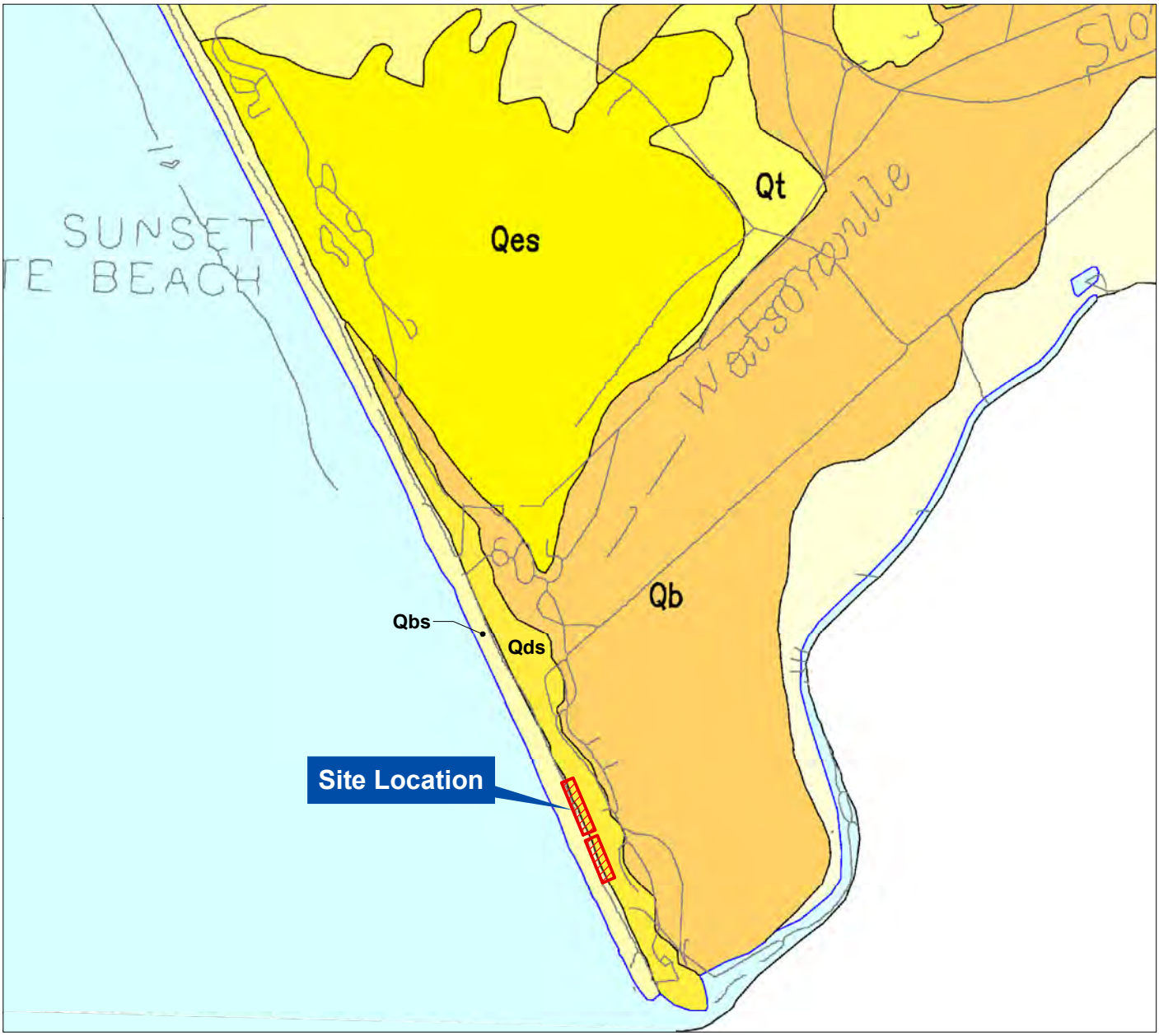

BASEMAP REFERENCE

1. REGIONAL GEOLOGY FROM BRABB, 1997.

0 0.25 0.5 1
MILES

MAP UNIT DESCRIPTION

Qyf	YOUNGER FLOOD-PLAIN DEPOSITS (HOLOCENE)	Qt	TERRACE DEPOSITS, UNDIFFERENTIATED (PLEISTOCENE)
Qb	BASIN DEPOSITS (HOLOCENE)	Qes	EOLIAN DEPOSITS OF SUNSET BEACH (PLEISTOCENE)
Qds	DUNE SAND (HOLOCENE)	Qem	EOLIAN DEPOSITS OF MANRESA BEACH (PLEISTOCENE)
Qbs	BEACH SAND (HOLOCENE)	Qwf	TERRACE DEPOSITS OF WATSONVILLE; FLUVIAL FACIES (PLEISTOCENE)

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PAJARO DUNES GHAD
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA

REGIONAL GEOLOGY MAP

190781	JULY 2020	FIGURE 3

CROSS SECTION ACROSS PAJARO DUNES SOUTH
NUMBERS REFER TO SITE OF CPT (CYPRESS TO THE LEFT, PELICAN TO THE RIGHT)

NORTH ← → SOUTH

1a-1e 2a 3a 4a 17a 16a 16b 15a 14a 13a 12a 11a 10a 9a 8a 7a 6a 5a

0 10 20 30 40 50 60

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

LEGEND:

- DUNE SAND
- DENSE BEACH SAND
- CLAY
- DENSE SAND
- INTERBEDDED CLAYS AND SANDS

REFERENCES

1. GEOLOGIC PROFILE FROM ARUP, REPORT NAMED "PAJARO DUNES GHAD, PAJARO DUNES, REVETMENT REPAIR DESIGN: INITIAL PHASE" DATED 08/30/2013, FIGURE A-2 TITLED "CROSS SECTION GEOLOGY".

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SCALE FEET
HORIZONTAL SCALE
1" = 500' (ON 17x11)

5 0 5 10
SCALE FEET
VERTICAL SCALE
1" = 10' (ON 17x11)

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ROCK REVETMENT REPAIR
PAJARO DUNES GHAD
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA

GEOLOGIC PROFILE

190781	JUNE 2020	FIGURE 4

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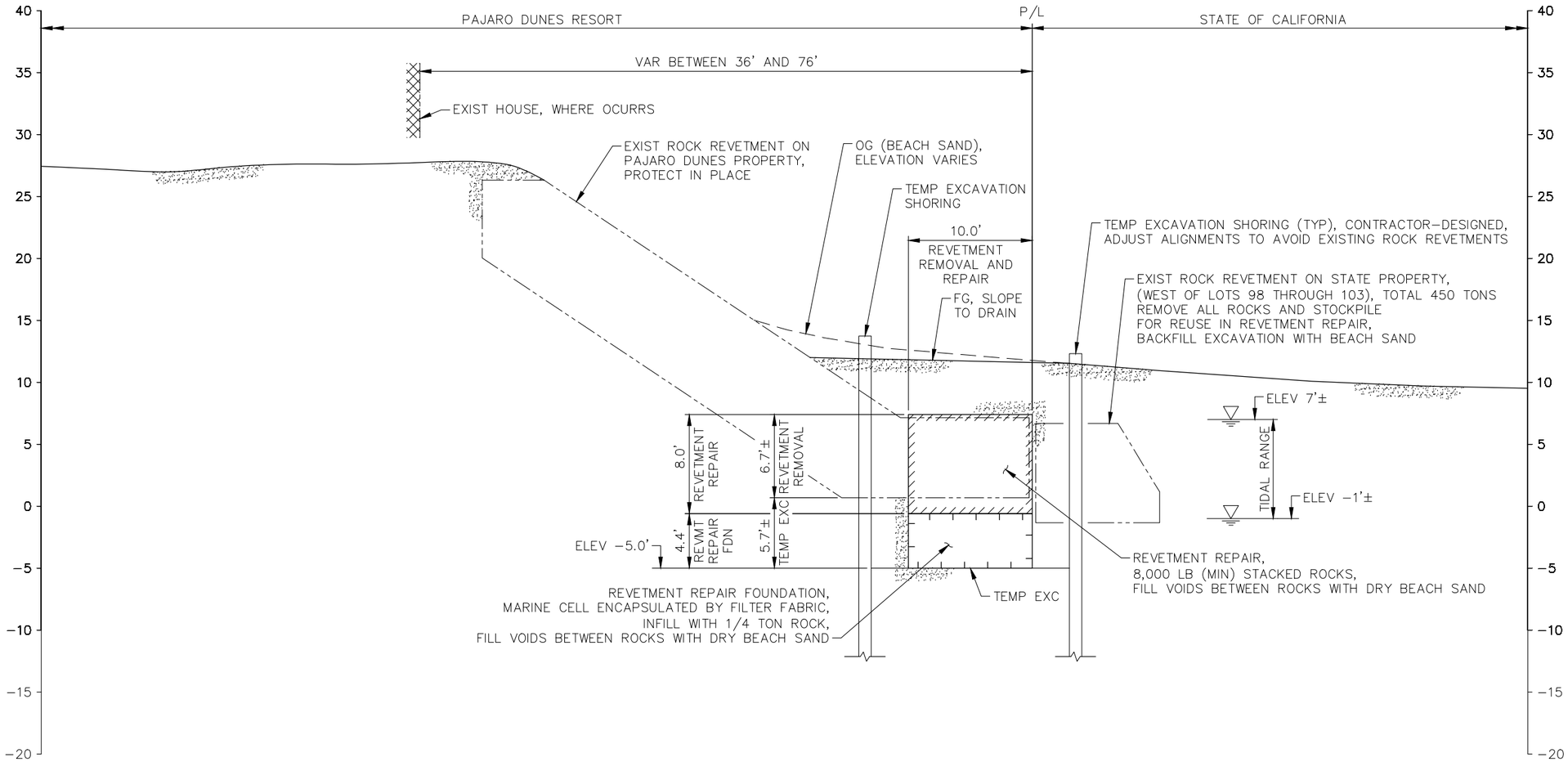

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SCALE FEET

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Walnut Creek, CA 94596
Phone: (925) 935-9771

PAJARO DUNES GHAD

ROCK REVETMENT REPAIR
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA
TYPICAL SECTION

DESIGNED	DRAWN	CHECKED	PROJECT NO.	DATE		FIGURE
XXX	XXX	P. GREGORY	190780	JULY 2020		5

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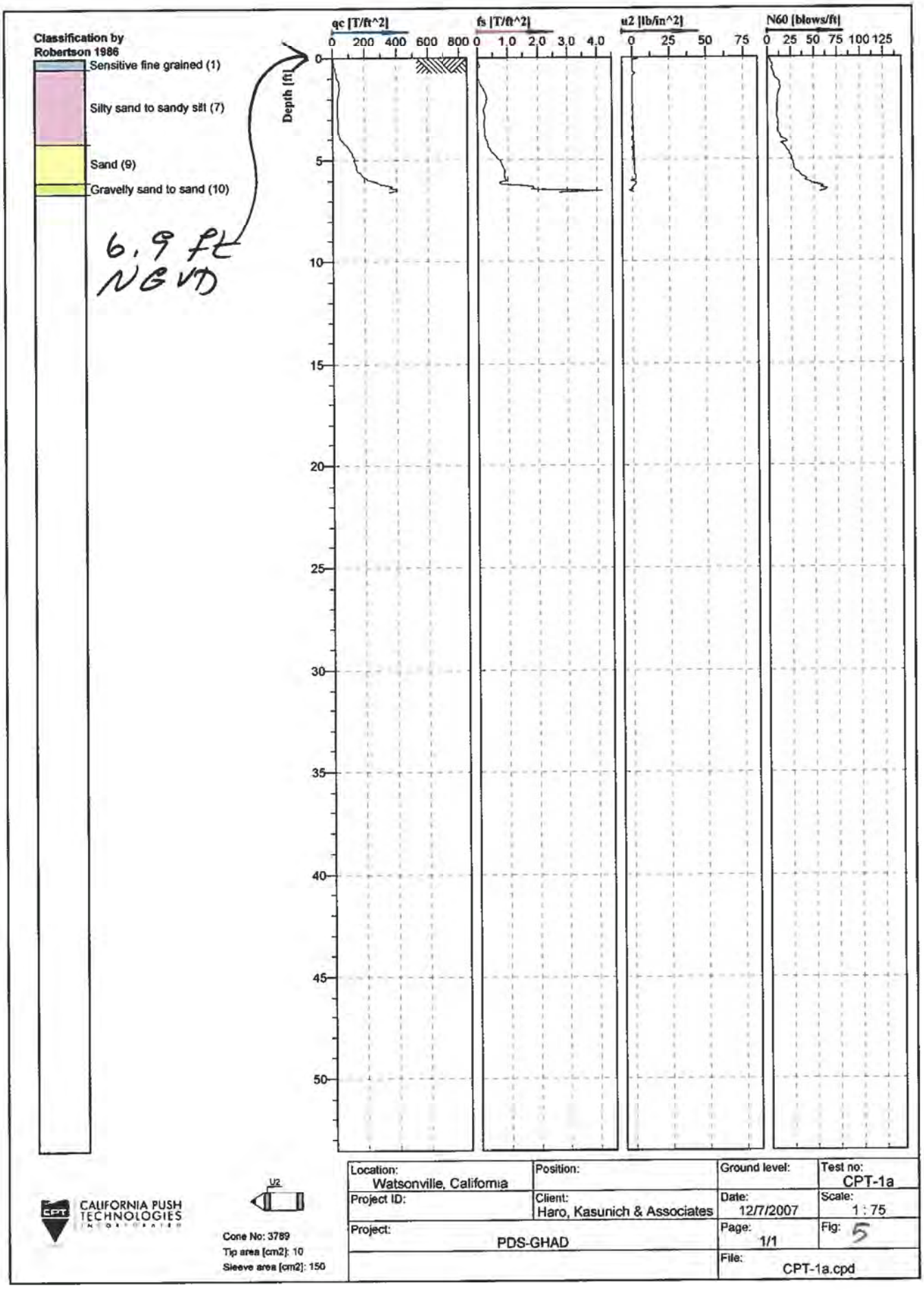
Appendix A. CPT Soundings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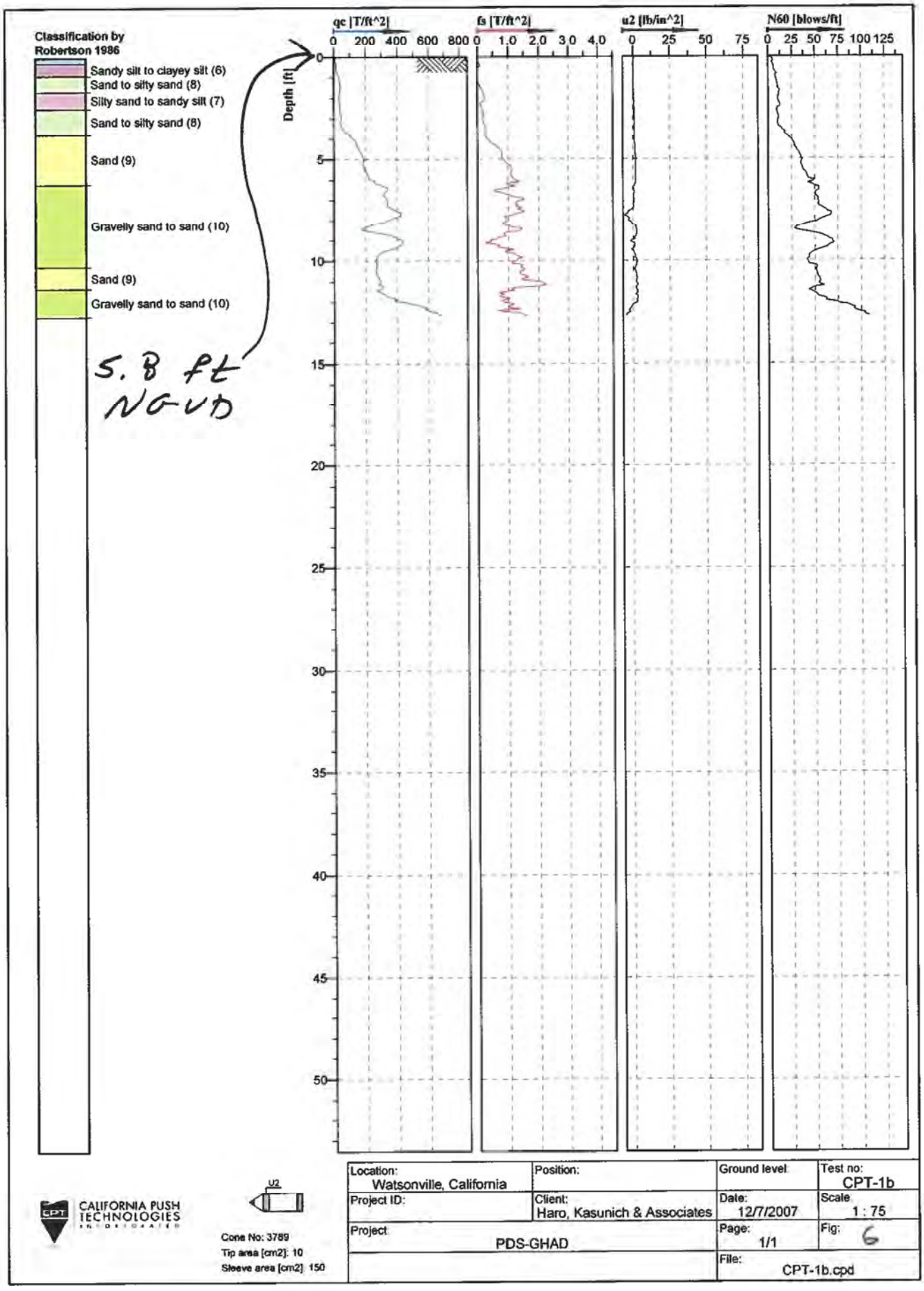
Silty sand to sandy silt (7)
Sand (9)
Gravelly sand to sand (10)
6.9 ft NGVD
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-1a
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
Page: 1/1
Fig: 5
File: CPT-1a.cpd
CALIFORNIA PUSH TECHNOLOGIES
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

FIGURE B-4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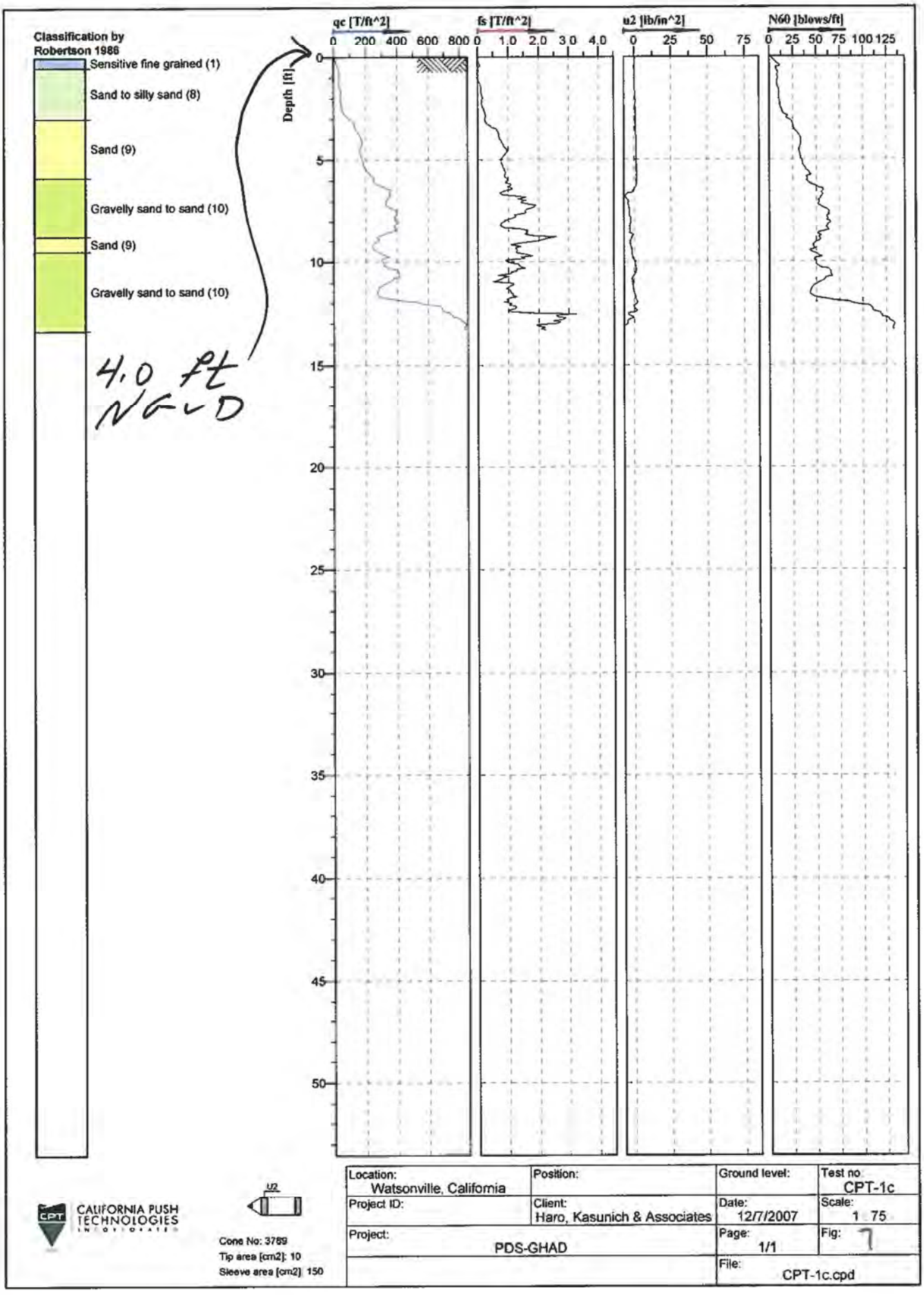
Sand to silty sand (8)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
5.8 ft NAVD
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 25 50 75
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50
U2
CALIFORNIA PUSH TECHNOLOGIES
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-1b
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
Page: 1/1
Fig: 6
File: CPT-1b.cpd

FIGURE B-5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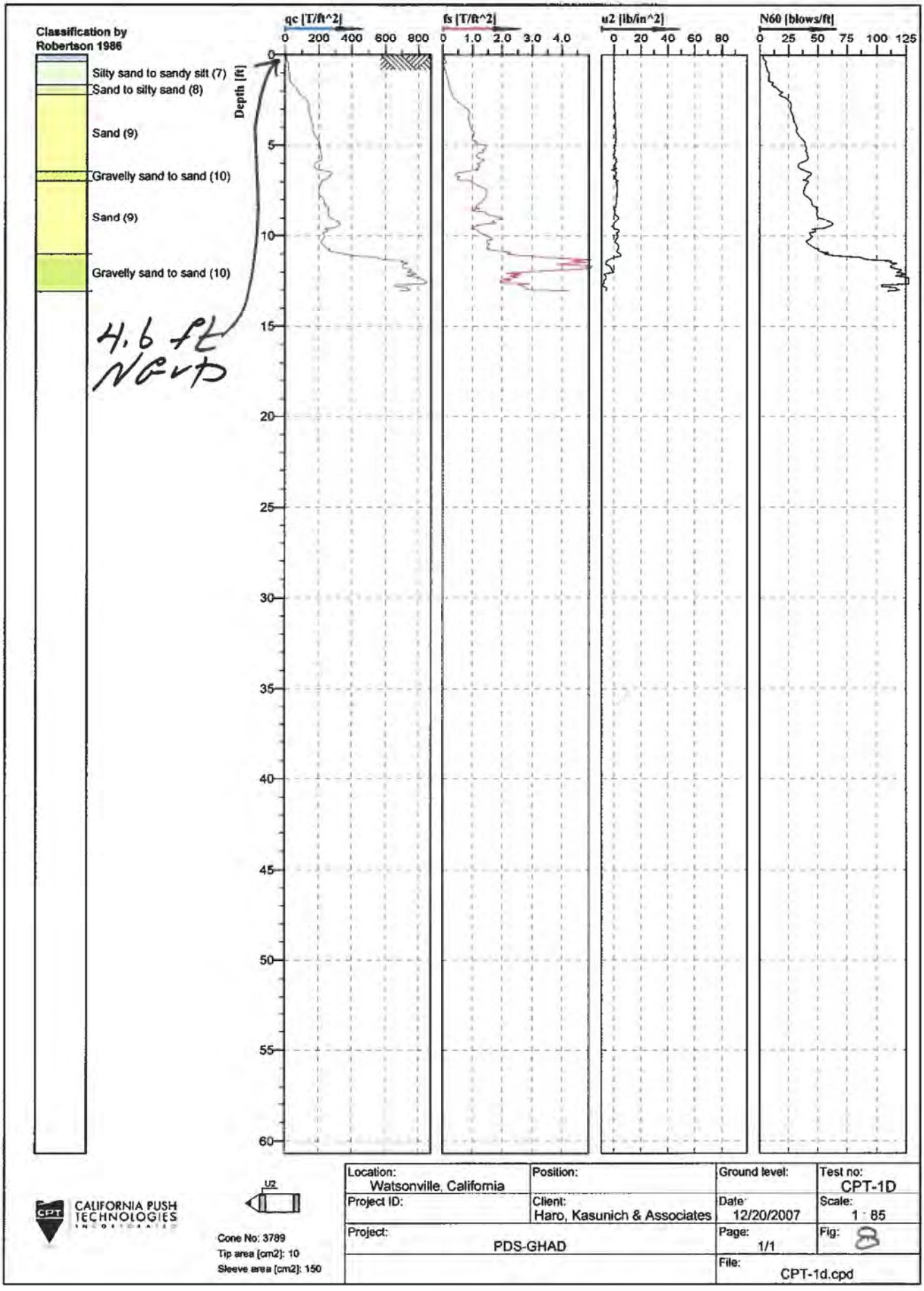
Sand to silly sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
4.0 ft NGVD
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 25 50 75
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-1c
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
Page: 1/1
Fig: 7
File: CPT-1c.cpd

FIGURE B-6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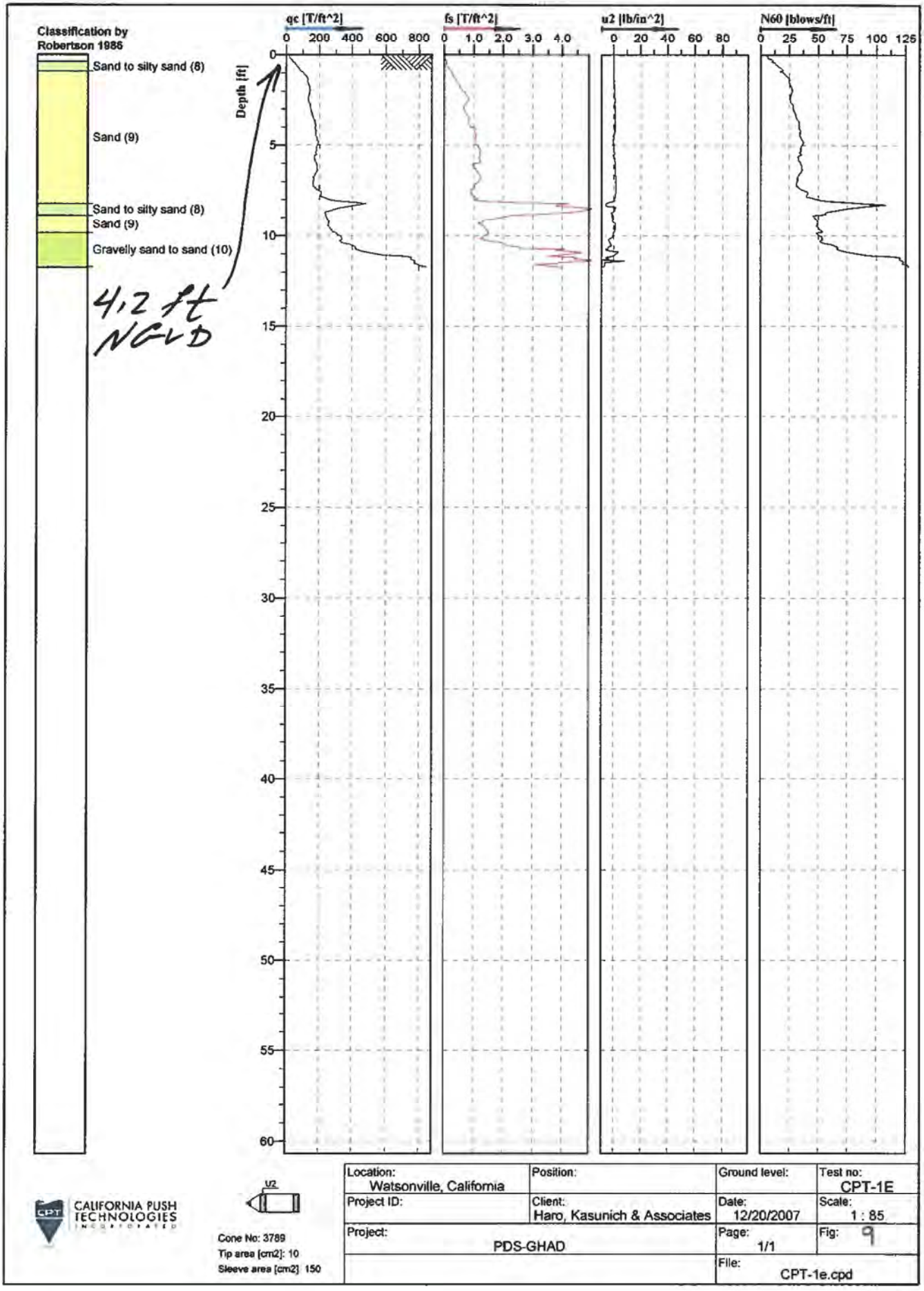
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
4.6 ft NGVD
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
Depth [ft]
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-1D
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: B-7
File: CPT-1d.cpd

FIGURE B-7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Sand (9)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
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0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
Depth [ft]
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
u2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-1E
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
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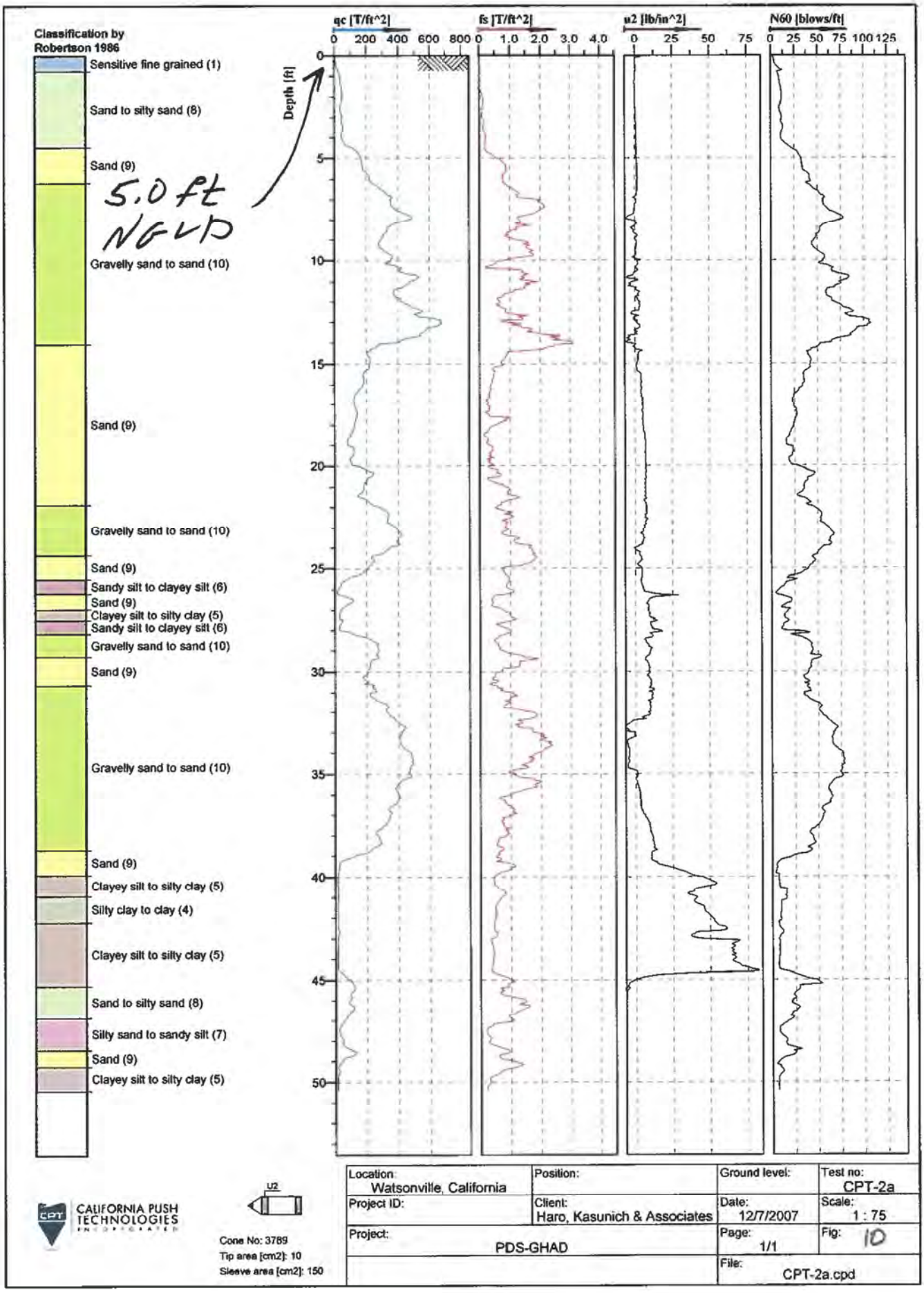
Project: PDS-GHAD
Page: 1/1
Fig: 9
File: CPT-1e.cpd

FIGURE B-8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Sand to silty sand (8)
Sand (9)
5.0 ft NGVD
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sandy silt to clayey silt (6)
Sand (9)
Clayey silt to silty clay (5)
Sandy silt to clayey silt (6)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clayey silt to silty clay (5)
Silty clay to clay (4)
Clayey silt to silty clay (5)
Sand to silty sand (8)
Silty sand to sandy silt (7)
Sand (9)
Clayey silt to silty clay (5)
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 25 50 75
N60 [blows/ft]
0 25 50 75 100 125
Depth [ft]
0 5 10 15 20 25 30 35 40 45 50
CALIFORNIA PUSH TECHNOLOGIES
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-2a
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
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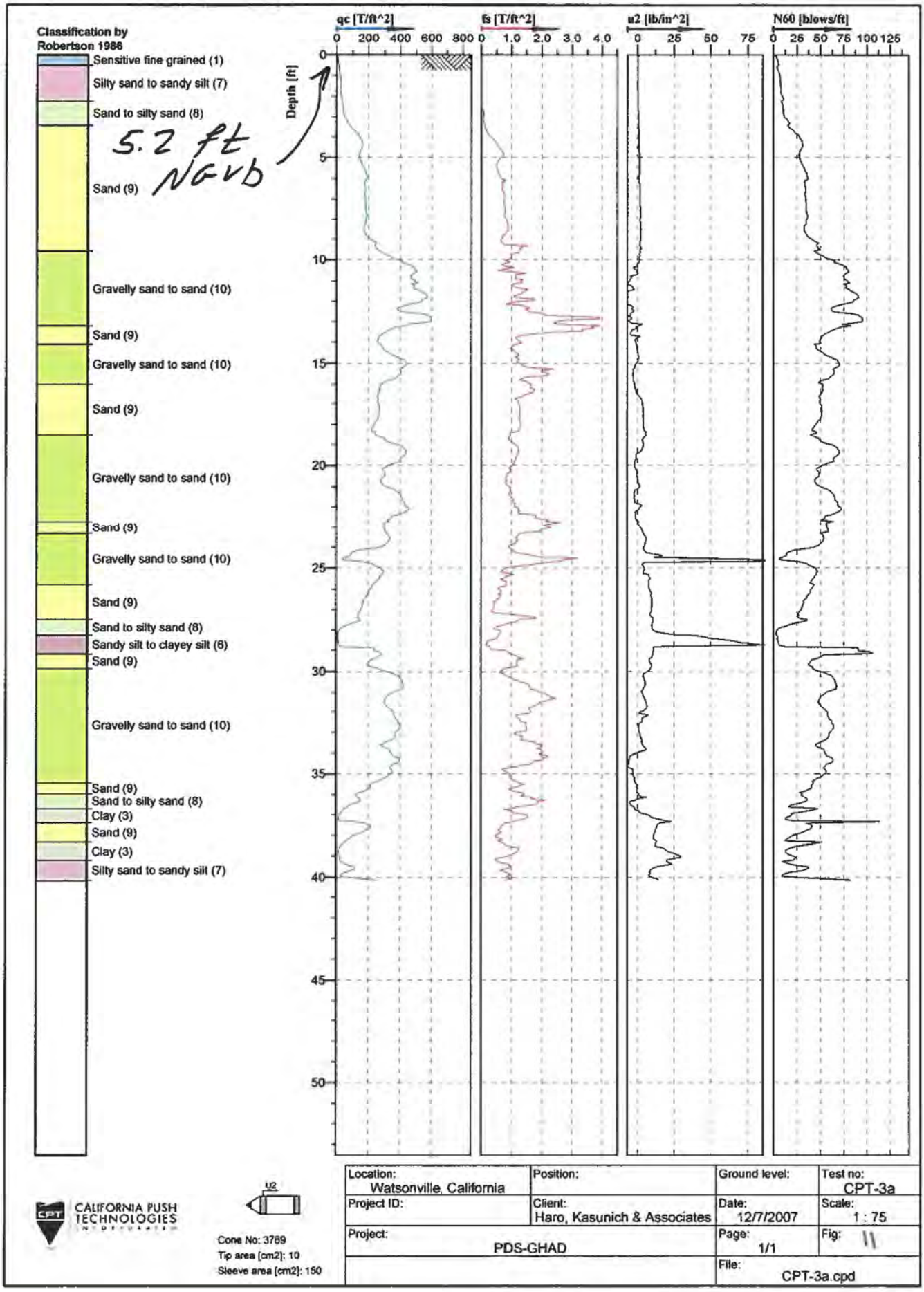
FIGURE B-9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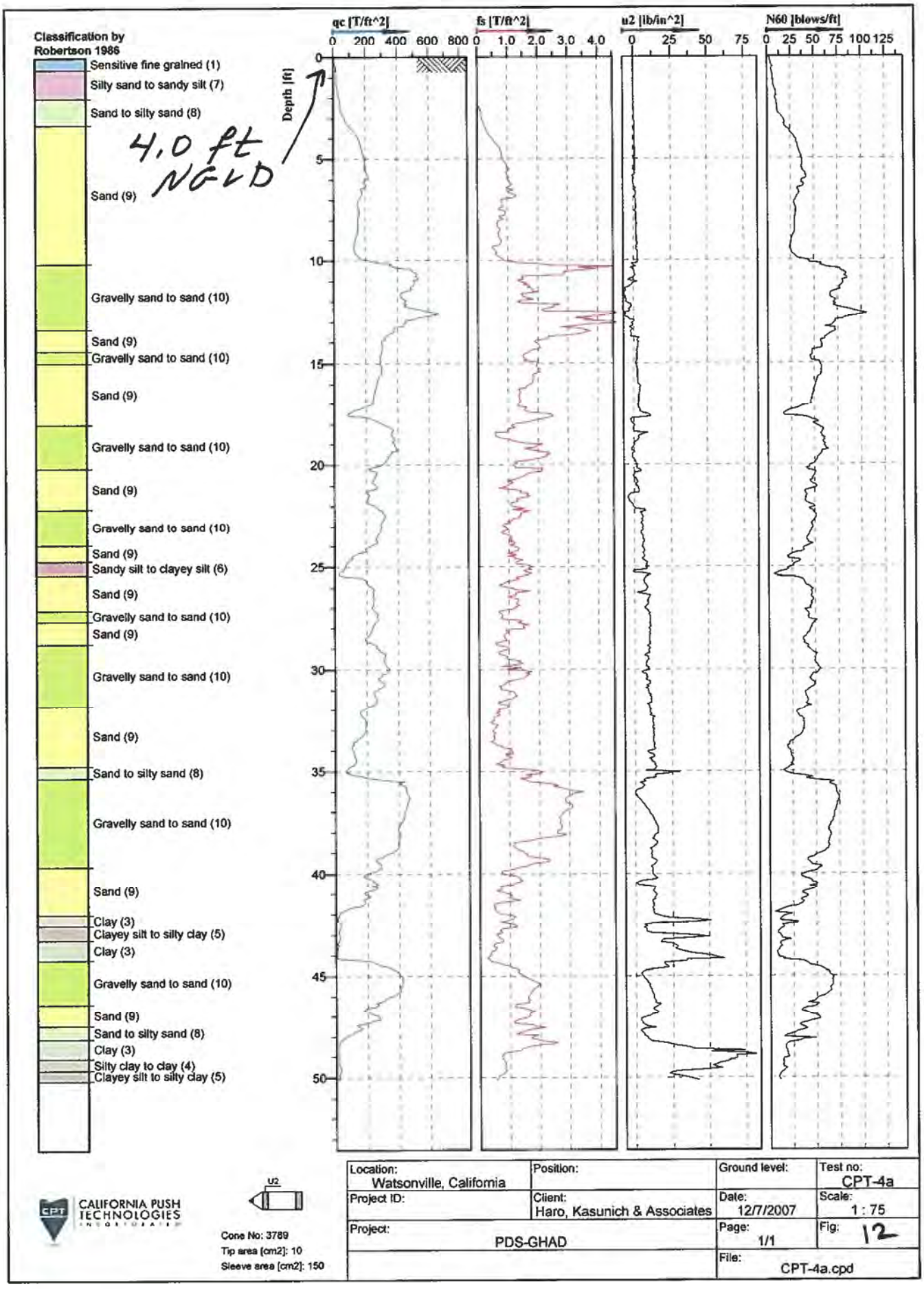
Silty sand to sandy silt (7)
Sand to silty sand (8)
5.2 ft NAVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Sandy silt to clayey silt (6)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Clay (3)
Sand (9)
Clay (3)
Silty sand to sandy silt (7)
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 25 50 75
N60 [blows/ft]
0 25 50 75 100 125
Depth [ft]
0 5 10 15 20 25 30 35 40 45 50
CALIFORNIA PUSH TECHNOLOGIES
u2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-3a
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
Page: 1/1
Fig: 11
File: CPT-3a.cpd

FIGURE B-10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Sand to silty sand (8)
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Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sandy silt to clayey silt (6)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Clay (3)
Silty clay to clay (4)
Clayey silt to silty clay (5)
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
CALIFORNIA PUSH TECHNOLOGIES
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-4a
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/7/2007
Scale: 1 : 75
Project: PDS-GHAD
Page: 1/1
Fig: 12
File: CPT-4a.cpd

FIGURE B-11

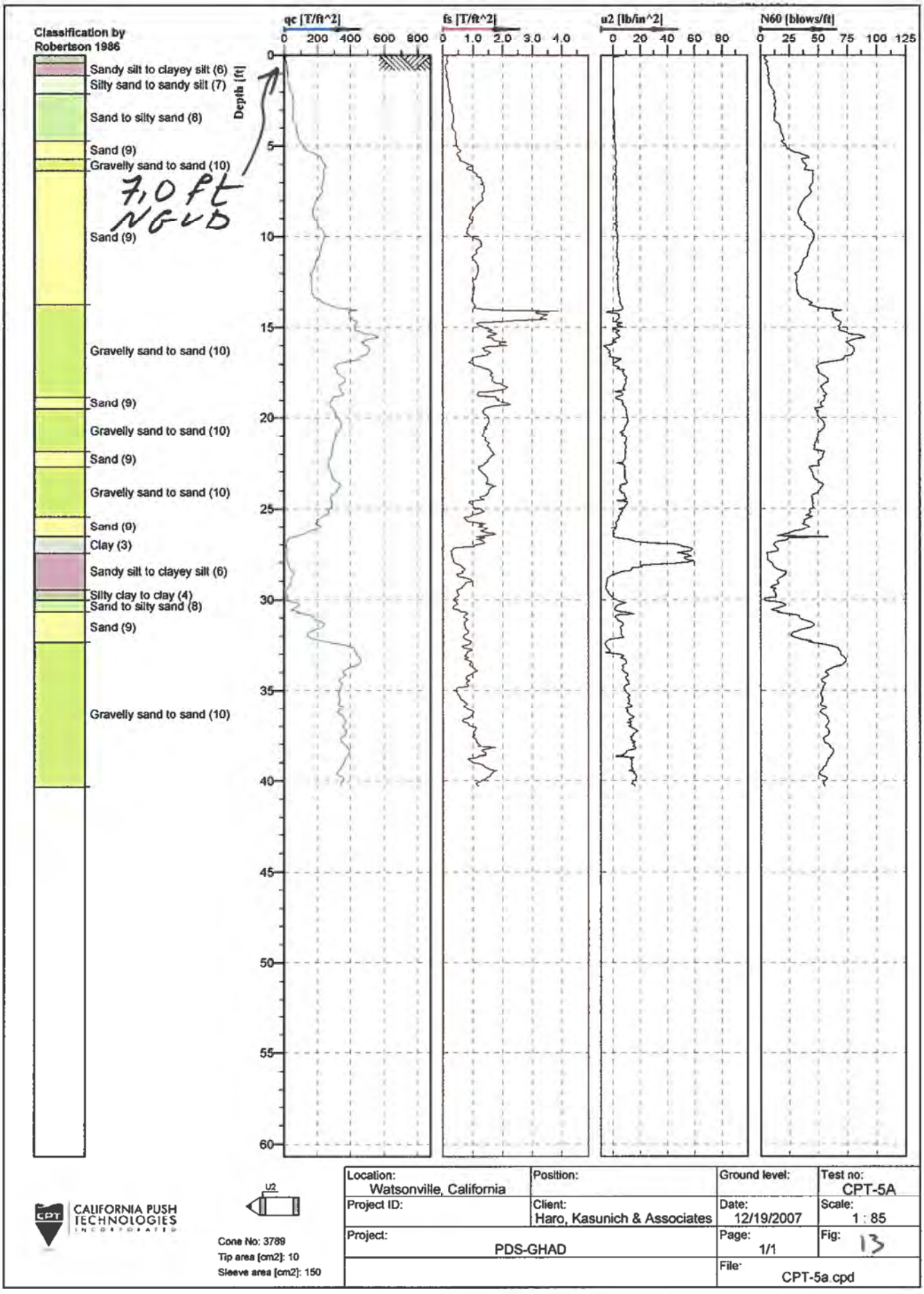

Classification by Robertson 1986
Sandy silt to clayey silt (6)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
7.0 ft NAVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Sandy silt to clayey silt (6)
Silty clay to clay (4)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Depth [ft]
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
U2
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-5A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 13
File: CPT-5a.cpd

FIGURE B-12

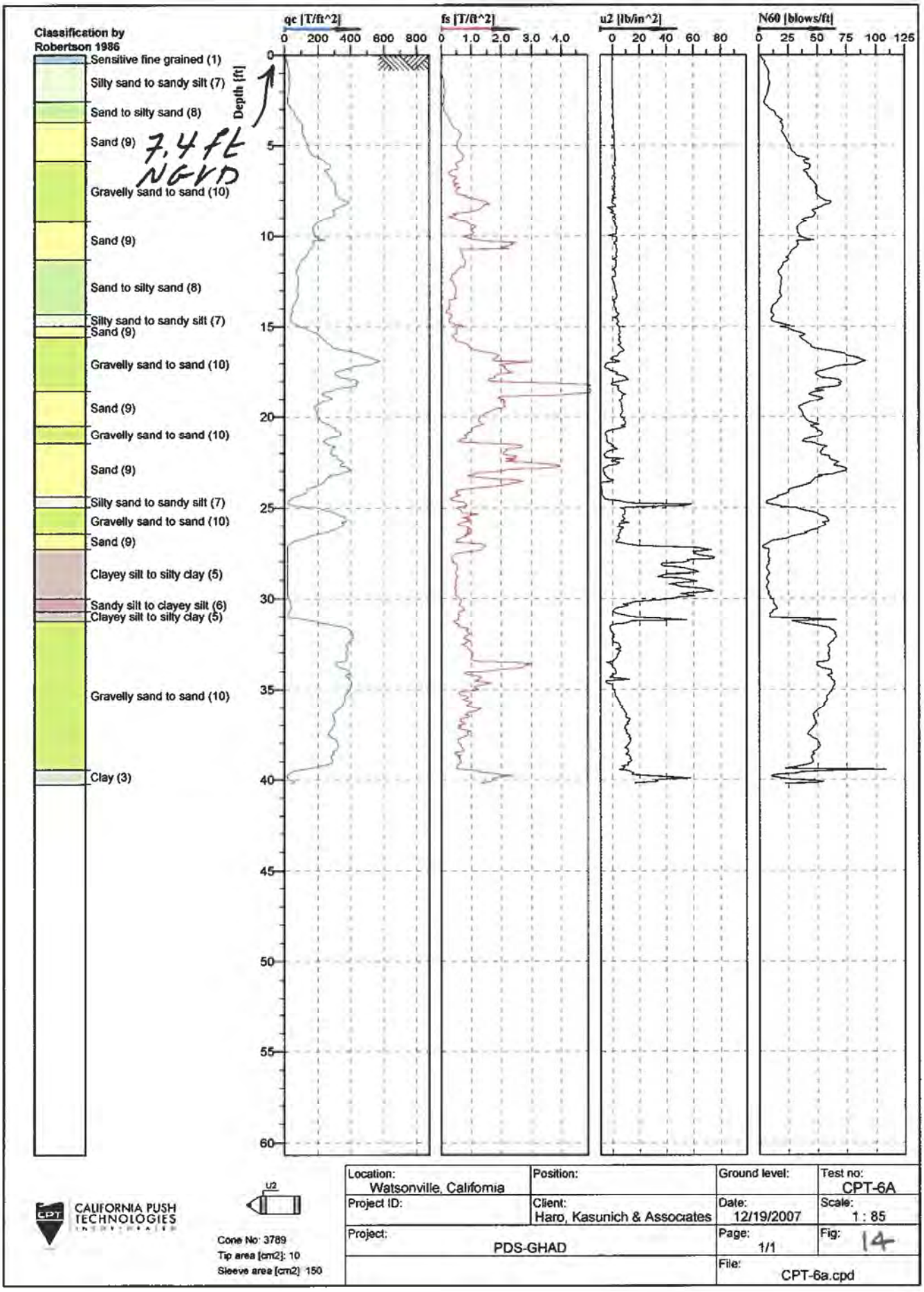

Classification by Robertson 1986
Sensitive fine grained (1)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
7.4 ft NGVD
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Silty sand to sandy silt (7)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Silty sand to sandy silt (7)
Gravelly sand to sand (10)
Sand (9)
Clayey silt to silty clay (5)
Sandy silt to clayey silt (6)
Clayey silt to silty clay (5)
Gravelly sand to sand (10)
Clay (3)
Depth [ft]
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
CALIFORNIA PUSH TECHNOLOGIES
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-6A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 14
File: CPT-6a.cpd

FIGURE B-13

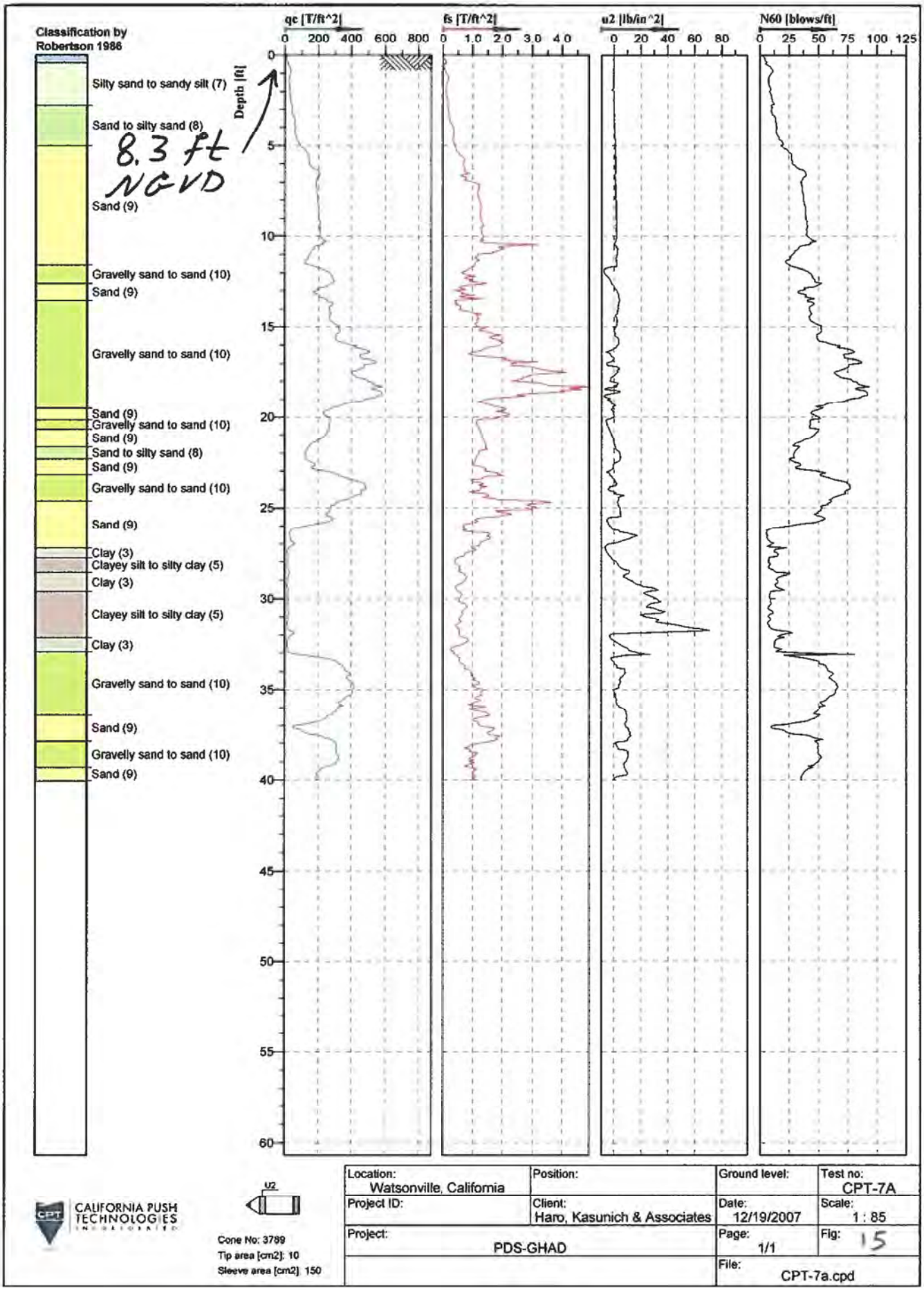

Classification by Robertson 1986
Silty sand to sandy silt (7)
Sand to silty sand (8)
8.3 ft NGVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Depth [ft]
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 20 40 60 80
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
CALIFORNIA PUSH TECHNOLOGIES
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-7A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 15
File: CPT-7a.cpd

FIGURE B-14

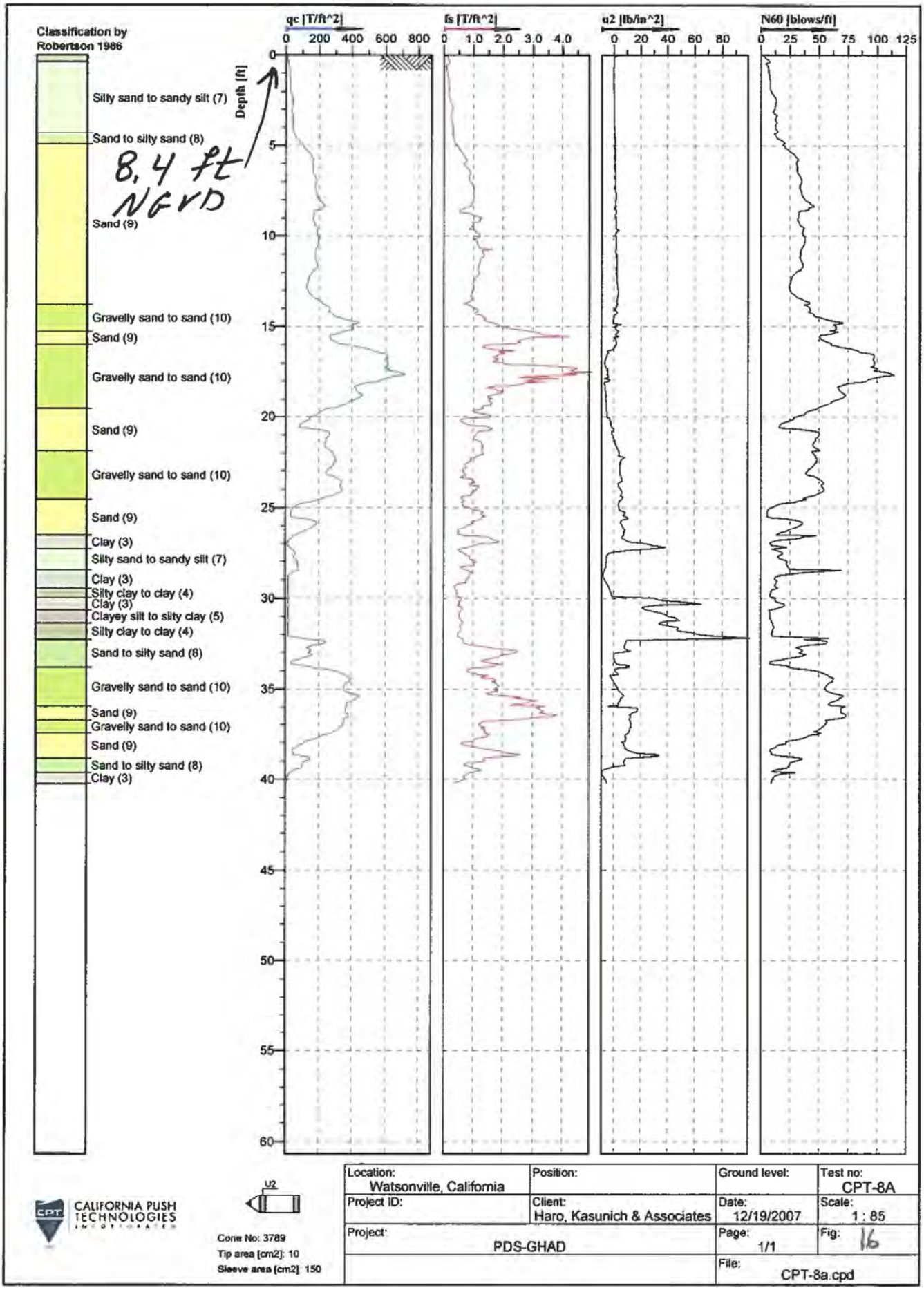

Classification by Robertson 1986
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
Silty sand to sandy silt (7)
Sand to silty sand (8)
8.4 ft NGVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Silty sand to sandy silt (7)
Clay (3)
Silty clay to clay (4)
Clay (3)
Clayey silt to silty clay (5)
Silty clay to clay (4)
Sand to silty sand (8)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Clay (3)
CALIFORNIA PUSH TECHNOLOGIES
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-8A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 16
File: CPT-8a.cpd

FIGURE B-15

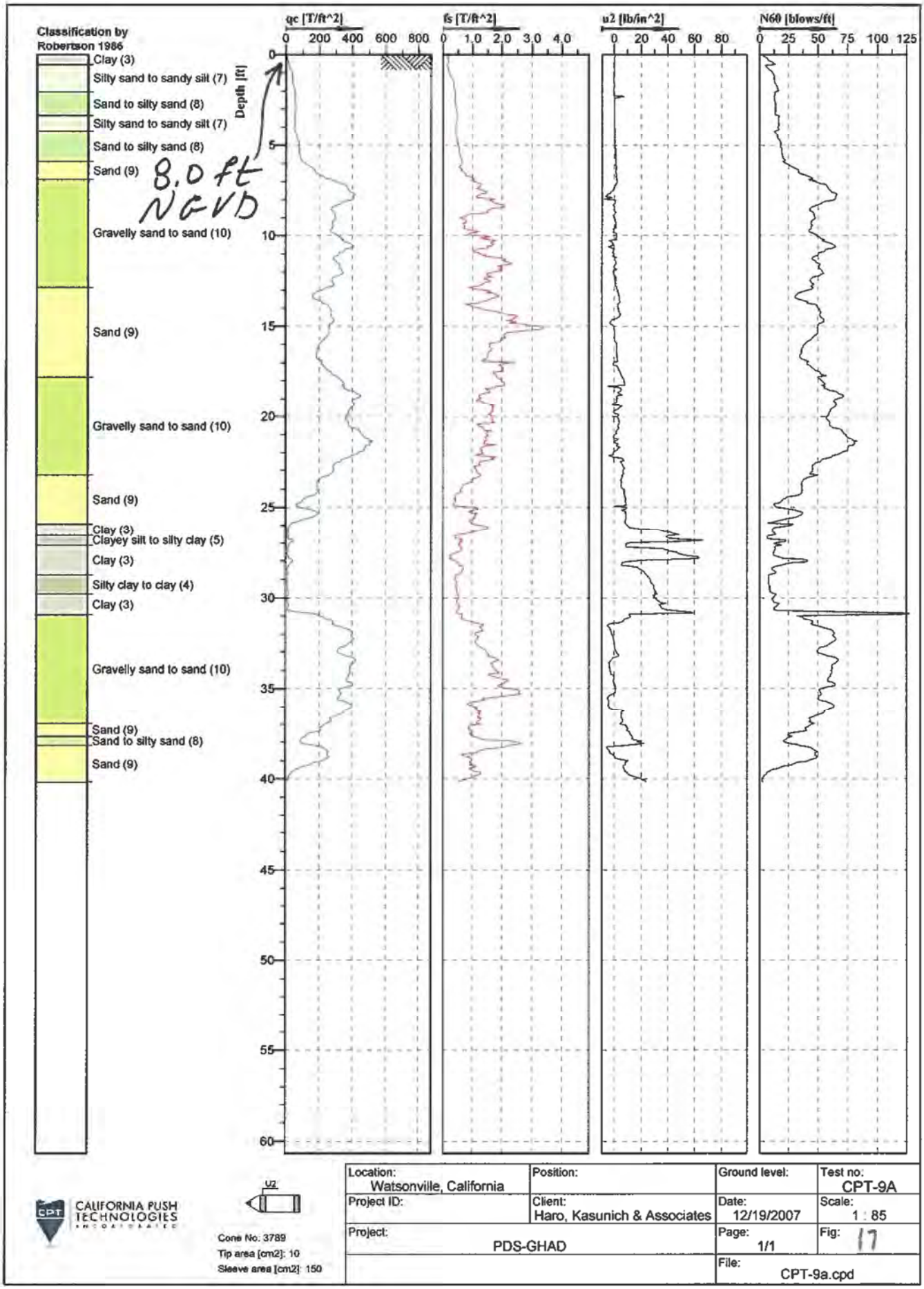

Classification by Robertson 1986
Clay (3)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
8.0 ft NGVD
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Silty clay to clay (4)
Clay (3)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Sand (9)
Depth [ft]
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 20 40 60 80
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
U2
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-9A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 17
File: CPT-9a.cpd

FIGURE B-16

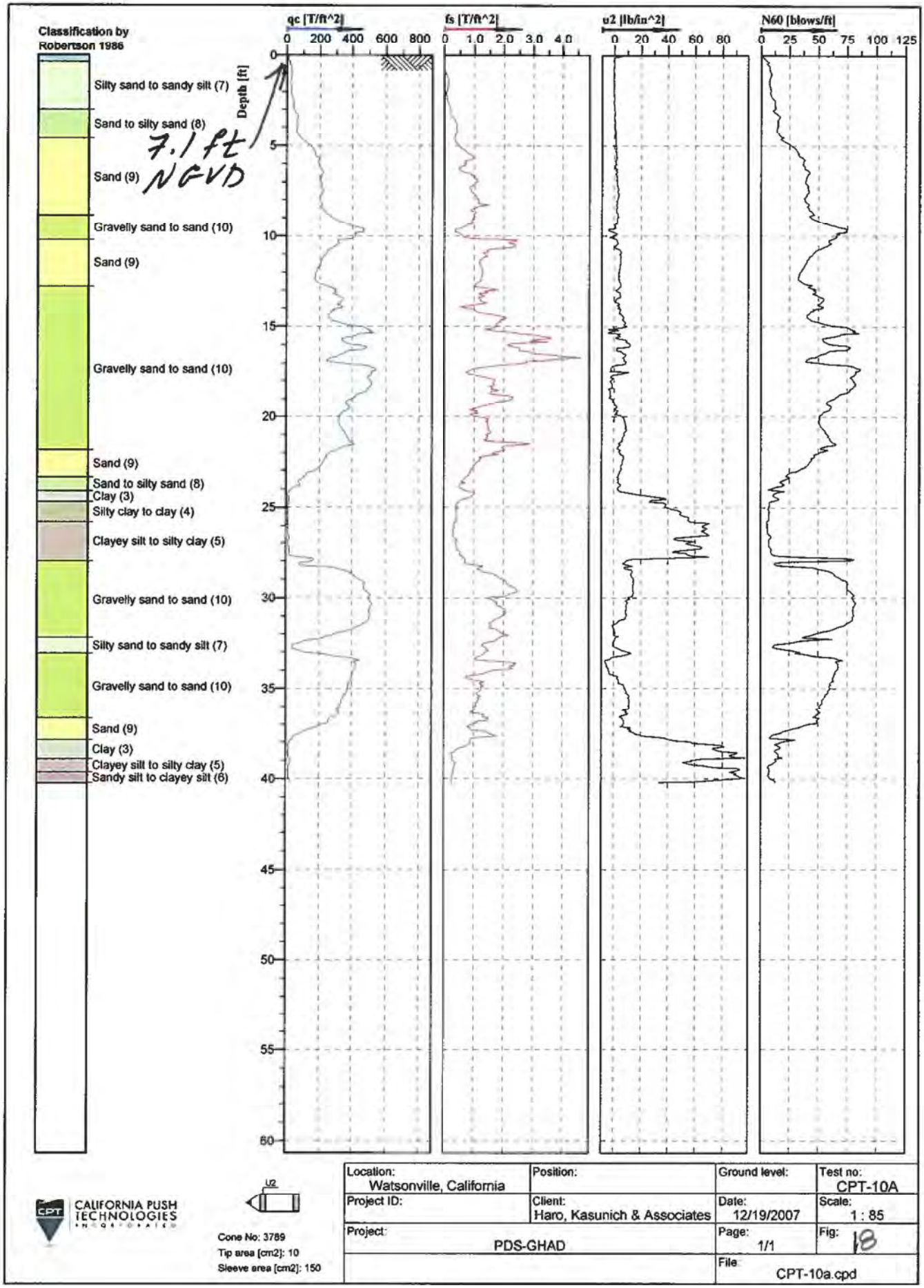

Classification by Robertson 1986
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Clay (3)
Silty clay to clay (4)
Clayey silt to silty clay (5)
Gravelly sand to sand (10)
Silty sand to sandy silt (7)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Sandy silt to clayey silt (6)
7.1 ft NGVD
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 20 40 60 80
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES
u2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-10A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 18
File: CPT-10a.cpd

FIGURE B-17

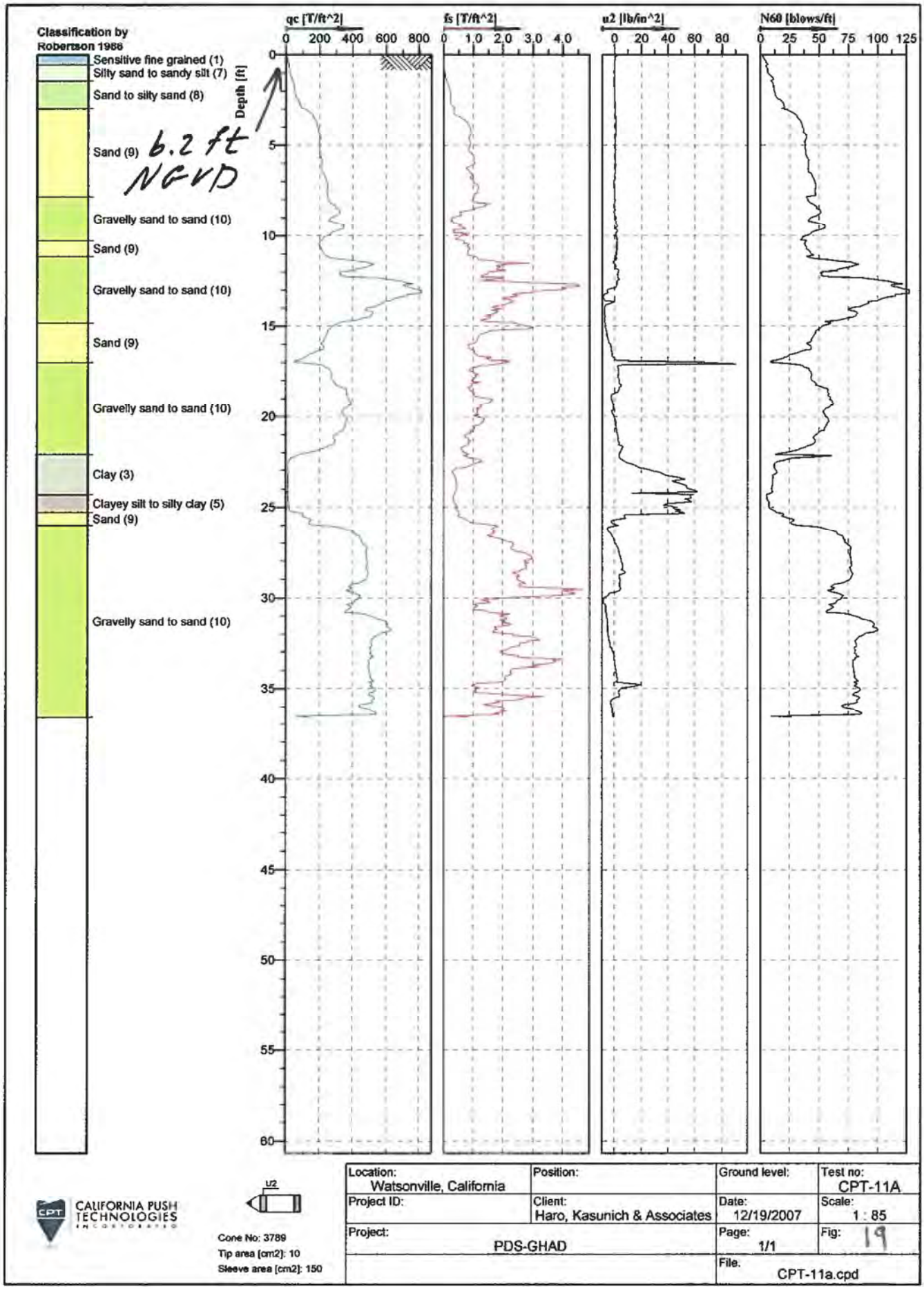

Classification by Robertson 1986
Sensitive fine grained (1)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
6.2 ft NGVD
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Clay (3)
Clayey silt to silty clay (5)
Sand (9)
Gravelly sand to sand (10)
Depth [ft]
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 20 40 60 80
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
u2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-11A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 19
File. CPT-11a.cpd

FIGURE B-18

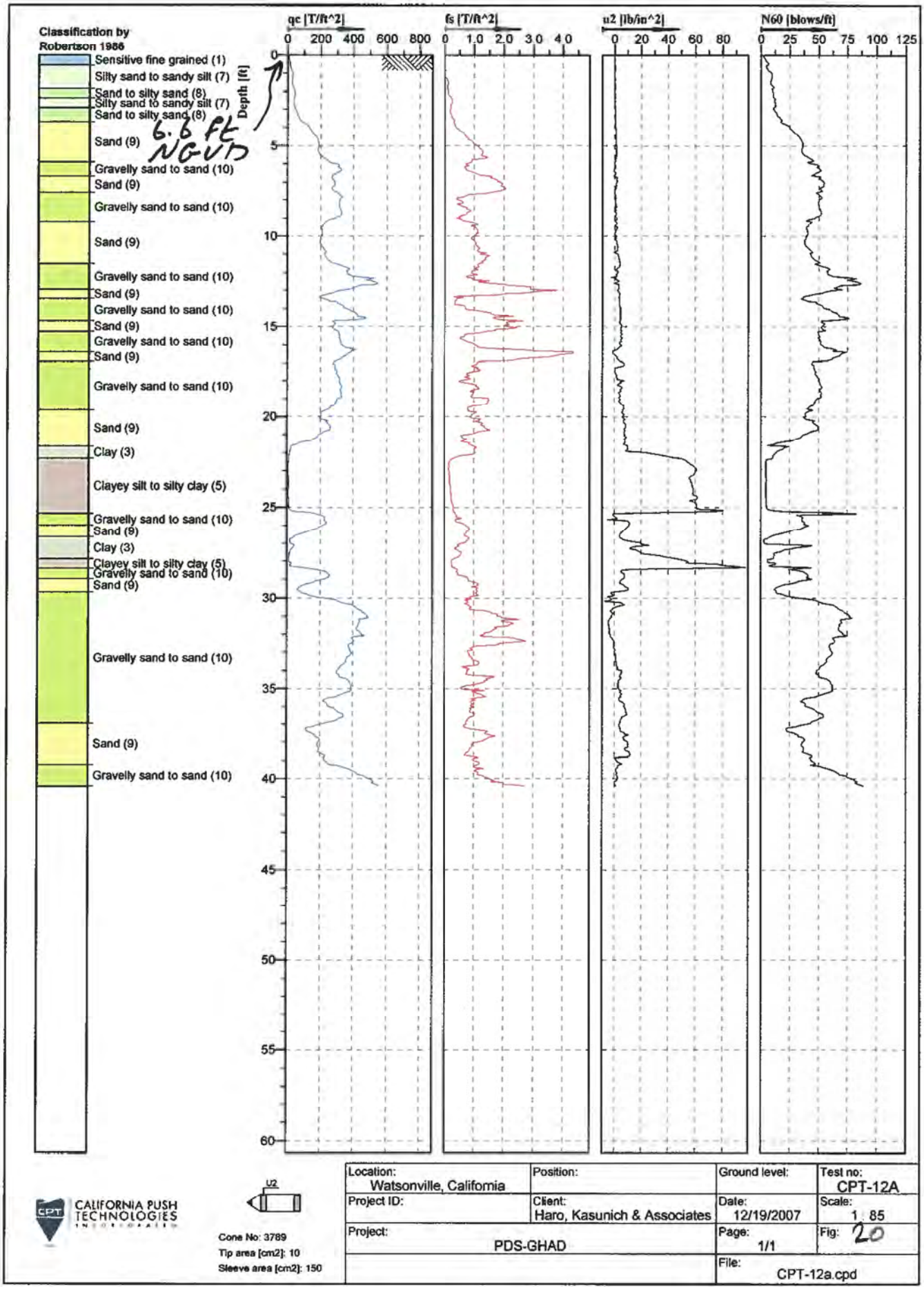
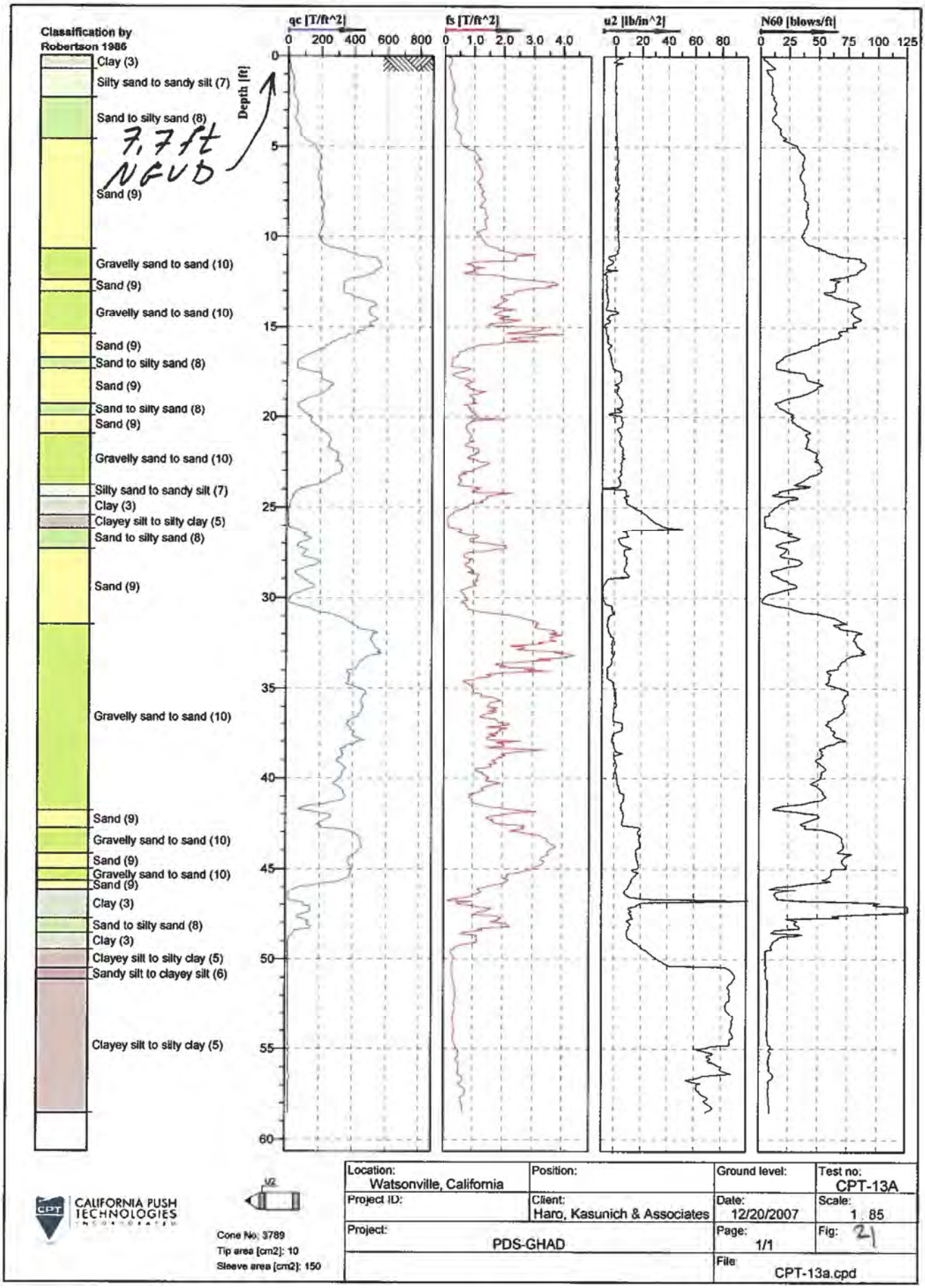

Classification by Robertson 1986
Sensitive fine grained (1)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Clayey silt to silty clay (5)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
6.6 FT NGVD
Depth [ft]
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-12A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/19/2007
Scale: 1:85
Project: PDS-GHAD
Page: 1/1
Fig: 20
File: CPT-12a.cpd

FIGURE B-19



CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Watsonville, California	Position:	Ground level:	Test no: CPT-13A
Project ID:	Client: Haro, Kasunich & Associates	Date: 12/20/2007	Scale: 1 : 85
Project: PDS-GHAD		Page: 1/1	Fig: 21
		File: CPT-13a.cpd	

FIGURE B-20

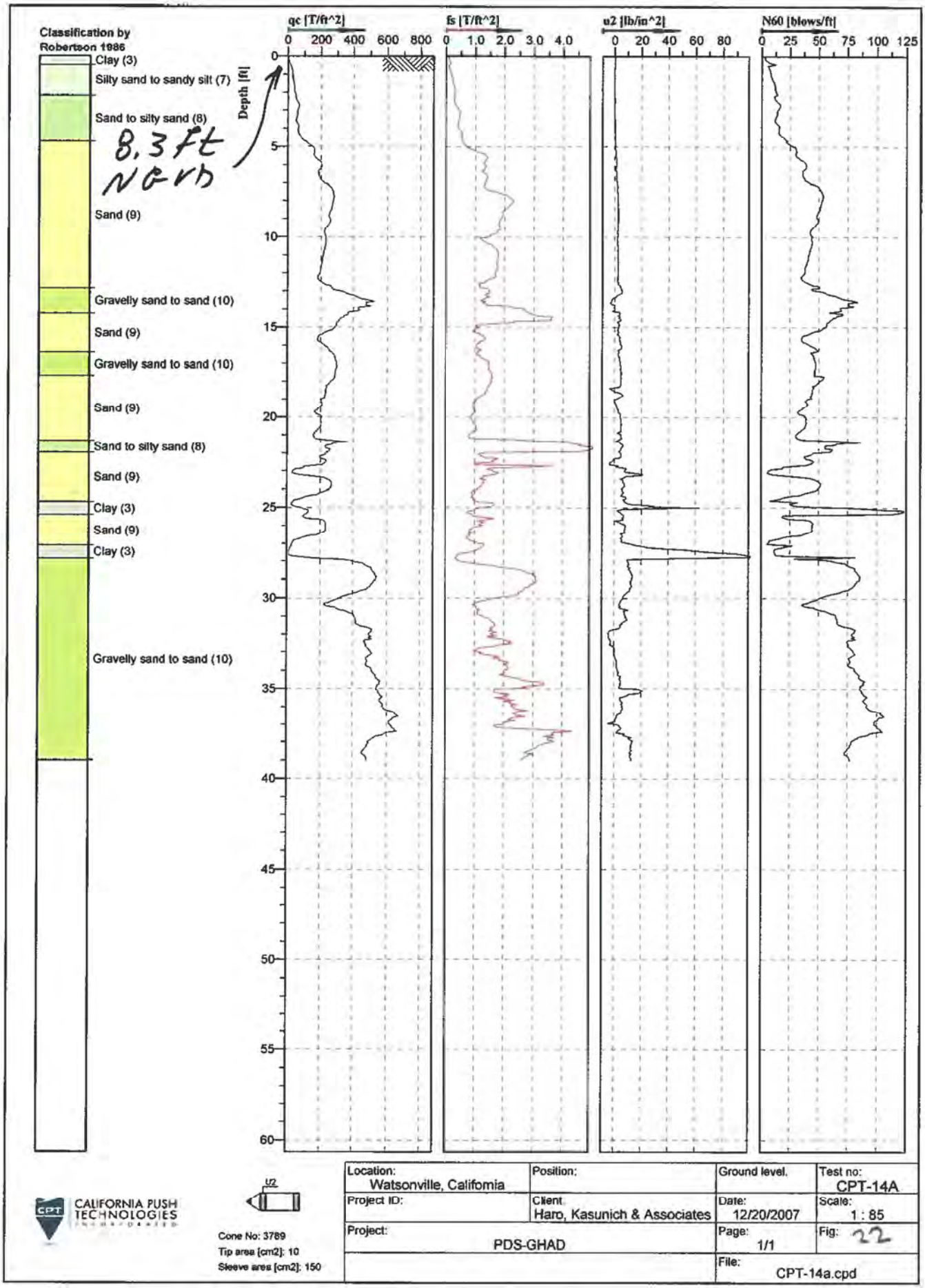

Classification by Robertson 1986
Clay (3)
Silty sand to sandy silt (7)
Sand to silty sand (8)
8.3 ft NGVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Sand (9)
Clay (3)
Sand (9)
Clay (3)
Gravelly sand to sand (10)
Depth [ft]
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
CALIFORNIA PUSH TECHNOLOGIES
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level.
Test no: CPT-14A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 22
File: CPT-14a.cpd

FIGURE B-21

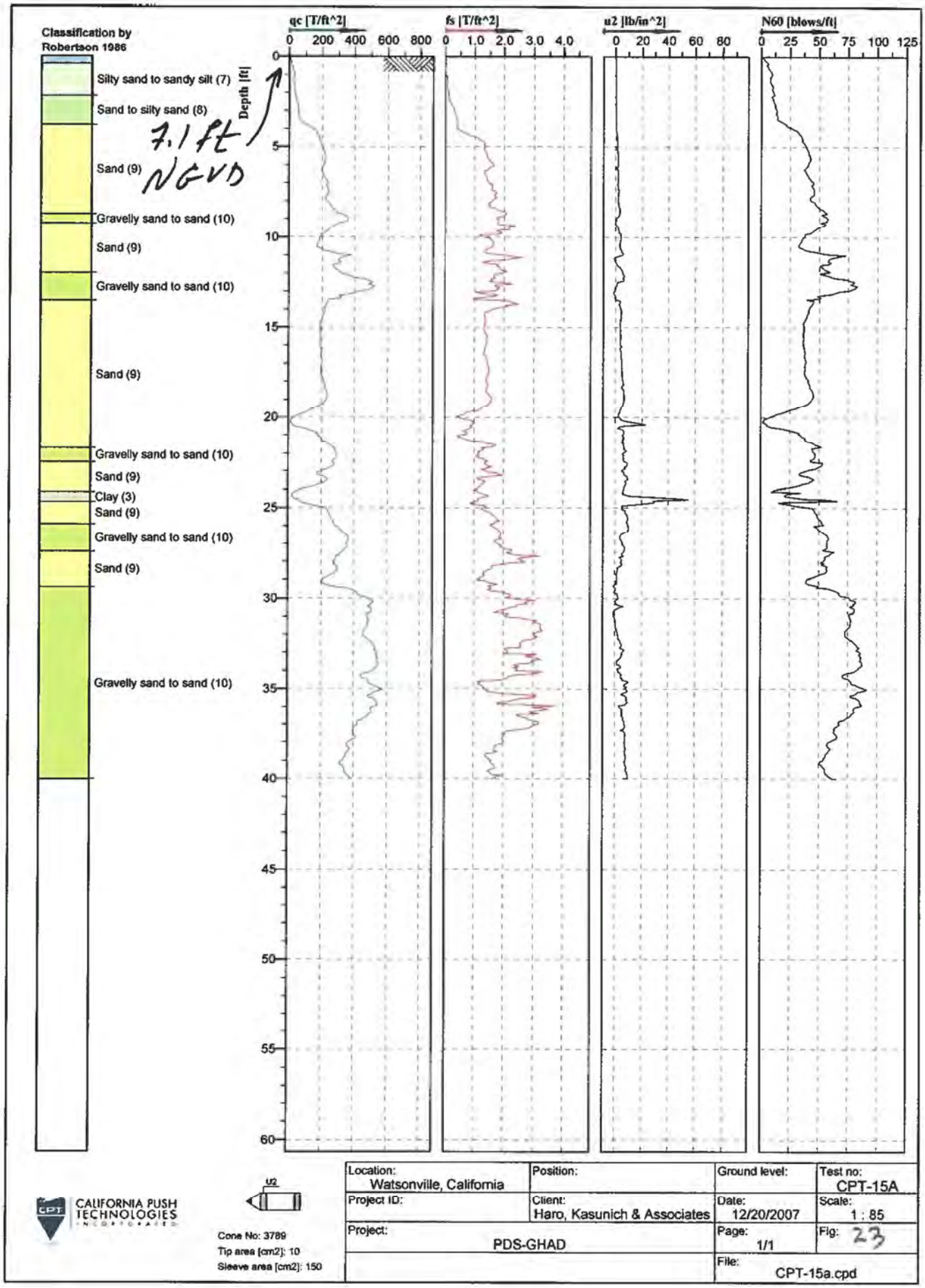

Classification by Robertson 1986
Silty sand to sandy silt (7)
Sand to silty sand (8)
7.1 ft NGVD
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Clay (3)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Depth [ft]
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
u2
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-15A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 23
File: CPT-15a.cpd

FIGURE B-22

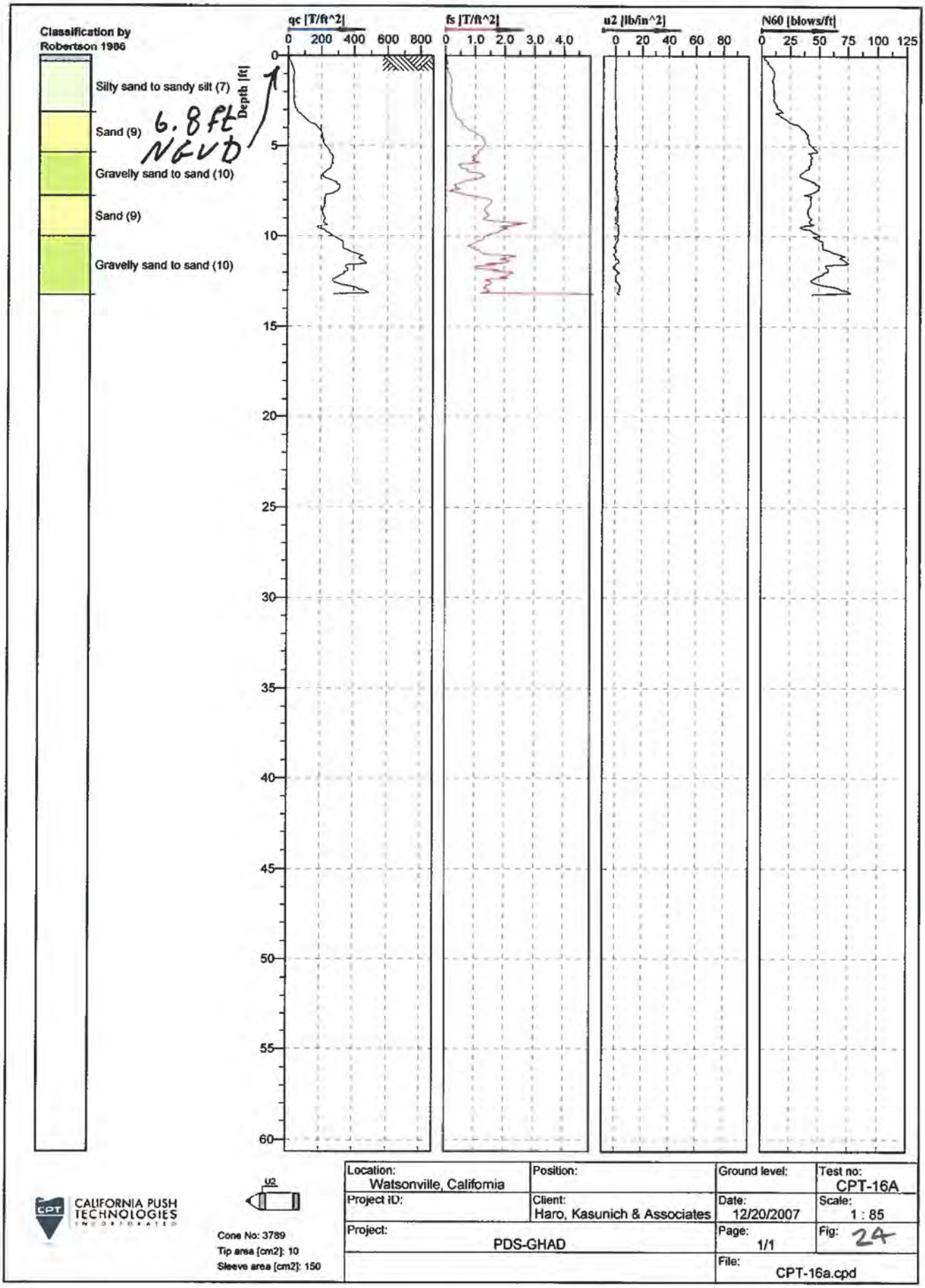

Classification by Robertson 1986
Silty sand to sandy silt (7)
Sand (9)
6.8ft NGVD
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
qc [T/ft^2]
fs [T/ft^2]
u2 [lb/in^2]
N60 [blows/ft]
Depth [ft]
0 200 400 600 800
0 1.0 2.0 3.0 4.0
0 20 40 60 80
0 25 50 75 100 125
0 5 10 15 20 25 30 35 40 45 50 55 60
u2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-16A
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 24
File: CPT-16a.cpd

FIGURE B-23

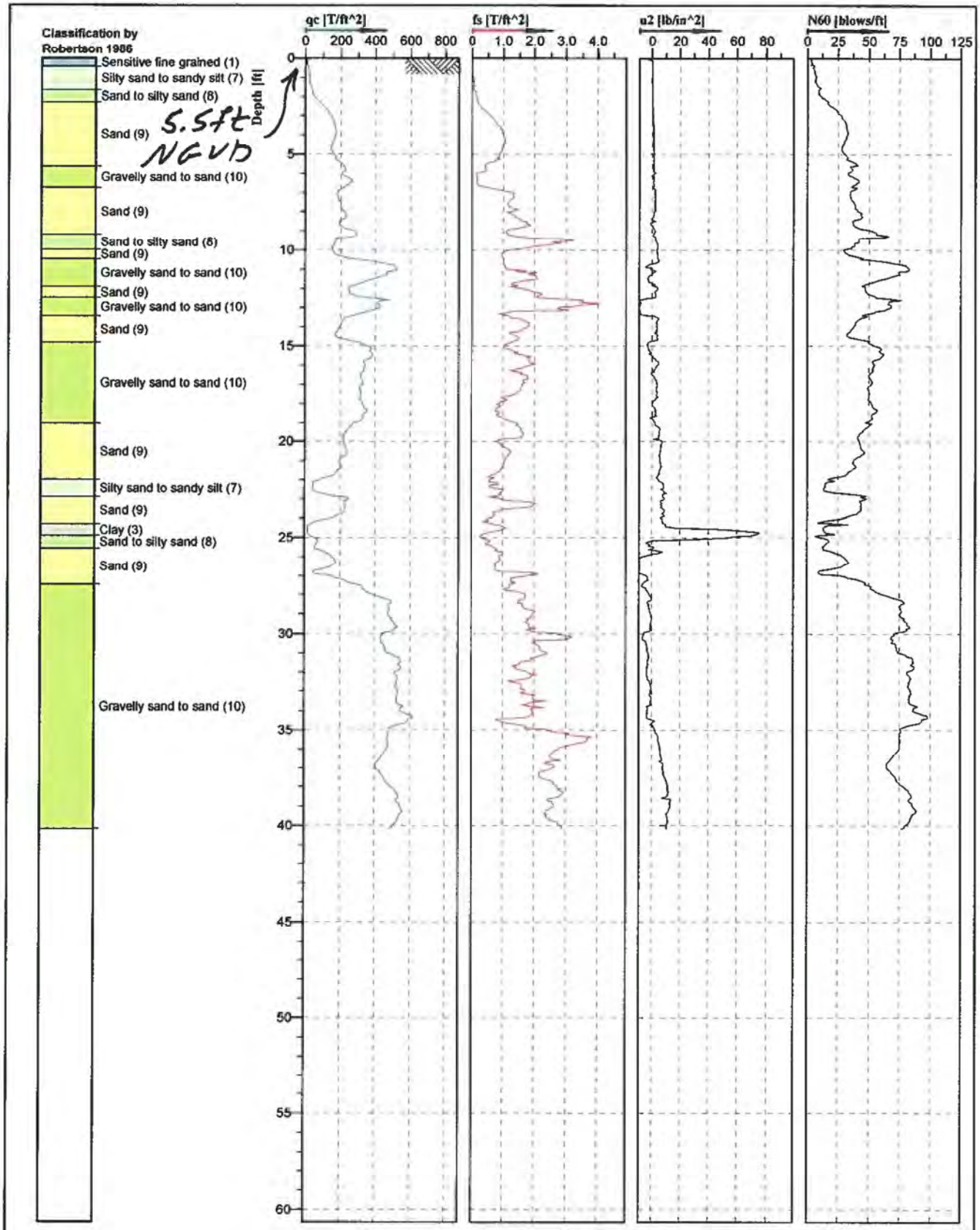
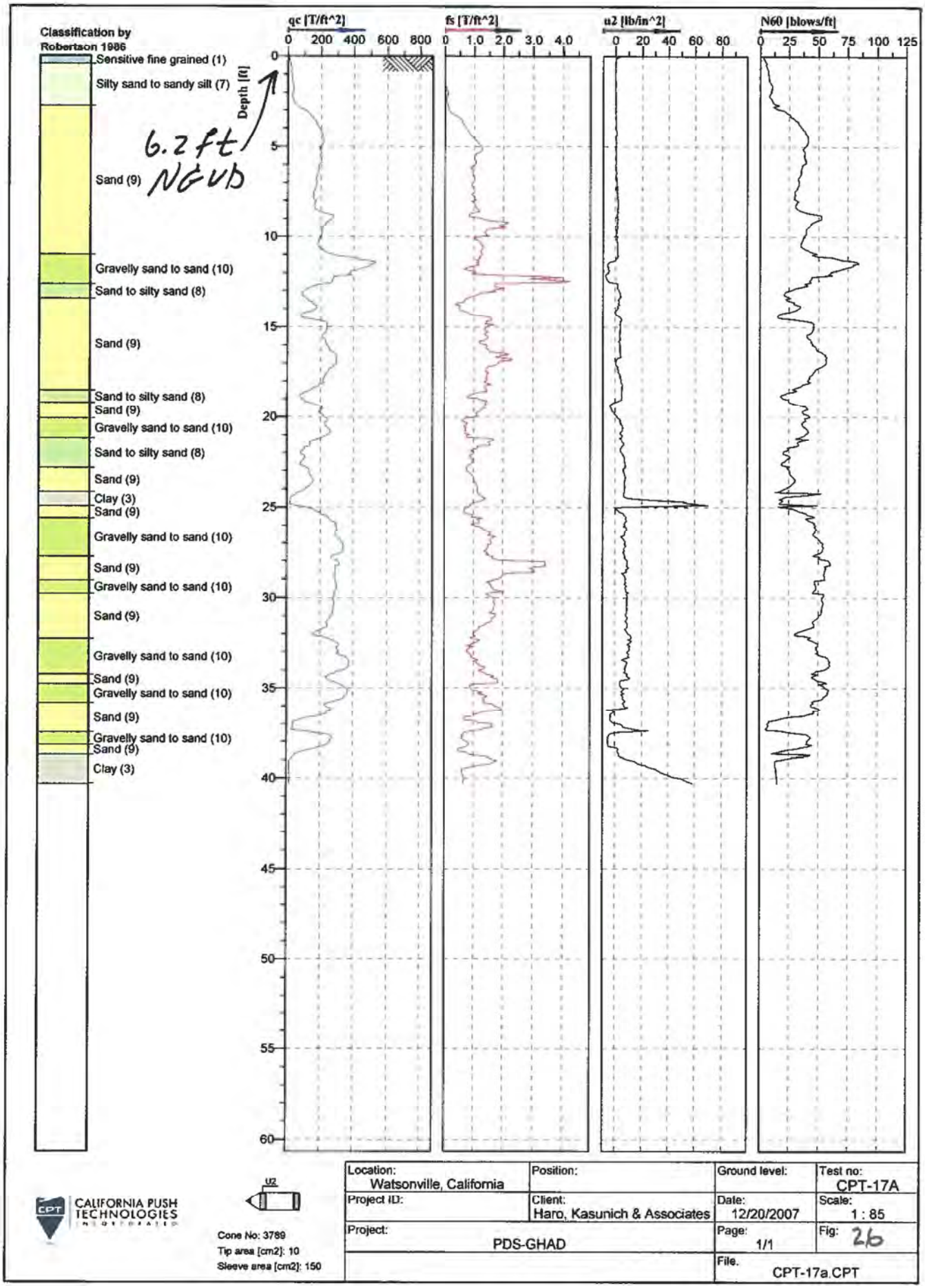

Classification by Robertson 1986
Sensitive fine grained (1)
Silty sand to sandy silt (7)
Sand to silty sand (8)
Sand (9)
5.5ft NGVD
Gravelly sand to sand (10)
Sand (9)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Gravelly sand to sand (10)
Sand (9)
Silty sand to sandy silt (7)
Sand (9)
Clay (3)
Sand to silty sand (8)
Sand (9)
Gravelly sand to sand (10)
qc [T/ft^2]
0 200 400 600 800
fs [T/ft^2]
0 1.0 2.0 3.0 4.0
u2 [lb/in^2]
0 20 40 60 80
N60 [blows/ft]
0 25 50 75 100 125
Depth [ft]
0 5 10 15 20 25 30 35 40 45 50 55 60
U2
Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150
CALIFORNIA PUSH TECHNOLOGIES INCORPORATED
Location: Watsonville, California
Position:
Ground level:
Test no: CPT-16B
Project ID:
Client: Haro, Kasunich & Associates
Date: 12/20/2007
Scale: 1 : 85
Project: PDS-GHAD
Page: 1/1
Fig: 25
File: CPT-16b.cpd

FIGURE B-24



Location: Watsonville, California	Position:	Ground level:	Test no: CPT-17A
Project ID:	Client: Haro, Kasunich & Associates	Date: 12/20/2007	Scale: 1 : 85
Project: PDS-GHAD		Page: 1/1	Fig: 26
		File: CPT-17a.CPT	

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

Cone No: 3789
Tip area [cm2]: 10
Sleeve area [cm2]: 150

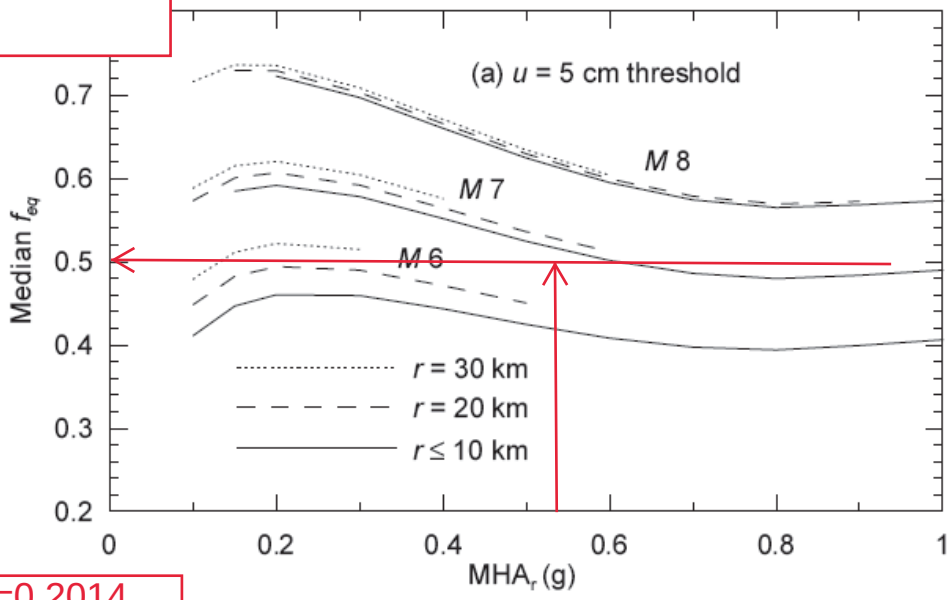
FIGURE B-25

Appendix B. Seismic Coefficient

where NRF is a factor that accounts for the nonlinear response of the materials above the slide plane; u is displacement; and D_{5-95} is the duration of strong shaking, a function of earthquake magnitude and distance.

Blake and others (2002) have simplified the process of estimating f_{eq} for ranges of magnitude and distance by preparing sets of curves for two displacement (u) values, 5 cm and 15 cm. These curves are reproduced in Figure 1.

Keq=0.5*0.53=0.265



Keq=0.38*0.53=0.2014

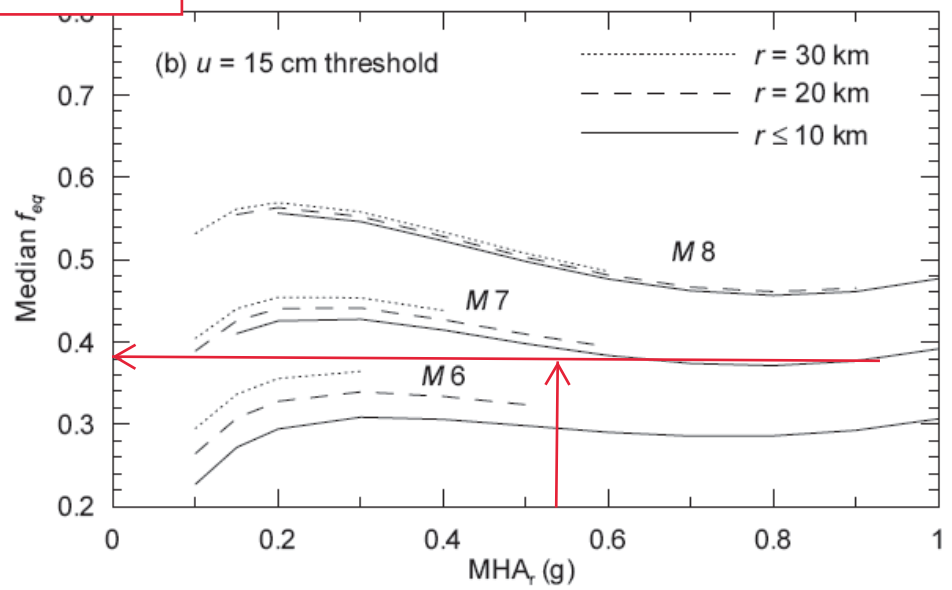


Figure 1. Values of f_{eq} as a Function of MHA_r, Magnitude and Distance for Threshold Displacements of (a) 5 cm and (b) 15 cm (Modified from Blake and others, 2002).

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (update) (v4.2.0)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

36.858963

Time Horizon

Return period in years

475

Longitude

Decimal degrees, negative values for western longitudes

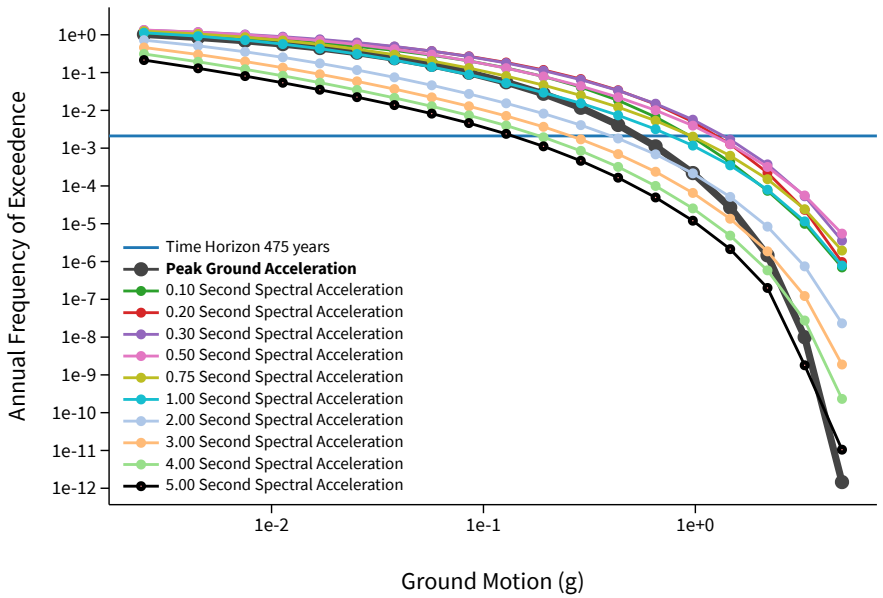
-121.815399

Site Class

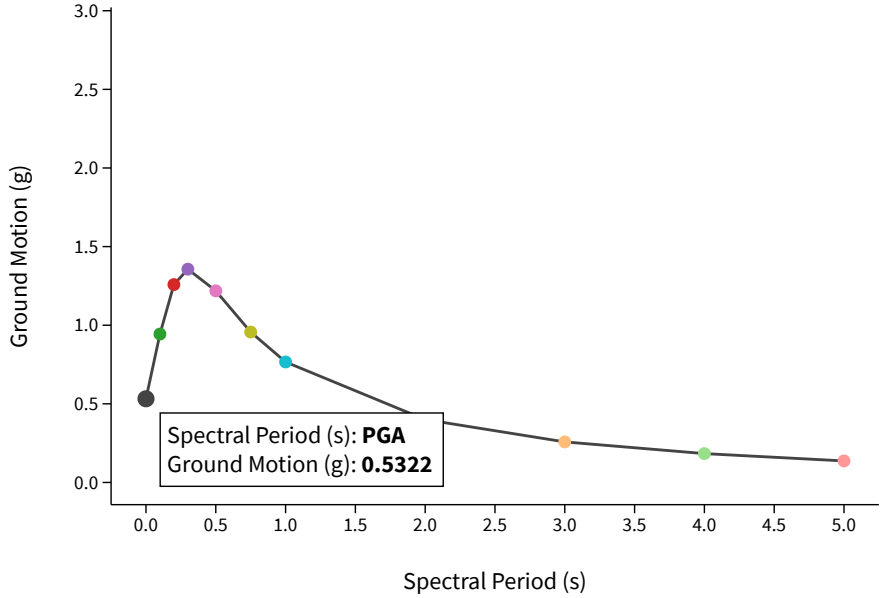
259 m/s (Site class D)

Hazard Curve

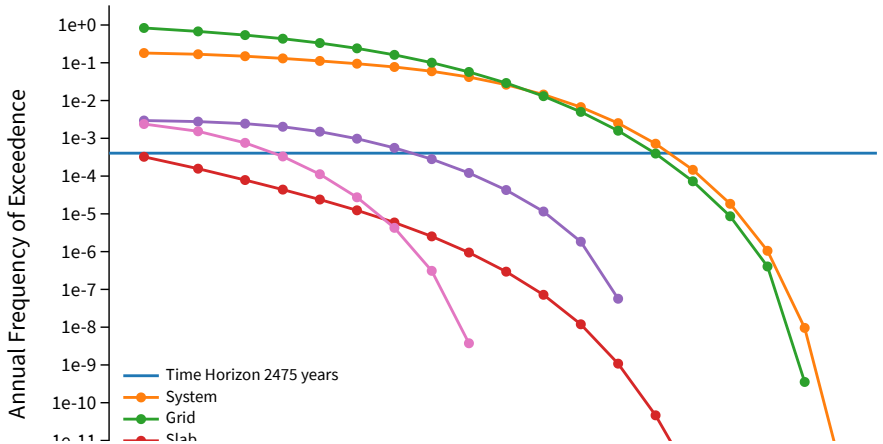
Hazard Curves

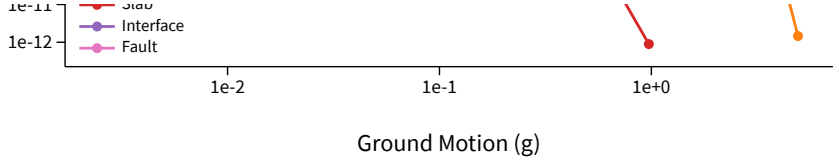


Uniform Hazard Response Spectrum



Component Curves for Peak Ground Acceleration





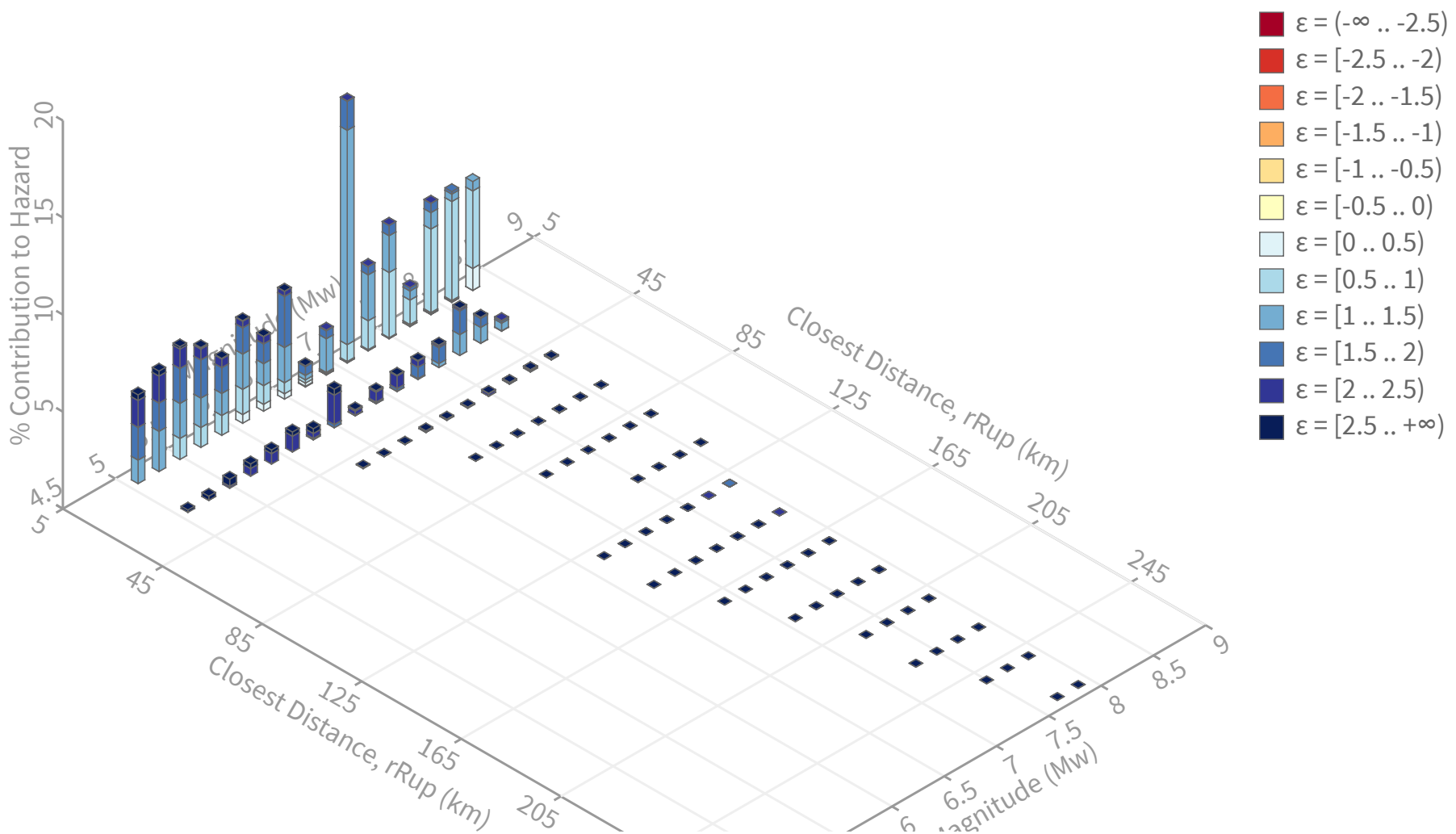
Ground Motion (g)

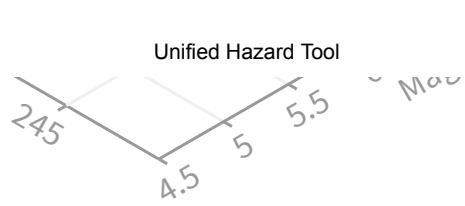
View Raw Data

Deaggregation

Component

Total




245
4.5
5
5.5
Mag

Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 475 yrs
Exceedance rate: 0.0021052632 yr^{-1}
PGA ground motion: 0.53222412 g

Recovered targets

Return period: 530.63917 yrs
Exceedance rate: 0.0018845197 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.13 %

Mean (over all sources)

m: 6.77
r: 15.57 km
ε_0: 1.34 σ

Mode (largest m-r bin)

m: 7.08
r: 15.13 km
ε_0: 1.22 σ
Contribution: 13.48 %

Mode (largest m-r-ε_0 bin)

m: 7.07
r: 15.18 km
ε_0: 1.18 σ
Contribution: 11.04 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

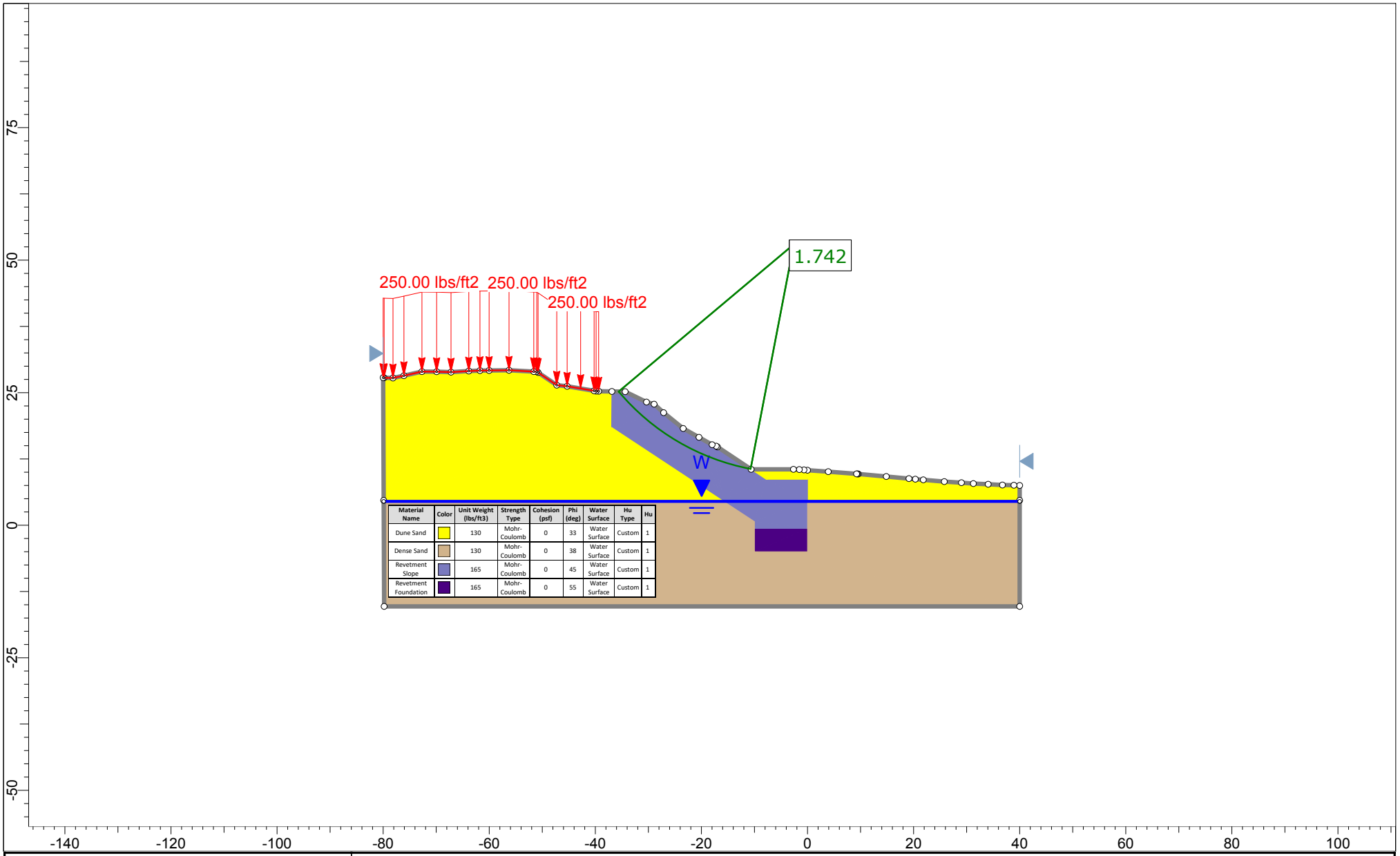
ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)

ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							31.50
San Andreas (Santa Cruz Mts) [5]		15.10	7.49	1.04	121.694°W	36.957°N	44.67	22.36
Calaveras (So) [2]		34.37	7.37	1.98	121.447°W	36.951°N	72.49	1.52
Sargent [4]		21.85	7.07	1.67	121.679°W	37.009°N	35.87	1.21
UC33brAvg_FM32	System							31.43
San Andreas (Santa Cruz Mts) [5]		15.10	7.50	1.03	121.694°W	36.957°N	44.67	23.11
Calaveras (So) [2]		34.37	7.37	1.98	121.447°W	36.951°N	72.49	1.52
Sargent [4]		22.06	7.03	1.69	121.679°W	37.009°N	35.87	1.17
UC33brAvg_FM31 (opt)	Grid							20.01
PointSourceFinite: -121.815, 36.899		6.81	5.64	1.04	121.815°W	36.899°N	0.00	3.60
PointSourceFinite: -121.815, 36.962		12.06	5.71	1.71	121.815°W	36.962°N	0.00	2.98
PointSourceFinite: -121.815, 36.899		6.81	5.64	1.04	121.815°W	36.899°N	0.00	1.77
PointSourceFinite: -121.815, 36.917		8.00	5.73	1.18	121.815°W	36.917°N	0.00	1.60
PointSourceFinite: -121.815, 36.917		8.00	5.73	1.18	121.815°W	36.917°N	0.00	1.44
PointSourceFinite: -121.815, 36.971		12.31	5.88	1.62	121.815°W	36.971°N	0.00	1.04
UC33brAvg_FM32 (opt)	Grid							17.06
PointSourceFinite: -121.815, 36.899		6.92	5.51	1.14	121.815°W	36.899°N	0.00	3.43
PointSourceFinite: -121.815, 36.962		12.29	5.63	1.78	121.815°W	36.962°N	0.00	2.74
PointSourceFinite: -121.815, 36.899		6.92	5.51	1.14	121.815°W	36.899°N	0.00	1.68
PointSourceFinite: -121.815, 36.917		7.95	5.73	1.19	121.815°W	36.917°N	0.00	1.28
PointSourceFinite: -121.815, 36.917		7.95	5.73	1.19	121.815°W	36.917°N	0.00	1.15

Appendix C. Slope Stability Analyses



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Hu Type	Hu
Dune Sand		130	Mohr-Coulomb	0	33	Water Surface	Custom	1
Dense Sand		130	Mohr-Coulomb	0	38	Water Surface	Custom	1
Revetment Slope		165	Mohr-Coulomb	0	45	Water Surface	Custom	1
Revetment Foundation		165	Mohr-Coulomb	0	55	Water Surface	Custom	1

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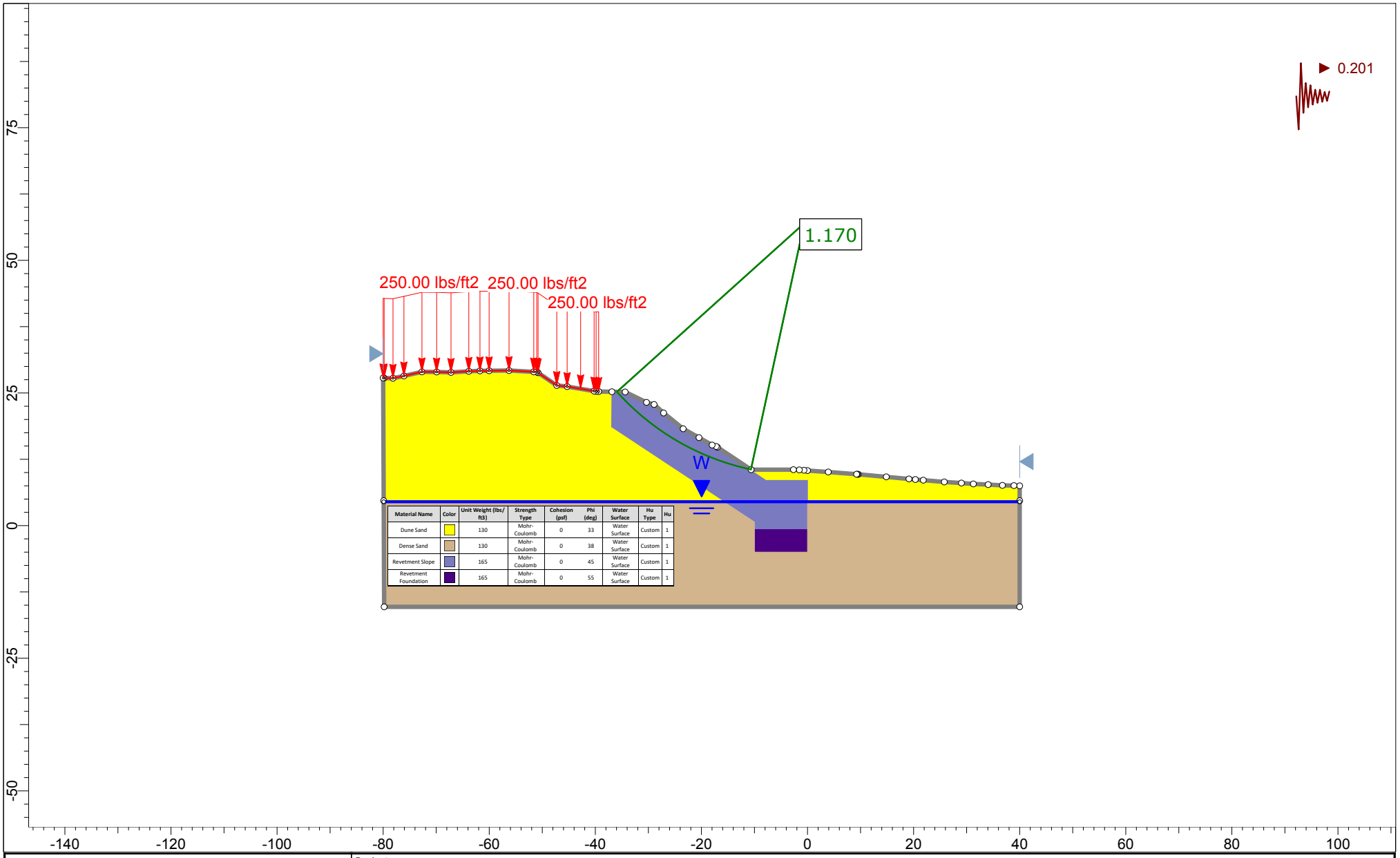
Project	PAJARO DUNES REVETMENT REPAIR		
Analysis Description	"SLOPE STABILITY ANALYSIS"		
Drawn By	KF	*Scale* 1:300	*Company* CAL ENGINEERING AND GEOLOGY
Date	6/22/2020		*File Name* Lot-99.slmd



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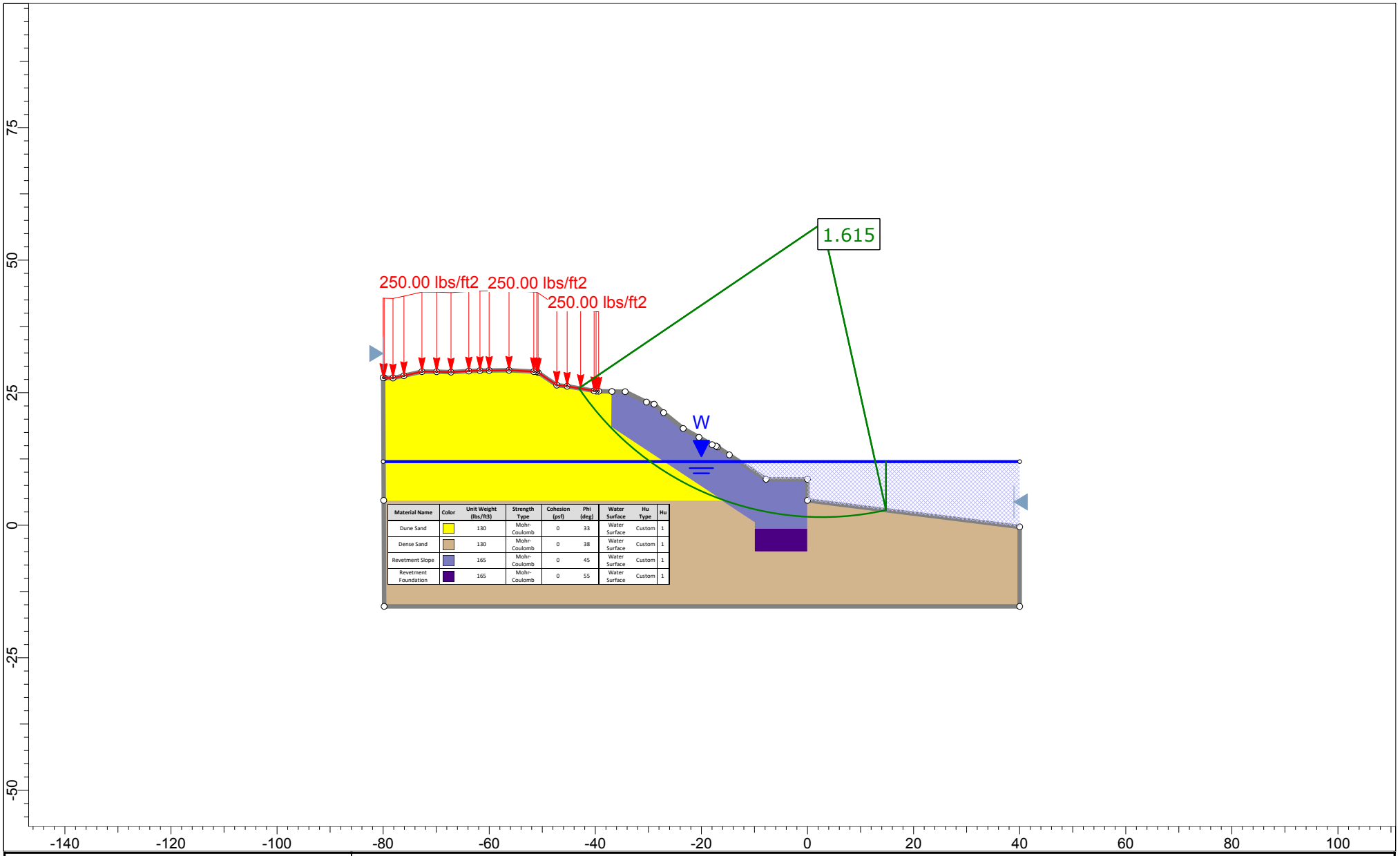

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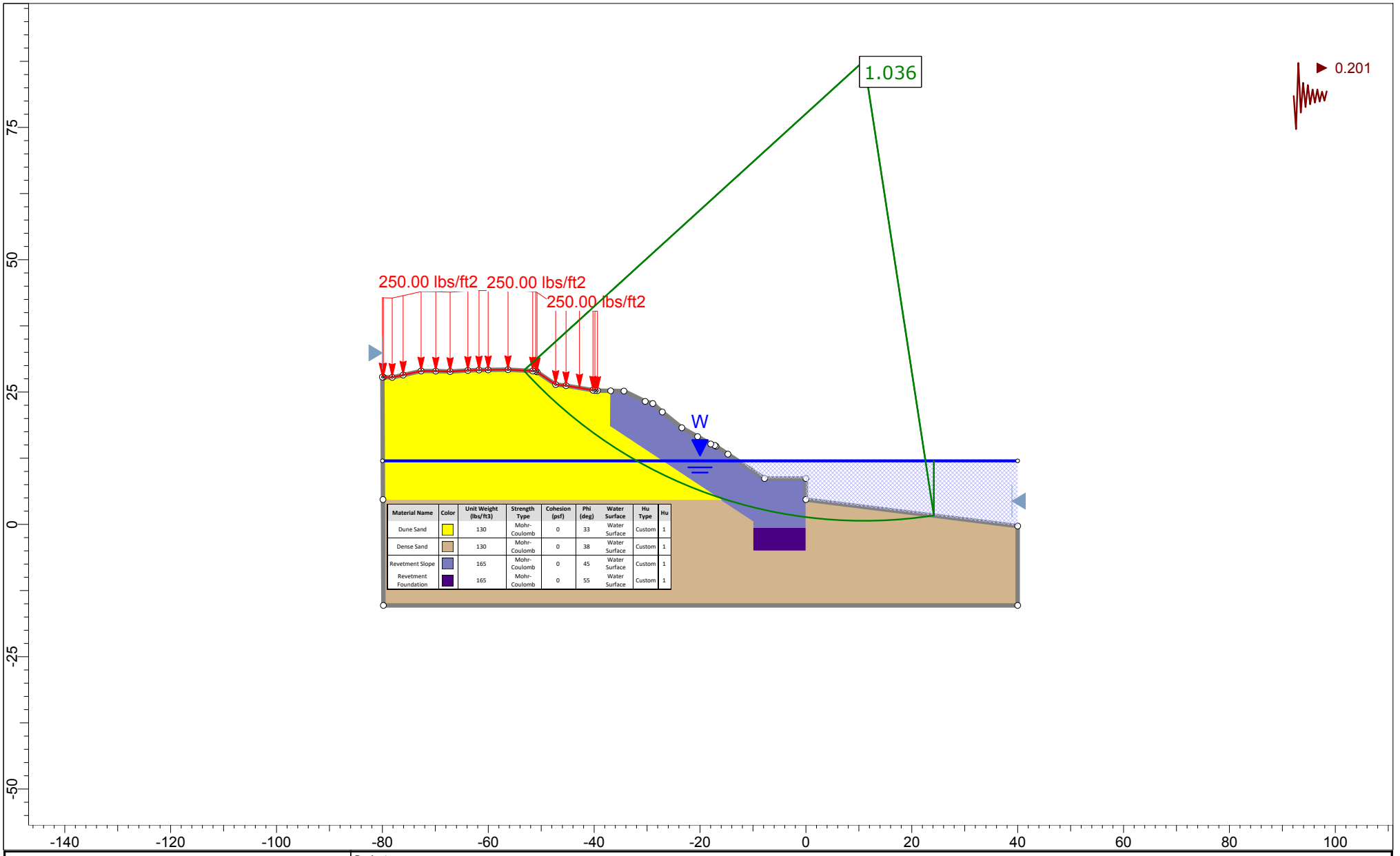

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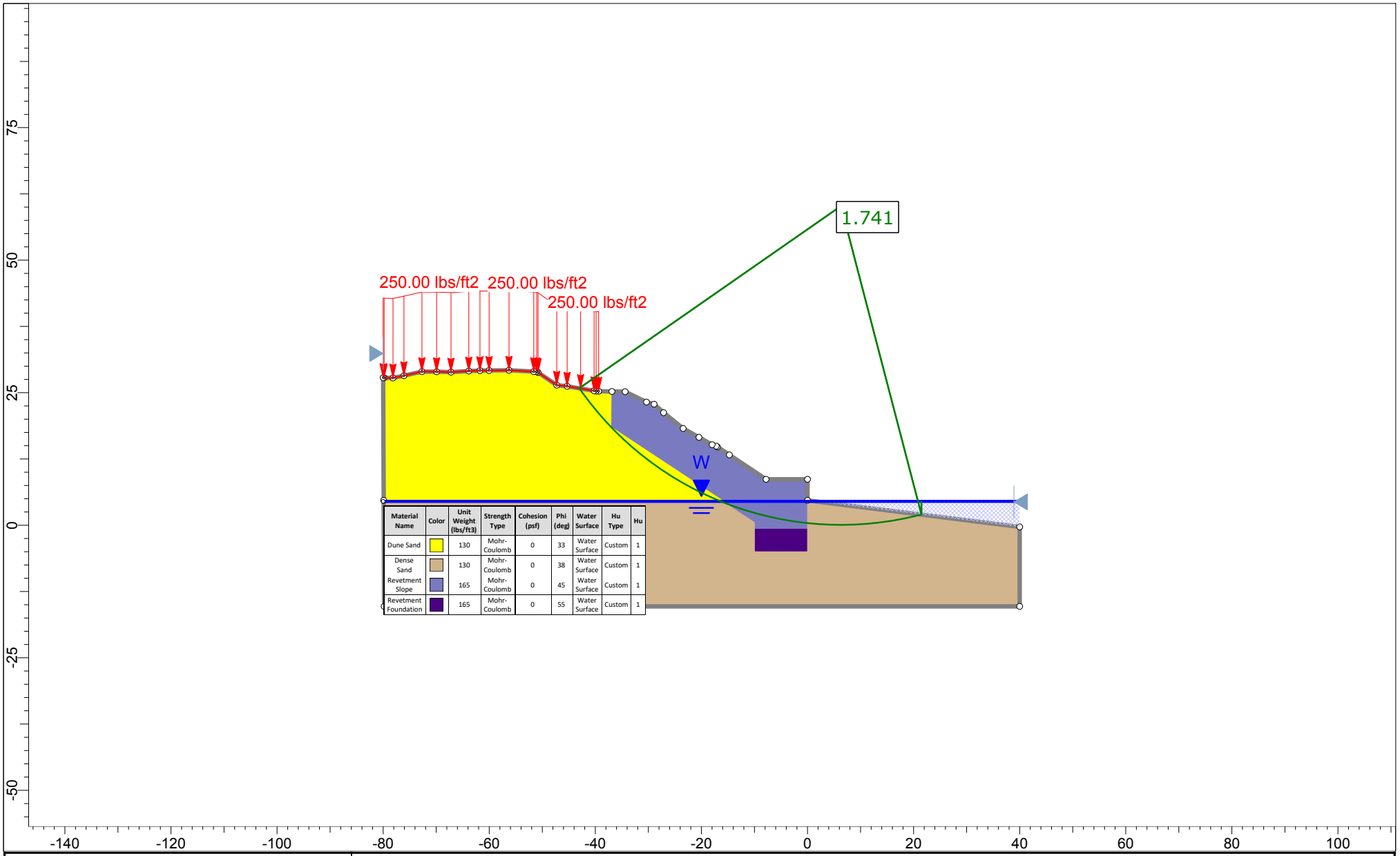

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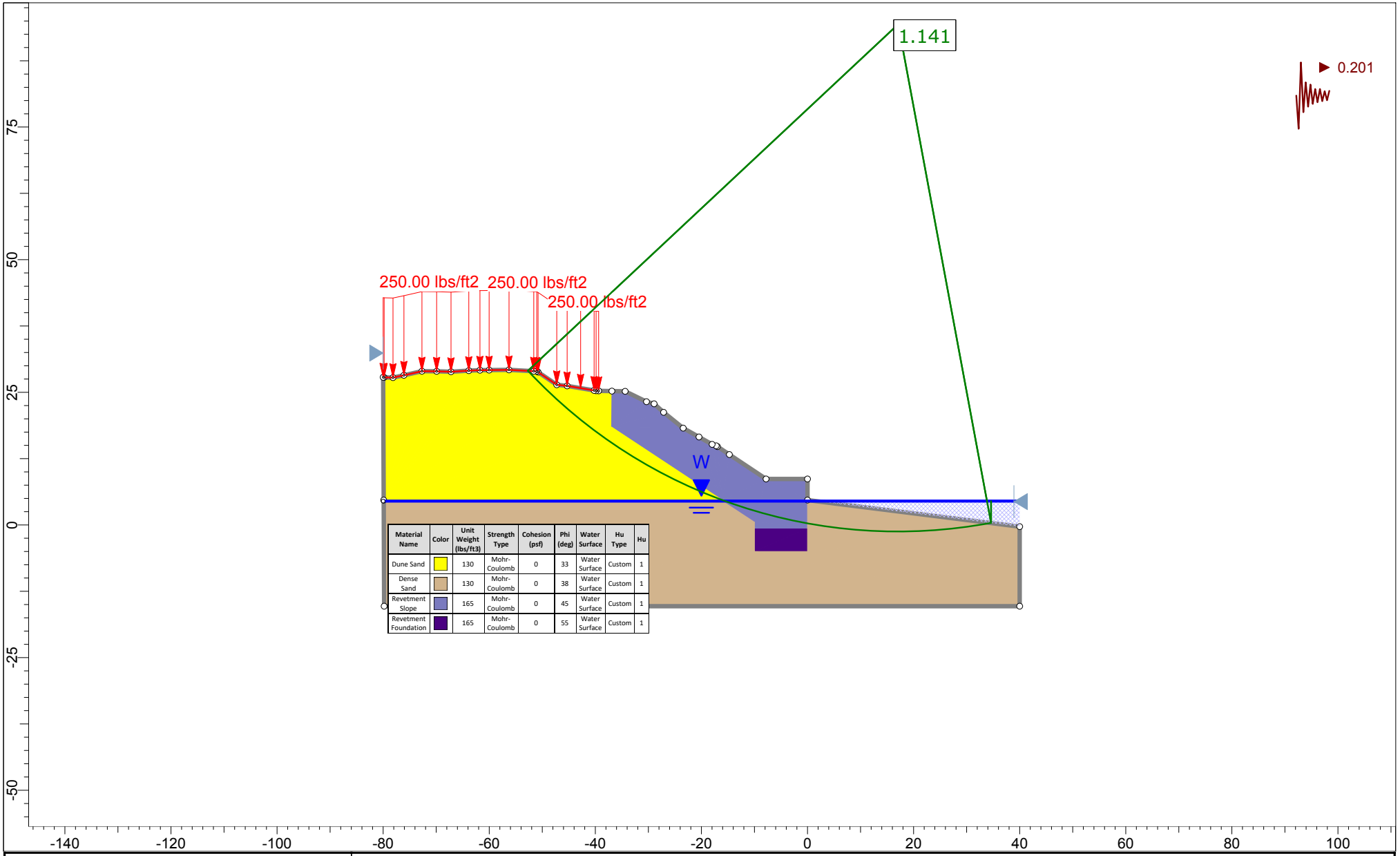

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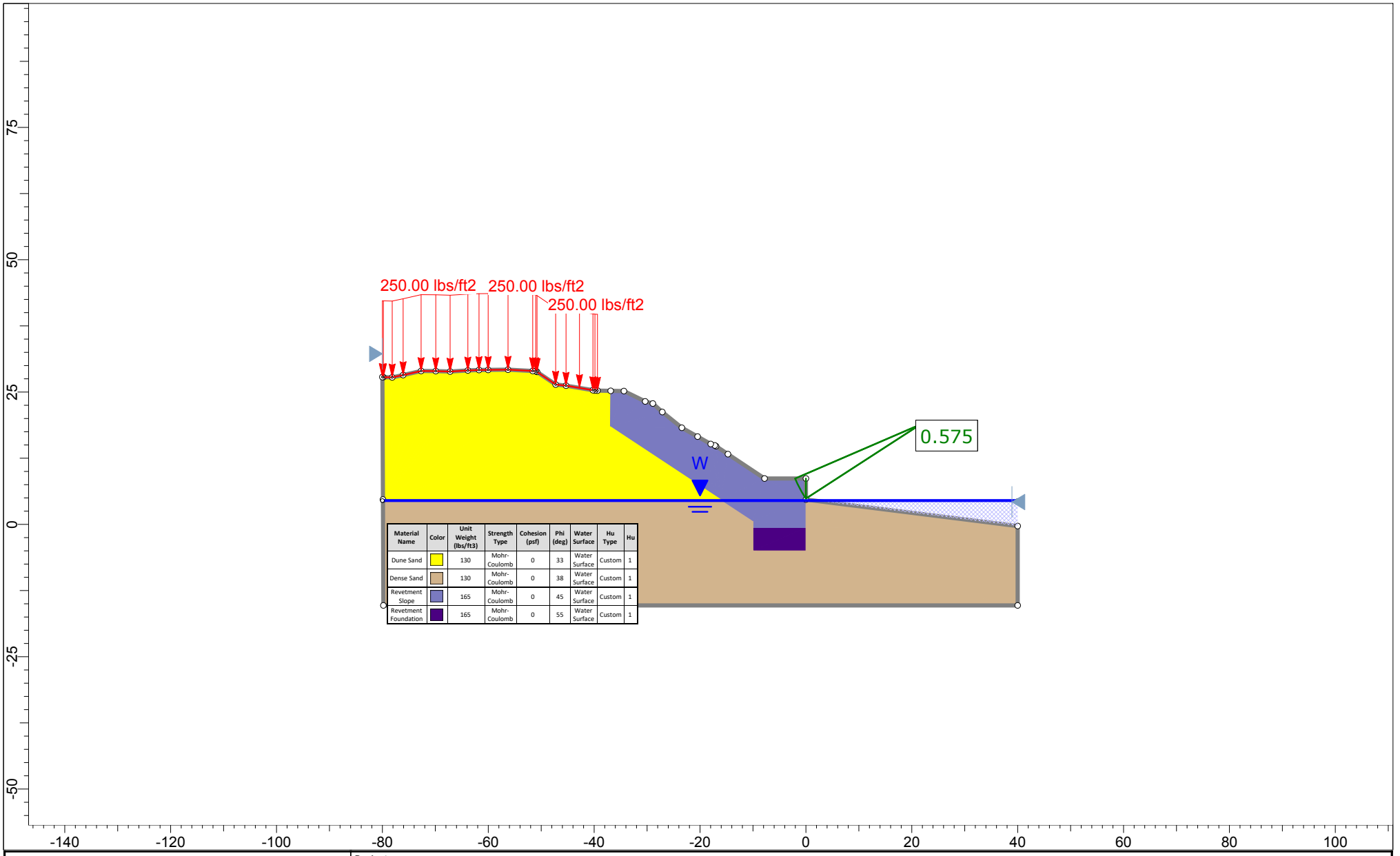

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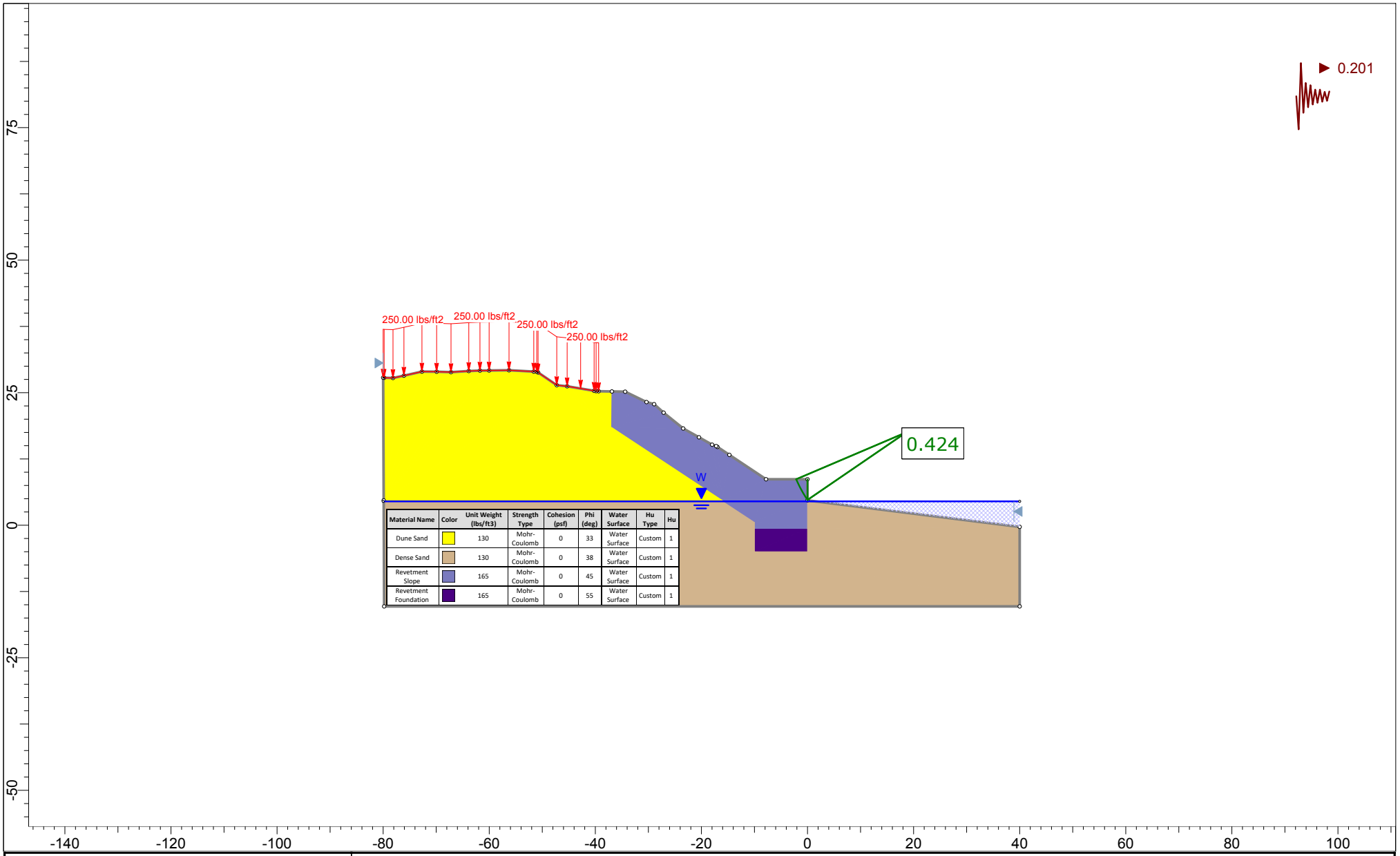
Date	6/22/2020		*File Name* Lot-99.slmd



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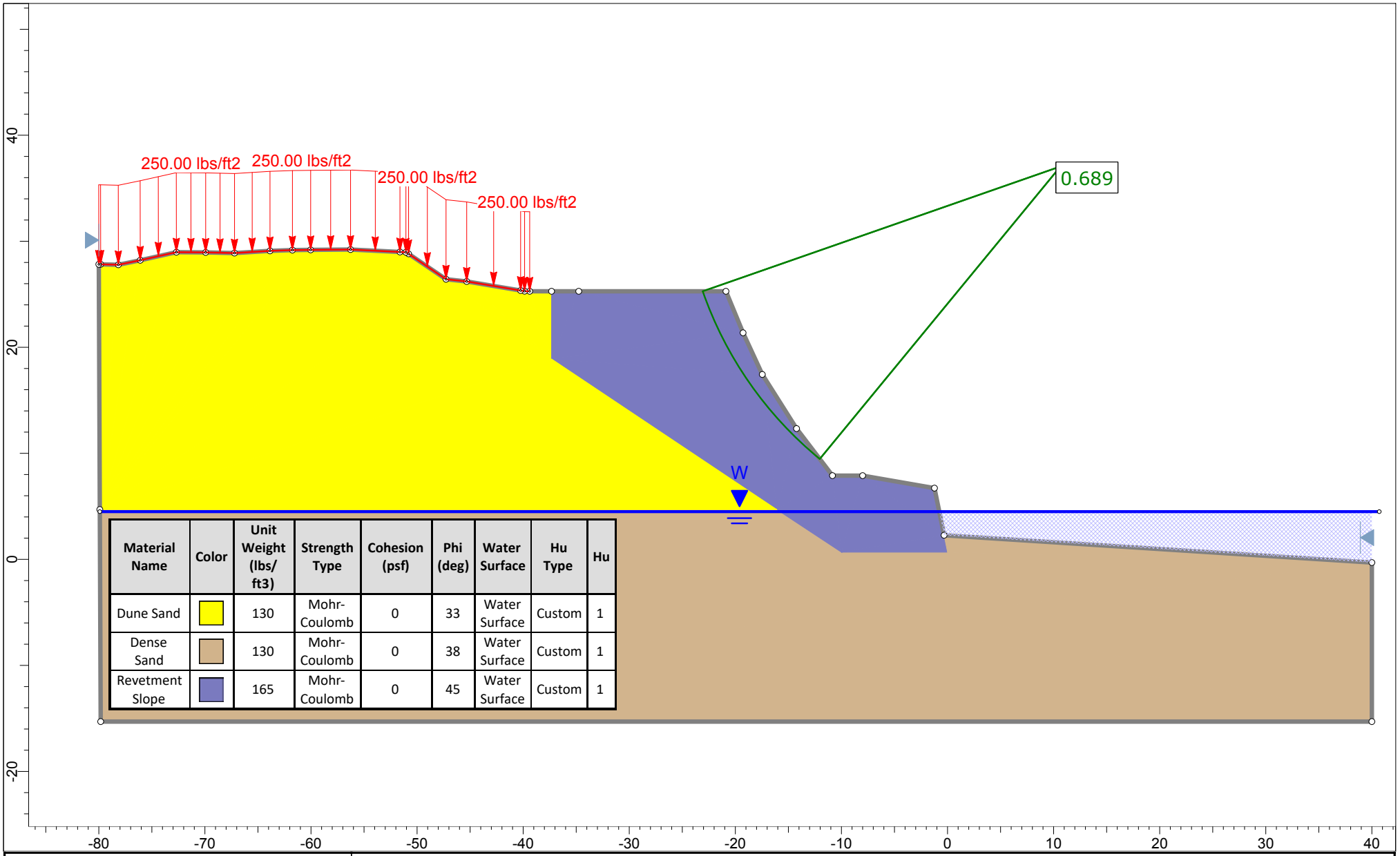
Date	6/22/2020		*File Name* Lot-99.slmd



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Project	PAJARO DUNES REVETMENT REPAIR		
Analysis Description	"SLOPE STABILITY ANALYSIS"		
Drawn By	KF	*Scale* 1:150	*Company* CAL ENGINEERING AND GEOLOGY
Date	6/22/2020		*File Name* Lot-99.slmd

CONFLICT OF INTEREST CODE FOR THE

PAJARO DUNES GEOLOGICAL HAZARD ABATEMENT DISTRICT

REVIEWED AUGUST 8th, 2020

The Political Reform Act, Government Code Section 81000, et. seq., requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Commission has adopted a regulation, 2 Cal. Code of Regs. Section 18730, which contains the terms of a standard conflict of interest code. It can be incorporated by reference and may be amended by the Fair Political Practices Commission after public notice and hearings to conform to amendments in the Political Reform Act. Therefore, the terms of 2 Cal. Code of Regs. Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference and, along with the attached Table 1 (Categories) and Table 2 (Designated Positions) in which members and employees are designated and disclosure categories are set forth, constitute the conflict of interest code of the Pajaro Dunes Geologic Hazard Abatement District.

Designated employees and directors shall file their statements of economic interest, as specified in this Code, with Pajaro Dunes Geologic Hazard Abatement District, who will thereafter make the statements available for public inspection and reproduction. (GOV. Section 81008). Statements for all designated employees will be retained by the Pajaro Dunes Geologic Hazard Abatement District.

TABLE 1
CATEGORIES FOR
CONFLICT OF INTEREST CODES
FOR PAJARO DUNES GEOLOGIC HAZARD ABATEMENT DISTRICT

Category 1: Officials and employees whose duties are broad and indefinable:

Investments, business positions, and income from source located in or doing business in the jurisdiction.

Interests in real property located in jurisdiction, including property located within a two mile radius of any property owned or used by the agency.

Category 2: Officials and employees whose duties involve contracting or purchasing:

Investments, business positions, and sources of income of the type which:

Provide services, supplies, materials, machinery or equipment of the type utilized by the agency.

Category 3: Agencies with regulatory powers:

Investments, business positions, and sources of income of any type which:

Are subject to the regulatory, permit or licensing authority of the agency.

Category 4: Designated employees whose decisions may affect real property interests:

Investments, business positions and sources of income of the type which:

Engage in land development, construction or the acquisition or sale of real property.

Interests in real property located within the jurisdiction, including property located within a two-mile radius of any property owned or used by the agency.

Category 5: Agencies which Provide pooled self-insurance benefits:

Interests in real property located within the jurisdiction, including

property located within a two-mile radius of any property owned or used by the agency.

Investment, business positions, and sources of income of the type which:

The agency is empowered to invest its funds.

Provide services, supplies, materials, machinery or equipment of the type utilized by the agency.

Engaged in the business of insurance including, but not limited to, insurance companies, carriers, holding companies, underwriters, brokers, solicitors, agents, adjusters, claims managers and actuaries.

Financial institutions including, but not limited to, banks, savings and loan associations and credit unions.

Have filed a claim, or have a claim pending, against the agency.

TABLE 2
CATEGORIES FOR
DESIGNATED POSITIONS OF INTEREST CODES
FOR PAJARO DUNES GEOLOGIC HAZARD ABATEMENT DISTRICT

Designated Position	**Disclosure Category**
Members of the Board of Directors	Categories 1, 2
Clerk	Categories 1, 2
General Counsel	Categories 1, 2
Consultants*	Categories 1, 2

* The definition of "Consultant" contained in 2 Cal. Code of Regs., Section 18701 (a)(2), and any amendment to said section duly adopted by the Fair Political Practices Commission, is incorporated herein by reference.

The Board of Directors may determine in writing that a particular consultant is hired to perform a range of duties that are limited in scope and thus not required to comply with disclosure requirements described in these categories. Such determination shall include a description of the consultant's duties, and based upon that description, a statement of the extent of the disclosure requirements. The Board shall direct that a copy of this determination be forwarded to the Fair Political Practices Commission. Nothing herein excuses any such consultant from any other provision of this Conflict of Interest Code.

HUTCHINSON and BLOODGOOD LLP
CERTIFIED PUBLIC ACCOUNTANTS AND CONSULTANTS

579 Auto Center Drive
Watsonville, CA 95076
t 831.724.2441 f 831.761.2136
www.hbllp.com

July 29, 2020

Mr. John Cullen, President
Board of Directors
Pajaro Dunes Geologic Hazard Abatement District
Watsonville, California 95076

Dear Mr. Cullen:

We are pleased to confirm our understanding of the services we are to provide to Pajaro Dunes Geologic Hazard Abatement District (the "District") for the year ended June 30, 2020. We will audit the financial statements of the District, including the related notes to the financial statements. Accounting standards generally accepted in the United States of America provide for certain required supplementary information (RSI), such as management's discussion and analysis (MD&A), to supplement the District's basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to the District's RSI in accordance with auditing standards generally accepted in the United States of America. These limited procedures will consist of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We will not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance. The following RSI is required by U.S. generally accepted accounting principles and will be subjected to certain limited procedures, but will not be audited:

1. Management's Discussion and Analysis

Audit Objectives

The objective of our audit is the expression of an opinion as to whether your financial statements are fairly presented, in all material respects, in conformity with U.S. generally accepted accounting principles and to report on the fairness of the supplementary information referred to in the first paragraph when considered in relation to the financial statements as a whole. Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and will include tests of the accounting records of the District and other procedures we consider necessary to enable us to express such opinion. We will issue a written report upon completion of our audit of the District's financial statements. Our report will be addressed to The Board of Directors of the

Pajaro Dunes Geologic Hazard Abatement District. We cannot provide assurance that an unmodified opinion will be expressed. Circumstances may arise in which it is necessary for us to modify our opinion or add emphasis-of-matter or other-matter paragraphs. If our opinion is other than unmodified, we will discuss the reasons with you in advance. If, for any reason, we are unable to complete the audit or are unable to form or have not formed opinions, we may decline to express opinions or issue reports, or may withdraw from this engagement.

We will also provide a report (that does not include an opinion) on internal control related to the financial statements and compliance with the provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a material effect on the financial statements as required by *Government Auditing Standards*. The report on internal control and on compliance and other matters will include a paragraph that states (1) that the purpose of the report is solely to describe the scope of testing of internal control and compliance, and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control on compliance, and (2) that the report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. The paragraph will also state that the report is not suitable for any other purpose. If during our audit we become aware that the District is subject to an audit requirement that is not encompassed in the terms of this engagement, we will communicate to management and those charged with governance that an audit in accordance with U.S. generally accepted auditing standards and the standards for financial audits contained in *Government Auditing Standards* may not satisfy the relevant legal, regulatory, or contractual requirements.

Audit Procedures—General

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the District or to acts by management or employees acting on behalf of the District. Because the determination of abuse is subjective, *Government Auditing Standards* do not expect auditors to provide reasonable assurance of detecting abuse.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is a risk that material misstatements may exist and not be detected by us, even though the audit is properly planned and performed in accordance with U.S. generally accepted auditing standards and *Government Auditing Standards*. In addition, an audit is not designed to detect immaterial misstatements or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform the appropriate level of management of any material errors, fraudulent financial reporting, or misappropriation of assets that comes to our attention. We will also inform the appropriate level of management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential, and of any material abuse that comes to our attention. Our responsibility as auditors is limited to the period covered by our audit and does not extend to later periods for which we are not engaged as auditors.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, and may include tests of the physical existence of inventories, and direct confirmation of receivables and certain other assets and liabilities by correspondence with selected individuals, funding

sources, creditors, and financial institutions. We will request written representations from your attorneys as part of the engagement, and they may bill you for responding to this inquiry. At the conclusion of our audit, we will require certain written representations from you about your responsibilities for the financial statements; compliance with laws, regulations, contracts, and grant agreements; and other responsibilities required by generally accepted auditing standards.

Audit Procedures—Internal Control

Our audit will include obtaining an understanding of the District and its environment, including internal control, sufficient to assess the risks of material misstatement of the financial statements and to design the nature, timing, and extent of further audit procedures. Tests of controls may be performed to test the effectiveness of certain controls that we consider relevant to preventing and detecting errors and fraud that are material to the financial statements and to preventing and detecting misstatements resulting from illegal acts and other noncompliance matters that have a direct and material effect on the financial statements. Our tests, if performed, will be less in scope than would be necessary to render an opinion on internal control and, accordingly, no opinion will be expressed in our report on internal control issued pursuant to *Government Auditing Standards*.

An audit is not designed to provide assurance on internal control or to identify significant deficiencies or material weaknesses. However, during the audit, we will communicate to management and those charged with governance internal control related matters that are required to be communicated under AICPA professional standards and *Government Auditing Standards*.

Audit Procedures—Compliance

As part of obtaining reasonable assurance about whether the financial statements are free of material misstatement, we will perform tests of the District's compliance with the provisions of applicable laws, regulations, contracts, agreements, and grants. However, the objective of our audit will not be to provide an opinion on overall compliance and we will not express such an opinion in our report on compliance issued pursuant to *Government Auditing Standards*.

Other Services

We will also assist in preparing the financial statements and related notes of the District in conformity with U.S. generally accepted accounting principles based on information provided by you. These nonaudit services do not constitute an audit under *Government Auditing Standards* and such services will not be conducted in accordance with *Government Auditing Standards*. We will perform the services in accordance with applicable professional standards. The other services are limited to the financial statement services previously defined. We, in our sole professional judgment, reserve the right to refuse to perform any procedure or take any action that could be construed as assuming management responsibilities.

Management Responsibilities

Management is responsible for designing, implementing, and maintaining effective internal controls, including evaluating and monitoring ongoing activities to help ensure that appropriate goals and objectives are met; following laws and regulations; and ensuring that management and financial information is reliable and properly reported. Management is also responsible for implementing systems designed to achieve compliance with applicable laws, regulations, contracts, and grant agreements. You are also responsible for the selection and application of accounting principles, for the preparation and fair presentation of the financial statements and all accompanying information in conformity with U.S. generally accepted accounting principles, and for compliance with applicable laws and regulations and the provisions of contracts and grant agreements.

Management is also responsible for making all financial records and related information available to us and for the accuracy and completeness of that information. You are also responsible for providing us with (1) access to all information of which you are aware that is relevant to the preparation and fair presentation of the financial statements, (2) additional information that we may request for the purpose of the audit, and (3) unrestricted access to persons within the District from whom we determine it necessary to obtain audit evidence.

Your responsibilities include adjusting the financial statements to correct material misstatements and for confirming to us in the written representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

You are responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud affecting the District involving (1) management, (2) employees who have significant roles in internal control, and (3) others where the fraud could have a material effect on the financial statements. Your responsibilities include informing us of your knowledge of any allegations of fraud or suspected fraud affecting the District received in communications from employees, former employees, grantors, regulators, or others. In addition, you are responsible for identifying and ensuring that the District complies with applicable laws, regulations, contracts, agreements, and grants and for taking timely and appropriate steps to remedy fraud and noncompliance with provisions of laws, regulations, contracts or grant agreements, or abuse that we report.

You are responsible for the preparation of the supplementary information, which we have been engaged to report on, in conformity with U.S. generally accepted accounting principles. You agree to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. You also agree to [include the audited financial statements with any presentation of the supplementary information that includes our report thereon. Your responsibilities include acknowledging to us in the written representation letter that (1) you are responsible for presentation of the supplementary information in accordance with GAAP; (2) you believe the supplementary information, including its form and content, is fairly presented in accordance with GAAP; (3) the methods of measurement or presentation have not changed from those used in the prior period; and (4) you have disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

Management is responsible for establishing and maintaining a process for tracking the status of audit findings and recommendations. Management is also responsible for identifying and providing report copies of previous financial audits, attestation engagements, performance audits or other studies related to the objectives discussed in the Audit Objectives section of this letter. This responsibility includes relaying to us corrective actions taken to address significant findings and recommendations resulting from those audits, attestation engagements, performance audits, or other studies. You are also responsible for providing management's views on our current findings, conclusions, and recommendations, as well as your planned corrective actions, for the report, and for the timing and format for providing that information.

You agree to assume all management responsibilities relating to the financial statements and related notes and any other nonaudit services we provide. You will be required to acknowledge in the management representation letter our assistance with preparation of the financial statements and related notes and that you have reviewed and approved the financial statements and related notes prior to their issuance and have accepted responsibility for them. Further, you agree to oversee the nonaudit

services by designating an individual, preferably from senior management, with suitable skill, knowledge, or experience; evaluate the adequacy and results of those services; and accept responsibility for them.

Revenue Recognition Implementation Services

We will assist in implementation of Financial Accounting Standards Board's (FASB) Accounting Standards Codification (ASC 606), Revenue from Contracts with Customers, including, but not limited to the following procedures:

- We will read the completed ASC 606 questionnaires and identify inconsistencies and points of misunderstanding.
- We will read the prior period financial statements for issues relevant to adoption of ASC 606.
- We will read the process narratives and accounting policies and identify potential gaps in addressing ASC 606 requirements.
- We will read a sample of contracts to identify provisions relevant to adoption of ASC 606.

Through our revenue recognition implementation services, we will assist in the preparation of the District's financial statements, and we may advise the District about appropriate accounting principles and their application, but the responsibility for the financial statements remains with the District. As part of our engagement, we may also propose adjusting or correcting journal entries to the District's financial statements. However, management has the final responsibility for reviewing the proposed entries to the financial statements. It is our understanding management has designated an individual to oversee such services; evaluate the adequacy and results of the services performed; accept responsibility for the results of the services; and establish and maintain internal controls, including monitoring ongoing activities.

Claim Resolution

The District and Hutchinson and Bloodgood LLP agree that no claim arising out of services rendered pursuant to this agreement shall be filed more than the earlier of two years after the date of the audit report issued by Hutchinson and Bloodgood LLP or the date of this engagement letter if no report has been issued. In no event shall either party be liable to the other for claims of punitive, consequential, special, or indirect damages. Hutchinson and Bloodgood LLP's liability for all claims, damages and costs of the District arising from this engagement is limited to the amount of fees paid by the District to Hutchinson and Bloodgood LLP for the services rendered under this engagement letter.

Mediation

You agree that any dispute that may arise regarding the meaning, performance or enforcement of this engagement will, prior to resorting to litigation, be submitted to mediation, and that the parties will engage in the mediation process in good faith once a written request to mediate has been given by any party to the engagement. Any mediation initiated as a result of this engagement shall be administered within the county of Santa Cruz, California, by a member of the American Arbitration Association or the American Bar Association Section of Dispute Resolution, according to its mediation rules, and any ensuing litigation shall be conducted within said county, according to California law. The results of any such mediation shall be binding only upon agreement of each party to be bound. The costs of any mediation proceeding shall be shared equally by the participating parties.

Other Relevant Information

We may from time to time and depending on the circumstances, use third-party service providers in serving your account. We may share confidential information about you with these service providers, but remain committed to maintaining the confidentiality and security of your information. Accordingly, we maintain internal policies, procedures, and safeguards to protect the confidentiality of your personal information. In addition, we will secure confidentiality agreements with all service providers to maintain the confidentiality of your information and we will take reasonable precautions to determine that they have appropriate procedures in place to prevent the unauthorized release of your confidential

information to others. In the event that we are unable to secure an appropriate confidentiality agreement, you will be asked to provide your consent prior to the sharing of your confidential information with the third-party service provider. Furthermore, we will remain responsible for the work provided by any such third-party service providers.

The documentation for this engagement is the property of Hutchinson and Bloodgood LLP. However, you acknowledge and grant your assent that representatives of the cognizant or oversight agency or their designee, other government audit staffs, and the U.S. Government Accountability Office shall have access to the audit documentation upon their request and that we shall maintain the audit documentation for a period of at least three years after the date of the report, or for a longer period if we are requested to do so by the cognizant or oversight agency. Access to requested documentation will be provided under the supervision of Hutchinson and Bloodgood LLP audit personnel and at a location designated by our Firm.

Fees

Our fees for the audit and accounting services described above are based upon the value of the services performed and the time required by the individuals assigned to the engagement, plus direct expenses. Our fee estimate and completion of our work is based upon the following criteria:

a. Anticipated cooperation from District personnel.
b. Timely responses to our inquiries.
c. Timely completion and delivery of client assistance requests.
d. Timely communication of all significant accounting and financial reporting matters.
e. The assumption that unexpected circumstances will not be encountered during the engagement.

Our fee for these services will be at our standard hourly rates plus out-of-pocket costs; we estimate that our fees will range from $7,900 - $9,000 for the financial statement audit. Our standard hourly rates vary according to the degree of responsibility involved and the experience level of the personnel assigned to your audit. Our invoices for these fees will be rendered each month as work progresses and are payable on presentation. The above fee is based on anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the audit. If significant additional time is necessary, we will discuss it with you and arrive at a new fee estimate before we incur the additional costs.

Record Retention

It is our policy to keep records related to this engagement for seven years. However, the Firm does not keep any original client records, so we will return those to you at the completion of the services rendered under this engagement. When records are returned to you, it is your responsibility to retain and protect your records for possible future use, including potential examination by any government or regulatory agency.

By your signature below, you acknowledge and agree that upon the expiration of the seven-year period Hutchison and Bloodgood LLP shall be free to destroy our records related to this engagement. If we are aware that a federal awarding agency, pass-through entity, or auditee is contesting an audit finding, we will contact the party(ies) contesting the audit finding for guidance prior to destroying the workpapers.

PKF International

Hutchinson and Bloodgood LLP is a member firm of the PKF International Limited family of legally independent firms. Neither the other member firms nor the correspondent firms of the network nor PKF International Limited is responsible or accept liability for the work or advice which Hutchinson and Bloodgood LLP provides to its clients and in signing and returning to us the enclosed copy of this Agreement Letter you acknowledge and accept that such other member and correspondent firms and PKF

International Limited do not owe you any duty in relation to the work or advice which we will from time to time provide to you or are required to provide to you.

Electronic Signatures

Each party hereto agrees that any electronic signature of a party to this agreement or any electronic signature to a document contemplated hereby (Including any representation letter) is intended to authenticate such writing and shall be as valid, and have the same force and effect, as a manual signature.

We appreciate the opportunity to be of service to the District and believe this letter accurately summarizes the significant terms of our engagement. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this letter, please sign a copy and return it to us.

Very truly yours,

HUTCHINSON AND BLOODGOOD LLP

Kim Said, CPA
Partner

Accepted:

By: _____
President, Board of Directors

Date: _____