CITY OF FORT BRAGG
416 N. FRANKLIN, FORT BRAGG, CA 95437
PHONE 707/961-2823 FAX 707/961-2802

MEMORANDUM

DATE: **AUGUST 12, 2009**

TO: **INTERESTED PARTIES**

FROM: **CHRIS CARTERETTE, SENIOR PLANNER**

SUBJECT: **Addendum correcting incorrectly checked boxes for the Fort Bragg Skate Park *DRAFT* Mitigated Negative Declaration distributed August 12, 2009 for public review period August 14, 2009 to September 23, 2009**

Some of the boxes in the initial study checklist are incorrectly checked. The following box numbers in the referenced environmental document should have been checked indicating *Less than Significant Impact with Mitigation Incorporated*:

4 b and 4 c

5 a, b and c

6 a-ii

10 b

Any questions regarding this memo may be directed to Chris Carterette (707) 961-2827 x107

ATTACHMENT 2
Mitigated Negative Declaration

COMBINED NOTICE OF FINDING OF NO SIGNIFICANT IMPACT AND INTENT TO REQUEST RELEASE OF FUNDS

August 13, 2009

City of Fort Bragg
416 North Franklin Street
Fort Bragg, CA 95437
(707) 961-2827

This Notice shall satisfy the above-cited two separate but related procedural notification requirements.

REQUEST FOR RELEASE OF FUNDS

On or about August 31, 2009 the City of Fort Bragg will submit a request to the State of California Department of Housing and Community Development for the release of Small Cities Community Development Block Grant Program funds under Title 1 of the Housing and Community Development Act of 1974, as amended, to undertake a project known as the Fort Bragg Skate Park for the purpose of constructing a 10,800 square foot, in-ground, solid concrete skate park with landscaping and amenities at the Mendocino Recreation and Park District's C.V. Starr Community Center, 300 South Lincoln Street, Fort Bragg, CA.

FINDING OF NO SIGNIFICANT IMPACT

The City of Fort Bragg has determined that the project will have no significant impact on the human environment. Therefore, an Environmental Impact Statement under the National Environmental Policy Act of 1969 (NEPA) is not required. Additional project information is contained in the Environmental Review Record (ERR) on file at the City of Fort Bragg Community Development Department at the above address and may be examined or copied weekdays 9 A.M. to 5 P.M.

PUBLIC COMMENTS

Any individual, group, or agency disagreeing with this determination or wishing to comment on the project may submit written comments to the City of Fort Bragg Community Development Department. All comments received August 28, 2009, will be considered by the City of Fort Bragg prior to authorizing submission of a request for release of funds. Commenters should specify which part of this Notice they are addressing.

RELEASE OF FUNDS

The City of Fort Bragg certifies to the Department of Housing and Community Development (HCD) that Marie Jones in her capacity as Community Development Director consents to accept the jurisdiction of the Federal Courts if an action is brought to enforce responsibilities in relation to the environmental review process and that these responsibilities have been satisfied. HCD's approval of the certification satisfies its responsibilities under NEPA and related laws and authorities, and allows the City of Fort Bragg to use Program funds.

OBJECTIONS TO RELEASE OF FUNDS

HCD will consider objections to its release of funds and the City of Fort Bragg's certification received by September 12, 2009, or a period of fifteen days from its receipt of the request (whichever is later) only if they are on one of the following bases: (a) the certification was not executed by the Certifying Officer or other officer of the City of Fort Bragg approved by HCD; (b) the City of Fort Bragg has omitted a step or failed to make a decision or finding required by HUD regulations at 24 CFR Part 58; (c) the grant recipient or other participants in the project have committed funds or incurred costs not authorized by 24 CFR Part 58 before approval of a release of funds by HCD; or (d) another Federal agency acting pursuant to 40 CFR Part 1504 has submitted a written finding that the project is unsatisfactory from the standpoint of environmental quality. Objections must be prepared and submitted in accordance with the required procedures (24 CFR Part 58) and shall be addressed to HCD at 1800 3rd Street, Suite 330, Sacramento, CA 95811. Potential objectors should contact HCD to verify the actual last day of the objection period.

Linda Ruffing

Linda Ruffing
City Manager, City of Fort Bragg
Certifying Officer

U.S. Department of Housing
and Urban Development
Pacific/Hawaii Office of
Community Planning and Development
Environmental Branch

Environmental Assessment

(HUD recommended format per
24 CFR 58.36, revised 1/99)

Project Identification:	**CDBG Grant #07-PTAG-3663** (City of Fort Bragg) The City of Fort Bragg will use $482,317.00 to design, engineer and construct a 10,800 square foot, in-ground, solid concrete skate park with landscaping and amenities at the Mendocino Recreation and Park District's newly constructed C.V. Starr Community Center. The skate park conceptual design completed on May 26, 2009 is the basis for the proposed project.
Preparer:	Chris Carterette, AICP Senior Planner
Responsible Entity:	City of Fort Bragg
Month/Year:	August 2009

Environmental Assessment

Responsible Entity [24 CFR 58.2(a)(7)]: City of Fort Bragg

Certifying Officer [24 CFR 58.2(a)(2)]: Linda Ruffing, City Manager, City of Fort Bragg

Project Name: Skate Plaza Conceptual Design (07-PTAG-3663)

Project Location: 300 South Lincoln Street.

Estimated total project cost: $482,300

Grant Recipient [24 CFR 58.2(a)(5)]: City of Fort Bragg

Recipient Address: City of Fort Bragg, 416 No. Franklin St., Fort Bragg, CA 95437

Project Representative: Marie Jones, Community Development Director

Telephone Number: (707) 961-2827, ext. 108

Conditions for Approval: (List all mitigation measures adopted by the responsible entity to eliminate or minimize adverse environmental impacts. These conditions must be included in project contracts or other relevant documents as requirements). [24 CFR 58.40(d), 40 CFR 1505.2(c)]

Conditions for Approval: (List all mitigation measures adopted by the responsible entity to eliminate or minimize adverse environmental impacts. These conditions must be included in project contracts or other relevant documents as requirements). [24 CFR 58.40(d), 40 CFR 1505.2(c)]

1. An ordinance shall be enacted to establish rules and regulations for use of the skate park and to establish penalties for violations:
   a) The maximum possible hours of operation of the skate park shall be from10 am to 7 pm. Use of the park at any other time will be prohibited. Hours of operation may be further limited at the discretion of the Rec District.
   b) Participants are required to use personal safety equipment comprised of at least head, knee, and elbow protection.
   c) No moveable obstacles or materials (e.g., ramps or jumps) are allowed in the park.
   d) Bicycling is prohibited within the skate area, except at designated bicycle only times.
   e) The playing of amplified music is within the park is prohibited, unless it is part of a special event which has been approved by the City of Fort Bragg and/or the Rec District.
   f) The placing of graffiti anywhere in or on the park is prohibited and may result in park closure
   g) The following are prohibited in the park at all times: possession or use of drugs or alcohol or being under the influence thereof; fighting or other violence; possession or use of firearms, knives, or other weapons of any kind; and smoking or use of tobacco products.
2. Stormwater from the skate park site will be appropriately conveyed through the City's Area E Storm Drain system. Completion of the City-sponsored "Otis Johnson Park restoration project" will: 1) establish an effective stormwater dissipater system in the park for Storm Drain Area E drainage, and 2) construct an appropriately sized culvert to handle all stormwater flows from Storm Drain Area E
3. All construction activities shall cease and the Planning Director shall be contacted if any historic resources or human remains are encountered during construction.
4. In the event that archaeological resources are encountered during construction, land alteration work in the general vicinity of the find shall be halted and a qualified archaeologist consulted.
5. All structures and improvements shall comply with the seismic safety provisions of the Uniform Building Code.
6. Construction activities shall be limited to the hours of 7 am to 8 pm, Monday through Friday, 7 am to 5 pm on Saturday, and 8 am to 5 pm on Sunday in accordance with Chapter 9.44 of the Municipal Code. Construction is prohibited on designated holidays.

FINDING: [58.40(g)]

☒ **Finding of No Significant Impact**
(The project will not result in a significant impact on the quality of the human environment)

☐ **Finding of Significant Impact**
(The project may significantly affect the quality of the human environment)

Preparer Signature: _____

Date: 8/11/2009

Title/Agency: Senior Planner, City of Fort Bragg, California

RE Approving Official Signature: _____

Date: 8/11/2009

Title/ Agency: City Manager, City of Fort Bragg, California

Statement of Purpose and Need for the Proposal: [40 CFR 1508.9(b)]

Since early 2006, City staff, in collaboration with staff from the Fort Bragg Unified School District (FBUSD) and the Mendocino Coast Recreation and Park District (MCRPD), has been meeting as the Skate Park Committee to strategize establishment of a Community Skate Park in Fort Bragg. The impetus for a Skate Park is the recognition of the benefits that a skate park provides in recreational and healthy living opportunities for youth. Like many communities, Fort Bragg has a growing number of youth and young adult skaters who practice their sport on the streets, sidewalks, and other public and private property. Absent a Skate Park, the resulting endangerment to skaters and defacement of public and private property will continue. A skate park located within City limits will provide a safe and appropriate venue for Fort Bragg skaters. The Skate Park facility initiative started over 15 years ago with a group of elected officials, local residents, skateboard enthusiasts, young adults and community interest groups.

Description of the Proposal: Include all contemplated actions which logically are either geographically or functionally a composite part of the project, regardless of the source of funding [24 CFR 58.32, 40 CFR 1508.25]

Design, engineer and construct a 10,800 square foot, in-ground, concrete skate plaza with landscaping and amenities at the MCRPD's newly constructed C.V. Starr Community Center. The skate plaza conceptual design completed on May 26, 2009 is the basis for the proposed project. Project details are listed below:

- Construction of 10,800 square foot, in-ground, concrete skate park including bowl, stairs, curbs, rails, and ramps
- Signage at the project entrance on Willow Street
- Bicycle racks
- Benches
- Drinking Fountain
- Landscaping and irrigation
- Perimeter fencing consisting of powder coated tubular steel
- Posting of Skatepark Rules
- No lighting or bathrooms are planned for the project, though a new detached accessible unisex bathroom is planned adjacent to Willow Street for the general community center facility.

Existing Conditions and Trends: Describe the existing conditions of the project area and its surroundings, and trends likely to continue in the absence of the project. [24 CFR 58.40(a)]

The project site formerly housed Green Memorial Field, a baseball playing field that was decommissioned by the MCRPD upon construction of the new Recreation Center and Aquatic Facility. The proposed skate park will be located

on a portion of the site that was originally slated as a driveway and parking area. The overall site plan was reconfigured to allow the skate park.

The project area is within a relatively densely populated residential neighborhood in central Fort Bragg in an area that for decades has been a center of outdoor community activity, such as little league baseball tournaments, annual logging shows and dog training and agility classes. The site is adjacent to Redwood Elementary School and the School District offices, and a component of a recreation facility (that includes an aquatic center, multi-purpose community center, and a dog park) will nicely round out the active recreational offerings to serve a marginalized group of youthful athletes. In the absence of the project, there would continue to be limited outdoor recreational opportunities for youth, especially a lack of legal, safe designated areas for skateboarders and roller skaters.

Statutory Checklist

[24CFR §58 5]

For each listed statute, executive order or regulation, record the determinations made. Note reviews and consultations completed as well as any applicable permits or approvals obtained. Attach evidence that all required actions have been taken. Record any conditions or mitigation measures required. Then, make a determination of compliance or consistency.

Factors **Documentation**	**Determinations and Compliance**
Historic Preservation [36 CFR 800]	The project area is vacant land and no structures subject to preservation concerns are present.
Floodplain Management [24 CFR 55, Executive Order 11988]	The property is not located within a floodplain
Wetlands Protection [Executive Order 11990]	There are no wetlands located on the property.
Coastal Zone Management Act [Sections 307(c),(d)]	The project site is not located within the coastal zone.
Sole Source Aquifers [40 CFR 149]	Not applicable.
Endangered Species Act [50 CFR 402]	There are no rare, threatened of endangered species on the project site.
Wild and Scenic Rivers Act [Sections 7 (b), (c)]	There are no wild and scenic rivers in the City of Fort Bragg
Air Quality [Clean Air Act, Sections 176 (c) and (d), and 40 CFR 6, 51, 93]	The project will not adversely affect air quality.
Farmland Protection Policy Act [7 CFR 658]	Not applicable.
Environmental Justice [Executive Order 12898]	The project will be a free use facility and positively addresses low-income populations by providing a place for healthy, athletic activity.

HUD Environmental Standards Determinations and Compliance Documentation

Noise Abatement and Control [24 CFR 51 B]	The project will not result in any adverse impacts relating to noise. The project is subject to the City of Fort Bragg Noise Ordinance relative to hours of operation and construction activities.
Toxic or Hazardous Substances and Radioactive Materials [HUD Notice 79-33]	The project will not expose skate park users to toxic or hazardous substances or radioactive materials.
Siting of HUD-Assisted Projects near Hazardous Operations [24 CFR 51 C]	There are no hazardous operations in the vicinity of the project site.
Airport Clear Zones and Accident Potential Zones [24 CFR 51 D]	There are no airports in the project vicinity.

Environmental Assessment Checklist

[Environmental Review Guide HUD CPD 782, 24 CFR 58.40, Ref. 40 CFR 1508.8 &1508.27]

Evaluate the significance of the effects of the proposal on the character, features and resources of the project area. Enter relevant base data and verifiable source documentation to support the finding. Then enter the appropriate impact code from the following list to make a finding of impact. **Impact Codes**: **(1)** - No impact anticipated; **(2)** - Potentially beneficial; **(3)** - Potentially adverse; **(4)** - Requires mitigation; **(5)** - Requires project modification. Note names, dates of contact, telephone numbers and page references. Attach additional materials as needed.

Land Development	**Code**	**Source or Documentation**
Conformance with Comprehensive Plans and Zoning	2	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Compatibility and Urban Impact	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Slope	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Erosion	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Soil Suitability	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Hazards and Nuisances including Site Safety	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Energy Consumption	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Noise - Contribution to Community Noise Levels	4	City of Fort Bragg General Plan and Municipal Code regulating noise and project Mitigated Negative Declaration
Air Quality Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Environmental Design Visual Quality - Coherence, Diversity, Compatible Use and Scale	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration

Socioeconomic	Code	Source or Documentation
Demographic Character Changes	1	US Census 2000
Displacement	1	Not applicable, no displacement will occur.
Employment and Income Patterns	1	US Census 2000

Community Facilities and Services	Code	Source or Documentation
Educational Facilities	1	City of Fort Bragg General Plan
Commercial Facilities	1	City of Fort Bragg General Plan
Health Care	1	City of Fort Bragg General Plan
Social Services	1	City of Fort Bragg General Plan
Solid Waste	1	City of Fort Bragg General Plan
Waste Water	1	City of Fort Bragg General Plan
Storm Water	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Water Supply	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
Public Safety - Police	2	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
- Fire	1	City of Fort Bragg Planning Commission, Agenda Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration
- Emergency Medical	1	City of Fort Bragg General Plan
Open Space and Recreation - Open Space	2	City of Fort Bragg General Plan
- Recreation	2	City of Fort Bragg General Plan
- Cultural Facilities	1	City of Fort Bragg General Plan
Transportation	1	City of Fort Bragg Planning Commission, Agenda

		Summary Report for USP 8-00/04/05/07/09 and Site and Architectural Review 12-00/04/05/07/09 and project Mitigated Negative Declaration

Natural Features		Source or Documentation
Water Resources	1	Not applicable
Surface Water	1	Not applicable
Unique Natural Features and Agricultural Lands	1	Not applicable
Vegetation and Wildlife	1	Not applicable

Summary of Findings and Conclusions

The following findings are recommended for adoption by the Fort Bragg Planning Commission in support of their approval of the project as described:

1. The proposed project is consistent with the purpose and intent of the Public Facility Zoning District, as well as all other provisions of the General Plan, Land Use and Development Code and the Fort Bragg Municipal Code;
2. The proposed use, a skate park, is a permitted use within the Public Facilities Zoning District and complies with all other applicable provisions of this Development Code and the Municipal Code;
3. The design, location, size, and operating characteristics of the proposed activity are compatible with the existing and future land uses in the vicinity;
4. The site is physically suitable in terms of design, location, shape, size, operating characteristics, and the provision of public and emergency vehicle (e.g., fire and medical) access and public services and utilities (e.g., fire protection, police protection, potable water, schools, solid waste collection and disposal, storm drainage, wastewater collection, treatment, and disposal, etc.), to ensure that the type, density, and intensity of use being proposed would not endanger, jeopardize, or otherwise constitute a hazard to the public interest, health, safety, convenience, or welfare, or be materially injurious to the improvements, persons, property, or uses in the vicinity and zoning district in which the property is located;
5. The project complies with the purpose and requirements of Section 18.71.050 Design Review;
6. The project provides architectural design, building massing, and scale appropriate to and compatible with the site surroundings and the community;
7. The project provides attractive and desirable site layout and design, including building arrangement, exterior appearance and setbacks, drainage, fences and walls, grading, landscaping, lighting, signs, etc.;

8. The project provides efficient and safe public access, circulation, and parking;
9. The project provides appropriate open space and landscaping, including the use of water efficient landscaping;
10. The project complies and is consistent with the City's Design Guidelines; and
11. For the purposes of the environmental determination a Mitigated Negative Declaration has been prepared and filed with the State Clearinghouse and County Recorder's Office.

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives and Project Modifications Considered [24 CFR 58.40(e), Ref. 40 CFR 1508 9]
(Identify other reasonable courses of action that were considered and not selected, such as other sites, design modifications, or other uses of the subject site. Describe the benefits and adverse impacts to the human environment of each alternative and the reasons for rejecting it)

During the project design phase the City considered eight potential alternative locations and narrowed the site selection process down to the selected site with two possible configurations of the park and one other location, Harold O. Bainbridge Park. The recommended alternative (the proposed project) allows for a skate park to be built upon an area proposed for parking and a drive access, whereas the Bainbridge Park alternative would have displaced open space currently used for active and passive recreation. The recommended alternative results in a net increase in programmed outdoor recreation space.

During public workshops the recommended alternative was preferred by approximately 95% of the over 80 attendees who participated, due to its better location, less impacts on neighbors, and the retention of open space. The layout of the recommended alternative evolved through public input and reflects the synthesized desires of the Fort Bragg skating community and is appropriately sized and capable of being built in two phases, if necessary. The management and operation of the Skate Park will be guided through a memorandum of understanding between the Recreation District and the City of Fort Bragg.

No Action Alternative [24 CFR 58.40(e)]
(Discuss the benefits and adverse impacts to the human environment of not implementing the preferred alternative)

The no action alternative would perpetuate the lack of a formal, safe and regulated park for skateboarders and roller skaters to practice their sport.

Mitigation Measures Recommended [24 CFR 58.40(d), 40 CFR 1508.20]
(Recommend feasible ways in which the proposal or external factors relating to the proposal should be modified in order to eliminate or minimize adverse environmental impacts.)

1. An ordinance shall be enacted adopting the following rules and regulations for use of the skate park and subjecting violators of the rules and regulations to citation:

    h) The maximum possible hours of use of the skate park shall be 8 am to 7 pm Daylight Saving Time, and 8 am to 5 pm Pacific Standard Time. Use of

the park at any other time will be prohibited. Hours of operation may be further limited through the adoption of an MOU between the City of Fort Bragg and the Rec District.

i) Participants are required to use personal safety equipment comprised of at least head, knee, and elbow protection.

j) No moveable obstacles or materials (e.g., ramps or jumps) are allowed in the park.

k) Bicycling is prohibited within the skate area, except at designated bicycle only times.

l) Music within the park that is audible from any residential parcel is prohibited, unless it is part of a special event which has received TAC review by the City of Fort Bragg.

m) The placing of graffiti anywhere in or on the park is prohibited and the park will be closed until the graffiti is removed and/or repaired. Unless a designated graffiti wall is added to the park features by the City of Fort Bragg.

n) The following are prohibited in the park at all times: possession or use of drugs or alcohol or being under the influence thereof; fighting or other violence; possession or use of firearms, knives, or other weapons of any kind; and smoking or use of tobacco products.

2. The City will continue with the implementation of the Otis Johnson Park restoration project to: 1) establish an effective stormwater dissipater system in the park, and 2) construct an appropriately sized culvert to handle all stormwater flows.
3. All construction activities shall cease and the Planning Director shall be contacted if any historic resources or human remains are encountered during construction.
4. In the event that archaeological resources are encountered during construction, land alteration work in the general vicinity of the find shall be halted and a qualified archaeologist consulted.
5. All structures and improvements shall comply with the seismic safety provisions of the Uniform Building Code.
6. Construction activities shall be limited to the hours of 7 am to 8 pm, Monday through Friday, 7 am to 5 pm on Saturday, and 8 am to 5 pm on Sunday in accordance with Chapter 9.44 of the Municipal Code. Construction is also prohibited on designated holidays.

Additional Studies Performed
None

Draft Mitigated Negative Declaration for the project is attached.

List of Sources, Agencies, and Persons Consulted [40 CFR 1508 9(b)]

City of Fort Bragg General Plan
City of Fort Bragg Planning Commission
City of Fort Bragg Public Works Department
Fort Bragg Police Department
Fort Bragg Fire Department
Fort Bragg Unified School District
Mendocino County Department of Planning & Building Services
MCRPD

CITY OF FORT BRAGG

Incorporated August 5, 1889
416 N. Franklin St.
Fort Bragg, CA 95437
Phone: (707) 961-2823
Fax: (707) 961-2802
www.fortbragg.com

NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION AND FEDERAL ENVIRONMENTAL ASSESSMENT

NOTICE IS HEREBY GIVEN that the Community Development Director has determined that the following project would not have a significant effect on the environment and a draft mitigated negative declaration and Federal environmental assessment have been prepared:

FILE NUMBER(S)/DATE:	DR 5-09; July 2, 2009
APPLICANT:	City of Fort Bragg
OWNER:	Mendocino Coast Recreation and Park District (MCRPD)
AGENT:	Chris Carterette, City of Fort Bragg
PROJECT DESCRIPTION:	Adoption of mitigated negative declaration, Federal environmental assessment, and approval of a Design Review permit to allow construction of 10,800 square foot, in-ground, concrete skate park including bowl, stairs, curbs, rails, and ramps with construction and installation of site amenities: signage at the project entrance on Willow Street, bicycle racks, benches, drinking fountain, landscaping and irrigation, posting of skate park rules and tubular steel perimeter fencing. Skate Park to be located at corner of Lincoln and Willow Streets at the northeast area of property.
ADDRESS:	300 South Lincoln Street (APN 008-280-62)

The draft mitigated negative declaration and Federal environmental assessment were distributed to responsible and trustee agencies and made available for public review beginning on August 14, 2009 and continuing through September 23, 2009. During the review period, the Fort Bragg Planning Commission will conduct a public hearing and receive public comment on the draft mitigated negative declaration and Federal environmental assessment for the Skate Park. The public hearing will be held during a regularly scheduled meeting at 6:00 p.m., or as soon thereafter as the matter may be heard on **SEPTEMBER 23, 2009**, at Town Hall, at the corner of Main and Laurel Streets (363 North Main Street), Fort Bragg, California. The hearing will be opened for public participation. All interested persons are invited to appear at that time to present their comments. At the conclusion of the public hearing, the Planning Commission will consider adoption of the draft mitigated negative declaration pursuant to the California Environmental Quality Act (CEQA) and Federal environmental assessment pursuant to the National Environmental Protection Act (NEPA).

Copies of all documents are available for review and/or copying during normal office hours at the Fort Bragg Community Development Department, City Hall, 416 North Franklin Street, Fort Bragg, California, 95437.

Nancy Phillips

Nancy Phillips, Administrative Secretary

PUBLISHING/POSTING/MAILING DATE: **August 13, 2009**

STATE OF CALIFORNIA)
)SS.
COUNTY OF MENDOCINO)

I declare under penalty of perjury, that I am employed by the City of Fort Bragg in the Community Development Department; and that I posted this Notice in the City Hall Notice case on August 13, 2009.

Nancy Phillips, Administrative Secretary

cc: City Council
City Manager
City Attorney
Bruce Irwin, MCRPD
Community Development Director
Fort Bragg Planning Commission
City Clerk

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Fort Bragg Skate Park

Lead Agency: City of Fort Bragg — Contact Person: Chris Carterette
Mailing Address: 416 N. Franklin Street — Phone: 707-961-2827 x107
City: Fort Bragg — Zip: 95437 — County: Mendocino

Project Location: County: Mendocino — City/Nearest Community: Fort Bragg
Cross Streets: Willow and Lincoln Streets — Zip Code: 95437
Longitude/Latitude (degrees, minutes and seconds): 39 ° 26 ' 00 " N / 123 ° 47 ' 30 " W — Total Acres: 10,800 sq feet
Assessor's Parcel No.: 008-280-62 — Section: 7 — Twp.: T 18 N — Range: R 17 W — Base: MDBM
Within 2 Miles: State Hwy #: SR1 and SR20 — Waterways: Noyo River, Hare Creek, Pudding Creek
Airports: none — Railways: Calif. Western RR — Schools: FBHS,FBMS, 2 Elems

Document Type:

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☑ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Other:
NEPA: ☐ NOI ☑ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other:

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☑ Other: Design Review

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational: ____
☑ Recreational: 10,800 sq. ft. skate park
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☐ Other: ____

Project Issues Discussed in Document:

☐ Aesthetic/Visual
☐ Agricultural Land
☐ Air Quality
☐ Archeological/Historical
☑ Biological Resources
☐ Coastal Zone
☑ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☐ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☑ Geologic/Seismic
☐ Minerals
☑ Noise
☐ Population/Housing Balance
☐ Public Services/Facilities
☐ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☐ Soil Erosion/Compaction/Grading
☐ Solid Waste
☐ Toxic/Hazardous
☐ Traffic/Circulation
☐ Vegetation
☐ Water Quality
☐ Water Supply/Groundwater
☐ Wetland/Riparian
☐ Growth Inducement
☐ Land Use
☐ Cumulative Effects
☐ Other: ____

Present Land Use/Zoning/General Plan Designation:

Public Facilities

Project Description: *(please use a separate page if necessary)*

Construct 10,800 square foot, in-ground, concrete skate park including bowl, stairs, curbs, rails, and ramps with construction and installation of site amenities: a five foot tubular steel fence, signage at the project entrance on Willow Street, bicycle racks, benches, drinking fountain, landscaping and irrigation, posting of skate park rules and tubular steel perimeter fencing.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

_____	Air Resources Board	_____	Office of Emergency Services
_____	Boating & Waterways, Department of	_____	Office of Historic Preservation
_____	California Highway Patrol	_____	Office of Public School Construction
_____	Caltrans District # _____	X	Parks & Recreation, Department of
_____	Caltrans Division of Aeronautics	_____	Pesticide Regulation, Department of
_____	Caltrans Planning	_____	Public Utilities Commission
_____	Central Valley Flood Protection Board	_____	Regional WQCB # _____
_____	Coachella Valley Mtns. Conservancy	X	Resources Agency
_____	Coastal Commission	_____	S.F. Bay Conservation & Development Comm.
_____	Colorado River Board	_____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
_____	Conservation, Department of	_____	San Joaquin River Conservancy
_____	Corrections, Department of	_____	Santa Monica Mtns. Conservancy
_____	Delta Protection Commission	_____	State Lands Commission
X	Education, Department of	_____	SWRCB: Clean Water Grants
_____	Energy Commission	_____	SWRCB: Water Quality
_____	Fish & Game Region # _____	_____	SWRCB: Water Rights
_____	Food & Agriculture, Department of	_____	Tahoe Regional Planning Agency
_____	Forestry and Fire Protection, Department of	_____	Toxic Substances Control, Department of
_____	General Services, Department of	_____	Water Resources, Department of
X	Health Services, Department of		
_____	Housing & Community Development	_____	Other: _____
_____	Integrated Waste Management Board	_____	Other: _____
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date August 14, 2009 Ending Date September 23, 2009

Lead Agency (Complete if applicable):

Consulting Firm: _____
Address: _____
City/State/Zip: _____
Contact: _____
Phone: _____

Applicant: _____
Address: _____
City/State/Zip: _____
Phone: _____

Signature of Lead Agency Representative: _____ **Date:** 8/11/2009

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Initial Study and Mitigated Negative Declaration of Environmental Impact

Fort Bragg Skate Park

Draft

Applicant:	City of Fort Bragg
Date:	August 11, 2009
Lead Agency:	City of Fort Bragg 416 N. Franklin Street Fort Bragg, CA 95437
Prepared by:	Chris Carterette, AICP
Review Period:	August 14, 2009 to September 23, 2009

Project Description and Setting

Project Title: Fort Bragg Skate Park

Lead Agency Name and Address: City of Fort Bragg, 416 N. Franklin Street, Fort Bragg, CA 95437

Contact Person and Phone Number: Chris Carterette, AICP Senior Planner (707) 961-2827 x107

Project Location: APN 008-280-62 300 S. Lincoln Street, Fort Bragg (see Exhibit A). The project fronts on Willow Street.

Project Sponsor's Name and Address: Same as Lead Agency

General Plan Designation: Public Facilities

Zoning District: Public Facilities

Project Description:

Construction of a 10,800 square foot concrete skate park, with related fencing, landscaping and amenities. See Page 3 for a detailed project description.

Existing Conditions:

The project site is located in a mixed institutional and residential neighborhood in the southeastern section of Fort Bragg. The approximately 6.5 acre property, owned by the Mendocino Coast Parks and Recreation District (Rec District), at the corner of Lincoln and Willow Streets is the location of the C.V. Starr Community Center and Sigrid and Harry Spath Aquatic Center, and a Dog Park. Fort Bragg Unified School District offices and Redwood Elementary School are located immediately south of the site on the same block. The site is generally level and the skate park site is located in the northeastern corner of the property. An engineered storm drainage system has been installed on the property.

Uses surrounding the 10,800 square foot Skate Park site are as follows (see Exhibit B):

North:	Single family residences
West:	C.V. Starr Community Center project
South:	C.V. Starr Community Center project
East:	City owned alley and single family residences

Other public agencies whose approval is required: The Mendocino Coast Recreation and Parks District has approved providing space for the Skate Park at their site and a Memorandum of Understanding between the City and the Rec District is in process.

Project Description

Proposed Improvements

The project includes the following site improvements:

- Construction of a 10,800 square foot, in-ground, concrete skate park including bowl, stairs, curbs, rails, and ramps
- Signage at the project entrance on Willow Street
- Bicycle racks
- Benches
- Drinking fountain
- Landscaping and irrigation
- Perimeter fencing consisting of powder coated tubular steel
- Posting of Skate Park Rules

Determination

The project requires discretionary approvals and is not otherwise exempt from the requirements of the California Environmental Quality Act (CEQA). The City of Fort Bragg is the lead agency for this project. This Initial Study has been prepared pursuant to the State Guidelines for Implementing the California Environmental Quality Act of 1970.

On the basis of this initial evaluation, it is determined that the proposed project could have a significant effect on the environment, however, there will not be a significant effect if the mitigation measures listed below are incorporated into the project.

Mitigation Measures required to reduce potential environmental impacts to an insignificant level:

1. An ordinance shall be enacted to establish rules and regulations for use of the skate park and to establish penalties for violations:
    a. The maximum possible hours of operation of the skate park shall be from10 am to 7 pm. Use of the park at any other time will be prohibited. Hours of operation may be further limited at the discretion of the Rec District.
    b. Participants are required to use personal safety equipment comprised of at least head, knee, and elbow protection.
    c. No moveable obstacles or materials (e.g., ramps or jumps) are allowed in the park.
    d. Bicycling is prohibited within the skate area, except at designated bicycle only times.

e. The playing of amplified music is within the park is prohibited, unless it is part of a special event which has been approved by the City of Fort Bragg and/or the Rec District.

f. The placing of graffiti anywhere in or on the park is prohibited and may result in park closure

g. The following are prohibited in the park at all times: possession or use of drugs or alcohol or being under the influence thereof; fighting or other violence; possession or use of firearms, knives, or other weapons of any kind; and smoking or use of tobacco products.

2. Stormwater from the skate park site will be appropriately conveyed through the City's Area E Storm Drain system. Completion of the City-sponsored "Otis Johnson Park restoration project" will: 1) establish an effective stormwater dissipater system in the park for Storm Drain Area E drainage, and 2) construct an appropriately sized culvert to handle all stormwater flows from Storm Drain Area E

3. All construction activities shall cease and the Planning Director shall be contacted if any historic resources or human remains are encountered during construction.

4. In the event that archaeological resources are encountered during construction, land alteration work in the general vicinity of the find shall be halted and a qualified archaeologist consulted.

5. All structures and improvements shall comply with the seismic safety provisions of the Uniform Building Code.

6. Construction activities shall be limited to the hours of 7 am to 8 pm, Monday through Friday, 7 am to 5 pm on Saturday, and 8 am to 5 pm on Sunday in accordance with Chapter 9.44 of the Municipal Code. Construction is prohibited on designated holidays.

Therefore, a MITIGATED NEGATIVE DECLARATION has been prepared.

Signature

August 11, 2009

Date

Chris Carterette, AICP
Senior Planner

City of Fort Bragg

Environmental Checklist and Supporting Information

The initial study that follows poses a series of questions across a wide range of environmental considerations that serve as the basis for research and analysis.

The initial study classifies the potential environmental effects or impacts of the proposed project in one of the following four categories:

- Potentially Significant Impact,
- Potentially Significant Impact with Mitigation Incorporated,
- Less Than Significant Impact, or,
- No Impact

Where potential impacts are identified, a discussion is included to assess the nature and significance of the potential impact.

Section 15382 of the California Environmental Quality Act Guidelines defines a significant effect on the environment as "...a substantial, or potentially-substantial adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

1. AESTHETICS

The project site's current visual condition is relatively unattractive, due to two years of grading and construction activity in the construction of the community and aquatic center. The project will be landscaped and designed to be an attractive community amenity.

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?				✓
b. Substantially damage scenic resources?				✓
c. Substantially degrade the existing visual character or quality of the site and its surroundings?				✓
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?				✓

a. The project site is not located within the Scenic View area designated by the General Plan (Map LC-3).

b. The project will not damage scenic resources such as significant trees or rock outcroppings as no such resources exist on the site.

c. None of the proposed improvements are considered degradations of the site's visual character or that of surrounding uses. The project will undergo design review by the Planning Commission with recommendation that the project be found to be consistent with the existing visual character of the neighborhood and the site.

d. The project will not be illuminated.

2. AGRICULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farm-land, or Farmland of Statewide Importance to non-agricultural use?				✓
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?				✓
c. Involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use?				✓

a. The project site is not identified as such by the California Resources Agency.

b. The project site is not agriculturally zoned nor is it under a Williamson Act contract.

c. The project site is surrounded by urban uses and is not adjacent to farmland.

3. AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?				✓
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				✓
c. Result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?				✓
d. Expose sensitive receptors to substantial pollutant concentrations?				✓
e. Create objectionable odors affecting a substantial number of people?				✓

a., b., c., d., e.:

The proposed project would not result in the operation of a stationary source of air emissions or the permanent or significant generation of new vehicle trips. Therefore, the project would not result in a quantifiable increase in air emissions and would not exceed significant thresholds of the Mendocino County Air Quality Management District relative to CEQA. Construction activities for project implementation will be conducted under best management practices. The project will not produce any odors, objectionable or otherwise.

4. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Dept. of Fish and Game or U.S. Fish and Wildlife Service?				✓
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			✓	
c. Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool) through direct removal, filling, hydrological interruption, or other means?			✓	
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				✓
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

a. The project site, a completely graded (for previous project) area within a completely developed neighborhood, does not presently support nor is it suitable habitat for any candidate, sensitive, or special status species.

b,c. The project site does not support any riparian or wetlands habitat, nor does the project site support any other sensitive natural community. However, the drainage from the site enter and the surrounding area is conveyed through the Area E Storm Drain system to an outfall at Otis Johnson Park where it is conveyed to Pudding Creek. The City is presently implementing an extensive wetland restoration project at Otis Johnson Park. The wetland restoration project includes installation of a new culvert that will eliminate erosion from Storm Drain Area E stormwater runoff. The impact of the Skate Park on this wetland area is less than significant, however, cumulative impacts in the past have included the scouring out of a small seasonal stream bed and some damage to the stream bank which supports two large second growth redwoods. As indicated above, the City is addressing this issue through the installation of a new larger culvert, a stormwater dissipater system, and stream bed restoration in 2010.

d. No fish migrate through the project site nor do they migrate through the associated Otis Johnson Park wetland area as this is not a class 1 stream. Neither the project site nor the associated drainage area for the site's stormwater runoff (Otis Johnson Park) have any known wildlife of any special status.

e. There is no significant vegetation present on the project site.

f. The project site is not subject to any habitat conservation plan.

5. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of historical resources as defined in CEQA Section 15064.5?				✓
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Section 15064.5?				✓
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				✓
d. Disturb any human remains, including those interred outside of formal cemeteries?				✓

a. The project site does not contain any known historical resources. Mitigation Measure #3 requires that construction activities cease and the Community Development Director be contacted if any resources are encountered during construction.

b. The project site is fairly disturbed and there are no known archaeological resources in the project area. Mitigation Measure #4 requires that that in the event that archaeological resources are encountered during sub-subsurface construction, land alteration work in the general vicinity of the find shall be halted and a qualified archaeologist consulted.

c. There are no known unique paleontological or geologic resources in the project area.

d. There are no known human remains in the project area. Mitigation Measure #3 requires that construction activities cease and the Planning Director be contacted if any human remains are encountered during construction.

6. GEOLOGY AND SOILS

The information in this section is based on a geotechnical investigation prepared for the Community Center project, taking into account the entire site by SHN Consulting Engineers & Geologists, Inc. (Attachment A).

Compliance with the seismic safety provisions of the Uniform Building Code and with the recommendations of the project's geotechnical investigation is routinely required of any project; specific mitigations measures are therefore not required.

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?				✓
ii) Strong seismic ground shaking?			✓	
iii) Seismic-related ground failure, including liquefaction?				✓
iv) Landslides?				✓
b. Result in substantial soil erosion or the loss of topsoil?				✓
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site lateral spreading, subsidence, liquefaction or collapse?				✓
d. Be located on expansive soil, creating substantial risks to life or property?				✓

a. i) The site is not located within an Earthquake Fault Study Zone and no known fault traces transverse the site. Therefore, the risk of ground rupture within the limits of the site is considered to be low.

a. ii) While the skatepark could be damaged by strong ground shaking, to minimize the possibility of such damage, it will be engineered to Seismic Zone 4 standards per the Uniform Building Code. It is unlikely the persons will be subjected to loss, injury or death associated with strong ground shaking as the skate park is not an enclosed structure.

a. iii) The geotechnical study[1] of the 6.5 acre parcel performed for the Community Center project states that the site is not likely to be subject to liquefaction due to the dense underlying sands found during borings and test pit digging.

a. iv) The project site is essentially flat and level, therefore, slides are not anticipated.

b. Due to the relatively flat topography and the fact that the site will be covered with concrete and landscaping, the potential for erosion on the site is considered to be very low.

c. Please refer to a. iii above.

d. Laboratory test data does not indicate that expansive soils are present.

[1]*Revised Geotechnical Report, Proposed Recreation Building, Green Memorial Field, Fort Bragg, California* prepared for MCRPD Recreation Center by SHN Consulting Engineers & Geologists, Inc. August 2003

7. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				✓
b. Create a significant hazard to the public or the environment through reasonably-foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				✓
c. Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d. Subject humans to hazardous substances or operations found on the project site or in the project vicinity?				✓
e. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓
f. Expose people or structures to a significant risk of loss, injury or death involving wildland fires?				✓

a. – c.:

None of the project's implementation actions or anticipated uses would involve the transport, use, emission, or disposal of hazardous substances.

d.: There are no known hazardous substances or operations on the project site or in the project vicinity.

e.: There would not be any impairment or interference with an adopted emergency response or evacuation plan in relation to the proposed project.

f.: The project site is located in an urbanized area and is not in close proximity to any wildlands.

8. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?				✓
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?				✓
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?			✓	
d. Substantially increase, including through the alteration of the course of a stream or river, the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?			✓	
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems?			✓	
f. Provide substantial additional sources of polluted runoff?				✓
g. Otherwise substantially degrade water quality?				✓
h. Place housing within a 100-year flood hazard area?				✓
i. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				✓

j. Expose people or structures to a significant risk of loss, injury or death involving flooding?				✓

a. Run-off from the skate park would not degrade water quality.

b. The project will not use groundwater. The increase in impervious surfaces due to the concrete skate areas is insignificant and would not substantially affect groundwater recharge.

c. The existing drainage pattern in the area will be maintained through the connection of the skate park drainage system to the site's existing engineered subsurface drainage system.

d. The increased amount of surface run-off related to the concrete skate areas will be conducted to the stormwater drainage system at a rate that can be accommodated by the existing system.

e. See answer to d.

f. See answer to a.

g. There are no other potential impacts associated with project implementation that would substantially degrade water quality.

h. The project does not involve the construction of housing.

i. The project is not proposed within a 100-year floodplain.

j. The project site would not be used during the unlikely event of flooding. Due to the nature of the proposed improvements, the risk of loss is minimal.

9. LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, the Zoning Ordinance or any master development plan) adopted for the purpose of avoiding or mitigating an environmental effect?				✓
b. Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓
c. Physically divide an established community?				✓

a. The project will be consistent with all General Plan policies that seek to avoid environmental impacts on biological and cultural resources, and from noise and geological/seismic hazards.

b. Neither of these types of plans has been adopted for the project site.

c. The project does not have the geographic magnitude to physically divide the community within which it is located.

10. NOISE

The project site and surrounding properties are currently and have been historically subjected to relatively high daytime noise levels from activities associated with the former Green Memorial Field, the Dog Park, Redwood Elementary School and moderate residential and school commuter traffic. Soon the C.V. Starr Community Center and Sigrid and Harry Spath Aquatic Center will open with a commensurate increase of activity in the vicinity. Noise readings from in-ground, concrete skate parks are typically 52 to 54 dBA. Occasional noise spikes of 57 to 62 dBA occur when skateboards slam against a cement surface.

Would the project result in:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflicts with the Noise and Land Use Compatibility Standards established in the General Plan by permanently increasing the ambient noise levels in the project vicinity?				✓
b. A substantial temporary or periodic increase in ambient noise levels in the project vicinity?			✓	
c. Exposure of persons to, or generation of excessive ground-borne vibration or ground-borne noise levels?			✓	

a. Relevant standards from the Fort Bragg General Plan's Noise and Land Use Compatibility Standards (Table 3) include a maximum normally acceptable noise level of 60 dBA for outdoor noise levels in residential areas where outdoor use is a major consideration, such as backyards, the same for schools and 65 dBA for parks and other outdoor recreational uses.

An analysis for the Carson Warner Memorial Skate Park in Healdsburg[1] included the following observations about skate park noise:

> "At skate parks, noise events fall into two categories: continuous and short duration. The loudest continuous sound was generated by the wheels passing over the concrete skating surface...The loudest sound generated by skating was created when skateboards slapped onto the pavement following an aerial maneuver.
>
> Although the skaters and spectators do socialize, the conversations and other interactions are more subdued than might be anticipated. The scene has many characteristics of a sporting event – the participants are very focused on their performance and the performance of others."

An analysis for the City of Santa Cruz skate park characterized the continuous noise as "whooshing"-type sounds from the fast rolling of the skateboard's wheels on the smooth concrete surface of the track.

Noise measurements taken at the City of Santa Rosa Skate Park[2] found that the average noise levels generated by approximately 20 to 30 skaters was between 52 to 54 dBA at 120 feet from the source. However, the Santa Rose Skate Park is significantly larger and has much higher average attendance than anticipated at the Fort Bragg Skate Park, and so the average level of noise at the Fort Bragg skate park should be below 50 dBA. This average noise level is below the City's General Plan standard.

Maximum noise levels at the Santa Rosa Skate Park generated when skateboards slammed on the cement surface were between 57 to 62 dBA at 120 feet. This noise level is below the City's General Plan standard.

Based on these studies, the project operation will not generate noise levels that exceed the 60 dB General Plan standard for residential uses and school uses. The project will also not expose skate park and CV Star Aquatic Center users to noise levels that exceed the 65 dB standard for parks and outdoor recreation.

The hours of operation of the skate park will be restricted to minimize impacts to nearby residents and amplified music in the skate park will be prohibited (see Mitigation Measure #1).

b. Temporary noise increases will be generated by construction activities. Construction noise would fluctuate depending on equipment type and duration of use, distance between noise source and receptor, and presence or absence of barriers between noise source and receptor. However, Chapter 9.44 of the Municipal Code limits construction activities within 500 feet of a residential zone to the hours of 7 am to 10 pm. The project's construction activities will be subject to even more restrictive limitations.

c. There are no such vibrations or noise currently existing on the project site or anticipated to be generated by the project except for temporary vibration and noise associated with project construction.

[1] *Noise Analysis, Technical Appendix to Initial Study for the Carson Warner Skate Park Site*, David Dietz, AICP, November 23, 1997

[2] Noise measurements taken by INAS Engineering and by Wilson Ihrig & Associates in 1997

11. POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial growth in an area either directly or indirectly?				✓
b. Displace substantial numbers of existing housing?				✓
c. Displace substantial numbers of people?				✓

a. The project is located in an in-fill area and will utilize existing infrastructure.

b. There are no housing units on the project site. The site is not zoned for residential development.

c. See answer for b.

12. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically-altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Fire and police protection?				✓
b. Schools?				✓
c. Other public facilities?				✓

a. The project can be adequately serviced by existing police and fire facilities and would not have a significant effect on acceptable service ratios, response times, or other performance objectives.

b. The project would not add any students to local schools.

c. The project will not impact other public facilities.

13. RECREATION

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				✓

a.: The project is part of a the newly established recreational facilities on the C.V. Starr Community Center site and would not cause or accelerate the physical deterioration of recreational facilities.

b.: The project is a recreational facility, the potential impacts of which are addressed by this Initial Study.

14. TRANSPORTATION / TRAFFIC

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			✓	
b. Substantially increase hazards due to design features (e.g., sharp curves or dangerous intersections) or incompatible uses?				✓
c. Result in inadequate emergency access or access to nearby uses?				✓
d. Result in inadequate parking capacity on-site or off-site?				✓
e. Create hazards or barriers for pedestrians or bicyclists?				✓
f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turn-outs, bicycle racks)?				✓

a. Traffic associated with the project would primarily be confined to Lincoln and Willow Streets, a minor collector and local road respectively, in the immediate vicinity. The potential increase in traffic in the project area is anticipated to be minimal and readily accommodated by the local streets and intersections without any degradation in levels of service.

b. No additional curb cuts or driveways are required to serve the project. Traffic associated with the project will use existing roadway infrastructure.

c. Emergency access to the project site will be provided from Willow Street and the access driveway for the Community Center to the east.

d. Extensive parking is available on Willow Street and is only nominally used by existing uses in the vicinity. It is anticipated that a large number of users will not require parking because they will be dropped off, walk, skate or bike to the site. Skate Park users may also park at the Community Center which is served by over

100 parking spaces. The Planning Commission and City Staff have reviewed the project in its entirety and found that the site is adequately served by on and off street parking.

e. The project would not interfere with pedestrians or cyclists on Willow Street. In addition the project will result in an additional pedestrian egress onto the site which will improve overall pedestrian circulation on the site, when the Skate Park is open.

f. There are no such policies, plans, or programs that apply to the project. Bicycle parking in the form of bike racks is part of the skate park project.

15. UTLITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the California Regional Water Quality Control Board, North Coast Region?				✓
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
c. Require new or expanded entitlements or resources for water supplies?				✓
d. Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
e. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
f. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?				✓
g. Conflict with federal, state, or local statutes and regulations related to solid waste disposal?				✓

a. The project is not anticipated to generate any wastewater.

b. See above.

c. Existing entitlements and resources for water supplies can adequately serve the project.

d. See answer to b. above.

e. The nominal increase in off-site drainage associated with the project can be adequately accommodated by using on-site drop inlet that ties into existing storm water drainage facilities.

f. The minimal amount of trash and recycling anticipated for the skateboard park will be collected and disposed of/recycled by the City, and can be readily accommodated by the existing landfill/transfer station.

g. The project will not generate solid waste that is subject to federal, state, or local statutes or regulations.

MANDATORY FINDINGS OF SIGNIFICANCE

	No	Yes
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare of endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	✓	
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	✓	
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	✓	

a. Refer to Section 4, Biological Resources and Section 5, Cultural Resources.

b. There are no cumulative impacts associated with the initial study checklist considerations numbered 1 through 15 anticipated for the project.

c. This Initial Study has not identified any potential substantial adverse impacts associated with the project.

Exhibits

Exhibit A – Project Location
Exhibit B – Aerial View of Site
Exhibit C – Project Site Plan
Exhibit D – Skate Park Plan View
Exhibit E – Skate Park Perspective View

Attachments

Attachment A – *Revised Geotechnical Report, August 2003*

Other Information Sources

City of Fort Bragg General Plan, as amended
City of Fort Bragg Municipal Code, as amended

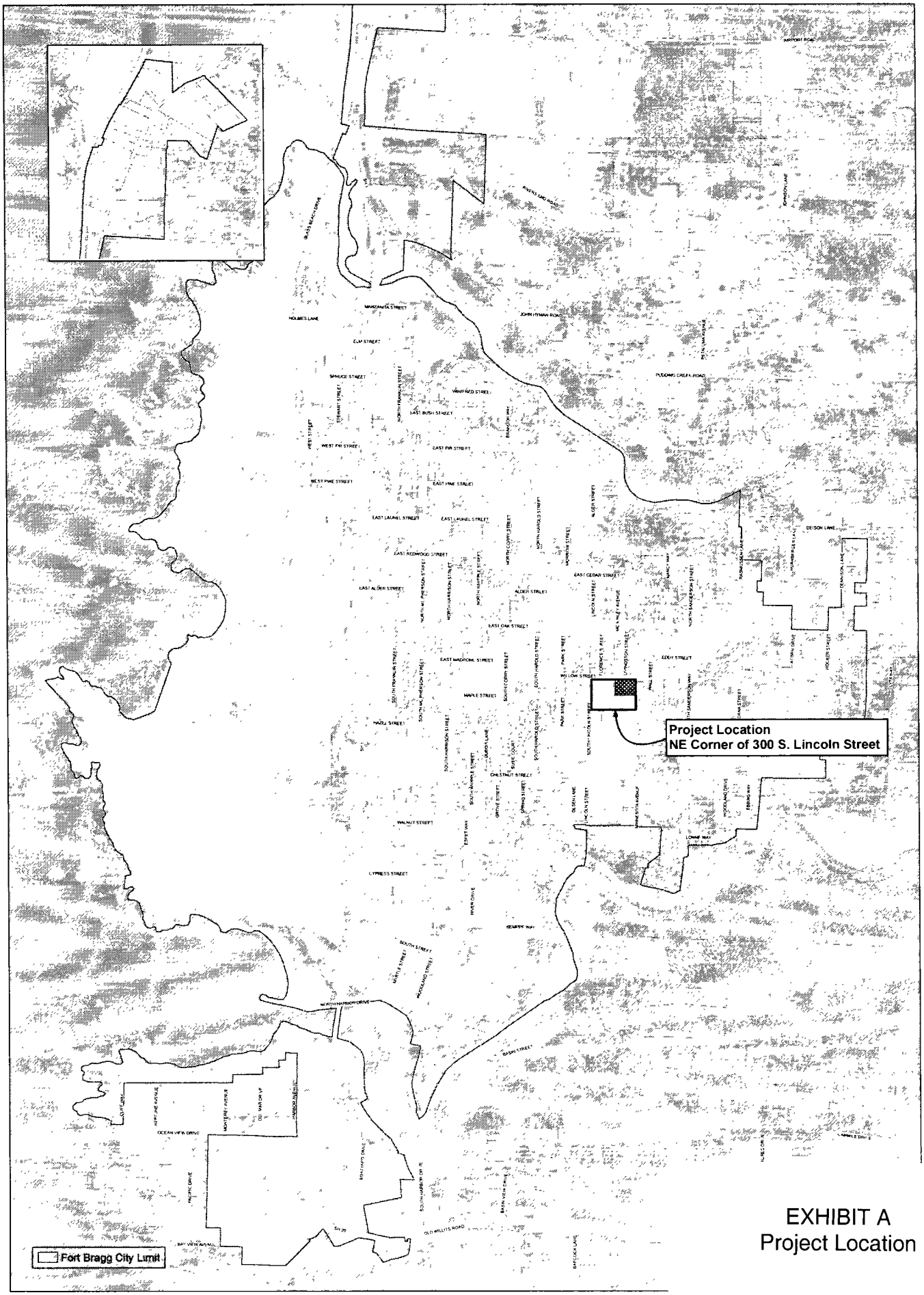


EXHIBIT A
Project Location

Locations of features and boundaries depicted are approximate only. No liability is assumed by the City of Fort Bragg for any information or data contained herein.

City of Fort Bragg

Skate Park Project - CDBG 07-PTAG-3663

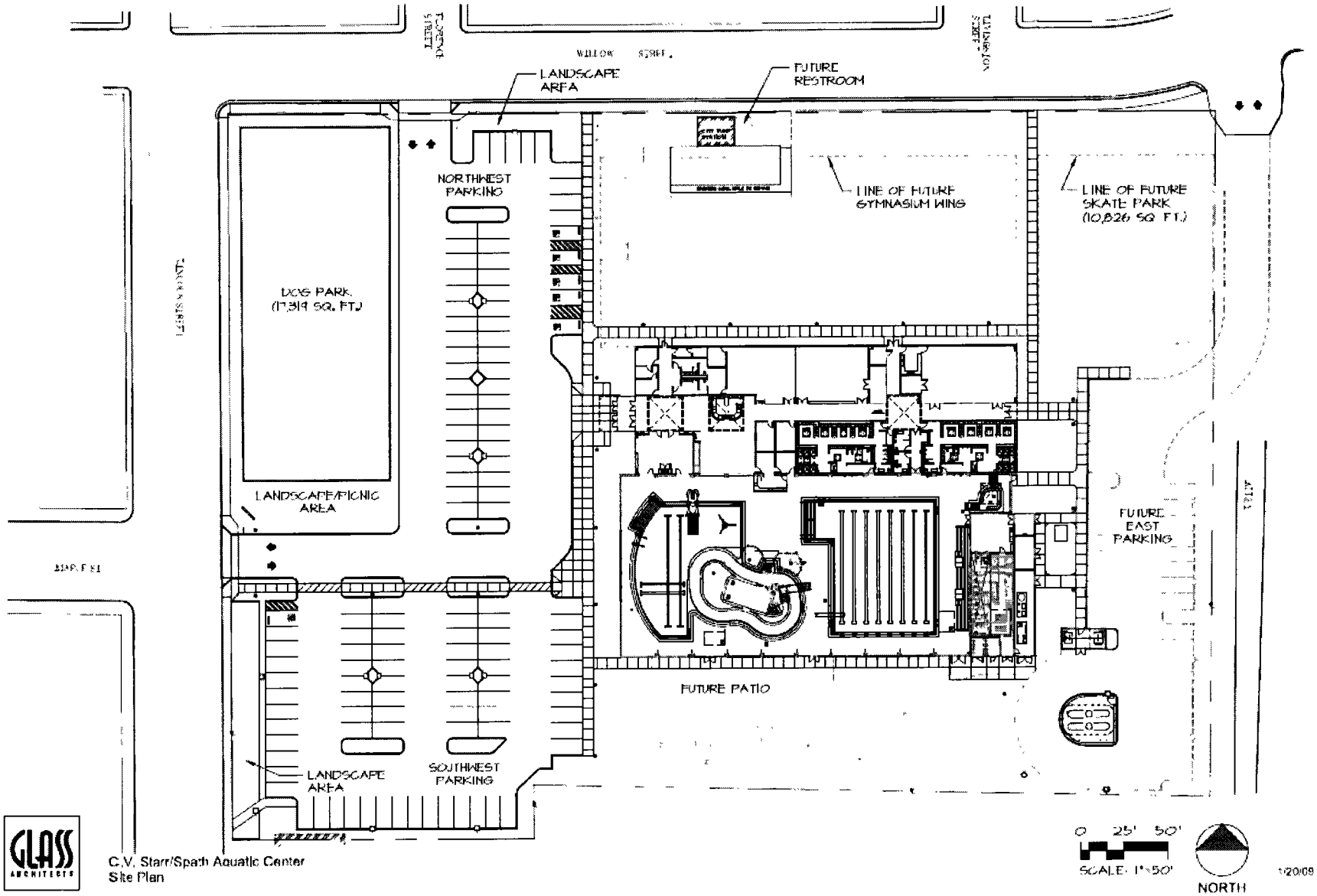
July, 2009

EXHIBIT B
Aerial View of Site

0 45 90 180 270 360
Feet

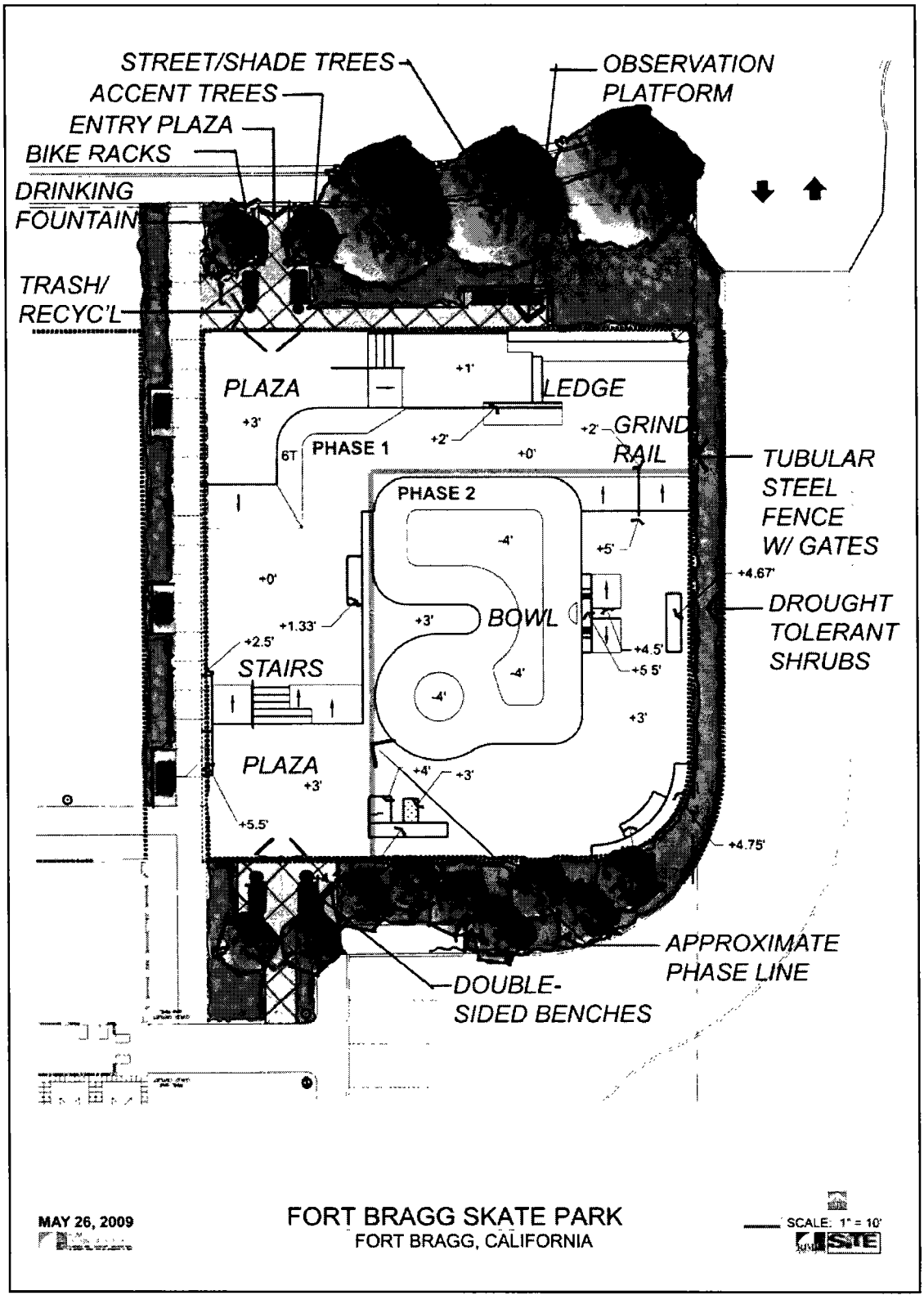
Fort Bragg Skate Park

July 2009



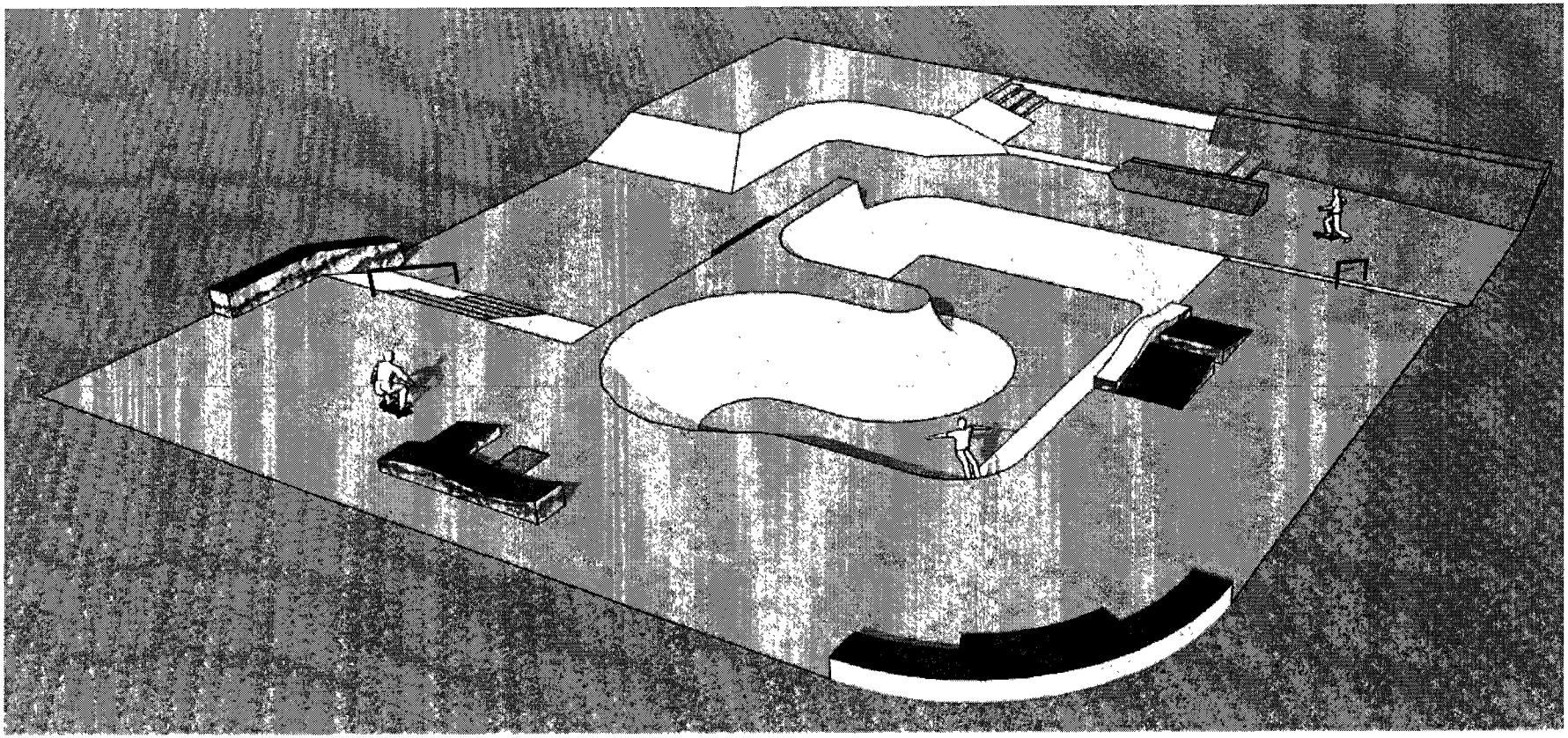
Overall Site Plan of C.V. Starr Community Center with Fort Bragg Skate Park (07-PTAG-3663) shown at upper right-hand portion of the site.

EXHIBIT C
Project Site Plan



Plan View of Proposed Fort Bragg Skate Park – CDBG 07-PTAG-3663 July 2009

EXHIBIT D
Skate Park Plan View



Perspective View of Fort Bragg Skate Park – CDBG 07-PTAG-3663 July 2009

EXHIBIT E
Skate Park Perspective View

Revised Geotechnical Report

Proposed Recreation Building, Green Memorial Field, Fort Bragg, California

Prepared for:

Mendocino Coast Recreation and Park District

SHN Consulting Engineers &
812 W. Wabash
Eureka, CA 95501-2138
707/441-8855

ATTACHMENT A
Revised Geotechnical Report
August 2003

August 2003
003020.100

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707-441-8855 • Fax 707-441-8877 • info@shn-eureka.com

Reference: 003020.100

August 28, 2003

Mr. Charlie Boise, District Administrator
Mendocino Coast Recreation and Park District
213 East Laurel Street
Fort Bragg, CA 95437

Subject: Revised Geotechnical Report, Proposed Recreation Building, Green Memorial Field, Fort Bragg, California

Dear Mr. Boise:

The enclosed report documents the results of our investigations for your proposed project. This report includes results of additional site investigations, and revised descriptions of geotechnical site characteristics and risks. It includes revised specific recommendations for site preparation, and design and construction of foundation and floor slab systems for the proposed recreational building, which includes competition and leisure pools, and it includes recommendations for vehicle pavement support and appurtenant facilities.

This report concludes our work on the current phase of the project in accordance with our agreement. If you have any questions, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists

David R. Bradley, P.E.
Geotechnical Engineer

DRB:lms
Enclosure: rpt

Reference: 003020.100

Revised Geotechnical Report

Proposed Recreation Building
Green Memorial Field
Fort Bragg, California

Prepared for:

Mendocino Coast Recreation and Park District

Prepared by:

Consulting Engineers & Geologists, Inc.
812 W. Wabash Ave.
Eureka, CA 95501-2138
707/441-8855

August 2003

QA/QC:DRB

Table of Contents

Acronyms and Abbreviations

Km	Kilometers
pcf	pounds per cubic foot
psf	pounds per square foot
ASTM	American Society for Testing and Materials
B-#	Boring -#
Caltrans	State of California, Department of Transportation
CBC	California Building Code
CPT	Cone Penetration Test
ICBO	International Conference of Building Officials
IPD	Initial Penetration Depth
OSHA	Occupational Safety Health Administration
SHN	SHN Consulting Engineers & Geologists, Inc.
TP-#	Test Pit-#
UBC	Uniform Building Code

1.0 Introduction

This revised report documents summarizes the results of geotechnical investigations conducted by SHN Consulting Engineers & Geologists, Inc. (SHN) from December 1997 through August 2003, at Green Memorial Field in Fort Bragg.

An approximately 42,000 square foot, aquatic center building is proposed. The building will be a one story, slab on grade structure, which will contain a leisure pool with water slides, a competition pool, a wading pool and spa, and multi-use rooms and offices. The building will be 45 feet in maximum height, with 16-foot high eves. The finished floor slab will be at elevation 142. Appurtenant structures will include vehicle parking areas, a grounds keeper shop, walkways, equipment slabs, and light poles. We understand it will be a steel frame structure with relatively light in-filled walls.

We have been provided with various drawings presenting civil, topographic, architectural, structural, electrical, and mechanical details. We understand the project is in design development.

The central and western ends of the building will be constructed with the finished floor slab 1 to 3.4 feet above currently existing grade. The eastern end of the building will be constructed in an area where currently existing grade is within 1 foot of finished floor elevation. We understand the existing grade toward the east end of the building will be cut-graded to be at least 1-foot below finished floor elevation.

The leisure and competition pools will have reinforced concrete shells. The pools are typically less than 6 feet in depth, except for the deeper portion of the competition pool, which extends to approximately 12 feet in depth. The wading pool and spa structures will be less than about 3 feet in depth. The leisure pool will include columns supporting water slide equipment.

The competition pool will include a below-grade backwash/surge pit adjacent to its southeast corner. This will extend to approximately 8.5 feet below finished floor. A smaller backwash/surge pit is planned adjacent to the south side of the leisure pool. Two groundwater monitors are planned for installation in the vicinity of the competition pool. These allow monitoring of groundwater levels exterior to the pool, to aid in determining potential uplift (floatation) forces on the pool during dewatering operations. Drawing notes indicate the pools also include pressure relief valves to limit the differential pressure across the pool shells during dewatering. We understand pool dewatering will occur approximately annually.

This current revised report is based on the results of past investigations, an on a recent Cone Penetration Test investigation to provide better definition of subsurface conditions, especially in the vicinity of the pools. In the pool vicinities, uplift forces become large if the pools are emptied while groundwater levels are high. This revised report is also intended to summarize and supersede the previous reports listed below.

SHN previously prepared a "Geotechnical Report, Proposed Recreation Building, Green Memorial Field, Fort Bragg, California," dated December 1997. This initial report was based on five backhoe-excavated Test Pits. A second report, based on four additional drill rig borings, was prepared in December 1998. The second report contained revised recommendations and risk discussions, and was titled "Addendum to Geotechnical Report, Based on Additional Site Exploration, Proposed Recreation Building, Green Memorial Field, Fort Bragg, California." We also prepared a fax letter dated January 29, 2003, titled "Skin Friction for Concrete Piling, R-Values for Pavement Design."

This report is intended to provide the owner with findings, conclusions, and recommendations related to geotechnical aspects of project design and construction. The recommendations contained in this report are subject to the limitations presented herein. Attention is directed to the Additional Services and Limitations sections of this report.

2.0 Field Investigation and Laboratory Testing

SHN conducted geotechnical investigations to evaluate subsurface soil conditions, and to provide foundation design and site development criteria for the aquatic center. Our field investigations were limited to reconnaissance of the project site, supervising the excavation and sampling of four subsurface exploration test pits in November 1997, supervising the drilling and sampling of 4 exploratory borings in October 1998, and advancing 11 Cone Penetration Test (CPT) probes in May 2003.

The subsurface explorations were advanced to maximum depths of 45 feet below the ground surface. The test pits and machine drilled borings were logged in general accordance with the Unified Soil Classification System, and the CPT profiles were logged by the CPT procedure based on ratios between tip and sleeve resistance. (See Figure 1 for locations of all explorations, and Appendix A for the logs.)

The machine-drilled borings were advanced using a Deep Rock Model 10K, hollow stem and solid stem auger drill rig. Machine drilling and sampling methods, which included penetration resistance tests, are further described in Appendix A.

The CPT probes were accomplished using a Geoprobe CPT rig, which uses reaction augers and hydraulic pressure to advance the CPT probe. Continuous readouts of cone tip penetration resistance, and side friction (drag) on an instrumented sleeve, and soil pore pressure are obtained. Computer generated logs are presented in Appendix A.

Selected undisturbed samples were collected, and laboratory tests were conducted. Laboratory testing for index properties included in-place moisture content, dry density, unconfined compressive strength, and percent fines (silt and clay) passing the No. 200 sieve.

See the attached logs for detailed soil descriptions, the penetration resistance test results, and laboratory index test results.

A compaction test was conducted on a composite sample of the site's sandy soils, and two R-value tests were conducted on shallow soil samples in proposed vehicle parking areas. R-value test locations are indicated on the Site Plan, Figure 1. These test results are presented in Appendix B.

3.0 Site Conditions

The existing site is relatively level, and consists of grass-covered playing fields. Existing structures in or close to the proposed building area include a restroom/storage building, bleachers, dugouts, and a goal post.

The site is located on a terrace on which most of the town of Fort Bragg is located. This terrace consists of a wave-cut marine bedrock platform (Franciscan complex), overlain by up to about 30 feet of predominately sandy soils (Lawson and others, 1908). For comparison, the borings and CPT results indicated depths to Franciscan complex materials, varying from a possible minimum of 11.5 feet, up to 38.5 feet.)

The four drill rig borings, and the CPT probes, encountered upper soils profiles similar to those logged in the previous test pits. These upper soils consist of fill, cohesive (silty/clayey) native soils, and organic native soils. The observed depths of these upper soils were 0 to 4 feet at the boring locations, 0.5 to 5.6 feet in depth at the test pit locations, and 1 to 6.5 feet at the CPT locations. These upper soils overly sand deposits with occasional cohesive or organic interbeds, which in turn overlie Franciscan complex materials.

The test pits and borings indicate greatest existing fill depth toward the north side of the site (4.6 and 3.5 feet in TP-1 and TP-2, and 3 and 4 feet in B-2 and B-3, respectively) with shallower fill along the south side of the site (0.4 and 1.3 feet in TP-4 and TP-5, and 1.5 and 0 feet in B-1 and B-4, respectively.) Three feet of fill was logged at the location of TP-3, in the central site area.

Beneath these upper soils, sandy soils were encountered and logged in the test pits, borings, and CPT probes as indicated on the logs. These sand soils are predominately fine, and show generally low but variable silt and clay content. In exception, silty, clayey strata were encountered from 11 to 15 feet in depth in CPT-6, 11 to 15 feet in CPT-7, and 16 to 23 feet in CPT-9. In Boring B-3, a peat layer was encountered in the sand from 15.5 to 22 feet in depth, which was not encountered by the other borings or CPT probes. The CPT logs, and Boring B-2, indicate gravelly strata, generally at deeper depths. The data indicate potentially variable or erratic soil conditions.

Penetration resistance indicated by the CPT probes indicate dense sandy deposits below 5 to 10 feet in depth in the pool area, and 4 to 18 feet in depth along the proposed north side of the building. They indicate very dense sandy deposits below 6.5 to 10 feet in the pool area, with the exception of CPT-4, which indicates very dense soils from 9 to 11 feet in depth, and then below 24 feet. They also indicate very dense soils below 8.5 to 18.5 feet toward the north side of the building.

In the borings, drilled in late October 1998, groundwater was observed during drilling between about 5 and 6.5 feet beneath the ground surface. Groundwater seepage was observed entering the test pits, excavated in November 1997, from 4.3 to 8.3 feet beneath the ground surface. Stabilized groundwater levels were not determined. One of the test pits encountered a shallow drain tile, and we understand an older drawing exists showing a layout of shallow drain tiles. The drain tiles likely indicate a potential for seasonal, near-surface groundwater conditions, which may accumulate and be perched above near surface cohesive soils. During the CPT investigation in May 2003, after a very wet April, no shallow groundwater was noted toward the north side of the site. Toward the south side of the site, a well screen was installed at a depth of 20 feet, with the hole sealed above, and the water level was observed to rise quickly to the three-foot depth, indicating that the shallow groundwater at this location was not perched. We understand there may be some groundwater level monitoring data that could provide additional water level information.

Groundwater conditions may vary from those observed during our investigations, and are anticipated to be near or at the ground surface during or following wet season storm events.

The project area is subject to strong seismic ground motion, and is located in Seismic Zone 4, with a Seismic Zone Factor of 0.4, per Figure 16-2 and Table 16-I of the 2001 California Building Code (CBC), (ICBO, 2001). The site is 11.5 kilometers (Km) from a Type A earthquake fault (the San Andreas), and is over 15 Km from any Type B faults, based on the 1997 Uniform Building Code (UBC) "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada." Near-source factors N_a and N_v of 1.0 and 1.12 from Tables 16-S and 16-T of the 2001 CBC are indicated. We estimate a soil profile type S_D for the site. C_a and C_v values of 0.44 and 0.72, respectively, were determined from the N_a and N_v values, the soil profile type, and the seismic zone factor per CBC Tables 16-Q and 16-R. Values of these coefficients based on the 2001 CBC are the same as those based on the 1997 UBC.

4.0 Conclusions and Discussion

4.1 General

Based on the results of our field and laboratory investigations, it is our opinion that the project site can be developed as proposed, provided that our recommendations are followed, and that noted conditions and risks are acknowledged.

The primary geotechnical site considerations are: upper fill and native soils, including compressible deposits, varying from 0 to about 6.5 feet in depth at the exploration locations; potentially high groundwater levels; variable/erratic underlying soils conditions; and a potential for strong seismic ground motion.

In our opinion, with the recommended site preparation completed, with the building columns and heavy bearing walls supported on deep foundations, and with the slab supported on grade, risk of post-construction total or differential settlement should be low. Due to the variability of soils deposits and the inherent limitations of current engineering and construction practices, some post-construction movement may occur. We estimate that with the project constructed in accordance with the following recommendations, total and differential post construction settlement of the building superstructure, the building floor slab, and the pools, is not likely to exceed three-fourths inch, with no abrupt differential settlement expected.

4.2 Building Floor Slab Support

Site settlement under existing fill loads should be essentially complete, given their age and inferred permeability.

Recommendations are provided below that provide for the building floor slab to be supported by existing upper soils. These site grading recommendations include provisions to rework and densify upper soils immediately beneath the floor slab, and to mitigate risk of highly compressible soils lying closely below the floor slab or other structures. Following this mitigation, potentially compressible upper soils deposits may remain beneath the floor slab. Recommendations are presented to mitigate risk of settlement which include a well-reinforced, 6 inch minimum thickness floor slab, a minimum thickness of structural fill beneath the slab, review of fill subgrade by the geotechnical engineer prior to fill placement, placement of a layer of separation/reinforcement fabric over the subgrade prior to fill placement, and using short term surveyed settlement monitoring of the prepared ground surface to support the slab in deeper fill areas, prior to placing the slab.

Other floor slab support alternatives with less risk are available. One consists of removing and replacing all potentially compressible upper soils with structural fill, with estimated removal and replacement depths up to about 7 feet indicated at the exploration locations). Other alternatives include preloading the site to reduce settlement potential before constructing the slab on grade, and structurally supporting the entire floor slab on a deep foundation system. The presented recommendations, which are not as costly as these alternatives, are presented assuming that the risk level associated with the recommended alternative is acceptable to the owner.

Existing ground elevations will be modified by grading. The building finished floor elevation will vary from existing grade at the northeast corner of the building, to 3.4 feet above existing grade at one location along the west side. The site will be cut graded up to a foot at the northeast corner, so that the building slab will be about 1 foot above finished grade in this area. The site will be filled up to 3.4 feet (including the floor slab) at the deepest. Typically, the site will be filled less than 2 feet, including the floor slab. Settlement potential and differential settlement risk increases with increasing fill depth above existing grade.

Subsurface explorations in the vicinity of the existing low area, which will receive the deepest fill, indicate from zero to about 3.5 feet of lower density, potentially compressible, near-surface soils. These soils included an organic soil layer logged from 2.0 to 2.7 feet in depth in CPT-4. Recommendations are provided for a geotechnical engineering review of this area prior to placing fill. Geotechnical review of subgrade conditions in this area is recommended to include shallow hand borings to identify any highly compressible remaining soil layers that may need to be removed and replaced to mitigate significant settlement risk.

4.3 Building Floor Slab Capillary Break/Drainage Layer

In our opinion, it is prudent at this site to assume that wintertime or storm event water groundwater levels might reach the average existing ground surface, although the boring and test pit information indicate that water levels of 3 feet or deeper are not uncommon. Adjacent site grades are relatively level, and a proposed storm drain system to be installed in the alley to the east of the building will be relatively shallow. Consequently, deeper subdrain systems would need to be drained to sump/pump systems to be effective. Sump/pump systems require maintenance, and are likely to produce continuous flows if below the groundwater level. Should a sump/pump system temporarily fail, protected facilities may be put at risk.

Floor slabs can become dampened or wetted if exposed to soil moisture or groundwater from below. We understand the proposed finished floor slab elevation is to be a minimum of 1 foot above adjacent exterior grade. Recommendations are provided below for a 6-inch layer of capillary break/drainage material beneath the floor slab, with a moisture reduction barrier above the capillary break. Recommendations are also included for 3 inch diameter drainage piping installed at centers in the bottom of the drainage layer to promote drainage to the building exterior.

The building covers a large area, the capillary break/drainage layer is relatively thin, and surrounding ground is relatively level. It is possible that groundwater may rise to the elevation of the bottom of the slab in peak moments, even with the capillary break/drainage layer, and the drainage piping, in place. We consider it unlikely or uncommon that groundwater will rise to the elevation of the bottom of the slab, but as a worst-case scenario, it is conceivable. The drainage piping should keep excess pressure from building up in the groundwater, should it rise to the base of slab elevation.

With these recommended provisions, and with at -surface high ground water conditions assumed to be uncommon, it is our opinion that risk of chronic excess floor slab moisture from wet conditions beneath the slab is low.

4.4 Building Superstructure Support, Liquefaction, and Co-Seismic Settlement Potential

Site soils include compressible upper deposits to depths of at least 6 feet, some minor layers of loose or moderately dense sandy soils below that depth, and are variable (erratic), with relatively low density peat, or silty/clayey layers, extending as deep as 22 feet at a few locations.

Site soils, beneath generally cohesive upper soils, and above the clayey underlying Franciscan complex materials, are predominately sandy. In place sand density is best evaluated by drill rig sampler penetration resistance testing, or CPT testing. The CPT results provide an equivalent sampler penetration resistance value, which can be compared to those obtained by conventional drilling and sampling techniques. Penetration resistance blow counts were obtained in drill rig Borings B-1 and B-3. Those encountered in Boring B-3 were, except in the near vicinity of the peat layer encountered from 15.5 to 22 feet in depth, generally equivalent to the values indicated by CPT testing across the site, with most blow counts indicating nearly dense to very dense consistency. The blow counts obtained in Boring B-1 indicated medium to very dense consistency in the underlying native sand, with three of the blow counts toward the middle or low end of the medium dense range. These values are generally lower than indicated by CPT results across the site, and by the sand densities indicated in Boring B-3. As noted on the log of Boring B-1, the test results are suspect due to sand heaving up into the augers during the sampling process, which can result in a lowering of test values. In our opinion, the consistency of CPT results across the site, and their general agreement with the Boring B-3 test results, indicate that they provide reasonable indications of in-place sand density. We consider it likely that the medium dense sands classifications based on the Boring B-1 blow counts are lower than actual, and are not representative of in-place conditions. Driving resistance during pile installations will also provide an indication of existing sand densities.

The CPT test probes indicate that depths to dense materials (equivalent N values of 30 blows per foot or more) in the southern 2/3 of the building area vary from 5 to 10 feet below the ground surface.

Three CPT probes are located along the north edge of the proposed building site. Probe CPT-6 encountered clayey strata with relatively low penetration resistance from about 11 to 15 feet. Sands below this depth are indicated to be very dense, except for a silty sand transition layer from about 15 to 17 feet in depth. Probe CPT-7 also encountered clayey strata with relatively low penetration resistance from about 11 to 15 feet. Sands below this depth are indicated to be dense to very dense, except for a silty sand transition layer from about 15 to 18 feet in depth. Shallower soils in these borings are indicated to have greater penetration resistance than underlying soils. This is also true of the peat layer encountered in Boring B-3, which had denser sands above. Deeper depths of potentially compressible soils are indicated in CPT-6, CPT-7, CPT –9, and B-3 than across the remainder of the building area.

Liquefaction is considered a low risk in most soils at the site, and a low risk in general. At this site, essentially cohesionless, or low cohesion, sand or silty sand soils are indicated in thin transition zones, while most of the sand deposits are classified as dense to very dense and consequently are not subject to liquefaction. Cohesive silt, clayey silt, or clay soils are also not subject to

liquefaction. Where they are of low relative density and below the groundwater level, these soils may have a potential to liquefy. However, they are relatively thin strata. For example, from a depth of 15 to 17 feet in CPT-6 is a relatively low blow count transition layer between overlying clayey deposits, and very dense underlying sands. Similar transition layers are indicated from 6 to 7 feet, and 17 to 18 feet, in CPT-7; 5 to 11 feet in CPT-9 (although the average N value is above 20, indicating a low to moderate risk of liquefaction); and 6 to 8 feet in CPT-11 in silty sand.

Liquefaction is a rapid loss of soil strength under dynamic loading conditions, caused by an increase in soil pore-water pressure. These conditions can reduce soil strength to the point that the saturated soil acts as a liquid/soil slurry. However, the site's underlying fine sandy soils are not of geologically recent deposition, and in our opinion, there is a low risk of liquefaction for this reason. In confirmation, no liquefaction effects "except to a very limited extent" were noted for the geologic terrace on which the site is located in the 1906 earthquake (Lawson and others, 1908; Youd and Hoose, 1978). The 1906 earthquake had a reported intensity of VIII to IX, and lasted approximately 40 to 47 seconds. The San Andreas Fault lies 11.5 Km west of the terrace (ICBO, 1997).

The references cited in the proceeding paragraph do report many obvious liquefaction effects from the 1906 earthquake in geologically recent, river or stream floodplain, alluvial soils, meaning it is likely that if significant liquefaction had occurred on the Fort Bragg terrace, it would have been reported.

The site's moderately consolidated, non-cohesive, underlying sand soils may also be subject to co-seismic compaction. This can occur above or below the groundwater level, and consists of sand densification resulting from dynamic, co-seismic, loading. Densification of underlying soils can result in ground surface settlement. In our opinion, the geologic age of the site's underlying sand deposits mitigate this risk. Also, most of the site's sandy soils are indicated to be dense to very dense, and not subject to co-seismic settlement. The same minor layers discussed above that may be subject to liquefaction may also be subject to co-seismic settlement.

Because site soils are variable (erratic), and may contain compressible layers, and because near-surface compressible deposits extend as deep as 6 feet beneath the ground surface, deep (pile) foundation systems are recommended to support the building superstructure. In CPT-6, CPT-7, CPT-9, and Boring B-3, denser soils are indicated overlie less dense, potentially compressible soils. Consequently, recommendations are provided below to install piles to an Initial Penetration Depth (IPD). Based on the CPT data, an IPD of 12 feet is recommended below for the southern portion of the building, with an IPD of 18 feet in the northern portion of the building. For this purpose, the northern portion of the building is that portion of the building north of the east/west continuous foundation line that is indicated on the Site Plan just north of the location of CPT-4, and just south of the locations of CPT-3 and CPT-5. This east/west continuous foundation line is considered to be within the southern portion of the building in accordance with this definition. As estimated below under the 'Recommendations' section of this report, pile lengths are typically estimated to be 5 or 10 feet more than the IPD.

4.5 Pool Support

The weight of soil removed at the pool locations will be greater than the weight of the pool, regardless of the water table level or whether the pool is filled or not filled. Consequently, the pools are not subject to consolidation settlement if shallow founded, and will not require deep foundations to adequately support their weight, or to keep them from settling downward.

However, uplift or floatation forces will act on the pool if the water level in the pool is drawn down below the groundwater level exterior to the pool. These forces could cause the pools to float up out of the ground if not prevented.

There are two alternatives to mitigate uplift or floatation forces when the pools are emptied, holding the pools down using deep foundations or heavy pool structure weights, or drawing down the exterior groundwater level throughout the dewatering sequence. Alternatives, including recommendations for deep foundations to resist uplift, are presented below. It may be desirable to use deep foundations to prevent uplift in deeper pool areas, and heavy pool shell weights to prevent uplift in shallow pool areas.

4.6 Appurtenant Structures

Recommendations are also provided for appurtenant facilities including vehicle pavements, walkways, utility trench backfill, light poles, and equipment and small building slabs.

5.0 Recommendations

5.1 Site Preparation and Grading

In the following recommendations, "compact" and "compacted" refer to obtaining a minimum of 90% of the maximum relative dry density as referenced to the American Standard Test Method (ASTM) D1557-91 test method. As an alternative, 95% relative compaction as determined by the State of California, Department of Transportation (Caltrans) method can be substituted for 90% per ASTM. However, where a 6- inch layer of subgrade compacted to 95% per ASTM is recommended under vehicle pavement baserock, 95% per Caltrans can be substituted, provided the soil and baserock materials are compacted to 95% Caltrans down to at least 30 inches below the pavement surface.

We recommend the following:

a. As appropriate, notify Underground Service Alert (1-800-642-2444) prior to commencing site work, and use this location service and other methods to avoid injury or risk to life, and to avoid damaging underground and overhead utilities.

b. Strip all existing improvements, cultural debris, vegetation and root systems from the site surface, and excavate to a depth of 2.5 feet below finished floor elevation of the main building. If the main building finished floor is 18 inches above existing grade, it will take 1 foot of site surface excavation to meet this requirement. Strip to 1-foot minimum below the bottom of baserock elevation in vehicle pavement areas, and strip to 1-foot minimum below the bottom of equipment slab and small building slab areas. Stripping should be carried out 3 feet beyond the perimeter of any improvements to be supported by fill. Beneath walkways, strip as necessary to obtain a stable, compacted surface to support the sidewalk.

c. Conduct a geotechnical engineering review of exposed subgrade surfaces. The geotechnical engineer will recommend that remaining unsuitable soils, such as overly weak, compressible, organic, or disturbed soils, be additionally stripped. Additional stripping is not intended to include all fill, or all potentially compressible, moderately soft, or organic upper soils, but to remove any highly compressible, non-compactable, or highly organic materials lying at or closely below fill or structure subgrade elevations. In the area where the finished floor elevation will be more than 2 feet above existing ground surface

elevations, shallow auger borings should be included in the geotechnical review, and any remaining highly compressible deposits, such as organic or soft plastic clay layers, be additionally removed from these areas and replaced with structural fill.

d. Compact the upper 6 inches of exposed subgrade to a minimum of 90% of the maximum dry density as referenced to the ASTM D-1557-91 test method, or to a minimum of 95% as determined by Caltrans 216, or to the extent practically achievable. If the subgrade is disturbable because it is too wet, and cannot be practically dried back, and/or pumping or weaving subgrade conditions are encountered, do not attempt compaction, and avoid disturbing the exposed subgrade.

   If the pools are not pile supported, site soils to support the pools should either be native undisturbed soils, or compacted fill placed directly onto overlying undisturbed soils. That is, any disturbed, loosened soils should be replaced with compacted soils beneath the pools.

e. Place a layer of woven, separation/stabilization fabric over the cut-to-grade, subgrade surface. Use woven filter fabric made by a reputable manufacturer specifically for the purpose of soil separation and stabilization, such as Amoco 2000 or 2002; or Carthage Mills FX-77. If the subgrade surface can not be practically compacted, place a layer of stabilization gravel over the fabric, compacted to a minimum of 90% ASTM (95% Caltrans), or to the maximum extent practical in the first lift if 90% ASTM (95% Caltrans) cannot be obtained, using conventional equipment and methods.

   Use hard, durable gravel for the stabilization layer, conforming to the specifications for Caltrans Class 1 aggregate subbase, or equivalent. Well-graded river-run gravel should qualify, unless it contains excessive silt and clay. The required thickness of the initial stabilization layer will depend upon the strength of, and degree of saturation of, the subgrade.

f. Then place structural fill to design grades, compacted to a minimum of 90% ASTM D-1557, or 95% per Caltrans 216.

g. In the primary building area, where the compacted fill surface is more than 1.5 feet above existing grade, take an initial set of survey elevations on the subgrade surface as soon as the structural filling is completed. (See slab-on-grade recommendations for settlement monitoring criteria.)

h. Structural fill material should consist of relatively non-plastic (Liquid Limit less than 35, Plasticity Index less than 12) material containing no organic material or debris, and no individual particles over 6 inches across. We suggest the use of granular soils (sand, gravel) for fill, because these soils are relatively easy to moisture condition and compact. Sandy soils excavated from the site should qualify for use as structural fill.

i. Utility trench backfilling beneath areas to support improvements should be completed prior to subgrade compaction. Utility trench backfill in areas to support improvements should be compacted to a minimum of 90% of the maximum dry density per ASTM D-1557 (or 95% per Caltrans 216), and to a minimum of 95% ASTM in the upper 6 inches, or 95% Caltrans to a depth of 30 inches below finished grade, in areas to receive baserock to support vehicle pavement. Utility trench backfill should be compacted to a minimum of 85% ASTM (90% Caltrans) in unimproved or landscaping areas, to prevent excessive subsidence.

j. All site preparation and fill placement should be observed by a representative of SHN. It is important that a representative of our firm be present to observe stripping, grading, and subgrade preparation.

5.2 Foundations

5.2.1 Appurtenant Small Building and Structure Foundations

For appurtenant small building and equipment slab support, we recommend that the geotechnical observation of the stripped subgrade surface (see the grading recommendations) include hand drilling to determine the presence or absence of any high-compressibility soils strata closely underlying the exposed subgrade surface. If such strata are disclosed, they should be excavated and replaced with structural fill as described in the grading recommendations.

For small building foundations (one story, wood-frame structures less than 20 feet in maximum plan dimension) we make the following recommendations.

Following site grading as recommended, foundations may be constructed. Foundations should be sized, embedded, and reinforced to at least the minimums presented in the current edition of the UBC. Such foundations may be designed so they do not exceed an allowable bearing capacity of 1,200 pounds per square foot (psf) for dead plus live loads. These values may be increased by one-third to account for the short-term effects of wind and/or seismic loading.

A friction coefficient of 0.40 may be used for the footing/soil contact. Frictional resistance may be calculated in conjunction with an allowable lateral passive pressure represented by an equivalent fluid weighing 200 pounds per cubic foot (pcf) for short-term loadings, such as lateral foundation resistance in response to wind or earthquake loadings. Lateral passive pressure can be calculated where footings bear laterally against undisturbed native subsoils, or structural fill.

The ground surface around the structure perimeter should be sloped away, or other design measures implemented to provide positive surface water drainage away from perimeter foundation areas.

We recommend against depressed crawl spaces, where the crawl space is below exterior grade elevation, due to potential high groundwater conditions and relatively level ground conditions.

For light pole foundations, we recommend the pole formula as presented in the current edition of the UBC, using the soil parameters listed for silty, clayey soil classifications CL, ML, MH, and CH.

5.2.2 Building Support Piling

Deep pile foundations are recommended for support of the main building superstructure, including support of bearing walls and walls carrying roof or structure loads to the foundation. Light walls not carrying structural building loads may be supported by the floor slab.

Recommendations for reinforced concrete piling are presented in below and in Appendix C.

Total design vertical capacities of 45 or 70 tons per pile can be achieved using concrete piles, using Caltrans specifications and procedures, which include calculation of pile capacity by driving (blow count) formulas. Piling should be at least one-foot square, prestressed, concrete piling as specified by Caltrans (See appendix C).

For main building support, we recommend piles be jetted or otherwise installed to an IPD, due to the possible presence of compressible peat or clay layers that may underlie dense sand layers.

Based on the CPT data, an IPD of 12 feet below the existing ground surface elevation, or to the upper surface of the Franciscan complex materials, whichever is shallower, is recommended for the southern portion of the building. We recommend an IPD of 18 feet in the northern portion of the building. For this purpose, the northern portion of the building is that portion of the building north of the east/west continuous foundation line that is indicated on the Site Plan, lying just north of the location of CPT-4, and not far south of the locations of CPT-3 and CPT-5. This east/west continuous foundation line is considered to be within the southern portion of the building in accordance with this definition.

Following installation to the IPD, piles should then be driven to design bearing values using the appropriate Caltrans allowable bearing capacity vs. driving resistance formula.

We consider it likely that the piles will be difficult to drive in the underlying dense to very dense sands indicated by the CPT results. Consequently, for piles supported by the native sand soil deposits, we estimate that installed pile tip elevations will be about 5 feet below the IPD for 45 ton piles jetted to the IPD, and 2 feet below the IPD for 45 ton piles driven to the IPD. For 70-ton piles, we estimate pile tip elevations 8 feet below the IPD for piles jetted to the IPD, and 4 feet below the IPD for piles driven to the IPD.

In the vicinity of the pools, where the depth to underlying Franciscan complex materials is relatively shallow, the piles may penetrate into the underlying Franciscan materials. Depth to the Franciscan in the vicinity of the pools is estimated at about 12 to 20 feet beneath the ground surface, but could vary. (See Pile Uplift Capacities below for estimated minimum depths to Franciscan materials.) As encountered by the borings, the Franciscan materials are indicated to be very dense or cemented, and pile penetration of 2 or 3 feet into Franciscan materials is estimated for driven 45-ton piles, and 4 or 5 feet for 70-ton driven piles. Although not indicated by the borings or CPT probes, softer zones of weathered Franciscan materials could exist, requiring deeper pile penetrations.

The above estimates of pile lengths are estimated from the CPT results, should be considered approximate, and are unlikely to be accurate. Required pile lengths will vary with variations in underlying soils conditions, and should be confirmed by the installation of test or indicator piling at various building locations to confirm estimated pile support characteristics, prior to ordering remaining piling. The use of test or indicator piling can help preclude ordering piles that are too long, and need to be cut off, or too short, where extraction and replacement with a longer pile, or splicing, is required.

Jetting may be used to install the piles to the IPD in the site's sandy soils. The jetting should be followed by driving at least 3 additional feet, or to design bearing, to facilitate sand infilling of the annular space around the piles that may be formed by jetting. Concrete piles typically have jet pipes cast into them during manufacturing. Jetting is not likely to be feasible in cohesive or cemented Franciscan materials.

In underlying sandy soils with little silt and clay, it is likely that sands will naturally infill any annular gap created around the pile by jetting operations, when the jetting is terminated and followed by driving. In cohesive upper soils, a gap may be left. If a gap is apparent, it should be backfilled with concrete grout, or the pile cap extended downward, or the gap should be backfilled with clean fine sand washed, vibrated into place, and checked for voids.

Lateral resistance will be provided by floor slab sliding friction, and by lateral soil forces against the piling, pile caps, and structurally integrated grade beams. A lateral sliding friction factor of 0.4 may be used. Allowable lateral passive pressure may be calculated as an equivalent fluid weighing 200 pounds per cubic foot (pcf). For lateral passive soil pressure against piling, and equivalent effective diameter of 2 times the minimum pile diameter (minimum pile dimension) can be used.

Lateral fixity may be assumed to lie at a depth of 3 feet into the sand soils that underlie the upper old-fill/organic/cohesive soils, or at a depth of 6 feet, whichever is deeper.

Lateral shears, moments, and deflections of the embedded piling can be calculated using the methods presented in Foundations and Earth Structures, Design Manual 7.02 (Navy, 1986) or equivalent. For these calculations, consider the native soils below the pile cap to be medium stiff cohesive soils, or medium dense sands.

5.2.3 *Pile Uplift Capacity*

Based on the CPT data, we can amend previously recommended pile uplift capacity, which was 400 psf ultimate skin friction, as presented in SHN's fax to Paul Douglas, Architect, dated January 29, 2003. We now recommend allowable pile uplift capacity of 400 psf of surface area of the piles, ignoring the first 5 feet of site soils beneath the existing ground surface. Additionally, the total uplift resistance per pile should not exceed 1/3 of the design pile capacity (45 or 70 tons). If deep penetration into the underlying Franciscan complex materials is required for uplift resistance, the piles should either be driven into the underlying Franciscan materials, or driven into pre-drilled holes in the Franciscan, with the cross-sectional area of the drilled hole at not more than 80 percent of the cross-sectional area of the pile. Jetting into the cohesive or cemented underlying Franciscan materials is not recommended.

If the Franciscan is predrilled, the drilling operation will need to include casing, drilling slurry, or other means of precluding excess sand disturbance in the upper portion of the holes. Excess sand disturbance or removal (more than the volume of the drilled hole) during drilling operations can loosen the surrounding sand deposits, reduce pile capacities in the sand, and render the sands potentially liquefiable and/or subject to volume reduction under future seismic conditions. Follow-up CPT testing may be required to evaluate whether predrilling operations appreciably loosen the sand deposits. With the piles installed as recommended, an allowable uplift resistance of the portions of piles penetrating Franciscan complex materials of 600 psf of skin friction can be used.

Depths to Franciscan complex materials was not directly determined by the CPT probes, which generally were terminated upon meeting high resistance to penetration in sands or gravelly sands. Depth to Franciscan was determined in the four borings, as shown below, and varied significantly across the site. CPT probe termination depths are shown as minimum depths to Franciscan in the following table.

Table 1 CPT Probe Termination Depths	
Exploration Location	Depth to Franciscan Complex Materials (or Estimated Minimum Depth) (feet)
B-1	34.0
B-2	38.6
B-3	28.7
B-4	15.5
CPT-1	11.5+
CPT-2	14.5+
CPT-3	31.0+
CPT-4	29.5+
CPT-5	18.8+
CPT-6	32.8+
CPT-7	33.0+
CPT-8	25.5+
CPT-9	37.0+
CPT-10	16.5+
CPT-11	17.0+

5.2.4 Pool Support

Excavations for the pools will remove more weight than the weight of the pool and water to be added. Also, underlying sand deposits in the vicinity of the pools are indicated to be dense to very dense beneath about 5 to 10 feet from the ground surface. Therefore, deep foundations are not required to support of the weight of the pools. However, all upper soft, loose, or organic soils should be removed from beneath and for 5 feet outside pool areas, should they be encountered. Following recommended site grading, liquefaction potential in the soils supporting the pool is considered a low risk.

Where the pool shell is to be supported directly by native undisturbed soils, or by compacted drainage layers placed between the undisturbed native soils and the pool, an allowable dead plus live load bearing value of 2,000 psf may be used, which may be increased by 1/3 under wind or seismic conditions. This same bearing value can be used for spread foundations beneath the leisure pool that support water slide columns.

Dewatering may be required in order to make stable excavations for pool construction. See "Section 6.0: Construction Considerations" of this report below. The amount of dewatering required may depend upon the time of year.

5.2.5 Pool Uplift/Floatation Resistance

There are two basic alternatives for designing the pools to resist uplift/flotation forces when the pools are emptied. One is to design the pool to resist maximal uplift/floatation forces under high external groundwater conditions, and the other is to draw down external groundwater partially or fully at the times the pool is to be emptied, and design the pool accordingly.

We understand two permanent ground water level monitors are included in the plans. They should be located away from close proximity to layers of drainage gravel in the immediate vicinity of the pool, or to subdrain trench gravel, that may be used for sump/pump drawdown of exterior groundwater. If they are too close to gravel drains used for drawdown operations, water levels in the monitoring holes may not accurately represent groundwater levels in the native sands in the pool vicinity. If sump/pump drawdown of groundwater levels exterior to the pool is planned, we recommend at least three groundwater monitors be installed to represent groundwater levels in both pool areas.

As discussed below, deeper portions of the pool will create strong uplift forces if the groundwater level external to the pool is high at the time the pool is emptied. Consequently, without provisions for groundwater drawdown, deep foundations will likely be required beneath the pool for uplift resistance. Belled (under-reamed) piers could also be considered, however, drilled piers would be difficult to install without destabilizing the relatively cohesionless sands above the Franciscan materials. Site dewatering may have to be accomplished, or the belled piers drilled using slurry, and follow-up CPT testing may be required to evaluate whether the drilled/belled pier installations appreciably loosened the sand deposits. We can provide criteria for drilled, belled piers if they are to be considered.

As discussed above under "Section 5.2.4: Pool Support," piles or deep foundations are not needed to support the vertical weight of the pool and pool water.

A 6 -inch minimum thickness building floor slab, underlain by a 6 -inch capillary break/drainage layer, is recommended below. With the capillary break/drainage layer, and with proposed finished floor elevation a foot minimum above adjacent surrounding grade, a design high groundwater level of 2 feet below the finished floor elevation can be assumed. From information obtained, it is likely that through most of the year ground water levels will be lower than 2 feet below finished floor elevations. For example, water levels observed in the subsurface explorations in the late spring and late fall time periods indicated groundwater levels about 3 to 8.3 feet below the existing ground surface, and they are likely to be lower during the summer and fall seasons. It is also unlikely that at the time the pool is emptied, groundwater levels will be at peak heights. Any available additional groundwater monitoring information that might be available would be helpful in determining an appropriate design groundwater level.

Preliminary calculations indicate that a thickened pool bottom slab, instead of piling, might be used in shallow water areas to prevent uplift when the pool is emptied. These calculations assume the pool bottom slab is of reinforced concrete, that there is an exterior groundwater level at 2 feet below finished floor elevation, that the pool water depth can be measured downward from finished floor elevation, that the pool is emptied, and that a safety factor of 1.3 is applied. Our preliminary calculations, which should be verified, indicate the following pool bottom slab thicknesses would be required to prevent the pool from floating when it is emptied.

Table 2
Pool Bottom Thicknesses

Pool water depth (feet)	Required pool bottom thickness (feet)
2	<1.0
3	1.2
4	2.4
5	3.5

If verified, these calculations indicate that for pool water depths of up to 3 or 4 feet, a thickened pool slab could be used to prevent uplift. This could significantly reduce the number of piling currently being considered for uplift/floatation resistance.

Alternatively, groundwater levels can be drawn down prior to emptying the pool. We understand layer of drainage gravel beneath the pool bottoms are currently planned, which could be drained to a sump, from which groundwater could be pumped. The gravel layers beneath both pools could be hydraulically interconnected, and drained to the same sump. Groundwater monitors can be used to monitor groundwater levels exterior to the pool, and the pool emptied once groundwater levels are low enough, and are stabilized. Alternatively, a deep subdrain, constructed in an excavated trench outside the pool perimeter area could be installed, essentially encircling the pool vicinity. A sump/pump system can be installed to draw down groundwater from the subdrain. A system of dewatering wells could also be installed and pumped to draw down the water table.

Groundwater draw down alternatives would require knowledgeable operations personnel and proper procedures. These alternatives could prevent the pool from being emptied rapidly in an emergency, as the groundwater would have to be drawn down first. Any alternative involving sump/pump drawdown of on site groundwater should be carefully designed to prevent soil particles from being removed during pumping. Fine well screens, or filter fabric materials, can be used to prevent migration of soil particles.

We recommend a 6-ounce per square yard, non-woven, filter fabric be placed between the native soils and any permeable drainage layer constructed exterior to the pool, to prevent migration of the finer-grained, relatively cohesionless native soils into the drainrock. Soils migration would tend to occur if the drainage layer was used for groundwater drawdown operations, and also could occur over time as water levels naturally rise and fall.

We assume the pool and pool water weight will be supported by the underlying native sands below the pool, and not by piling. That is, we assume any pilings under the pool are for uplift resistance. Consequently, we recommend that following the pool excavation and installation of any piles and pile caps, that any loosened native sand be compacted to 90% minimum per ASTM D-1557 prior to placement of the compacted drainage gravel layer and pool base.

If a portion of the pool is underlain by piles to resist uplift, and another portion not underlain by piles, there may be a tendency for minor differential settlement, and the transition area should be reviewed and designed to resist cracking where stress concentrations may occur, such as abrupt changes in pool bottom thickness or reinforcing schedules between the two pool areas.

The pool walls should also be designed to resist active soil pressures from exterior soils, whether the pool is empty or full. The pool walls should be designed to resist active lateral soil pressures represented by an equivalent fluid weighing 100 pcf if the groundwater exterior to the pool is undrained, which is most likely, and 35 pcf if the exterior soils are maintained in a drained condition (groundwater levels permanently lowered to the bottom depth of the pool walls), which at this relatively level site would require a continuously operating sump/pump/subdrain system.

5.3 Slabs-on-Grade

Following site preparation and grading, and settlement monitoring as recommended for portions of the main building slab, slabs-on-grade may be constructed. We recommend a well-reinforced 6 -inch minimum thickness floor slab, or example, a 6 -inch slab with No. 4 bars at 18 inches on

centers both ways, with the reinforcing layer at mid-height of the slab. It is important to maintain correct positioning of the reinforcing during construction. The intent is to provide a slab resistant to bending or cracking.

Conduct settlement monitoring of any portion of the main building slab area where the compacted soil subgrade surface is at or more than 1.5 feet above previously existing grade. As soon as the slab subgrade in these areas is completed, take an initial set of survey elevations on the subgrade surface. Read the same points one week and two weeks following the initial elevation readings on the subgrade surface. If no appreciable settlement is indicated to be occurring, the floor slab can be constructed.

Potentially high groundwater conditions are anticipated. With the top of the floor slab located vertically at least 1 foot above general grade around the building exterior, and with a thicker-than-typical capillary break/drainage layer as recommended in the following paragraph, deep subdrainage or underdrainage is not considered necessary.

Concrete slabs can become damp from capillary water migration. As a precaution to reduce transmission of soil moisture up through the floor slab, we recommend that the slab be underlain by an impermeable polyethylene membrane at least 6 mils in thickness. This membrane should overlie a combined capillary break/drainage layer consisting of a 6-inch minimum thickness layer of No. 4 U.S. Sieve (0.187 inch) minimum, up to 1 inch maximum, gravel, or Class 1 Type A permeable material per Caltrans Standard Specifications 68-1.025. A thin layer of sand may be placed over the membrane to protect it during concrete placement. (The capillary break provides a layer with relatively large, intergranular, void spaces, which inhibit capillary rise of ground moisture or "wicking"; and the capillary break also acts as a highly permeable drainage layer.)

To increase the effectiveness of the capillary break/drainage layer to mitigate groundwater buildup, and groundwater pressure buildup beneath the floor slab, we additionally recommend that thee inch diameter perforated drain pipes be placed in the bottom 3 inches of the capillary break/drainage layer, with a maximum spacing of 8 feet on centers, gravity drained to daylight through a manifold. Drainpipe outlets should be constructed in a manner that will not allow surface drainage to back up into the drainpipe system during periods of heavy runoff, and should be screened to prevent the entry of animals.

Holes or slots in the perforated drainpipe should be matched to surrounding permeable material such that the finer particles do not enter the pipe during or subsequent to installation. If the perforated pipe has drain holes on one side only, the perforations in should be placed down.

Surface drainage, including roof drains, should be prevented from ponding over or entering into the capillary break/drainage layer.

5.4 Subdrain

A temporary subdrain may be constructed to control construction-phase or post construction groundwater levels, using a sump/pump system.

If a subdrain is to be constructed, we recommend a system of perforated pipe, permeable material, and filter fabric for the subdrain. The perforated pipe should be surrounded by a minimum of 6 inches of permeable material, and the permeable material and the drainpipe should be completely wrapped in filter fabric. The subdrains should be constructed in an excavated trench, and the

permeable material should extend from the trench bottom up to about 3 feet of the ground surface. The perforated pipe system should gravity drain to daylight, or to a sump/pump system, and should have a cleanouts extending to the ground surface. Trench backfill should be compacted to a minimum of 85% per ASTM D-1557, or 90% per Caltrans 216.

For filter fabric, use 6-ounce per square yard minimum weight, non-woven, geotextile fabric by a reputable manufacturer, specifically designed for the purpose of allowing water passage while retaining soil materials.

For permeable material, use free draining, durable, granular material, 100 percent passing the 1-1/2 inch sieve, and not over three percent passing the No. 10 sieve, or Class 1 Type A permeable material per Caltrans Standard Specifications 68-1.025. Washed pea gravel, or drainrock as commonly used for septic leachfield applications, should qualify as permeable material.

Perforated pipe should be durable, and at least 4 inches in minimum diameter. Holes or slots should be matched to surrounding permeable material such that the finer particles do not enter the pipe during or subsequent to installation. If holes or slots are on one side of the pipe only, they should be placed downward.

Backfill consisting of low permeability soil, at least 2.0 feet thick, should be placed above the wrapped permeable material to prevent infiltration of surface water. The low permeability backfill should consist of compact, cohesive, silty or clayey soil.

The surface should be sloped such that runoff is not allowed to pond above the subdrain system. All surface runoff conveyance systems (including rooftop downdrains) should be isolated from subdrains systems.

5.5 Vehicle Pavements

Soil subgrade to support pavement section materials (pavement and baserock), or to support structural fill which supports pavement section materials, should first be stripped of unsuitable surface materials as described in the grading recommendations.

Based on the results of the lowest of two R-Value tests, 76 and 80, that were obtained in site soils at the locations indicated on the Site Plan, and selecting design Traffic Indices of 6.0 for parking and service area travel lanes, and 5.0 for parking stalls and very light traffic areas, we calculated and recommend design pavement sections consisting of:

- **Parking and Service Area Travel Lanes.**
  A. C. Pavement Thickness: 0.25 feet
  Class 2 Baserock Thickness: 0.35 feet

- **Parking Stalls and Very Light Traffic Areas**
  A. C. Pavement Thickness: 0.20 feet
  Class 2 Baserock Thickness: 0.35 feet

Materials specifications and procedures should be in accordance with Caltrans current Standard Specifications, including Caltrans compaction standards for pavement sections, pavement section subgrade, and underlying structural fill, or, as a compaction alternative, 95% relative compaction (ASTM D-1557) should be obtained in the baserock, and in the upper 6 inches of soil subgrade, with 90% minimum per ASTM in any underlying structural fill.

It may be difficult or impractical to obtain a minimum of 95% ASTM relative density in the upper 6 inches of native soil subgrade, or 95% minimum Caltrans to a depth of 30 inches down from finished grade, especially if excess moisture conditions exist in cohesive, silty or clayey subsurface soils. As an alternative to obtaining these minimum compaction specifications for soil subgrade, excavate the subgrade 0.25 lower in elevation, compact the upper 6 inches to a minimum of 90% per ASTM 1557 (95% Caltrans 216), or demonstrate that it is non-yielding (not pumping or weaving) under proofrolling with a loaded 10 cubic yard dump truck or equivalent. Then place a layer of 6 ounces per square yard minimum, woven, geo-synthetic fabric made by a reputable manufacturer specifically for the purpose of soil separation and stabilization, and add an additional 0.25 feet of compacted baserock thickness to the pavement section.

Pavement sections provided above are based on the soil conditions encountered during our field exploration, assumptions regarding final site grades, and limited laboratory testing. In the event actual pavement subgrade materials are of different soil type than those tested for this study, we recommend representative subgrade samples be obtained, and additional R-value tests performed. Should the results of these tests indicate a significant difference that may impact the proposed pavement design life (based on the traffic index), the design pavement section(s) provided above may need to be revised. For example, if imported fill is placed over native soils in order to raise grade, and the pavement section is supported by the imported fill, the design should be based on the R-value of the imported fill.

6.0 Construction Considerations

The following construction considerations are presented to aid in project planning. They are not intended to be comprehensive; other issues may arise which will require coordination of the owner's goals, the consultant's design assumptions, and the contractor's construction methods and capabilities.

Groundwater levels can fluctuate with the seasons, storm (precipitation) events, runoff, and other factors. Significant variations in groundwater levels may occur from those observed during our investigations. Groundwater levels are indicated to be potentially high from the data obtained to date (see the subsurface exploration logs) and could rise to the existing ground surface during the wet season or as a result of peak storm events. We understand ground level monitoring data may be available for the site, which would be useful in helping to estimate seasonal groundwater levels.

Excavations or borings extending beneath the ground water level in the site's relatively cohesionless sand deposits, are expected to be unstable, with the sands being carried (flowing) into the excavation by groundwater seepage. Sudden heaving of boring or excavation bottoms, and instability of excavation sidewalls are also expected where the water level in excavations or borings become lower than those in the surrounding cohesionless soils.

Groundwater levels at the time of construction are anticipated to affect construction feasibility. One alternative for dewatering the pool area during construction operations is a trench subdrain outside the pool construction area. However, deep subdrain trench excavations may be unstable,

making the subdrain trench impractical to construct. Another technique for dewatering is to pump from the pool excavations as they are deepened. This can result in loosened sands in the bottom of the excavation. If ground water levels are high, and excavations into the sand prove highly unstable, initial construction phase dewatering using drilled wells might be required.

Test excavations may be helpful in predicting behavior of exposed soils and groundwater inflow.

To minimize the possible presence of groundwater, it is likely to be advantageous to excavate and construct the subsurface portions of the project during the fall dry season.

Due to the weak nature of some of the site's soils, trenches or excavations are considered subject to sidewall instability (sloughing, running, or sudden collapse of the excavation or trench sidewalls). Of the five test pits excavated to approximately the 9-foot depth with the backhoe, TP-4 was unstable as it was excavated. The others may have become unstable if left open for longer time periods than an hour or two.

Occupational Safety Health Administration (OSHA) Excavation and Trench Safety Standards, and applicable local, state, and federal regulations must be acknowledged and followed.

7.0 Additional Services

7.1 Project Bid Documents

Prior to bidding, prospective contractors for the project often contact us regarding the information contained in our reports. These informal contacts could result in incomplete or misinterpreted information being provided to the contractor. Consequently, we recommend a pre-bid meeting to answer such questions prior to bid submittal. Alternatively, such questions should be addressed to the Owner or designated representative, who, after consulting with SHN, can appropriately respond to all prospective contractors with clarifications or additional information.

7.2 Plan and Specification Review

During the design phase, we recommend that communications between the design team and SHN be maintained to optimize compatibility between the design and soil and groundwater conditions.

We have assumed, in preparing our recommendations, that we will be retained to review those portions of the plans and specifications that pertain to earthwork and foundations. The purpose of this review is to confirm that our earthwork and foundation recommendations have been properly interpreted and implemented during design. If we are not provided this opportunity for review of the plans and specifications, we will assume no responsibility for misinterpretation of our recommendations.

7.3 Construction Phase Monitoring

In order to assess conformance with the intent of our recommendations, we recommend that a representative of our firm:

- monitor adequate removal of topsoil, uncontrolled fill, or soft or loose upper soils;
- monitor adequate fill subgrade preparation;
- monitor placement of structural fill;
- monitor disturbance of sand soils in excavation or drilling operations;
- observe pile foundation installations;
- observe reinforcing and filter fabric placement;
- monitor subdrain and sump/pump installations; and
- monitor utility trench backfilling.

This work allows SHN the opportunity to verify anticipated site conditions, and recommend appropriate changes in design or construction procedures if site conditions encountered during construction vary significantly from those described in this report.

8.0 Limitations

The analyses, conclusions, and recommendations contained in this report are based on site conditions that we observed at the time of our investigations, data from our subsurface explorations and laboratory tests, our current understanding of proposed project elements, and on our experience with similar project elements in similar geologic environments supported on similar conditions. We have assumed that the information obtained from our limited subsurface explorations is representative of the subsurface conditions throughout the site. In order to confirm this assumption, we recommend a representative of our firm observe and evaluate actual soil conditions encountered during project construction operations.

Subsurface conditions may differ from those disclosed by our limited investigations. If differing conditions are encountered during construction, our firm should be notified immediately so that we can reevaluate the applicability of our conclusions and recommendations. Such an evaluation may result in reconsidered and/or amended recommendations. If the scope of the proposed construction, including the proposed loads, grades, or structural locations, changes from that described in this report, our recommendations should also be reviewed.

Our firm has prepared this report for your exclusive use on this project in substantial accordance with the generally accepted geotechnical engineering practice as it exists in the site area at the time of our study. No warranty is express or implied. The recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be conducted by our firm during the construction phase in order to evaluate compliance with our recommendations.

It is the client's responsibility to see that all parties to the project, including the designer, contractor, subcontractors, etc. are made aware of this report, and the prior report, in their entirety including the Additional Services and Limitations sections.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we should review our report to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse. This report is applicable only to the project and site studied.

The field and laboratory work was conducted to investigate the site characteristics specifically addressed by this report. Assumptions about other site characteristics, such as hazardous materials contamination, should not be made from this report.

9.0 References Cited

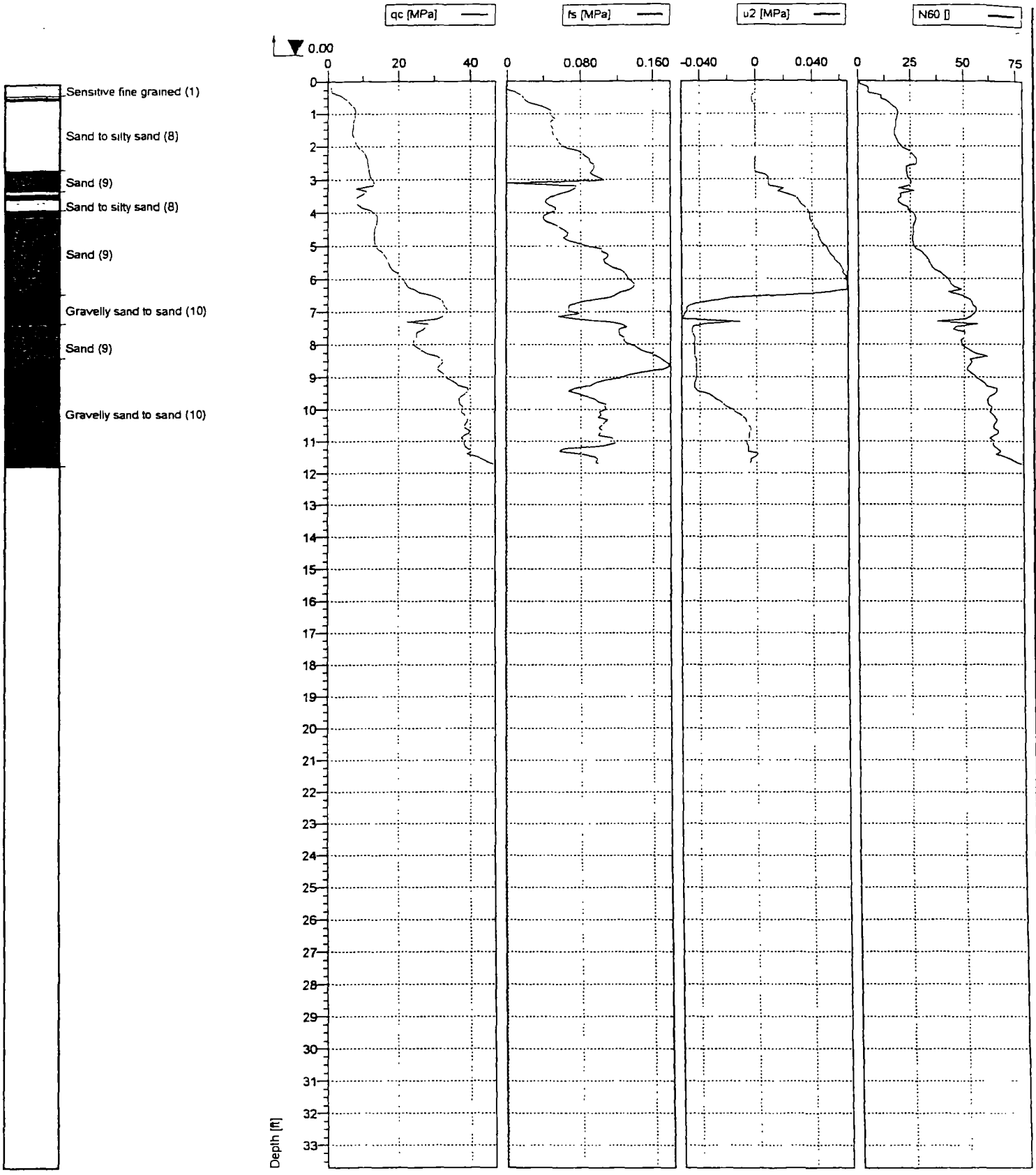
International Conference of Building Officials. (1997). "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada," *Uniform Building Code* Whittier:ICBO.

Lawson, Andrew C. et al (1908). *Report of the State Earthquake Investigation Commission,* Washington, D.C.: Carnegie Institute of Washington, (Reprinted 1969).

Youd, T.L., and S.N. Hoose. (1978). *Geological Survey Professional Paper Number 993: Historic Ground Failures in Northern California Triggered by Earthquakes.* Washington, D.C.: United States Government Printing Office.

Appendix A

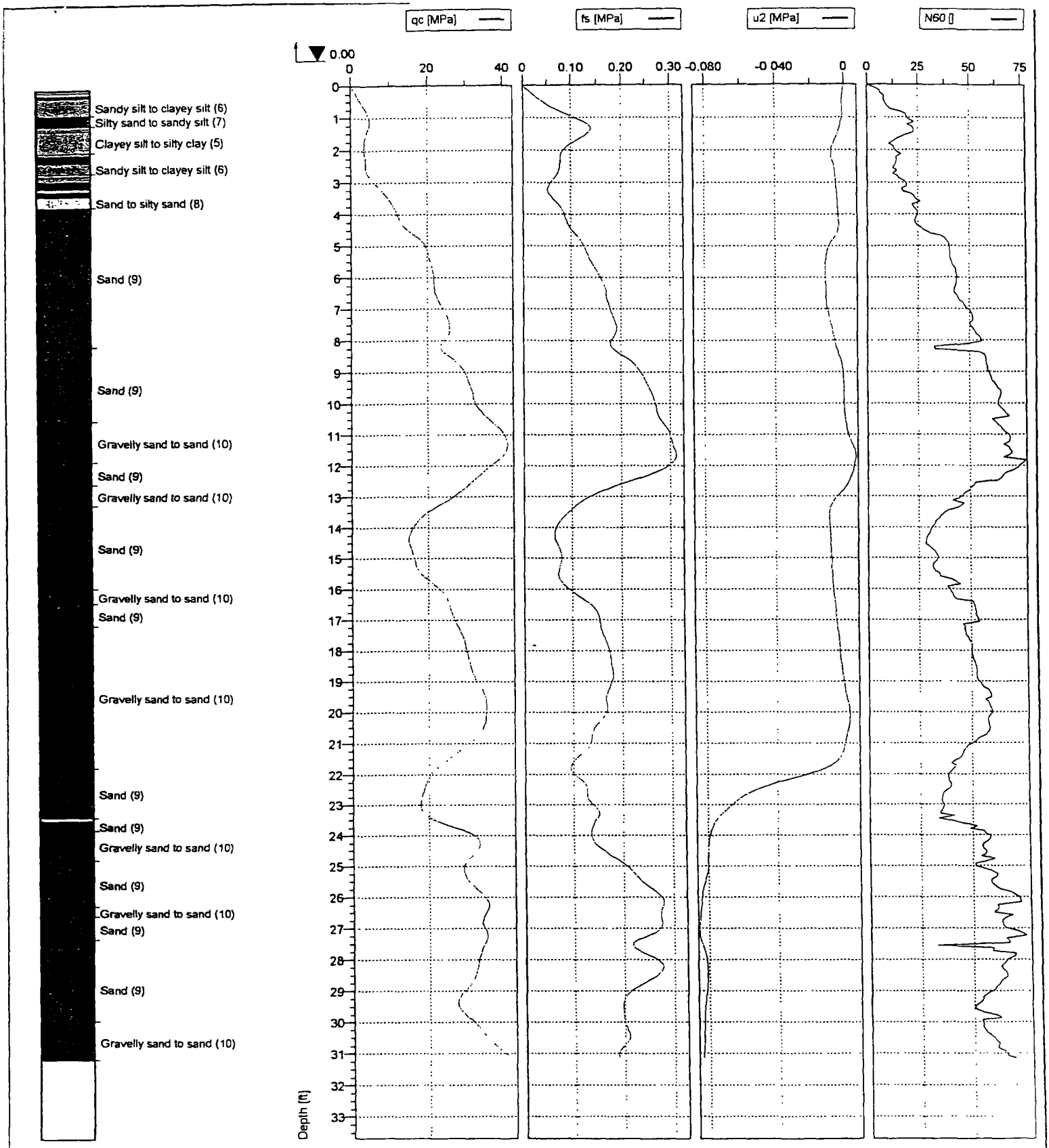
Subsurface Exploration Logs



U2

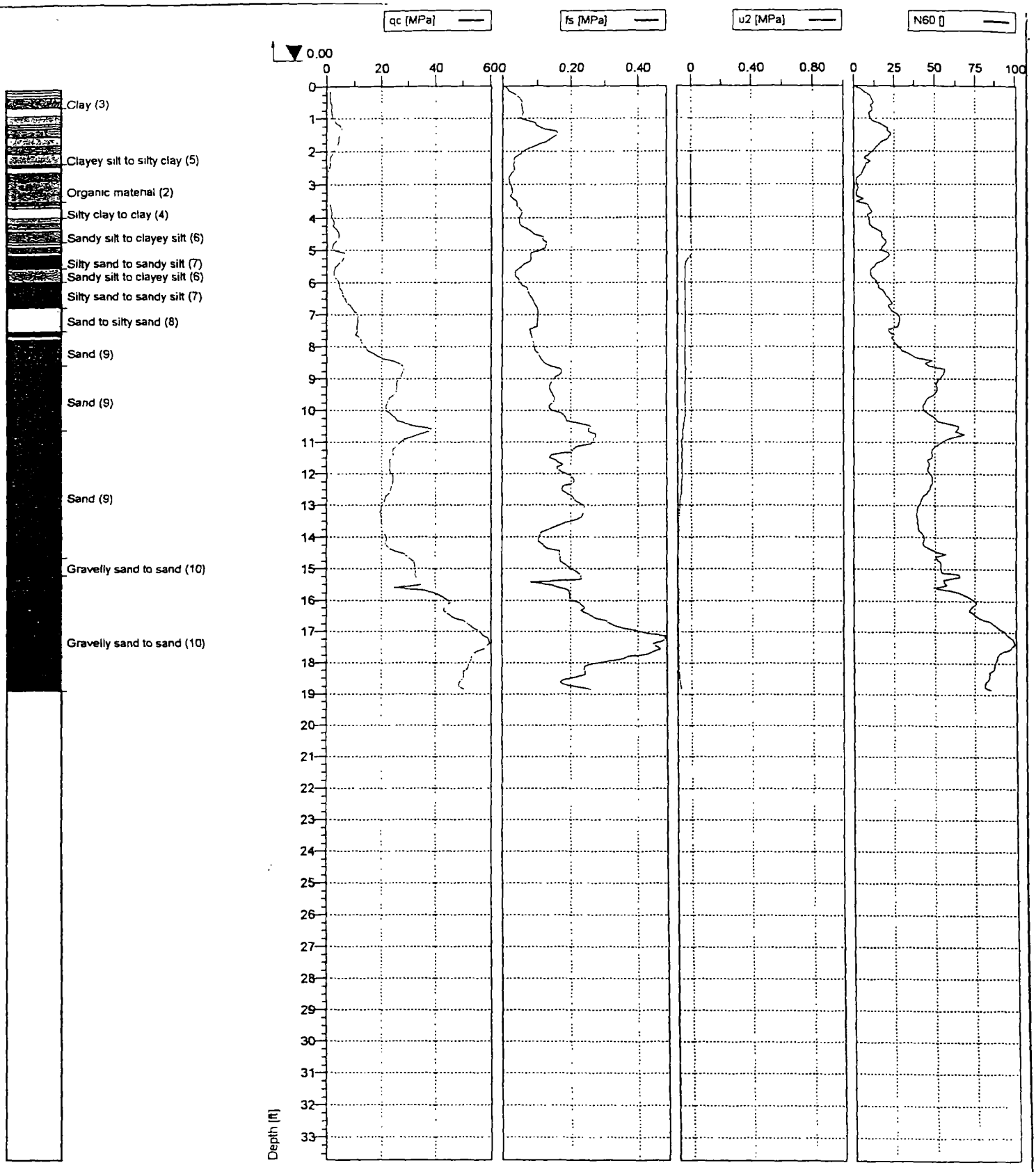
Cone No 3335
Tip area [cm2] 10
Sleeve area [cm2] 150

Test no: G2652-1	Position: X: 0.00 m, Y: 0.00 m		Ground level: 0.00
Client: SHN Engineering		Date: 5/29/2003	Scale: 1_50
Project: Fort Bragg, Pool Project		Page: 1/1	Fig:
		File: G2652-1 CPT	



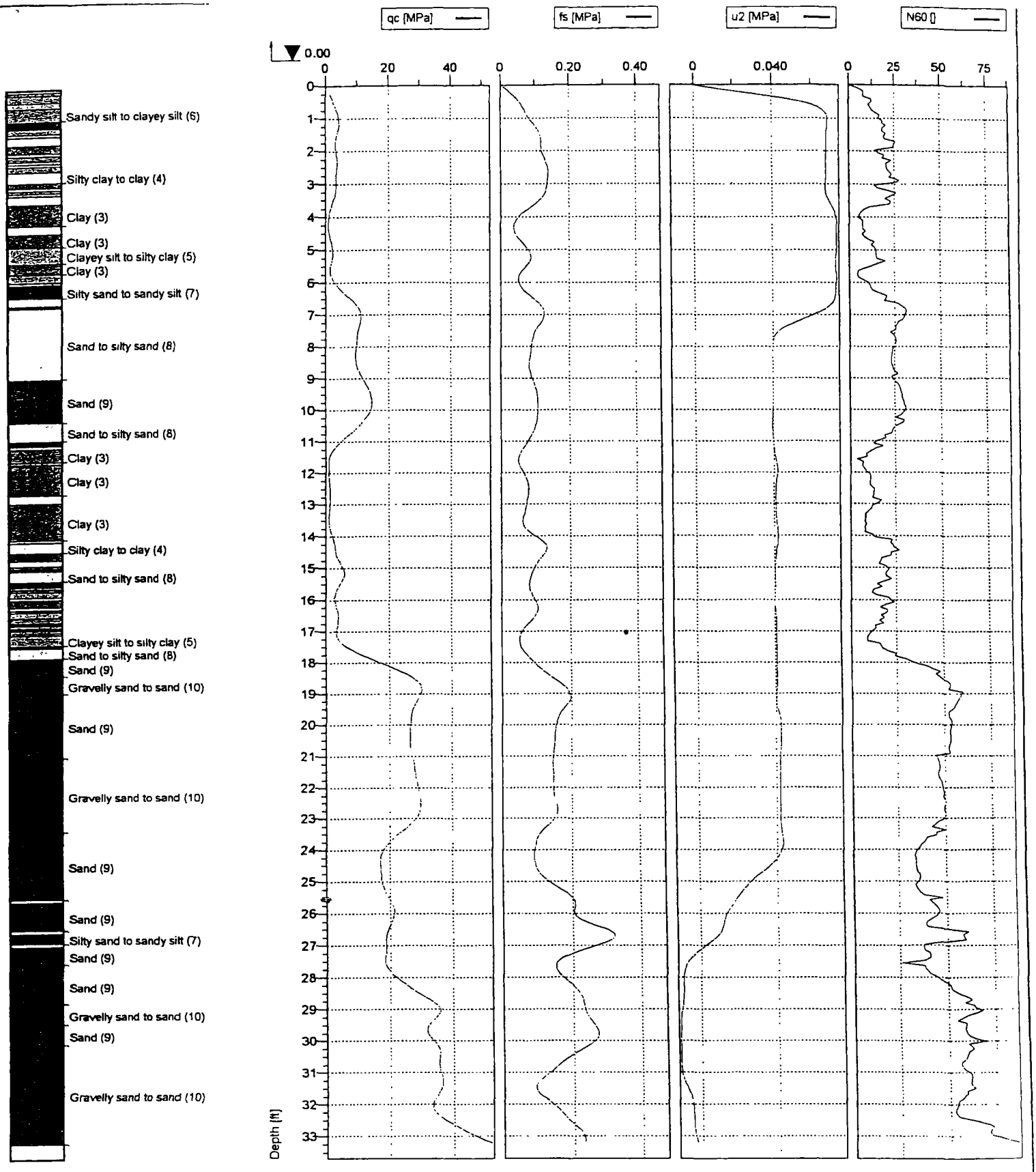
Cone No. 3335
Tip area [cm2]. 10
Sleeve area [cm2]. 150

Test no. G2652-3	Position: X: 0.00 m, Y: 0.00 m		Ground level 0.00
Client: SHN Engineering		Date 5/29/2003	Scale 1 50
Project: Fort Bragg, Pool Project		Page 1/1	Fig
		File G2652-3 CPT	



Test no: G2652-5	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00	
Client: SHN Engineering		Date: 5/29/2003	Scale: 1 : 50
Project: Fort Bragg, Pool Project		Page: 1/1	Fig
		File: G2652-5 CPT	

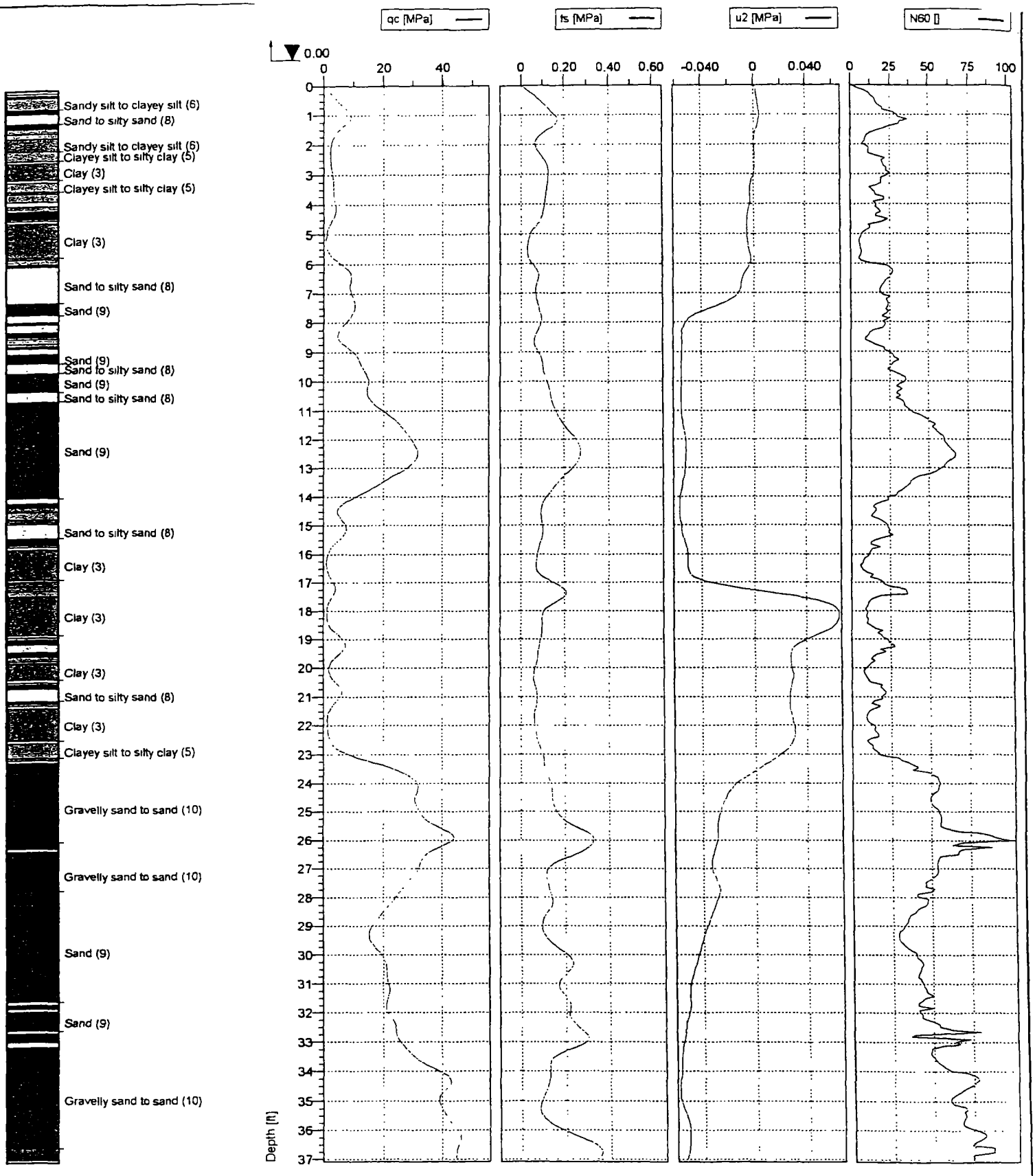
Cone No 3335
Tip area [cm2] 10
Sleeve area [cm2] 150



U2

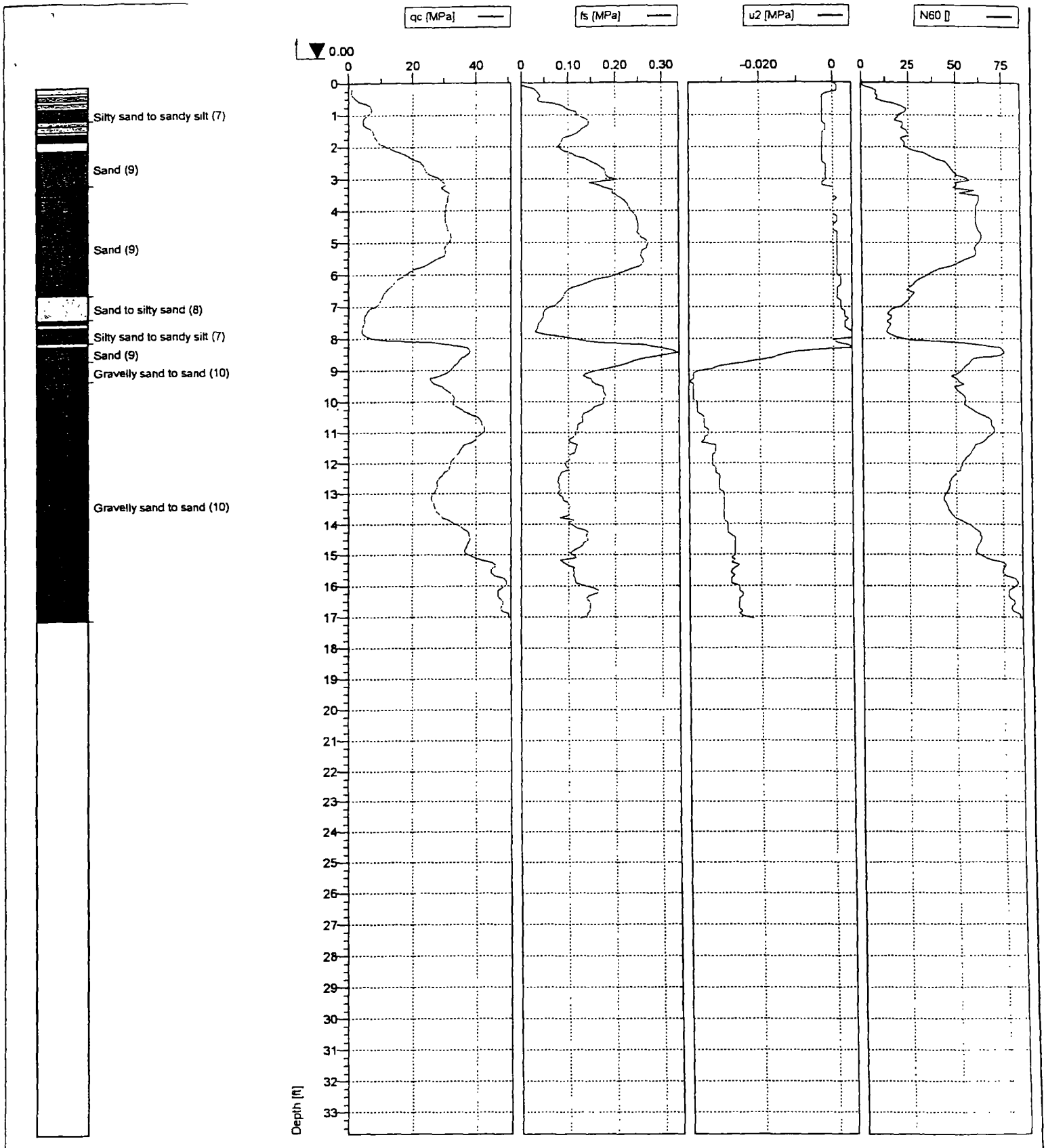
Cone No 3335
Tip area [cm2] 10
Sleeve area [cm2] 150

Test no: G2652-7	Position: X: 0.00 m, Y: 0.00 m	Ground level 0.00	
Client: SHN Engineering		Date: 5/29/2003	Scale 1 50
Project: Fort Bragg, Pool Project		Page 1/1	Fig
		File G2652-7.CPT	



Cone No: 3335
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: G2652-9	Position: X: 0.00 m, Y: 0.00 m		Ground level: 0.00
Client: SHN Engineering		Date: 5/30/2003	Scale: 1 55
Project: Fort Bragg, Pool Project		Page: 1/1	Fig
		File: G2652-9.CPT	



Cone No. 3335
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: G2652-11	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00
Client: SHN Engineering		Date: 5/30/2003 / Scale: 1 50
Project: Fort Bragg, Pool Project		Page: 1/1 / Fig
		File: G2652-11 CPT

SHN CONSULTING ENGINEERS & GEOLOGISTS

BORING LOG KEY

SAMPLE TYPES

DISTURBED SAMPLE (BULK)

HAND DRIVEN TUBE SAMPLE

1.4" I.D. STANDARD PENETRATION TEXT SAMPLE (SPT)

2.5" I.D. MODIFIED CALIFORNIA SAMPLE (NOT RETAINED)

MODIFIED CALIFORNIA SAMPLE (RETAINED)

CORE BARREL SAMPLE (NOT RETAINED)

CORE BARREL SAMPLE (RETAINED)

SYMBOLS

INITIAL WATER LEVEL

STABILIZED WATER LEVEL

GRADATIONAL CONTACT

WELL DEFINED CONTACT

SS SPLIT SPOON

HOLE NUMBER B-1

PROJECT Aquatic Facility, MCR & PD
JOB NUMBER 097233.100
LOCATION Fort Bragg, CA
DATE DRILLED 10/28/98
GROUND SURFACE ELEVATION
SAMPLER TYPE 2.5" I.D. Calif. Barrel; 2" O.D. SPT, 140 lb hammer, 30" drop
EXCAVATION METHOD Hollow Stem Auger Drill Rig
LOGGED BY DRB
TOTAL DEPTH OF HOLE 41.0 ft.

MOISTURE (%)	DRY DEN (PCF)	% PASS #200	DEPTH (ft.)	SAMPLES	BLOWS/FOOT	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
			1				ML	(FILL), SILT, fine sandy, soft, moist, black, topsoil.	
							SM	(FILL), SAND, fine, silty, loose, moist, brown.	
			2				ML	SILT, clayey, fine sandy, medium stiff, moist, black.	
			3				CL	CLAY, silty, medium stiff, wet, gray.	
			4				SP	SAND, fine to medium, slightly clayey to slightly silty, dense, wet, gray.	
			5						▽ 10/28/98 estimated from cuttings
20.0	107	3.3	6		51		SP	SAND, fine to medium, slightly silty, dense, wet, gray.	▽ 10/28/98 after pulling augers Note: Logged at sample locations only, or from cuttings, below this depth.
			7						
			8				SP	Cuttings: SAND, medium, with some fine and coarse, included one clayey layer, wet, grayish brown.	
			9						
			10		16		SP	SAND, fine to medium, slightly silty, medium dense, grayish brown, saturated.	Note: Sand heaved moderately up into augers. Blow count may not be accurate. It is likely higher, estimated at 22 or more based on last 6" blow count.
			11						
			12						
			13						
			14						
			15						Note: Sand heaved moderately up into augers. Blow count may not be accurate. It is likely higher, estimated at 30 or more based on last 6" blow count.
			16		25		SP	SAND, fine to medium, trace of coarse, slightly silty, dense, wet, brownish gray.	
			17						
			18						
			19						Note: Sand heaved moderately up into augers. Blow count may not be accurate. It is likely higher, estimated at 20 or more based on last 6" blow count.
			20						
			21		13		SP SW	SAND, fine to medium, with some coarse, slightly silty, medium dense to dense, wet, brownish gray.	

HOLE NUMBER B-2

PROJECT Aquatic Facility, MCR & PD
JOB NUMBER 097233.100
LOCATION Fort Bragg, CA
DATE DRILLED 10/28/98
GROUND SURFACE ELEVATION
SAMPLER TYPE Bulk Samples from Auger Cuttings
EXCAVATION METHOD Solid Stem Auger Drill Rig
LOGGED BY DRB
TOTAL DEPTH OF HOLE 45.0 ft.

MOISTURE (%)	DRY DEN (PCF)	% PASS #200	DEPTH (ft.)	SAMPLES	BLOWS/FOOT	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
			0				ML	(FILL), SILT, fine sandy, medium stiff, moist, brown.	
			1				ML	(FILL), SILT, fine sandy, medium stiff, moist, black.	
			2				SM	(FILL), SAND, fine to meidum, medium dense, moist, light brown.	
			3				SC	SAND, fine to meidum, clayey, loose to medium dense, moist, black.	
			4						
			5						
			6						▽ 10/28/98
			7					Becomes slightly silty, medium dense, light gray.	
—	—	20.8	8						
			9					Becomes brown on average	
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						
			21						

HOLE NUMBER B-3

PROJECT Aquatic Facility, MCR & PD
JOB NUMBER 097233.100
LOCATION Fort Bragg, CA
DATE DRILLED 10/28/98
GROUND SURFACE ELEVATION
SAMPLER TYPE 2.5" I.D. Calif. Barrel; 2" O.D.
EXCAVATION METHOD Hollow Stem Auger Drill Rig
SPT, 140 lb hammer, 30" drop
LOGGED BY DRB
TOTAL DEPTH OF HOLE 41.0 ft.

MOISTURE (%)	DRY DEN (PCF)	% PASS #200	DEPTH (ft.)	SAMPLES	BLOWS/FOOT	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
			1				SM	(FILL), SAND, fine, silty, medium dense, damp, light brown.	
			2						
			3					Becomes dark brown.	
			4				SC	SAND, fine, clayey, loose, wet, black.	
			5						Note: Logged at sample locations only, or from cuttings, below this depth.
			6					Becomes medium dense, light grayish brown.	▽ 10/28/98
			7						
			8						
			9						
			10						
—	—	7.9	11		28		SM/SP	SAND, fine to medium, slightly silty, slightly clayey, medium dense, wet, whitish gray.	
			12						
			13						
			14						
			15						
			16		7		PT	PEAT, with decayed wood, soft, wet, dark reddish brown.	
			17						
			18						
			19						
			20						
			21						

HOLE NUMBER B-4

PROJECT Aquatic Facility, MCR & PD
JOB NUMBER 097233.100
LOCATION Fort Bragg, CA
DATE DRILLED 10/28/98
GROUND SURFACE ELEVATION
SAMPLER TYPE 2.5" I.D. Calif. Barrel; 2" O.D.
EXCAVATION METHOD Hollow Stem Auger Drill Rig
SPT, 140 lb hammer, 30" drop
LOGGED BY DRB
TOTAL DEPTH OF HOLE 18.0 ft.

MOISTURE (%)	DRY DEN (PCF)	% PASS #200	DEPTH (ft.)	SAMPLES	BLOWS/FOOT	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
			1				SP SM	SAND, fine, slightly clayey and silty, loose, moist, mottled browns.	
			2				SM	SAND, slightly silty, medium dense to dense, moist, brown.	
			3						
			4					Becomes gray.	
			5						
			6						
			7					Becomes brown.	▽ 10/28/98 Note: Logged at sample locations only, or fro cuttings, below this depth.
			8						
			9						
			10						
			11						
			12						
			13						
			14						
			15		15/ 6" 50/ 4"				
—	—	14.3	16					SAND, fine to coarse, silty, dense, wet, brown.	
			17					SANDSTONE, fine grained, resistant to drilling and sampling, bluish gray. Franciscan formation.	Very slow drilling.
			18					Bottom of boring at 18.0 feet.	
			19						
			20						
			21						

HOLE NUMBER TP-

PROJECT Recreation Building
LOCATION Fort Bragg, CA
GROUND SURFACE ELEVATION
EXCAVATION METHOD Backhoe
LOGGED BY DRB

JOB NUMBER 097233
DATE DRILLED 11/7/97
SAMPLER TYPE 2.5" O.D. Brass Shelby Tubes; Hand Held Slide Hammer
TOTAL DEPTH OF HOLE 11.0 ft.

MOISTURE (%)	DRY DEN (PCF)	DEPTH (ft.)	SAMPLES	BLOWS/FT*	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
		0				SM	FILL, SAND, fine, silty, medium dense, moist, dark gray and dark brown.	
		1					Becomes slightly clayey, mixed brown and gray.	
		2						
22.5	95	3						
		4				SC	SAND, fine, clayey, medium dense, moist, gray with brown zones.	
23.5	122	5						
		6						
		7					Becomes fine to medium grained, slightly clayey, loose to medium dense, wet, whitish-gray.	
16.9	114	8					Changes to brown below 7.5'.	▽ 11/7/97 Water level 1 hour after excavation.
		9						
53.1	62	10						Hand auger below 9'.
		11				SP	SAND, fine to medium, loose, wet, whitish-gray.	Hole sidewalls unstable.
							Bottom of test pit at 11.0 feet.	

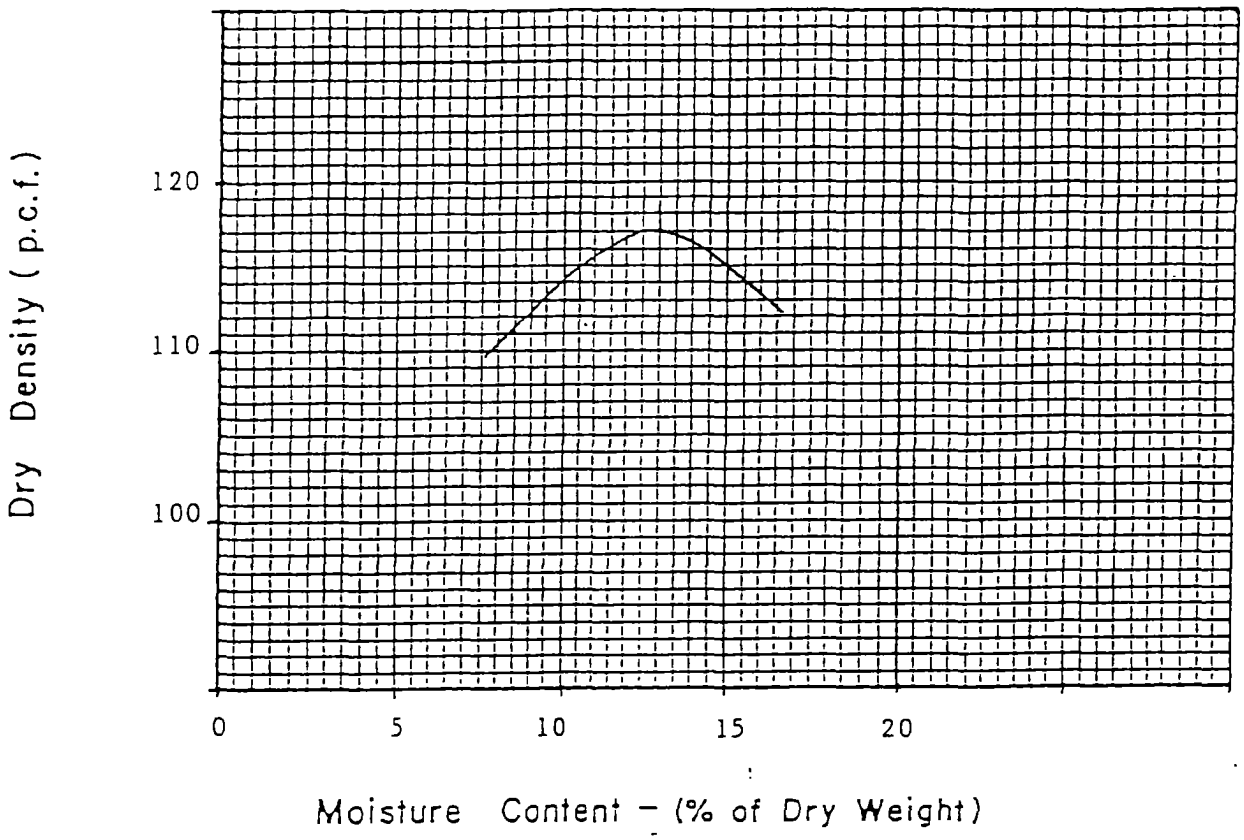
HOLE NUMBER TP-4

PROJECT Recreation Building
JOB NUMBER 097233
LOCATION Fort Bragg, CA
DATE DRILLED 11/7/97
GROUND SURFACE ELEVATION
SAMPLER TYPE 2.5" O.D. Brass Shelby Tubes; Hand Held Slide Hammer
EXCAVATION METHOD Backhoe
LOGGED BY DRB
TOTAL DEPTH OF HOLE 9.0 ft.

MOISTURE (%)	DRY DEN (PCF)	DEPTH (ft.)	SAMPLES	BLOWS/FT*	GRAPHIC LOG	USCS CLASS	MATERIALS DESCRIPTION	REMARKS
		0				ML	FILL, SILT, fine sandy, soft, moist, dark gray.	
		1				SC	SAND, fine, clayey, medium dense, wet, mottled orange and white.	
		2					Clay content reduces.	
		3						
		4				SP	SAND, fine, slightly silty, loose to medium dense, moist, mottled brown and gray.	▽ 11/7/97 Water encountered during excavation.
21.1	105	5						Sidewalls of test pit unstable (caving).
		6					Predominantly light brown.	
		7						
20.2	103	8						
		9					Bottom of test pit at 9.0 feet.	
		10						
		11						

Appendix B

Laboratory Results



Sample : Composite

Description : Native In-Place Sand, fine, slightly clayey and silty

Laboratory Test Procedure : ASTM D-1557-91

Maximum Dry Density : 117

Optimum Moisture Content : 13.0

Mendocino Coast Recreation and Park District JN097233

Curry Group Inc.

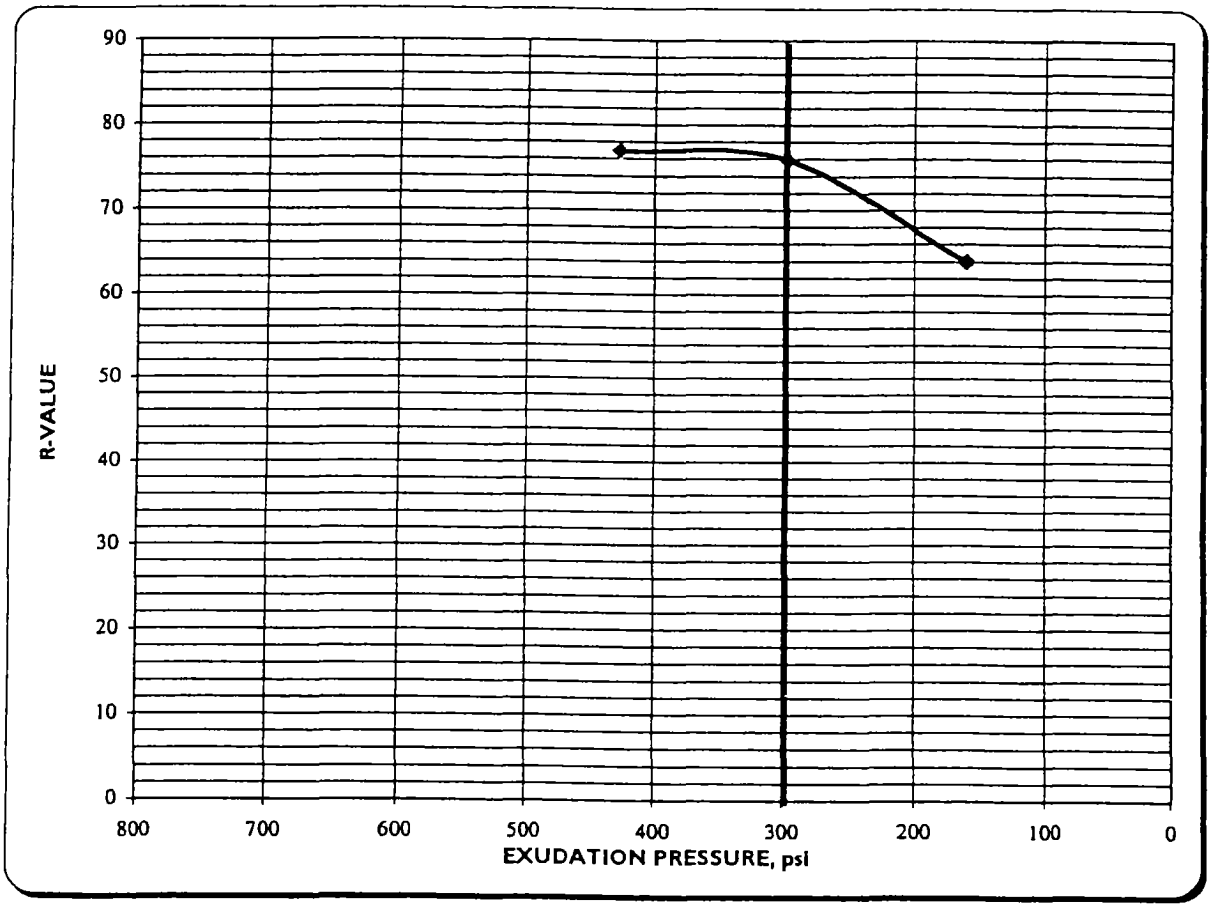
Resistance Value

Client: SHN Consulting Engineers & Geologists
Project: Fort Bragg Aquatic Center
SHN Project Number: 003003
Material Type: Dark Brown SAND
Material Supplier: SHN Consulting Engineers & Geologists
Material Source: N/A
Sample Location: -1.0' to -2.5'
Sampled By: SHN Consulting Engineers & Geologists

Job No.: 03-1008.26
Lab No.: 2530

Date Sampled: 4-Jun-03
Date Received: 5-Jun-03
Date Tested: 6-Jun-03
Date Reviewed: 9-Jun-03

Test Procedure: Caltrans **Method:** 301



	A	B	C
Moisture (%):	18.9	17.4	15.9
Dry Density (pcf):	95.6	103.5	108.1
Expansion Pressure (psf):	0	0	0
Exudation Pressure (psi):	161	296	427
Resistance Value:	64	76	77

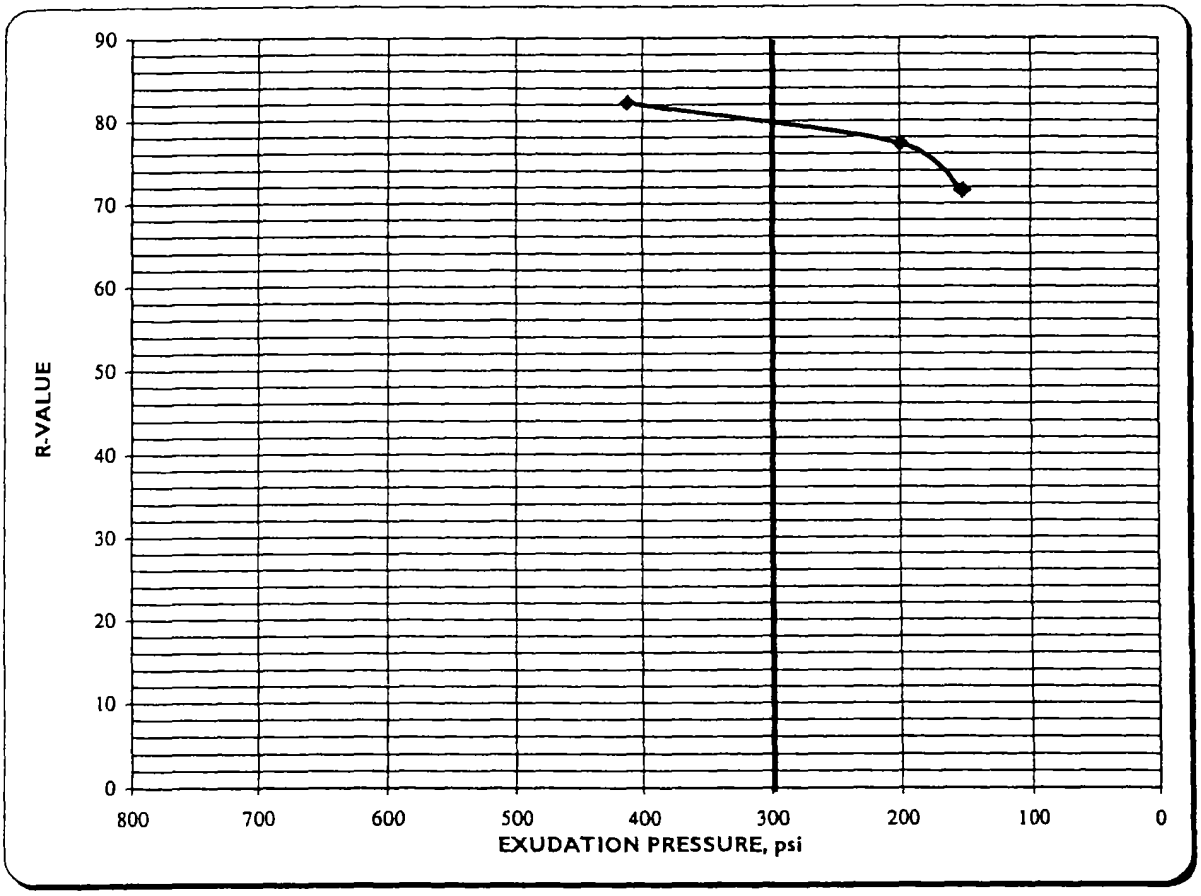
R - VALUE AT 300 PSI EXUDATION PRESSURE	76

Curry Group Inc.

Resistance Value

Client:	SHN Consulting Engineers & Geologists	**Job No.:**	03-1008.26
Project:	Fort Bragg Aquatic Center	**Lab No.:**	2530
SHN Project Number:	003003		
Material Type:	Light Brown SAND		
Material Supplier:	SHN Consulting Engineers & Geologists	**Date Sampled:**	4-Jun-03
Material Source:	N/A	**Date Received:**	5-Jun-03
Sample Location:	-0.5' to -2.0'	**Date Tested:**	6-Jun-03
Sampled By:	SHN Consulting Engineers & Geologists	**Date Reviewed:**	9-Jun-03

Test Procedure: Caltrans **Method:** 301



	A	B	C
Moisture (%):	10.1	9.2	7.3
Dry Density (pcf):	109.2	110.7	103.9
Expansion Pressure (psf):	0	0	0
Exudation Pressure (psi):	151	199	411
Resistance Value:	72	77	82

R - VALUE AT 300 PSI EXUDATION PRESSURE	80

Appendix C

Concrete Pile Recommendations

CONCRETE PILE RECOMMENDATIONS

Use precast, prestressed concrete piles conforming to Section 49 of the Caltrans Standard Specifications, unless otherwise approved by the Design Engineer. The piles shall have a minimum cross-sectional dimension of 12 inches. Pile driving equipment, techniques, and determination of allowable pile capacity should also conform to the Cal-Trans Standard Specifications. Alternatively, refer to "Recommendations for Design, Manufacture, and Installation of Concrete Piles, ACI Committee 543" where not treated otherwise.

Air, steam, or diesel hammers shall be within the manufacturer's recommendations for wear, adjustment, and rate of operation. Sufficient pressure shall be maintained for steam hammers so that: 1) for a double acting hammer, the number of blows per minute during and at the completion of driving of a pile is equal approximately to that at which the hammer is rated; 2) for a single-acting hammer, there is a full upward stroke of the ram; and 3) for a differential type hammer, there is a slight rise of the hammer base during each upward stroke.

The hammer furnished shall have a capacity at least equal to the hammer manufacturer's recommendation for the total weight of pile and character of subsurface material to be encountered.

The required driving energy of the hammer shall be obtained by use of a heavy ram and a short stroke with low impact velocity, rather than a light ram and a long stroke with high impact velocity.

While driving through soft ground, the energy per blow should be reduced, or a diesel hammer used, to avoid overstressing the pile in tension. When driving through hard ground, the allowable compressive strength of the concrete shall not be exceeded.

Pile driving equipment and operation should be monitored and recorded by the Geotechnical Engineer or Engineer's representative. Prior to driving piles, they shall be suitably marked as directed by the Geotechnical Engineer.

Drive piles until the specified depth or blow count is achieved, with the pile tip having penetrated in competent bearing soil. High blow counts from obstructions shall not qualify as adequate bearing.

If obstructions are encountered before the specified penetration is obtained, remove the obstruction, predrill or spud a pilot pile through it, move the pile, or put in an additional pile as approved by the Design Engineer.

If an annular space results from predrilling or using a spud or pilot pile to penetrate obstructions, the space shall be backfilled with sand or pea gravel.

Any injured or damaged pile, or piles driven out of location or out of alignment, shall be removed and replaced.

The Geotechnical or Design Engineer may require the Contractor to pull certain selected piles after driving for test and inspection to determine the condition of the pile. Any pile so pulled and determined to be damaged shall be removed and a replacement driven. Piles pulled and found to be sound and in a satisfactory condition shall be redriven.

Tops of piles shall be cut off horizontally at the design elevation. The cutoffs shall conform to the recommendations of the Design Engineer.