

● CHAPTER IX

APPENDICES

APPENDIX A: Initial Study

APPENDIX B: Wind Study

APPENDIX A

INITIAL STUDY



PLANNING DEPARTMENT

City and County of San Francisco 1660 Mission Street, Suite 500 San Francisco, CA 94103-2414

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CURRENT PLANNING/ZONING
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LONG RANGE PLANNING
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NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT

DATE: March 10, 2001

TO: Responsible Agencies, Trustee Agencies, and Interested Persons

FROM: Planning Department
City and County of San Francisco

1660 Mission Street, 5th Floor
San Francisco, CA 94103-2414

RE: Notice of Preparation of a Draft Environmental Impact Report

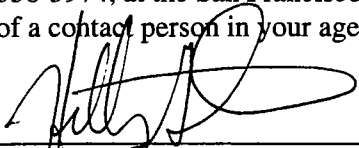
The San Francisco Planning Department is the Lead Agency and is preparing an Environmental Impact Report (EIR) for the following project:

2000.1081E: RINCON HILL MIXED USE DISTRICT

The San Francisco Planning Department proposes to amend the Area Plan for the Rincon Hill area and to combine the Planning Code's Rincon Hill Special Use District sub-area designations (Residential and Commercial/Industrial sub-areas) into one Rincon Hill Mixed Use (RHM) District, to increase height limits, and to make other changes intended to stimulate additional high density, residential development in the Rincon Hill area. The proposal would also rezone five parcels north of Folsom Street, between Main and Spear Streets, and would enact a 15-foot legislated setback (beyond the existing 10-foot sidewalk) on the north side of Folsom Street in order to ensure that future development in the area does not preclude development of a widened sidewalk and "boulevard" treatment for this section of Folsom Street. Amendments of the San Francisco General Plan and Planning Code, including text and zoning map changes, would be required for the proposal.

The proposed project may result in transportation, air quality, and other impacts. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for the project.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but no later than 30 days after receipt of this notice. Please send your response to Rick Cooper, (415) 558-5974, at the San Francisco Planning Department address shown above. Please include the name of a contact person in your agency.



Hillary E. Gitelman
Environmental Review Officer

3/10/01

Date

**NOTICE THAT AN
ENVIRONMENTAL IMPACT REPORT
IS DETERMINED TO BE REQUIRED**

Date of this Notice: March 10, 2001

Lead Agency: City and County of San Francisco, Planning Department
1660 Mission Street, 5th Floor, San Francisco, CA 94103

Agency Contact Person: Rick Cooper **Telephone:** (415) 558-5974

Project Title: 2000.1081E: Rincon Hill
Mixed Use District

Project Sponsor: City & County of
San Francisco Planning Department

Contact Person: Isolde Wilson

Contact Phone #: (415) 558-6602

Project Address: All properties within the proposed Rincon Hill Mixed Use District
(See Project Description)

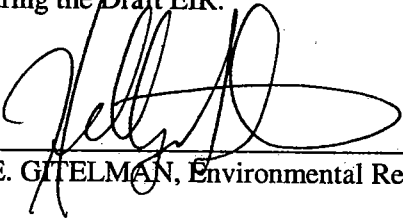
Assessor's Block and Lot: Various (See Project Description)

City and County: San Francisco

Project Description: The San Francisco Planning Department proposes to amend the Area Plan for the Rincon Hill area and to combine the Planning Code's Rincon Hill Special Use District sub-area designations (Residential and Commercial/Industrial sub-areas) into one Rincon Hill Mixed Use (RHM) District, to increase height limits, and to make other changes intended to stimulate additional high density, residential development in the Rincon Hill area. The proposal would also rezone five parcels north of Folsom Street, between Main and Spear Streets, and would enact a 15-foot legislated setback (beyond the existing 10-foot sidewalk) on the north side of Folsom Street in order to ensure that future development in the area does not preclude development of a widened sidewalk and "boulevard" treatment for this section of Folsom Street. Amendments of the San Francisco General Plan and Planning Code, including text and zoning map changes, would be required for the proposal.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and the following reasons, as documented in the Initial Study for the project, which is attached.

Deadline for Filing an Appeal to the Planning Commission of this Determination that an EIR is required is March 20, 2001. An appeal requires: 1) a letter specifying the grounds for appeal, and 2) a \$209.00 filing fee. The public is invited to comment on the scope of the EIR. Such comments must be received by April 9, 2001 to ensure consideration in preparing the Draft EIR.



HILLARY E. GITELMAN, Environmental Review Officer

**RINCON HILL MIXED USE DISTRICT
INITIAL STUDY
2000.1081E**

I. PROJECT DESCRIPTION

In 1985, the San Francisco Planning Commission and the San Francisco Board of Supervisors adopted the Rincon Hill Plan, an Area Plan of the San Francisco General Plan, and related (Rincon Hill Special Use District) provisions of the San Francisco Planning Code. Since adoption of the Plan, approximately 550 dwelling units¹ have been constructed within the area, although some development sites have remained vacant or underutilized. The dwelling units constructed, including approximately ten percent classified as “affordable,” have not been sufficient to address the City’s critical need for housing, even when combined with other residential development elsewhere in the City.

The San Francisco Planning Department proposes to amend the Rincon Hill Plan and to combine the Planning Code’s Rincon Hill Special Use District sub-area designations (Residential and Commercial/Industrial sub-areas) into one Rincon Hill Mixed Use (RHM) Zoning District, to increase height limits, and to make other General Plan and zoning changes intended to stimulate additional high density, residential development in the Rincon Hill area. The proposal would also rezone five parcels north of Folsom Street, between Main and Spear Streets from P (Public Use District) and C-3-S (Downtown Support District) to C-3-O (SD) (Downtown Office, Special Development District), and would enact a 15-foot legislated setback (beyond the existing 10-foot sidewalk) on the north side of Folsom Street in order to ensure that future development in the area does not preclude development of a widened sidewalk and “boulevard” treatment for this section of Folsom Street. A more detailed description of project components is provided further in this chapter.

This environmental impact report (EIR) is prepared as a program EIR, pursuant to the California Quality Act (See CEQA Guidelines Section 15168, 15175, and 15182). As such, this document analyzes the effects of long-term (to year 2020) build-out of the Rincon Hill area anticipated to result from the actions described above. A program EIR will enable the City and County of San Francisco, as the lead agency, to examine the overall effects of projected development in the area, and in the future, will allow for accelerated review of projects that fall within the program analyzed.

A. PROJECT LOCATION

Rincon Hill is situated within the northeast portion of San Francisco, south of the Transbay Terminal and north of the South Beach area. The existing Rincon Hill Special Use District is bounded generally by Folsom Street, Steuart Street, The Embarcadero, Bryant Street, Beale Street, the Bay Bridge approach, and the Transbay Terminal ramps. The proposed RHM District would encompass this area. The five parcels to be rezoned from P and C-3-S to a proposed C-3-O (SD) are located on the north side of

¹ Source: San Francisco Planning Department, Alton Chinn, March 9, 2001.

Folsom Street between Spear and Main Streets, just north of the existing Rincon Hill Special Use District (See Figure 1). As discussed above, a 15-foot legislated setback is proposed on the north side of Folsom Street, from just west of First Street to Spear Street, and adjacent to the existing Rincon Hill Special Use District.

B. PROJECT OBJECTIVES

The project sponsor is the City and County of San Francisco. Principal objectives are to encourage the development of a mixed-use neighborhood with high-density residential buildings in the Rincon Hill area; to allow for high density commercial or residential development on parcels currently zoned "P" that are no longer required for public use; to preserve existing view corridors towards San Francisco Bay; and to allow for future improvements, such as sidewalk and street widening, along a portion of Folsom Street. Some of the goals in the development of the proposed RHM District are articulated in the following Objectives in the Rincon Hill Area Plan, an element of the San Francisco General Plan. These objectives are not proposed to change.

OBJECTIVE 1: To create a unique residential neighborhood close to Downtown that will contribute significantly to the City's housing supply.

OBJECTIVE 4: To provide quality housing in a pleasant environment that has adequate access to light, air and open space.

OBJECTIVE 7: To achieve an aesthetically pleasing residential community.

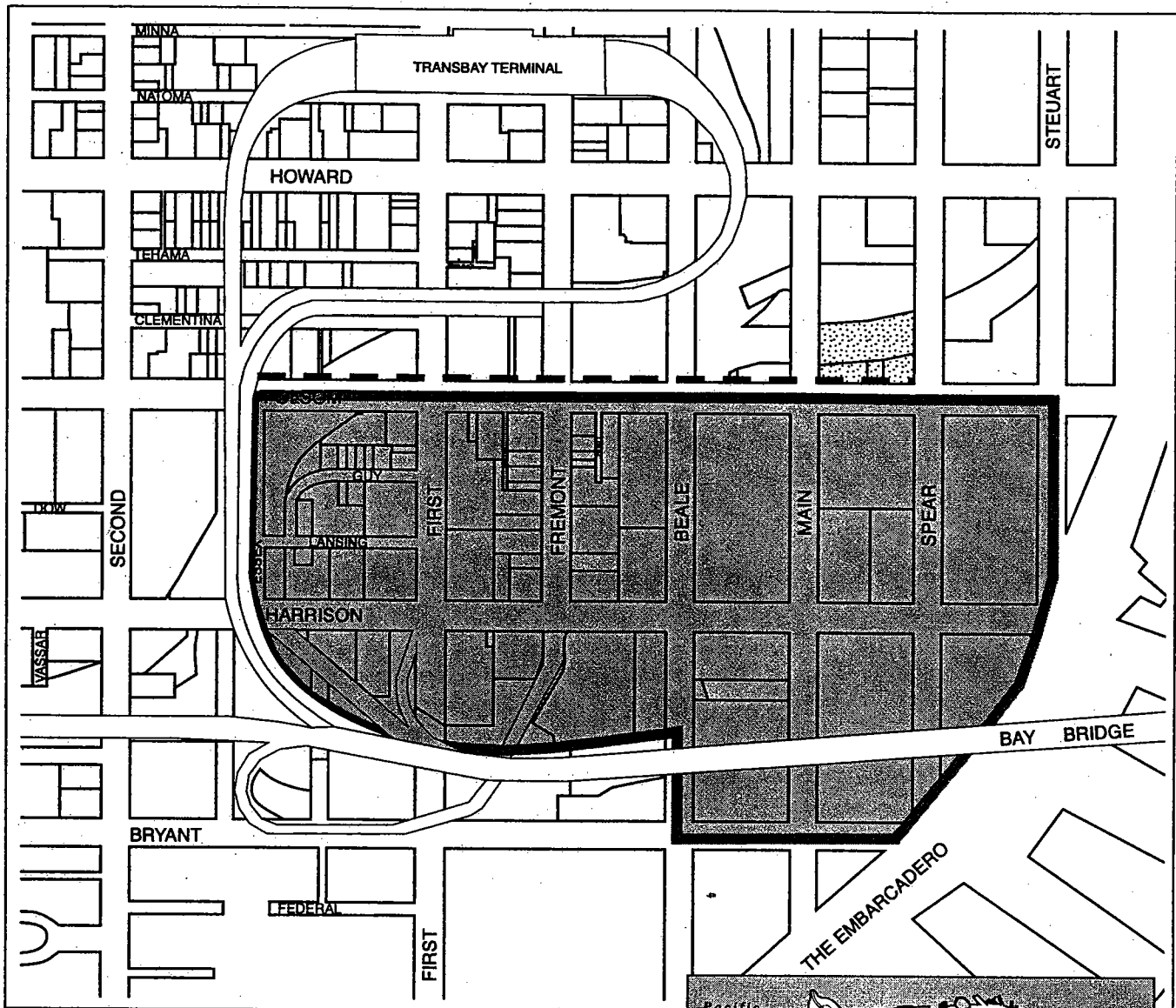
OBJECTIVE 8: To capitalize on the unique qualities of Rincon Hill, specifically its sweeping views of the Bay, its proximity to Downtown, and its relationship to the waterfront and Bay.




OBJECTIVE 9: To respect the natural topography of the hill and follow the policies already established in the Urban Design Element that restrict height near the water and allow increased height on the tops of hills.

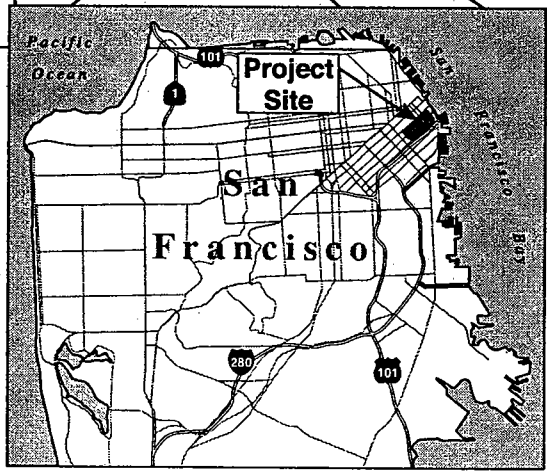
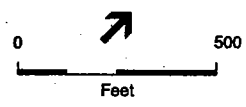
OBJECTIVE 10: To preserve views of the Bay and the Bay Bridge which are among the most impressive in the region.

OBJECTIVE 11: To maintain view corridors through the area by means of height and bulk controls which insure carefully spaced slender towers rather than bulky, massive buildings.

Additional Project objectives include complementing the removal and replacement of the nearby Transbay Terminal and associated joint development, and complementing city-wide efforts to increase housing production and supply.



-  Rincon Hill Special Use District
-  Proposed Rezoning from "P" and C-3-S to C-3-O (SD)
-  Proposed Legislated Setback



SOURCE: San Francisco Planning Department

Case No. 2000.1081E: Rincon Hill Mixed Use District EIR (ESA 990451) ■

Figure 1
Map of Project Area

C. PROJECT COMPONENTS

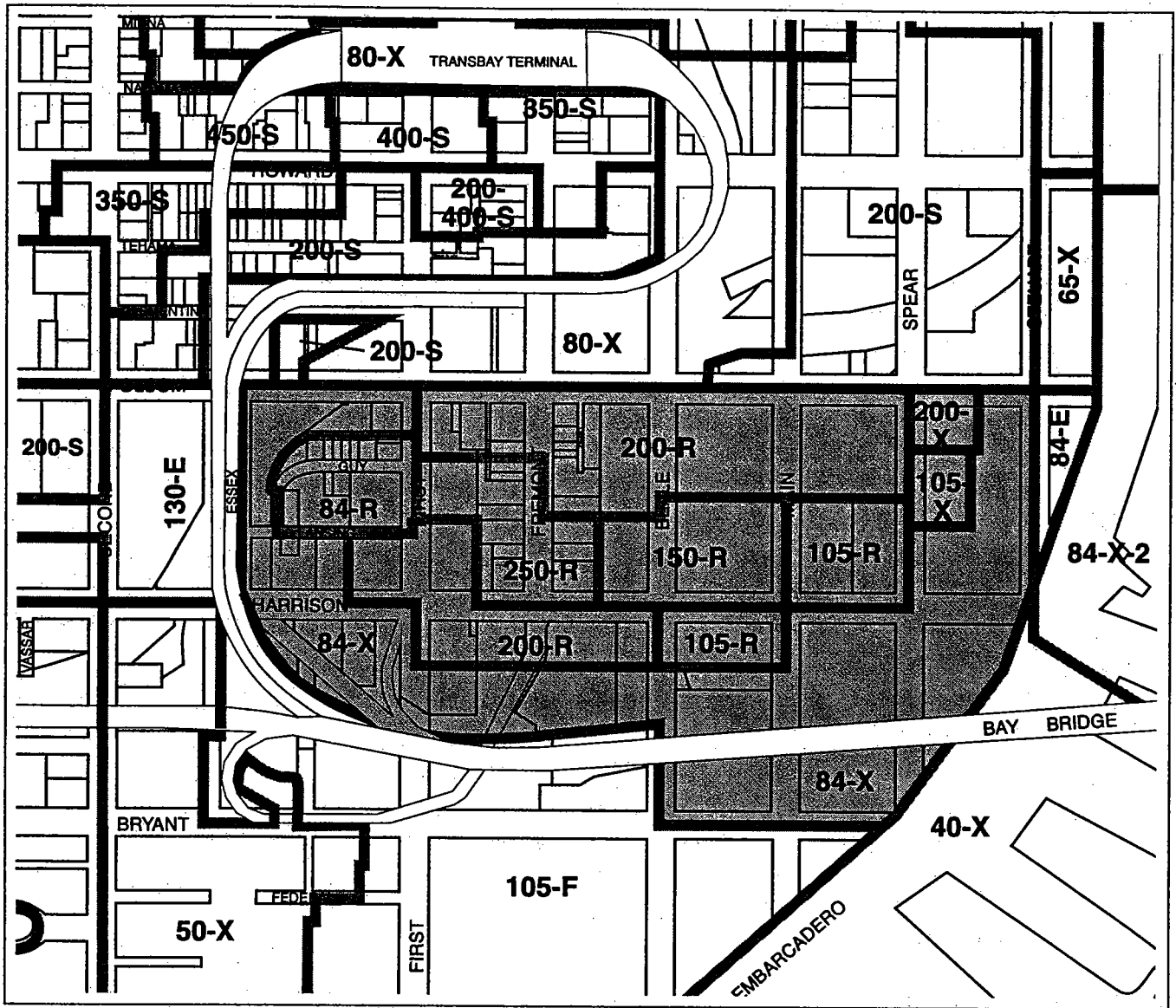
HEIGHT AND BULK CHANGES





Several existing height and bulk districts in the Rincon Hill area are proposed to change, and a new "U" bulk district designation would be established, as described in the paragraph below. East of Spear Street and south of the Bay Bridge, the existing 84-X² height and bulk district would remain. The existing 200-X and 105-X districts east of Spear Street however would change to a proposed 200-U. West of Spear Street, the height limits would increase, with the height and bulk districts changing from the existing 84-R, 84-X, 105-R, 150-R, 200-R, and 250-R, to a proposed 150-U, 200-U, 250-300-U, and 350-400-U (See Figures 2 and 3). Thus, the proposed maximum building heights would increase from an existing range of 84 - 250 feet to a proposed range of 84 - 400 feet. The parcels north of Folsom are within a 200-S height and bulk district, which would not change with the proposed project.

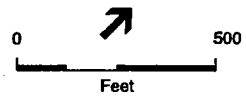
Currently, the required podium height (the height above which bulk limits would apply) is 1.25 times the width of the street, or 50 feet, whichever is more. In the existing "X" bulk districts, there are no bulk limitations. In the existing "R" bulk districts, the bulk limits are as follows: (1) above a height of 51 feet, the maximum length and diagonal dimension is each 200 feet; and (2) above a height of 105 feet, the maximum length is 110 feet and the maximum diagonal dimension is 125 feet. In the proposed "U" bulk district, the maximum allowed podium height would be 80 feet, and bulk controls would apply to lower and upper tower portions. Under the proposed controls, buildings over 200 feet but less than 250 feet in height could not exceed a maximum length of 100 feet and a maximum diagonal dimension of 125 feet. For buildings over 250 feet in height, dimensions of the lower tower (up to 150 feet) could not exceed a maximum length of 225 feet, a maximum average length of 200 feet, and a maximum diagonal dimension of 240 feet. Above 150 feet, the maximum length could not exceed 116 feet, with a maximum diagonal dimension of 145 feet. Some limited exceptions to these standards may be permitted under certain circumstances.

Separation between towers and separation from existing developable lots are proposed in the RHM District. Under proposed controls, for buildings that do not exceed a length of 100 feet and a diagonal dimension of 125 feet, the minimum separation between towers would be 75 feet. For buildings that do not exceed a length of 116 feet and a diagonal dimension of 145 feet, the minimum distance between towers would be 82.5 feet (87.5 feet for the upper tower). Buildings would be set back from adjacent properties in order to allow for operable windows.

² The number indicated within the height/bulk district denotes the maximum allowed height in feet, while the letter denotes the bulk district. Bulk districts, identified in Planning Code Section 270, Table 270, define the maximum allowed length and maximum diagonal dimension for a proposed building.



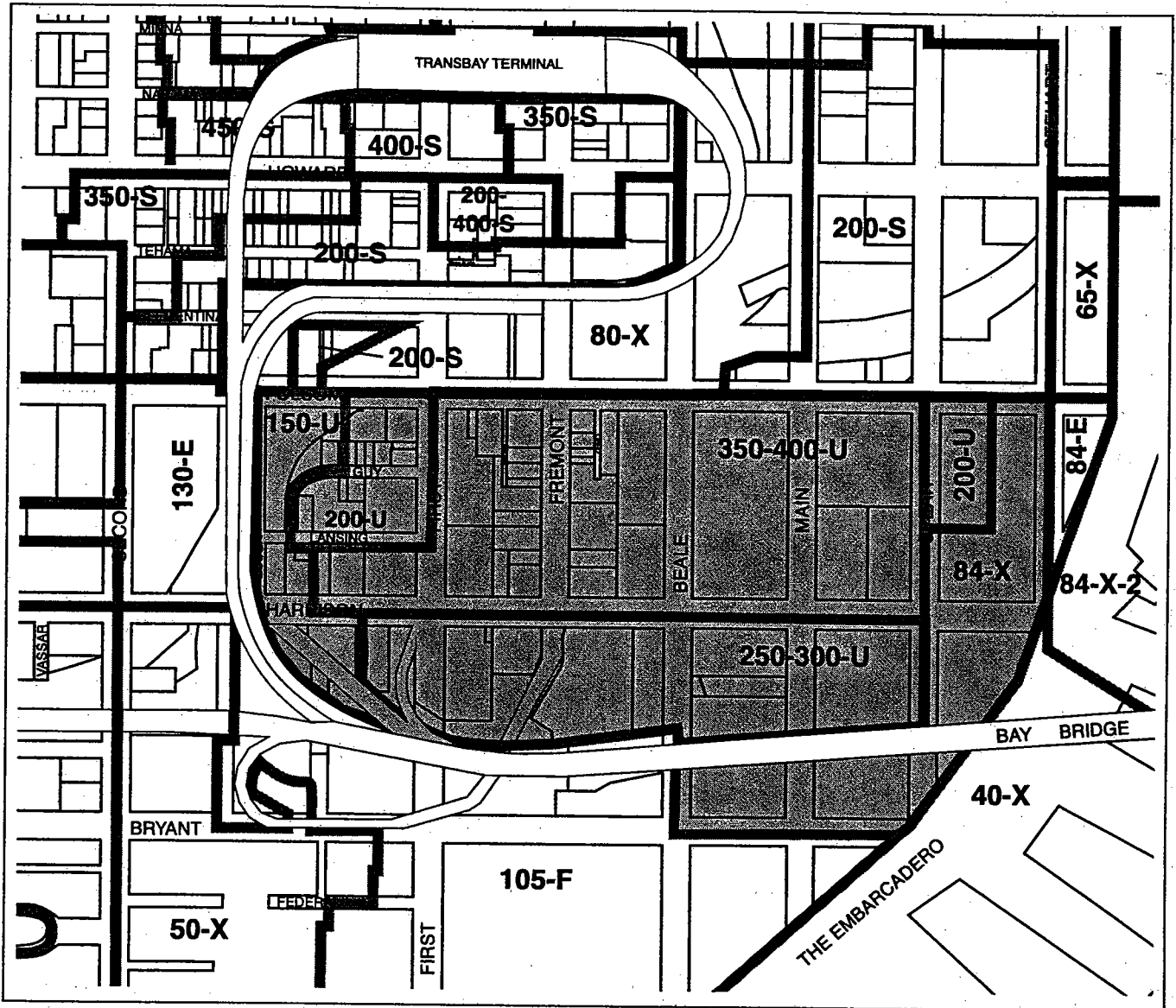
-  Height and Bulk Boundary
-  Rincon Special Use District
- OS** Open Space District
-  Numbers are height limits in feet
-  Letter symbols refer to bulk limits in City Planning Code sec. 270




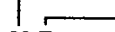


SOURCE: San Francisco Planning Department

Case No. 2000.1081E:Rincon Hill Mixed Use District EIR (ESA 990451) ■

Figure 2
Existing Height and Bulk Districts



-  Height and Bulk Boundary
-  Proposed Rincon Hill Mixed Use District
- OS** Open Space District
-  Numbers are height limits in feet
-  Letter symbols refer to bulk limits in City Planning Code sec. 270
- 00-Z**



SOURCE: San Francisco Planning Department

Case No. 2000.1081E: Rincon Hill Mixed Use District EIR (ESA 990451) ■

Figure 3
Proposed Height and Bulk Districts

In the proposed RHM District, upper story setbacks would be required for 50 percent of the lot frontage; this would apply throughout the District. Currently, the Residential Subdistrict requires a setback of 25 feet for 50% of the lot frontage.

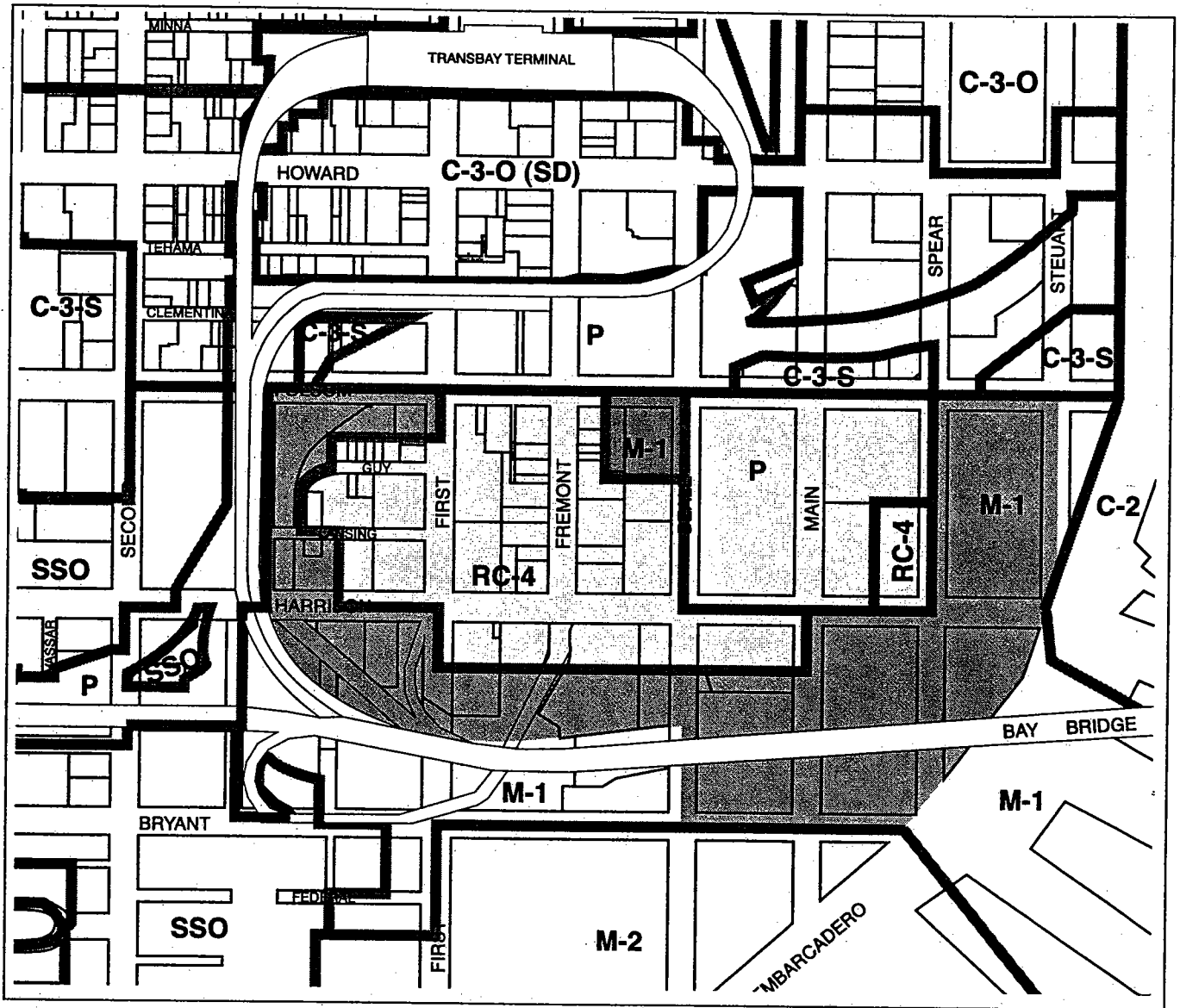
In addition to the bulk requirements, which establish the basic volume of those portions of the building above podium height, the following “performance standards for building height” are proposed:




- Clearly define the sections of the building: base, midsection, and top;
- Clearly express the highest element of the building (tower) at grade; avoiding as much as possible the disconnection of the midsection from the base of the building that may result from any required setbacks;
- Vary heights of towers, whenever a development comprises more than one tower;
- Include variations of color to the extent possible, provided that colors be light to reinforce the visual unity and character of the City;
- Provide interest to the facades of buildings through articulation by dividing the façade into smaller vertical sections, and by projecting elements such as bay windows and balconies. Blank and blind walls are highly discouraged;
- Avoid unusual shapes that detract from the clarity of the urban form and compete for attention with buildings of greater significance.
- Select materials that will reinforce the sense of slenderness.

ZONING MAP AND PLANNING CODE CHANGES

The proposed project would eliminate the existing Rincon Hill Special Use District (including its two subdistricts: Residential and Commercial/Industrial), as well as underlying zoning designations within the District and replace them with the proposed RHM Zoning District. The parcels north of Folsom Street would change from P (Public Use) and C-3-S (Downtown Support District) to C-3-O (SD) (Downtown Office, Special Development District) (See Figures 4 and 5).

In terms of allowed land uses in the area north of Folsom Street, the C-3-O (SD) District is generally more restrictive than the C-3-S District, not allowing certain uses permitted in the C-3-S District such as offices of building contractors, auto sales lots, gasoline service stations, auto repair garages, storage garages, ambulance services, and plant nurseries. The C-3-O (SD) would allow private development on the P-zoned sites, where currently only public uses are allowed. Many of the C-3-O (SD) controls governing building envelopes are the same as those within the C-3-S District, such as for rear yards, off-street parking, residential density and usable open space. Height and bulk controls vary according to height/bulk districts. The allowed FAR would be greater in the C-3-O (SD) District, being 9.0 to 1



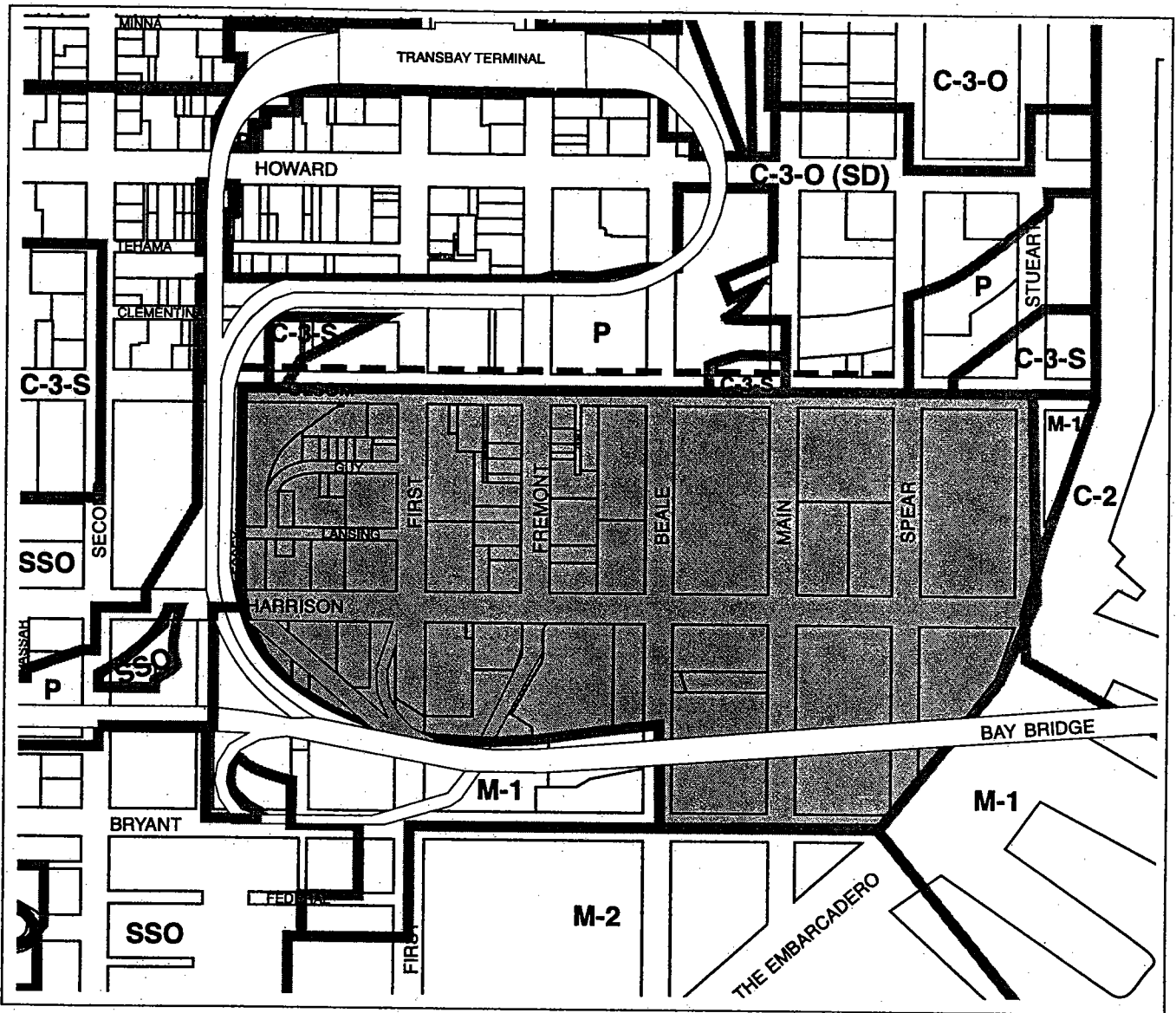
-  Zoning Boundary
-  Rincon Hill Residential Special Use District
-  Rincon Hill Commercial/Industrial Special Use District
- RC-4** Residential-Commercial Combined District, High Density
- M-1, M-2** Industrial Districts
- P** Public Use District
- C-3-O, C-3-R, C-3-S** Downtown Commercial Districts (adjacent)
- SSO** South of Market Use District (adjacent)



SOURCE: San Francisco Planning Department

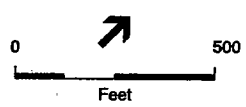
Case No. 2000.1081E:Rincon Hill Mixed Use District EIR (ESA 990451) ■

Figure 4
Existing Planning Code Use Districts



- Zoning Boundary
- Proposed Rincon Hill Mixed Use District
- Proposed Legislated Setback

- RC-4** Residential-Commercial Combined District; High Density
- M-1, M-2** Industrial Districts
- P** Public Use District
- C-3-O, C-3-S** Downtown Commercial Districts (adjacent)
- SSO** South of Market Use District (adjacent)



SOURCE: San Francisco Planning Department

Case No. 2000.1081E: Rincon Hill Mixed Use District EIR (ESA 990451) ■

Figure 5
Proposed Planning Code Use Districts

compared to 5.0 to 1 in the current C-3-S District. In both districts, additional FAR may be obtained through transfer of development rights (TDR), although the C-3-O (SD) is a “receiving” district and may receive TDR from any C-3 District. Other than building height, building envelopes are generally not regulated in P Districts, except where Conditional Use Authorization is required. Table 1 summarizes controls of the C-3-S, P, and C-3-O (SD) Districts.

Currently, permitted uses in the Rincon Hill S.U.D. are based on the underlying RC-4, P, and M-1 zoning districts. In recognition of its proximity to the downtown office district, but its intended mixed use and primary residential character, uses in the new RHM District would generally be those permitted in the C-3-O District, with the notable exceptions that large medical institutions (217(a)), massage establishments (218.1), and industrial/chemical research uses (226(e)), which are permitted in the C-3-O district, would not be permitted in the RHM. As discussed below, any new commercial uses within the RHM would be subject to the 6:1 residential/commercial ratio, which currently applies to the residential subdistrict of the Rincon Hill S.U.D.

Adjustments to Planning Code standards in the new RHM District would include those requirements pertaining to residential density, site coverage, off-street parking, open space, floor area ratio, and height and bulk limits (including separation between towers). Specific Planning Code controls that would change as a result of the rezoning are summarized here and in Table 2. Table 2 compares the existing Rincon Hill Special Use District controls to those proposed in the new RHM zoning district.

Site coverage in the RHM District would be roughly the same as the current Rincon Hill Special Use District controls, except that lots with a depth greater than 80 feet would be allowed 100 percent coverage.

In the proposed RHM District, upper story setbacks would be 25 feet for 50 percent of the lot frontage; this would apply throughout the District, compared to only the Residential Subdistrict under current controls. Requirements for separation of towers would be modified in the RHM District, as discussed under “Height and Bulk Changes.”

The proposed off-street parking requirement for residences would be a maximum of one parking space per dwelling unit, with no minimum requirement. Current controls in Rincon Hill require one parking space per dwelling unit, no more and no less. Off-street parking requirements for commercial uses is proposed to be one parking space per 500 square feet for the first 60,000 square feet of retail uses, and one parking space per 1,500 square feet for retail uses greater than 60,000 square feet and for all other commercial uses.³ This varies from the one parking space per 1,500 square feet of commercial uses currently included within the Residential Subdistrict of Rincon Hill, and from the current one space per 1,000 square feet in the Commercial/Industrial Subdistrict.

³ In addition to parking allowed for new commercial uses, parking spaces on the United States Postal Service site, on the block bounded by Beale, Main, Folsom and Harrison Streets (Block 3746), may be replaced within any project constructed on that block.

**TABLE 1
SUMMARY OF ZONING CONTROLS IN THE C-3-S, P, AND C-3-O (SD) DISTRICTS**

ZONING CATEGORY	DOWNTOWN SUPPORT DISTRICT (C-3-S)	PUBLIC USE DISTRICT (P)	DOWNTOWN OFFICE, SPECIAL DEVELOPMENT DISTRICT (C-3-O SD)
	EXISTING	EXISTING	PROPOSED
Height and Bulk Limit	Height varies (see Fig. 2); Base varies	Height varies (see Fig. 2)	Height varies (see Fig. 3); Minimum 50 ft. base
Rear Yard (§134)	25% lot depth for dwellings	n/a	25% lot depth for dwellings
Front Setback -- Upper Story	Varies	n/a	Varies
Off-Street Parking, Residential (spaces) (§150, 151, 153-7, 159-60, 204.5)	1 per four dwelling units	n/a	1 per four dwelling units
Off-Street Parking, Cmrc./Industrial (§150, 151, 153-7, 159-60, 204.5)	Varies	n/a	Varies
Residential Density, Dwelling Units (§209, 209.1, 215)	1 unit per 125 sq. ft. lot area, more with CU	n/a	1 unit per 125 sq. ft. lot area, more with CU
Usable Open Space (<i>Per Resid. Unit</i>) (§135)	36 sq. ft. if private, 48 sq.ft. if common	n/a	36 sq. ft. if private, 48 sq.ft. if common
Public Open Space (<i>Non-residential uses</i>) (§138)	1 sq. ft. per 50 gross sq. ft.	n/a	1 sq.ft. per 50 gross sq.ft.
Residential - Commercial ratio	None	n/a	None
Floor Area Ratio (§124)	5.0:1, more with TDR	n/a	9.0:1, more with TDR

Section numbers (§) refer to the Planning Code.

n/a = Not Applicable

SOURCE: San Francisco Planning Department, September 2000

As proposed, there would be no limit on residential density throughout the proposed RHM District, whereas the existing Commercial/Industrial Subdistrict imposes a density limit of one unit per 200 square feet of lot area. The Residential Subdistrict currently has no residential density limit.

Under the RHM District proposal, usable open space for residential units would be required to be 50 square feet per unit, compared to one square foot for each 13 gross square feet of residential space in the existing Residential Subdistrict and 36 square feet of private open space (48 square feet if common) per unit in the existing Commercial/Industrial Subdistrict. The Rincon Hill subdistricts currently require 36 square feet per unit.

**TABLE 2
COMPARISON BETWEEN EXISTING OVERLAY DISTRICT CONTROLS
AND PROPOSED ZONING CONTROLS**

ZONING CATEGORY	RINCON HILL SPECIAL USE DISTRICT / RESIDENTIAL (RC-4)	RINCON HILL SPECIAL USE DISTRICT / COMMERCIAL-INDUSTRIAL (M-1)	RINCON HILL MIXED USE ZONING DISTRICT (RHM)
	EXISTING	EXISTING	PROPOSED
Height and Bulk Limit	Height varies (see Fig. 2); 50 ft. base	Height varies (see Fig. 2); 50 ft. base	Height varies (see Fig. 3); Minimum 50 ft. base
Rear Yard (§249.1)	80% site coverage	80% site coverage	80% coverage on lots >80' 100% coverage on lots <80'
Front Setback -- Upper Story (§249.1)	25 ft. -- 50% of frontage	None	25 ft. -- 50% of frontage
Off-Street Parking, Residential (spaces) (§150, 151, 153-7, 159-60, 204.5, 249.1)	1 per dwelling unit	1 per dwelling unit	Up to 1 space per dwelling unit, with no minimum requirement
Off-Street Parking, Cmrc./Industrial (§150, 151, 153-7, 159-60), 204.5, 249.1)	1 space per 1,500 sq. ft.	1 space per 1,000 sq.ft.	1 space per 500 sq. ft. of retail for first 60,000 sf. ft. of retail 1 space per 1,500 sq.ft. above 60,000 sf. ft. of retail and for all other commercial uses
Residential Density, Dwelling Units (§249.1)	No limit	1 unit per 200 sq. ft. lot area	No limit
Usable Open Space (<i>Per Resid. Unit</i>) (§135, 249.1)	1 sq.ft. per 13 sq.ft. gross floor area of dwellings	36 sq.ft. if private, 48 sq.ft. if common	50 sq. ft. per unit
Public Open Space (<i>Non-residential uses</i>) (§249.1)	Not Required	1 sq.ft. per 50 gross sq.ft. (§249.1(d)(1))	1 sq.ft. per 50 gross sq.ft.
Residential - Commercial ratio (§249.1)	6:1	n/a	6:1
Floor Area Ratio (§124)	none	5.0:1, no premiums	7.0:1, not applicable to dwellings

Section numbers (§) refer to the Planning Code.

n/a = Not Applicable

SOURCE: San Francisco Planning Department, September 2000

In the proposed RHM District, one square foot of public open space would be required for each 50 gross square feet of uses, as in the Commercial/Industrial Subdistrict. The Residential Subdistrict does not currently have a public open space requirement, although some of the required open space for dwellings could be converted to publicly accessible open space.

The proposed RHM controls would extend the 6:1 residential-commercial ratio to the entire RHM District. The controls currently apply to the Residential Subdistrict and require a 6:1 residential-commercial ratio (6 square feet of residential space for every square foot of commercial space).

The proposed RHM District would include a floor area ratio (FAR) limit of 7.0:1. Pursuant to Planning Code Section 124(b), the FAR would not apply to dwellings in a mixed use district, such as the proposed RHM. Under current controls, the FAR limit is 5.0:1 in the Commercial/Industrial Subdistrict. There is no FAR limit in the Residential Subdistrict. FAR premiums, defined in Planning Code Section 125, are

not permitted in the Commercial/Industrial Subdistrict, nor is the use of TDR applicable in the existing Rincon Hill Special Use District.

In the proposed RHM District, when buildings within a height limit range exceed the initial threshold, for example 250 feet within a 250-300-U district, 15 percent of the building area above the threshold would be the equivalent of area required for affordable housing per development project.

Requirements for the reduction of ground level winds would continue to apply in the RHM District, as in the current Rincon Hill Special Use District.

LEGISLATED SETBACK

A 15-foot wide legislated setback is proposed (beyond the 10-foot sidewalk) on the north side of Folsom Street from west of First Street to Spear Street, to ensure that future development on those blocks does not preclude development of a widened sidewalk and “boulevard” treatment for this section of Folsom Street. Obstructions, such as bay windows and balconies, would be allowed within the setback area, as discussed in Sections 131 and 136 of the Planning Code.

Properties that would be subject to the proposed legislated setback do not currently have front setback requirements. With the proposed legislated setback, all new construction on the north side of Folsom Street generally between Essex and Spear Streets would be required to provide a 15-foot setback beginning at grade level.

CONFORMING GENERAL PLAN AMENDMENTS

The Rincon Hill Area Plan, an Element of the San Francisco General Plan, would be amended as necessary to conform with the development controls described above. The text of the Plan would be updated, as well as the maps to reflect the proposed rezoning, height and bulk districts, and legislated setback. Specifically, the following maps would be amended: Map 2, Existing Land Use Map; Map 3, Land Use Plan; Map 4, Height Limits; Map 5, Publicly Accessible Open Space Opportunities; and Map 6, Pedestrian Street Location. Pedestrian Street Location Map and text may be amended to provide greater flexibility in providing mid-block passages. Except as necessary to maintain consistency with proposed Planning Code map and text amendments, existing objectives and policies of the Rincon Hill Area Plan would remain substantially the same.

D. PROJECTED DEVELOPMENT

As noted, the project for CEQA purposes is adoption of zoning and height/bulk district changes, General Plan amendments, and a legislated setback. The project is not a development proposal, and no specific construction or improvements are proposed. Therefore, the EIR’s analysis of physical changes in the environment is based on assumptions about future development.

It is projected that implementation of the proposed project would result in the new construction of up to approximately 7,750 dwelling units, about 250,000 square feet of office space, and up to an additional 250,000 square feet of other commercial space by the year 2020. This would be in addition to incremental development that would likely occur without the project, and provides the basis for evaluating physical environmental effects of the proposed project.

Development in the Rincon Hill area would occur within the context of overall future development in San Francisco. The Association of Bay Area Government (ABAG) provides growth and development forecasts for the Bay Area, including San Francisco, in its publication *Projections 2000*. The San Francisco Planning Department has completed a reallocation of San Francisco population and employment forecasts for use in the San Francisco County Transportation Authority's transportation model. Projected development in the Rincon Hill area as part of this project would represent a further reallocation of this forecast. Additionally, the proposed Transbay Terminal and related facilities (see below) is expected to result in the construction of up to an additional 4,500 dwelling units and two million square feet of commercial space by the year 2020, to the north of the proposed RHM District.

E. RELATED PROJECTS AND PLANNING EFFORTS

The RHM District proposal represents a subset of previous proposals focussed on the entire Transbay Terminal Redevelopment Survey Area, as part of a possible Transbay Redevelopment Plan. In early 1999, the Board of Supervisors voted to adopt, as City and County of San Francisco policy, that a new or rebuilt regional transit terminal be constructed at the site of the existing Transbay Terminal. The Supervisors also approved a resolution urging the Metropolitan Transportation Commission and Caltrans to work with the City to implement Proposition I, an advisory measure approved by San Francisco voters in November 1998 calling for passenger rail service to be reintroduced on the Bay Bridge as part of plans to reconstruct the east span of the bridge. Finally, pursuant to the passage of Proposition H in November 1999, the Supervisors endorsed the extension of Caltrain to a new or rebuilt transit station at the site of the Transbay Terminal. Planning studies incorporating these ideas for the Transbay Area are ongoing. A proposed design has been unveiled for a new five-level Transbay Terminal that would accommodate AC Transit, other regional transit operators, and six underground train tracks, in anticipation of an extension of Caltrain, and possibly high-speed rail. A joint Environmental Impact Report / Environmental Impact Statement regarding these projects and associated joint development north of Folsom Street is proceeding separately from the proposed Rincon Hill Mixed Use District project.

The proposed RHM District would not address the above plans, the terminal, or the majority of parcels vacated by demolition of the ramps to the Embarcadero Freeway after the Loma Prieta earthquake of 1989. While the EIR will include a general discussion of potential developments in the project vicinity, the RHM District is proposed independently of those plans.

F. APPROVAL REQUIREMENTS

The proposed Rincon Hill Mixed Use District would require text and map changes to the San Francisco Planning Code. Section 249.1 of the Planning Code, regarding the Rincon Hill Special Use District, would be eliminated. A new section discussing the proposed RHM District would be created.

Throughout the Planning Code, references to the Rincon Hill Special Use District would be eliminated and replaced with a discussion of RHM controls, where necessary, including within Articles 1.2, 1.5, 2, 2.5, 6 and 8 of the Planning Code. Modification of the City's Zoning Maps, Map Nos. 1 and 1SU, would be required to reflect changes to zoning districts. A modification of Map 1H of the Zoning Maps would be necessary to reflect changes to the height and bulk districts. As discussed above, a General Plan Amendment to modify the Rincon Hill Area Plan, an Element of the San Francisco General Plan, would be necessary. The text of the Plan would be updated, as well as the maps to reflect the proposed rezoning, height and bulk districts, and legislated setback. The above changes would require review and approval of the Planning Commission and the Board of Supervisors after the conduct of public hearings.

The proposed legislated setback would be adopted by ordinance, requiring review and approval of the Planning Commission and the Board of Supervisors after a public hearing.

II. SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

A. EFFECTS FOUND TO BE POTENTIALLY SIGNIFICANT

The proposed Rincon Hill Mixed Use District is examined in this Initial Study to identify potential effects on the environment. Impacts on land use, visual quality, population and employment, transportation, air quality, wind and shadow, hazardous materials, and cultural resources (including archaeological and historic architectural resources) have been determined to be potentially significant, and will be analyzed in an Environmental Impact Report (EIR).

B. EFFECTS FOUND NOT TO BE SIGNIFICANT

The following potential impacts were determined either to be insignificant or to be mitigated through measures included in the proposed project. These items are discussed in Section III below, and require no further environmental analysis in the EIR: noise, utilities/public services, biology, geology and soils, surface or subsurface hydrology, and energy resources.

III. ENVIRONMENTAL EVALUATION CHECKLIST AND DISCUSSION

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS	<u>Discussed</u>	<u>Not Applicable</u>
1) Discuss any variances, special authorizations, or changes proposed to the City Planning Code or Zoning Map, if applicable.	<u>X</u>	<u> </u>
2) Discuss any conflicts with any adopted environmental plans and goals of the City or Region, if applicable.	<u>X</u>	<u>X</u>

The project site is located south of Downtown San Francisco, in the Rincon Hill area, which is covered by the Rincon Hill Plan, an area plan within the *San Francisco General Plan (General Plan)*. The San Francisco Planning Code implements the *General Plan* and governs permitted uses, densities and configuration of buildings within San Francisco. The Plan incorporates by reference the City Zoning Maps. Permits to construct new buildings or to alter or demolish existing ones may not be issued unless the proposed project conforms to the Code or an exception is granted pursuant to provisions of the Code.

The project site is within a variety of zoning districts. Currently, the area is governed by the Rincon Hill Special Use District (Planning Code Section 249.1). The District was established, as discussed in Planning Code Section 249.1(a), "In order to convert an underutilized and outmoded industrial area to a unique residential neighborhood close to downtown which will contribute significantly to the City's housing supply, create tapered residential buildings, provide an appropriate mixture of retail sales and personal services to support new residential development, provide a buffer of office and parking use between the bridge and freeway ramps and the housing sites, and allow the existing industrial, service and office uses to remain . . ." The proposed project involves a rezoning of the area to a proposed Rincon Hill Mixed Use District. The purpose of the proposed RHM District would be similar to that of the existing Rincon Hill Special Use District, which would be eliminated by the proposal, in that the RHM District would encourage the development of a mixed use neighborhood that stimulates high-density residential development.

Environmental plans and policies, like the '97 *Clean Air Plan*, directly address physical environmental issues and/or contain standards or targets that must be met in order to preserve or improve specific components of the City's physical environment. The proposed project would not obviously or substantially conflict with any such adopted environmental plan or policy.

In general, potential conflicts with the *General Plan* are considered by decision-makers (normally the Planning Commission) independently of the environmental review process, as part of the decision to approve, modify or disapprove a proposed project. Any potential conflict not identified here could be considered in that context, and would not alter the physical environmental effects of the proposed project. The relationship of the proposed project to objectives and policies of the *General Plan* will be discussed in the EIR.

On November 4, 1986, the voters of San Francisco passed Proposition M, the Accountable Planning Initiative, which established eight Priority Policies. These policies are: preservation and enhancement of neighborhood-serving retail uses; protection of neighborhood character; preservation and enhancement of affordable housing; discouragement of commuter automobiles; protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership; earthquake preparedness; landmark and historic building preservation; and protection of open space. Prior to issuing a permit for any project that requires an Initial Study under the *California Environmental Quality Act* (CEQA), or adopting any zoning ordinance or development agreement, the City is required to find that the proposed project or legislation is consistent with the Priority Policies.

B. ENVIRONMENTAL EFFECTS

Except for items regarding land use, visual quality, population and employment, transportation, air quality, wind and shadow, hazardous materials and cultural resources, all remaining items on the Initial Study Checklist have been checked "No," indicating that, upon evaluation, staff has determined that the proposed project could not have a significant adverse effect in those areas. For items where the conclusion is "To be Determined," the analysis will be conducted in the EIR. Several checklist items have also been checked "Discussed," indicating that the text includes discussion of that particular issue. For all of the items checked "No" without discussion, the conclusions regarding potential adverse environmental effects are based on field observation, staff and consultant experience on similar projects, and/or standard reference material available within the Planning Department such as the Department's Transportation Guidelines for Environmental Review, or the California Natural Diversity Data Base and maps, published by the California Department of Fish and Game. For each Checklist item, the evaluation has considered the impacts of the project both individually and cumulatively.

1) <u>Land Use</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Disrupt or divide the physical arrangement of an established community?	To be Determined		
(b) Have any substantial impact upon the existing character of the vicinity?	To be Determined		

The proposed zoning changes generally would not permit land uses that are not already permitted with the Rincon Hill Special Use District. However, the rezoning would involve changes to the Planning Code that would allow increased dwelling unit densities, increased FAR, increased height limits, and other modifications. Effects on land use that would result from these changes will be discussed in the EIR.

2) <u>Visual Quality</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Have a substantial, demonstrable negative aesthetic effect?	<u>To be Determined</u>		
(b) Substantially degrade or obstruct any scenic view or vista now observed from public areas?	<u>To be Determined</u>		
(c) Generate obtrusive light or glare substantially impacting other properties?	<u> </u>	<u> X </u>	<u> X </u>

Implementation of the proposed project would result in visual changes and potential effects upon public view corridors due to increased height limits and changes in bulk restrictions. Effects upon visual quality, including public views, will be analyzed in the EIR.

With implementation of the proposed project, the number of developments would increase in the area, thereby increasing ambient light levels. However, given the location within a developed urban area adjacent to Downtown San Francisco, the increase in ambient light levels would not be substantial. Light and glare produced from individual developments would be typical of commercial and residential structures nearby and throughout the City. Individual developments would comply with Planning Commission Resolution 9212, which prohibits the use of mirrored or reflective glass. As such light and glare will not be analyzed further in the EIR.

3) <u>Population</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Induce substantial growth or concentration of population?	<u>To be Determined</u>		
(b) Displace a large number of people (involving either housing or employment)?	<u>To be Determined</u>		
(c) Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	<u>To be Determined</u>		

The proposed project would allow increases in dwelling unit densities, thereby accommodating a greater number of residents in the area. Changes to FAR would modify the amount of commercial space permitted in the District, changing the amount of employment and resultant housing demand in the area. Changes to population, employment, and housing will be discussed in the EIR.

4) <u>Transportation / Circulation.</u> Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?			To be Determined
(b) Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?			To be Determined
(c) Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?			To be Determined
(d) Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?			To be Determined

Increased resident population and employment in the proposed RHM District would result in increased demand on the local transportation system. Effects on transportation and circulation, including intersection operations, transit demand, and impacts on pedestrian circulation, and parking will be analyzed in the EIR.

5) <u>Noise.</u> Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Increase substantially the ambient noise levels for adjoining areas?	_____	<u>X</u>	<u>X</u>
(b) Violate Title 24 Noise Insulation Standards, if applicable?	_____	<u>X</u>	<u>X</u>
(c) Be substantially impacted by existing noise levels?	_____	<u>X</u>	<u>X</u>

The existing ambient noise environment within the Rincon Hill area, typical of most urban areas, is dominated by automobile, bus, and truck traffic on roadways and freeways as well as activities associated with commercial office, transit, residential, light industrial, and warehousing/distribution uses. Traffic noise generated on the Bay Bridge is the most pervasive noise source, affecting the noise environment of adjacent areas.

Traffic Noise

Existing ambient noise levels in the area range generally from 65dBA to 76dBA,⁴ mostly due to existing traffic on area streets and the nearby Bay Bridge and related freeways. Generally, traffic must double in volume to produce a noticeable increase in noise levels. Traffic volumes in the area would not be expected to double on area roadways as a result of the proposed rezoning; therefore, substantial increases

⁴ dBA is a measure of sound in units of decibels (dB) on the A-weighted scale. Noise measurements were taken by Orion Environmental Associates on September 19 through 21, 1996 at various locations, for a previous draft study for the Transbay Area Plan. Current noise levels are not expected to vary greatly from those measurements taken in 1996.

in traffic noise in the project area would not be anticipated. Traffic noise would not be significant and requires no further discussion in the EIR.

Land Use Compatibility

The State of California has prepared guidelines for determining the compatibility of various land uses with different noise environments.⁵ For office uses, the guidelines recommend that necessary noise insulation features be included in new construction in areas where the noise levels are greater than about 68 Ldn (day-night background noise level). For multi-family residential uses, the recommendation applies when noise levels are greater than about 60 Ldn. As noted above, existing ambient noise levels in the area range generally from 65dBA to 75dBA.

At its inception, the existing Rincon Hill Commercial/Industrial Subdistrict, on parcels located directly adjacent to the Bay Bridge and its freeway approaches, was intended to provide a buffer of office and commercial uses between the Bridge and freeway ramps and residential uses. The proposed RHM district would no longer provide this buffer, and residential uses would be allowed throughout the RHM district, including on sites beneath or directly adjacent to the Bridge and freeways. To ensure that occupants of residential units are not adversely affected by proximity to traffic noise, standard noise insulation measures would be included as part of the design for specific development projects, as required under Title 24 of the California Code of Regulations. Such standards are applicable to construction of multi-family dwelling units, including live/work, and require that exterior noise be attenuated such that the interior noise level of any habitable room does not exceed 45db.

While noise attenuation rates of 30 to 35 dBA can achieve acceptable interior noise levels for residential uses throughout the Rincon Hill Area (even adjacent to the Bay Bridge and freeway ramps), such reductions could not be achieved without the use of mechanical ventilation since acceptable noise levels could not be maintained with open windows. Given San Francisco's cool climate, future residents may choose to open windows for natural ventilation, which would result in higher interior noise levels. Because portions of the Rincon Hill Area have existing noise levels greater than 60 dBA, and noise levels would remain above 60 dBA in the future, it would likely be necessary to provide mechanical ventilation in future residential development to provide residents the option to cool or ventilate residential units without opening windows when a quieter interior noise environment is desired or needed. Alternatively, future residential development designs could seek to reduce traffic noise impacts by having units open onto or face into a courtyard or direction where ambient noise levels have been reduced by the exterior walls.

The proposed project would increase residential and commercial densities in the Rincon Hill area. Given the above-noted regulations however, existing noise levels would not significantly affect individual developments resulting from the proposed rezoning. Therefore, these effects will not be analyzed further in the EIR.

⁵ Governor's Office of Planning and Research, General Plan Guidelines, November 1998, p. 187.

Building Equipment Noise

Individual developments resulting from the proposed project would include mechanical equipment, such as air conditioning units and chillers, that could produce operational noise. These operations would be subject to the San Francisco Noise Ordinance, Article 29 of the San Francisco Police Code. Compliance with Article 29, Section 2909, would minimize noise from building operations, which would not be significant. Therefore, building equipment noise will not be analyzed further in the EIR.

Construction Noise

Building construction that would result from the proposed RHM District would temporarily increase noise in the vicinity of individual construction sites. Construction noise levels would vary with individual developments, and would fluctuate depending on construction phase, equipment type and duration of use, distance between noise source and listener, and presence or absence of barriers. Impacts would be temporary and intermittent, and would be limited to the period during which the foundations and exterior structural and facade elements would be built. Interior construction noise would be substantially reduced by the exterior walls. It is possible that individual developments could require pile driving during construction, which is often a major source of construction noise. To reduce the effects of noise from pile driving, a mitigation measure has been identified requiring individual project sponsors to pre-drill holes where feasible (See Mitigation Measure 1, page 32). Such mitigation would ensure that noise effects related to pile driving would be reduced to a level of non-significance.

Construction noise is also regulated by the San Francisco Noise Ordinance, Article 29 of the City Police Code. The ordinance requires that noise levels from individual pieces of construction equipment, other than impact tools, not exceed 80 dBA at a distance of 100 feet from the source. Impact tools (jackhammers and impact wrenches) must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. Section 2908 of the Ordinance prohibits construction work between 8:00 p.m. and 7:00 a.m. if noise would exceed the ambient noise level by five dBA at the project property line, unless a special permit is authorized by the Director of Public Works.

Sensitive noise receptors are generally considered to include hospitals, nursing homes, senior citizen centers, schools, churches, libraries, and residences. There are no public schools or libraries, hospitals, churches, nursing homes or senior centers within the Rincon Hill area. Residential uses are located on Rincon Hill, including the Bay Crest Condominiums on Harrison Street between Main and Beale Streets (adjacent to and below the Bay Bridge), the Embarcadero Lofts at Folsom and Beale Streets, and smaller residential developments along Guy Place and Lansing Street. Because of the above-noted regulations regarding building insulation requirements and construction noise, sensitive receptors would not be adversely affected by construction noise. In light of the above, construction noise that could result from the proposed RHM District would not be significant and will not be analyzed further in the EIR.

6) <u>Air Quality/Climate.</u> Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	To be Determined		
(b) Expose sensitive receptors to substantial pollutant concentrations?	To be Determined		
(c) Permeate its vicinity with objectionable odors?	_____	<u>X</u>	<u>X</u>
(d) Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region?	To be Determined		

Implementation of the proposed project would affect air quality through construction-related emissions, transportation-related vehicular exhaust emissions, and stationary source emissions. These effects, including regional and localized effects upon air quality, will be analyzed in the EIR.

The proposed project would not include the allowance of land uses not already permitted in the Rincon Hill Special Use District. Therefore, the rezoning would not be expected to result in land uses generating particularly noxious or offensive odors. Therefore, the proposed project would not result in a significant effect with respect to odor emission, and this topic will not be discussed in the EIR.

7) <u>Utilities/Public Services.</u> Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Breach published national, state or local standards relating to solid waste or litter control?	_____	<u>X</u>	_____
(b) Extend a sewer trunk line with capacity to serve new development?	_____	<u>X</u>	<u>X</u>
(c) Substantially increase demand for schools, recreation or other public facilities?	_____	<u>X</u>	<u>X</u>
(d) Require major expansion of power, water, or communications facilities?	_____	<u>X</u>	<u>X</u>

Implementation of the proposed project would incrementally increase demand for and use of public services and utilities and increase water consumption. However, development in the Rincon Hill area would be considered infill development. That is, it would occur within an area of San Francisco that is already built-out, and would not be expected to have any measurable impact on public services or utilities, including water supply.⁶ While development that is anticipated to occur with implementation

⁶ Water supply was determined to be adequate based upon responses to a questionnaire dated June 12, 1997 by Joseph Pelayo, Senior Engineer, City Distribution Division, San Francisco Water Department. The questionnaire was part of the environmental analysis for the previously proposed Transbay Area Plan, which encompassed an area that included Rincon Hill within its boundaries.

of the project would increase the intensity of land use, development would not typically require construction of new facilities, although upgrades of existing facilities could be required over the analysis period. Individual developments would comply with applicable laws and regulations concerning water conservation, such as installing low-flush toilets and urinals, as required by California State Building Code Section 402.0(c). Therefore, effects would not be significant, and this topic will not be discussed in the EIR.

8) <u>Biology</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	_____	<u> X </u>	<u> X </u>
(b) Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migratory fish or wildlife species?	_____	<u> X </u>	<u> X </u>
(c) Require removal of substantial numbers of mature, scenic trees?	_____	<u> X </u>	<u> X </u>

Future development in the Rincon Hill area resulting from the proposed project could result in disturbance to, or direct mortality of, common plant and wildlife species. There are several separate small undeveloped open space areas within Rincon Hill, all in the vicinity of freeway ramps in an area bounded by Second, Folsom, Beale, and Bryant Streets. They occur in an altered, non-natural state, dominated by non-native ruderal, and landscaped vegetation. No special status plant or animal species are expected to utilize these remnant open space lands. Direct impacts to common plant and wildlife species include displacement and potential mortality of resident species, and could occur either during construction or as a result of subsequent occupation of a project. No special status species would be affected.

Development in the Rincon Hill area would not affect rare or endangered species of plants or animals, species identified as candidates for listing, or species under provision of the Migratory Bird Treaty Act (e.g. burrowing owls and nesting raptors). It would not be expected to affect sensitive wildlife habitats such as riparian lands, wetlands, bays, estuaries, marshes, or habitats for rare or endangered species. Nor would it be expected to interfere substantially with the movement of any resident or migratory wildlife species. Therefore, effects on biological resources would not be significant, and this topic will not be discussed further in the EIR.

9) <u>Geology/Topography</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction)?	_____	<u>X</u>	<u>X</u>
(b) Change substantially the topography or any unique geologic or physical features of the site?	_____	<u>X</u>	<u>X</u>

Most of San Francisco is underlain by bedrock of the Franciscan Assemblage. The bedrock is exposed in steep slopes in many areas of the city, but is deeply buried up to 225 feet beneath much of the area surrounding Rincon Hill. Rincon Hill consists of a knob of Franciscan Assemblage Rock. The Franciscan Assemblage contains large amounts of greenstone, basalt, chert, and sandstone, but beneath Rincon Hill and the surrounding area, it consists mainly of graywacke with smaller amounts of shale, siltstone, chert, and conglomerate.⁷ Surficial geologic materials surrounding Rincon Hill consist generally of artificial fill, dune sand, and surficial deposits.

The *San Francisco General Plan* Community Safety Element contains maps that show areas of the city subject to geologic hazards. Like the entire San Francisco Bay Area, Rincon Hill is located in an area subject to groundshaking from earthquakes along the San Andreas and Northern Hayward Faults and other faults in the San Francisco Bay Area (Maps 2 and 3). Portions of the project area are in, or adjacent to, an area of liquefaction potential (Map 4), a Seismic Hazards Study Zone (SHSZ) designated by the California Division of Mines and Geology, and an area susceptible to landslide (Map5).

For any individual development proposal in an area of liquefaction potential or an area susceptible to landslide, the Department of Building Inspection (DBI) will, in its review of the building permit application, require the project sponsor to prepare a geotechnical report that assesses the nature and severity of the hazard(s) on the site and recommends project design and construction features that would reduce the hazard(s). To ensure compliance with all San Francisco Building Code provisions regarding structural safety, when DBI reviews the geotechnical report and building plans for a proposed project, it will determine necessary engineering and design features for the proposed project to reduce potential damage to structures from groundshaking and liquefaction. Therefore, potential damage to structures from geologic hazards on a project site would be ameliorated through the DBI requirement for a geotechnical report and review of the building permit application.

The Rincon Hill area is not in an Alquist-Priolo Special Studies Zone,⁸ and no known active fault exists on or in the immediate vicinity of the site. The closest active faults are the San Andreas Fault, approximately 8 miles southwest of downtown, and the Hayward Fault, about 16 miles northeast of

⁷ PSC Associates, Inc., *Phase I Environmental Site Assessment, Transbay Redevelopment Plan, San Francisco, California*, April 23, 1997.

⁸ California State Department of Conservation, Division of Mines and Geology (CDMG) *Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of May 1, 1998*, [http://www.consrv.ca.gov], November 16, 1998, and CDMG, *Fault Rupture Hazard Zones in California Alquist- Priolo Earthquake Zoning Act*, Special Publication 42, Revised 1997.

downtown. Like the entire San Francisco Bay Area, the project area is subject to groundshaking in the event of an earthquake on these faults, although surface rupture at the site is unlikely.

In light of the above, implementation of the proposed rezoning would not result in a significant effect related to geology, and this topic will not be analyzed further in the EIR.

10) <u>Water</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Substantially degrade water quality, or contaminate a public water supply?	_____	<u> X </u>	_____
(b) Substantially degrade or deplete groundwater resources, or interfere substantially with groundwater recharge?	_____	<u> X </u>	<u> X </u>
(c) Cause substantial flooding, erosion or siltation?	_____	<u> X </u>	<u> X </u>

The Rincon Hill area lies within the Northeast Drainage Basin of San Francisco, almost adjacent to San Francisco Bay. However, little natural runoff reaches the Bay directly from the Rincon Hill area, other than from natural groundwater drainage, because most of San Francisco is developed and virtually all of the developed area is served by a combined sewer/storm water system. Therefore, natural surface drainage from the Rincon Hill area is diverted to the combined sewer system instead of flowing directly to the Bay. The combined sewer system carries both municipal and industrial wastewater and intercepted storm runoff in the same sewer pipes. The City owns and operates two wastewater pollution control plants that discharge the treated effluent to the Bay. The Southeast Water Pollution Control Plant is located on Jerrold Avenue in the Bayview District, about two miles south of the Rincon Hill area. It treats all wastewater from the east side of the City, including the Rincon Hill area, during dry weather to a secondary level of treatment.⁹

The Rincon Hill Area has a history of developed uses for over 100 years, and the entire area is essentially covered by impervious surfaces (either paved roadways, sidewalks, vacant parcels or buildings). Implementation of the proposed rezoning would not measurably change the impervious surface area in the area, since most future developments or improvements would essentially replace existing structures or parking lots. The general drainage pattern of the area would not be altered; site runoff would drain into the City's combined sanitary and storm sewer system. Therefore, neither groundwater resources nor runoff and drainage would be adversely affected, nor would implementation of the proposed rezoning result in flooding, erosion, or siltation.

Any groundwater encountered during construction of individual developments would continue to be subject to the requirements of the City's Industrial Waste Ordinance (Ordinance No. 199-77), which requires that groundwater meet specified standards before it may be discharged into the sewer system.

⁹ Wastewater that has received secondary treatment has had solids and organic material removed, the former through means such as screening and sedimentation, and the latter by means of biological and chemical processes.

Any groundwater pumped from individual construction sites would be retained in a holding tank to allow suspended particles to settle, if this is found necessary by the Bureau of Environmental Regulation and Management of the Public Utilities Commission, to reduce the amount of sediment entering the storm drain/sewer lines. The Bureau of Environmental Regulation and Management must be notified of projects necessitating dewatering. That office may require analysis before discharge.

The entire Rincon Hill area is within the Eastside Reclaimed Water Use Area designated by Section 1029 of the Reclaimed Water Use Ordinance (approved November 7, 1991), which added Article 22 to Part II, Chapter X of the *San Francisco Municipal Code (Public Works Code)*. Non-residential projects over 40,000 sq. ft. that require a site permit, building permit, or other authorization, and are located within this area are required to provide for the construction and operation of a reclaimed water system for the transmission of the reclaimed water within buildings and structures. That is, individual development projects would need to be designed with separate plumbing to service uses that could employ reclaimed water (e.g., toilets). The ordinance also requires that owners, operators, or managers of all development projects register their project with the Water Department. The Water Department will issue a certificate of intention to use reclaimed water, and reclaimed water shall be used unless the Water Department issues a certificate exempting compliance because reclaimed water is not available, an alternative water supply is to be used, or the sponsor has shown that the use of reclaimed water is not appropriate. In light of the above, effects on water resources would be less than significant and will not be analyzed further in the EIR.

11) <u>Energy/Natural Resources</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	_____	<u> X </u>	<u> X </u>
(b) Have a substantial effect on the potential use, extraction, or depletion of a natural resource?	_____	<u> X </u>	_____

Energy consumption in buildings is regulated in California under the California Code of Regulations Title 24 Building Energy Efficiency Standards. The efficiency standards apply to new construction of both residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. In San Francisco, documentation showing compliance with these standards is submitted with the application for a building permit and is enforced by the City.

Individual development projects would meet current state and local codes concerning energy consumption, including Title 24 of the California Code of Regulations. For this reason, implementation of the proposed rezoning would not cause a wasteful use of energy, and effects related to energy consumption/natural resources would not be significant. Therefore, energy consumption requires no further analysis and will not be analyzed further in the EIR.

12) <u>Hazards</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?	To be Determined		
(b) Interfere with emergency response plans or emergency evacuation plans?	_____	<u> X </u>	<u> X </u>
(c) Create a potentially substantial fire hazard?	_____	<u> X </u>	<u> X </u>

Soil and Groundwater Contamination

A portion of the Rincon Hill area falls outside the boundary of the City and County of San Francisco Ordinance 253-86 (Maher Ordinance) and would not be affected by this ordinance.¹⁰ Information regarding past uses of the Rincon Hill area will be discussed and the potential for soil and groundwater contamination will be analyzed in the EIR.

Hazardous Building Materials

Implementation of the proposed project may result in demolitions or alterations of buildings containing asbestos or lead-based paint. The regulations described below would ensure that effects related to asbestos or lead-based paint would be reduced to a level of non-significance.

Asbestos

Section 19827.5 of the California Health and Safety Code, adopted January 1, 1991, requires that local agencies not issue demolition permits until an applicant has demonstrated compliance with notification requirements under applicable Federal regulations regarding hazardous air pollutants, including asbestos. The Bay Area Air Quality Management District (BAAQMD) is vested by the California legislature with authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and is to be notified ten days in advance of any proposed demolition. Notification includes the names, addresses and phone numbers of operations and persons responsible, including the contractor; description and location of the structure to be renovated/demolished including size, age and prior use, and the approximate amount of friable asbestos; scheduled starting and completion dates of demolition; nature of planned work and methods to be employed; procedures to be employed to meet BAAQMD requirements; and the name and location of the waste disposal site to be used. The District randomly inspects removal operations. In addition, the District inspects any removal operations concerning which a complaint has been received.

¹⁰ The Maher Area encompasses the area of the City bayward of the original high tide line where past industrial uses and fill associated with the 1906 earthquake and bay reclamation often left hazardous waste residue in soils and groundwater. The Ordinance requires that soils must be analyzed for hazardous wastes if more than 50 cubic yards of soil are to be disturbed.

The local office of the California Occupational Safety and Health Administration (OSHA) must be notified if asbestos abatement is to be carried out. Asbestos abatement contractors must follow State regulations contained in 8 CCR 1529 and 8 CCR 341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing material. Asbestos removal contractors must be certified as such by the Contractors Licensing Board of the State of California. The owner of the property where abatement would occur must have a Hazardous Waste Generator Number assigned by, and registered with, the California Department of Health Services. The contractor and the hauler of the material are required to file a Hazardous Waste Manifest that details the hauling of the material from the site and the disposal of the material. Pursuant to California law, the Department of Building Inspection would not issue the required permit until the applicant has complied with the notice requirements above.

Compliance with asbestos regulations and procedures, already established as part of the permit review process would ensure that any potential impacts due to asbestos would be reduced to a level of insignificance.

Lead-Based Paint

Construction and renovation activities must comply with Chapter 36 of the San Francisco Building Code, Work Practices for Exterior Lead-Based Paint. Where there is any work that may disturb or remove lead paint on the exterior of any building built prior to December 31, 1978, Chapter 36 requires specific notification and work standards, and identifies prohibited work methods and penalties.

Chapter 36 applies to buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces), where more than ten total square feet of lead-based paint would be disturbed or removed. The ordinance contains performance standards, including establishment of containment barriers that are at least as effective at protecting human health and the environment as those in the most recent *Guidelines for Evaluation and Control of Lead-Based Paint Hazards* promulgated by the U.S. Department of Housing and Urban Development. The ordinance also identifies prohibited practices that may not be used in disturbance or removal of lead-based paint. Any person performing work subject to the ordinance shall make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers during the course of the work, and any person performing regulated work shall make all reasonable efforts to remove all visible lead paint contaminants from all regulated areas of the property prior to completion of the work.

The ordinance includes notification requirements, contents of notice, and requirements for signs. Notification includes notifying bidders for the work of any paint-inspection reports verifying the presence or absence of lead-based paint in the regulated area of the proposed project. Prior to commencement of work, the responsible party (owner or contractor) must provide written notice to the Director of Building Inspection of the location of the project; the nature and approximate square footage of the painted surface being disturbed and/or removed; anticipated job start and completion dates for the work; whether the responsible party has reason to know or presume that lead-based paint is present; whether the building is residential or non-residential, owner-occupied or rental property; the approximate

number of dwelling units, if any; the dates by which the responsible party has or will fulfill any tenant or adjacent property notification requirements; and the name, address, telephone number, and pager number of the party who will perform the work. (Further notice requirements include Sign When Contaminant is Required, Notice by Landlord, Required Notice to Tenants, Availability of Pamphlet related to protection from lead in the home, Notice by Contractor, Early Commencement of Work [by Owner, Requested by Tenant], and Notice of Lead Contaminated Dust or Soil, if applicable.) The ordinance contains provisions regarding inspection and sampling, and enforcement, and describes penalties for non-compliance with the requirements of the ordinance.

The aforementioned regulations and procedures required as part of the San Francisco Building Code would ensure that potential impacts due to lead-based paint would be reduced to a level of insignificance.

Evacuation and Emergency Response

San Francisco ensures fire safety primarily through provisions of the Building Code and the Fire Code. Existing and new buildings are required to meet standards contained in these codes. Individual development projects would conform to these standards, which (depending on the building type) may also include development of an emergency procedure manual and an exit drill plan. In this way, potential fire hazards (including those associated with hydrant water pressure and emergency access) would be mitigated during the permit review process. Thus effects upon emergency response would not be significant, and this topic will not be analyzed further in the EIR.

13) <u>Cultural</u> . Could the project:	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
(a) Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific Study?	To Be Determined		
(b) Conflict with established recreational, educational, religious or scientific uses of the area?	_____ <u>X</u> _____		
(c) Conflict with the preservation of buildings subject to the provisions of Article 10 or Article 11 of the Planning Code ?	To Be Determined		

The Rincon Hill area does not contain local, State or National Register historic districts. However, there are structures on Rincon Hill that have some historic and architectural importance. Effects of the proposed rezoning upon cultural resources, including historic architecture and archaeological resources, will be analyzed in the EIR.

C. OTHER	<u>Yes</u>	<u>No</u>	<u>Discussed</u>
Require approval and/or permits from City Departments other than Planning Department or Department of Building Inspection, or from Regional, State, or Federal Agencies?	<u>X</u>	_____	<u>X</u>

D. MITIGATION MEASURES

	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>Discussed</u>
1) Could the project have significant effects if mitigation measures are not included in the project?	<u>X</u>	_____	_____	<u>X</u>
2) Are all mitigation measures necessary to eliminate significant effects included in the project?	_____	<u>X</u>	_____	<u>X</u>

The following is a mitigation measure related to environmental effects determined to require no further analysis in the EIR. The EIR will contain a mitigation chapter describing this measure, which is proposed as part of the project, as well as other measures that would be, or could be, adopted to reduce potential adverse effects of the project identified in the EIR.

Mitigation Measure 1 – Construction Noise

For projects requiring pile driving, individual project sponsors would ensure that piles be pre-drilled wherever feasible to reduce construction-related noise and vibration. No impact pile drivers should be used unless absolutely necessary. To reduce noise and vibration impacts, sonic or vibratory sheetpile drivers, rather than impact drivers, shall be used wherever sheetpiles are needed.

Construction noise is regulated by the San Francisco Noise Ordinance, Article 29 of the City Police Code. The ordinance requires that noise levels from individual pieces of construction equipment, other than impact tools, not exceed 80 dBA at a distance of 100 feet from the source. Impact tools (jackhammers and impact wrenches) must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. Section 2908 of the Ordinance prohibits construction work between 8:00 p.m. and 7:00 a.m. if noise would exceed the ambient noise level by five dBA at the project property line, unless a special permit is authorized by the Director of Public Works.

E. ALTERNATIVES

The EIR will analyze alternatives to the proposed project that could reduce or eliminate any significant environmental effects. At a minimum, these alternatives will likely include a No Project /No Action Alternative, in which no zoning and height/bulk changes would be adopted; and a Reduced Development

Alternative that would reduce or eliminate significant effects of the project. The Reduced Development Alternative will likely include rezoning of "P" and "C-3-S" parcels within the project area, adoption of proposed zoning and General Plan amendments, and adoption of the legislated setback on Folsom Street, but would not include changes to existing height and bulk limits.

F. MANDATORY FINDINGS OF SIGNIFICANCE Yes No Discussed

- | | | | |
|--|-------|----------|----------|
| 1) 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 or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history? | _____ | <u>X</u> | <u>X</u> |
| 2) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? | _____ | <u>X</u> | _____ |
| 3) Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.) | _____ | <u>X</u> | <u>X</u> |
| 4) Would the project cause substantial adverse effects on human beings, either directly or indirectly? | _____ | <u>X</u> | _____ |

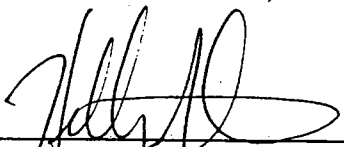
G. ON THE BASIS OF THIS INITIAL STUDY

_____ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

_____ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers _____, in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

X I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Date 3/10/01


 HILLARY E. GITELMAN
 Environmental Review Officer
 for
 GERALD G. GREEN
 Director of Planning
 Planning Department

APPENDIX B

WIND STUDY

TECHNICAL MEMORANDUM

TO: Joan A. Kugler, AICP
City and County of San Francisco
Planning Department, Major Environmental Analysis
1660 Mission Street, Suite 500
San Francisco, CA 94103

FROM: Charles Bennett
Environmental Science Associates
225 Bush Street, Suite 1700
San Francisco, CA 94104

DATE: September 12, 2004

SUBJECT: Potential Wind Conditions
Proposed Rincon Hill Plan
San Francisco, California
ESA 203516

I. INTRODUCTION AND OVERVIEW

A wind-tunnel test was performed to evaluate the effects that potential development under the Rincon Hill Plan, which would be bounded generally by Folsom, Stuart, and Essex Streets and the Bay Bridge approach, in the City of San Francisco. The test was performed in order to define the pedestrian wind environment that would exist under three cumulative development scenarios¹ that could result from implementation of the Plan. Pedestrian-level wind speeds were measured at selected points for the site as it presently exists, and under three cumulative development scenarios to quantify resulting pedestrian-level winds in public spaces.

Three cumulative scenarios were tested to investigate the possible conditions that could result from each of these possible future development scenarios that represent a wide range of possible development in the Rincon Hill area in the future. The three future cumulative development scenarios tested were: 1) the projects in the Planning Department's "pipeline" of projects under review as of June 2004; 2) the preferred scenario for the Draft Rincon Hill Plan; and, 3) the Draft Rincon Hill Plan scenario of future development under the 82.5 ft. tower spacing and current height and bulk limits.

Details of the background and test methods are presented in Section II, Background of this memorandum. Test results and discussion are presented in Section III, Study Results, and Section IV summarizes the findings and conclusions. An overview of the test results and conclusions follows.

¹ These cumulative scenarios were developed for the wind tunnel test of the 425 First Street Project. That specific Project-related test is not presented here in order to emphasize the comparisons among the 3 potential future cumulative scenarios.

Summaries of Tests

Test 1: Existing Setting

This setting consists generally of the buildings existing and under construction in the vicinity of the Rincon Hill Area Plan. Development in the immediate vicinity is characterized by low and mid-rise structures and scattered high-rise towers. In terms of wind conditions, the more important mid- and high-rise buildings in the area include the 333 First Street towers at First and Folsom Streets and the Sailors Union of the Pacific Building on Harrison Street, as well as the Avalon and the Bridge View Towers and two approved high-rise developments along Folsom Street at Beale and at Spear Streets.

The general vicinity of Rincon Hill Plan can be characterized as moderate to windy; the average wind speed for all 26 existing setting test points is 11.2 mph. Wind speeds in pedestrian areas range from 7 to 19 mph. Wind speeds of 14 mph or more occur at 7 of the existing setting locations. The highest wind speeds in the vicinity (18 and 19 mph) occur on the both sides of Harrison Street at First Street. Fourteen of the 26 points currently are at or less than the Planning Code's 11 mph pedestrian-comfort criterion.

The City of San Francisco's Planning Code's wind hazard criterion is currently exceeded at one of the 26 existing setting test locations. The existing exceedance, with a duration of 2 hours per year, occurs on the south side of Harrison Street, at the bridge that spans Beale Street.

Test 2: Cumulative Development Setting #1

Test 2 was conducted to analyze wind conditions under the cumulative development scenario #1, called Cumulative #1, which includes projects currently in the Planning Department's "pipeline" of projects under review.

With the Cumulative #1 scenario the average wind speed for all test points would be 12.3 mph. Wind speeds in pedestrian areas would range from 8 to 20 mph. Eleven of the points would meet the Planning Code's pedestrian-comfort criterion of 11 mph. The Cumulative #1 scenario would eliminate one existing pedestrian-comfort criterion exceedance and create four new exceedances, for a total of 15 exceedances.

Compared to the existing setting, under the Cumulative #1 scenario, wind speeds would increase at 14 locations, remain unchanged at 6 locations and decrease at 6 locations. Wind speeds of 14 mph or more would occur at 9 pedestrian locations. The highest wind speeds in the vicinity (20 mph) would occur at the southern corner of intersection of Harrison and Fremont (#19) and also in front of the Sailors Union of the Pacific building located at the northeast corner of Harrison and First Streets.

Under the Cumulative #1 scenario, the existing 2-hour per year wind hazard criterion exceedance would be eliminated, but a new exceedance with a duration of 5 hours per year would be created at a pedestrian location on the south side of Harrison Street at the Harrison off-ramp. Cumulative #1 would increase the wind hazard relative to the existing setting by 3 hours per year.

Test 3: Cumulative Development Setting #2

Test 3 was conducted to determine wind speeds under the cumulative development scenario #2, called Cumulative #2, a preferred scenario for the Draft Rincon Hill Plan.

With the Cumulative #2 scenario, the average wind speed for all test points would be 11.9 mph. Wind speeds in pedestrian areas would range from 7 to 19 mph. Thirteen of the points would meet the Planning Code's pedestrian-comfort criterion of 11 mph. The Cumulative #2 scenario would eliminate four existing pedestrian-comfort criterion exceedances and create five new exceedances, to make a total of 13 pedestrian-comfort criterion exceedances.

Compared to existing setting, with the Cumulative #2 scenario, wind speeds would increase at 14 locations, remain unchanged at 1 location and decrease at 11 locations. Wind speeds of 14 mph or more would occur at 5 pedestrian locations. The highest wind speeds in the vicinity (19 mph) would be at the southern corner of intersection of Harrison and Fremont (#19).

Under the Cumulative #2 scenario, the existing 2-hour per year wind hazard criterion exceedance would be eliminated, but three new exceedances with a total duration of 5 hours per year would be created at three other pedestrian locations. Cumulative #2 would increase the wind hazard relative to the existing setting by 3 hours per year.

Test 4: Cumulative Development Setting #3

Test 4 was conducted to test wind conditions under the cumulative development setting #3, called Cumulative #3, which is the Draft Rincon Hill Plan scenario of future development under the 82.5 ft. tower spacing and current height and bulk limits.

Compared to the existing setting, the Cumulative #3 scenario would result in an average wind speed of 12 mph for all test points. Wind speeds in pedestrian areas would range from 8 to 17 mph. Eleven of the points would meet the Planning Code's pedestrian-comfort criterion of 11 mph. The Cumulative #3 scenario would eliminate four existing pedestrian-comfort criterion exceedances and create seven new exceedances, to make a total of 15 pedestrian-comfort criterion exceedances.

Compared to the existing setting, with the Cumulative #3 scenario, wind speeds would increase at 12 locations, remain unchanged at 6 locations and decrease at 8 locations. Wind speeds of 14 mph or more would occur at 8 pedestrian locations. The highest wind speeds in the vicinity (17 mph) would occur at the southern corner of intersection of Harrison and Fremont (#19), in front of the Sailors Union of the Pacific building located at the northeast corner of Harrison and First Streets (#71) and on Harrison Street west of the First Street On-Ramp (#16).

Under the Cumulative #3 scenario, the existing 2-hour per year wind hazard criterion exceedance would be eliminated, and a new exceedance with a duration of one hour per year would be created at a pedestrian location at the intersection of First and Lansing Streets. Cumulative #3 would reduce the wind hazard relative to the existing setting by 1 hour per year.

Comparisons of Cumulative Development Scenarios

Comfort Criterion Conditions

The average speeds of all three cumulative scenarios would range between 11.9 mph and 12.3 mph, with Cumulative #2 having the *lowest* average speed with 11.9 mph and Cumulative #1 having the *highest* average speed with 12.3 mph. All three averages would be greater than the average wind speed for the existing setting. These differences are relatively small and of little importance.

Wind speeds ranged from 8 mph to 20 mph in Cumulative #1, from 7 mph to 19 mph in Cumulative #2, and from 8 mph to 17 mph in Cumulative #3 scenario. The up to 15% differences in the highest wind speeds, while beneficial, are not sufficient by themselves to decrease the number of comfort criterion exceedances.

Comfort criterion exceedances would increase under each of the three scenarios. Cumulatives #1 and #3 would increase the number of exceedances by 3, while the Cumulative #2 scenario would increase the number of exceedances by 1.

Compared to Cumulative Development Scenarios #1 and #3, the Cumulative #2 scenario would have small additional benefits for the wind comfort conditions, with slightly lower average wind speed and the fewest comfort criterion exceedances. However, Cumulative #2 would have a higher average wind speed and 3 more pedestrian-comfort criterion exceedances than the existing setting.

Hazard Conditions

All three scenarios would eliminate the existing 2-hour per year hazard criterion exceedance present at one location in the existing setting. Under Cumulative #1, one new 5-hour per year wind hazard criterion exceedance would occur. Under the Cumulative #2 scenario, three hazard criterion exceedances totaling 5-hours per year would occur. Under the Cumulative #3 scenario, one new hazard criterion exceedance, with a duration of 1-hour per year, would occur.

Thus, Cumulative #3 would have the smallest exceedance duration and would be the only scenario that would decrease the total existing hazard duration of 2-hour per year.

II. BACKGROUND

Tall buildings and structures can strongly affect the wind environment for pedestrians. In cities, groups of structures tend to slow the winds near ground level, due to the friction and drag of the structures themselves. Buildings that are much taller than the surrounding buildings intercept and redirect winds that might otherwise flow overhead, and bring them down the vertical face of the building to ground level, where they create ground-level wind and turbulence. These redirected winds can be relatively strong and also relatively turbulent, and can be incompatible with the intended uses of nearby ground-level spaces.

In the project area, wind conditions are relatively lower than conditions typical of the South of Market area, where wind hazard conditions at a number of pedestrian locations occur.

Existing Climate and Wind Conditions

Average winds speeds in San Francisco are the highest in the summer and lowest in winter. However, the strongest peak winds occur in winter. The highest average wind speeds occur in mid-afternoon and the lowest in the early morning. Westerly to northwesterly winds are the most frequent and strongest winds during all seasons. Of the 16 primary wind directions, four have the greatest frequency of occurrence and subsequently make up the majority of the strong winds that occur. These winds include the northwest, west-northwest, west, and west-southwest winds.

Data describing the speed, direction, and frequency of occurrence of winds were gathered at the old San Francisco Federal Building at 50 United Nations Plaza (at a height of 132 ft.) during the six-year period, 1945 to 1950. Measurements taken hourly and averaged over one-minute periods have been tabulated for each month (averaged over the six years) in three-hour periods using seven classes of wind speed and 16 compass directions. Analysis of these data shows that during the hours from 6:00 a.m. to 8:00 p.m., about 70% of all winds blow from five of the 16 directions as follows: Northwest (NW), 10%; West-Northwest (WNW), 14%; West (W), 35%; West-Southwest (WSW), 2%; Southwest (SW), 9%; and all other winds, 28%. Calm conditions occur 2% of the time. More than 90% of measured winds over 13 mph blow from these directions.

Wind Speed and Pedestrian Comfort²

The comfort of pedestrians varies under different conditions of sun exposure, temperature, clothing, and wind speed. Winds up to four miles per hour (mph) have no noticeable effect on pedestrian comfort. With speeds from four to eight mph, wind is felt on the face. Winds from eight to thirteen mph will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole. Winds from 13 to 19 mph will raise loose paper, dust, and dry soil, and will disarrange hair. For winds from 19 to 26 mph, the force of the wind will be felt on the body. With 26 to 34 mph winds, umbrellas are used with difficulty, hair is blown straight, there is difficulty in walking steadily, and wind noise is unpleasant. Winds over 34 mph increase difficulty with balance and gusts can blow people over.

² Lawson, T.V. and A.D. Penwarden, "The Effects of Wind on People in the Vicinity of Buildings," Proceedings of the Fourth International Conference on Wind Effects on Buildings and Structures, London, 1975, Cambridge University Press, Cambridge, U.K., 605-622 1976.

City Planning Code Requirements

The three Cumulative Development Scenarios are located in an area that is subject to the City Planning Code Section 249.1(b)(3), Reduction of Ground-Level Wind Currents in the Rincon Hill Special Use District. The City Planning Code specifically outlines these wind reduction criteria for the Rincon Hill Special Use District. This analysis is performed using the wind testing analysis and evaluation methods to determine conformity with the Code. These requirements are described in Planning Code Section 249.1(b)(3), a copy of which is attached to this Memorandum. A copy of Planning Code Section 148 is also attached to this Memorandum because the basis for implementation of Section 249.1(b)(3) is based on Planning Code Section 148.

The Planning Code requires buildings to be shaped so as not to cause ground-level wind currents to exceed defined comfort and hazard criteria. The comfort criteria are that wind speeds will not exceed, more than 10% of the time, 11 mph in substantial pedestrian use areas, and 7 mph in public seating areas. Similarly, the hazard criterion of the Code requires that buildings not cause equivalent wind speeds to reach or exceed the hazard level of 26 mph as averaged for a single full hour of the year. These comfort criteria are based on wind speeds that are measured for one minute and averaged. In contrast, the hazard criterion is based on winds that are measured for one hour and averaged; when stated on the same basis as the comfort criteria winds, the hazard criterion speed is a one-minute average of 36 mph³, to distinguish between the wind comfort conditions and hazardous winds. The Planning Code defines these wind speeds in terms of equivalent wind speeds⁴, an average wind speed (mean velocity), adjusted to include the level of gustiness and turbulence.

Model and Wind Testing Protocols

A 1-inch to 50-foot scale model of the project site and surrounding several blocks was constructed in order to simulate the project and its existing and future contexts. The scale model of the cumulative development scenarios and the surrounding area was provided by ESA. The design was configured from plans provided by the project architects. The test model was constructed by ESA. The scale models were then tested in a boundary layer wind-tunnel facility at the University of California, Davis, under the direction of Dr. Bruce White. These tests, however, were performed independent of the University.

Wind-tunnel tests were conducted for four configurations: the Existing Setting and the Project in each of these Cumulative Development Settings. In accordance with the protocol for wind-tunnel testing in Section 148 of the Planning Code, each configuration was wind-tunnel tested for each of four primary wind directions: northwest (NW), west-northwest (WNW), west (W) and southwest (SW).

The test procedure consisted of orienting the selected configuration of the model in the atmospheric boundary layer wind-tunnel and measuring the wind speed at each of the test locations with a hot-wire anemometer. All hot-wire measurements were taken at the same series of surface points around the existing site for all test configurations and wind directions.

³ Arens, E., "Designing for Acceptable Wind Environment," Transactions Engineering Journal, ASCE 107, No. TE2, p.127-141, 1981.

⁴ Equivalent mean wind speed is defined as the mean wind, multiplied by the quantity (one plus three times the turbulence intensity) divided by 1.45.

The wind tunnel allows testing of natural atmospheric boundary layer flow past surface objects such as buildings and other structures. The tunnel has an overall length of 22 meters (m) (72 feet), a test section of 1.22 m (4 feet) wide by 1.83 m (6 feet) high, and an adjustable false ceiling. The adjustable ceiling and turbulence generators allow speeds within the tunnel to vary from 1 meter per second (m/s) to 8 m/s, or 2.2 mph to 17.9 mph.

Wind-speed measurements at each test location were made with a hot-wire anemometer, an instrument that directly relates rates of heat transfer to wind speeds by electronic signals that are proportional to the magnitude and steadiness of the wind. The hot-wire probe was calibrated to an accuracy of within 2% before the test procedure was begun. The hot-wire probe measured the analog voltage for approximately 30 seconds at each test location. When converted to digital signals, this measurement provided approximately 30,000 individual voltage samples that were averaged and the root mean square calculated for each test location. These data, when converted to velocity using the calibration curves, provided the mean velocity and turbulence values used to calculate the equivalent wind speed.

By measuring both the mean wind speeds and corresponding turbulence intensities, high wind speeds and gustiness (changes in wind speeds over short periods of time) could be determined. The ratio of near-surface speed to reference wind speed was calculated from the hot-wire measurements. The inherent uncertainty of measurements made with the hot-wire anemometer close to the surface of the model is $\pm 5\%$ of the true values.

These values were compared with the free stream wind as measured in the wind-tunnel. As a result, each wind-tunnel measurement resulted in a ratio that relates the speed of ground-level wind to the speed at the reference elevation, in this case the height of the Old San Francisco Federal Building. These ratios were the output data from the wind-tunnel tests.

These output data were reduced using a computer program that evaluated the contribution from each tested wind direction to the total wind speed output ratios to account for the differences between the boundary layer profile in the wind-tunnel and the profile as measured at the Old Federal Building located at 50 United Nations Plaza. The program then computed the equivalent wind speed that conforms to the selected criterion; either the wind speed exceeded 10% of the time or the wind speed exceeded one hour or more per year. The program also computed the percentage of time that the wind would exceed the speed criterion selected, and further computed the percentage contribution of each wind direction to the equivalent wind speed and to the excess of the criterion. In addition to the computations for each tested wind direction, the program computed an average ratio and used this to compute statistics for "Other" winds, which accounted for all remaining wind directions.

The output of the computer program is presented in the Wind-Tunnel Test Results tables for normal winds and for hazardous winds. These tables, appended to this Memorandum, provide the detail of the data and of the intermediate results that are described above. The wind tunnel ratios were included in the program input, and the results evaluated in the discussions that follow.

The program first adjusted the wind-tunnel output ratios to account for the differences between the boundary layer profile in the wind-tunnel and the profile as measured at the Old Federal Building located at 50 United Nations Plaza. The program then computed the equivalent wind speed that conforms to the selected criterion; either the wind speed exceeded 10% of the time or the wind speed exceeded one hour or more per year. The program also computed the percentage of time that

the wind would exceed the speed criterion selected, and further computed the percentage contribution of each wind direction to the equivalent wind speed and to the excess of the criterion. In addition to the computations for each tested wind direction, the program computed an average ratio and used this to compute statistics for "Other" winds, which accounted for all remaining wind directions.

The output of the computer program is presented in the Wind-Tunnel Test Results tables for normal winds and for hazardous winds. These tables, appended to this Memorandum, provide the detail of the data and of the intermediate results that are described above. The wind tunnel ratios were included in the program input, and the results evaluated in the discussions that follow.

Wind Speed Profile Adjustments

The standard Section 148 wind test methodology implicitly assumes that the relationship between height above the ground and wind speed (referred to hereafter as the wind speed profile) is the same in the test area as at the Civic Center weather station. Wind speed adjustments were not made for this wind test. Because adjustments would have only produced lower wind speeds than those reported in this Memorandum, therefore, the results shown provide a more conservative estimate of wind conditions in the area.

III. TEST CASES AND STUDY RESULTS

Introduction

Wind-tunnel tests were conducted for the existing setting and the cumulative test scenarios; twenty-six locations were studied, all of them pedestrian locations. Each scenario was tested for the four prevailing wind directions: northwest, west-northwest, west, and southwest. These winds are the most common in San Francisco and are therefore the most representative for evaluation.

Test Locations⁵

The 26 pedestrian test locations surround the Rincon Hill Plan area on the sidewalks of First, Harrison, Folsom, Fremont and Beale Streets. The pedestrian test locations along Harrison, First and Fremont Streets, upwind and downwind within the area, helped facilitate comparison of this wind-tunnel test with prior wind-tunnel tests.

Along Harrison Street between Essex and Beale Streets were thirteen locations (#8-10, 16-19, 61-65, 71). Six points (#10, 17, 61, 62, 64, 71) were positioned on the north side of Harrison Street with the remaining seven points (#8, 9, 16, 18, 19, 63, 65) on the south side of the street.

One test point (#82) was located in the proposed park east of the Harrison Street off-ramp.

Along First Street from Harrison Street to Folsom Street were nine measurement locations (#8-15, 71). Four of the locations (#8, 12, 15, 71) were on the east side of First and five (9-11, 13, 14) were on the west side.

Along Fremont Street between Folsom and Harrison Streets were eight test locations (#19, 61-63, 70, 75, 76, 81). Four points (#62, 63, 70, 75) were located on the east side of Fremont Street and four (#19, 61, 76, 81) along the west side of the street.

Along Folsom Street between First and Beale Streets were five test locations (#14, 15, 74-76). All five locations were located on the south side of Folsom Street.

Along Beale Street between Folsom and Harrison Streets were three test locations (#64, 65, 74), all three located along the west side of the street.

Note that in describing wind conditions, some points were referred to in more than one group. For the purpose of identifying the applicable wind comfort criterion of the Planning Code, all of the test locations were considered to be pedestrian, rather than sitting areas.

Wind Evaluation and Criteria

Just as the wind-tunnel testing was performed in accordance with the test protocols of City Planning Code Section 249.1(3), the performance requirements of Code Section 249.1(3) were used to evaluate the results of the tests. The mean wind speeds were compared to the Code's comfort criteria of 11 mph for areas of substantial pedestrian use and 7 mph for seating areas, each not to be exceeded more than 10% of the time. Separate calculations evaluated compliance with the hazard criterion. As previously noted, the wind data observed at the Old San Francisco Federal Building were not full hour average speeds as identified by the

⁵ The location numbers were arbitrarily assigned, and thus hold no significance to the analysis of wind results.

Code, so it is necessary to adjust the wind criterion speed to obtain a valid comparison with the available data and the equivalent wind speeds based on those data. When normalized to the equivalent wind speeds used here, the hazard criterion speed is equal to 36 mph, the value used in the tables. Throughout the following discussion the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10% of the time when referring to the comfort criteria, and about 0.011416% of the time when referring to the hazard criterion.

Test Output





The basic wind-tunnel test data and the detailed outputs of the computer program were presented in tables of comfort criteria (Table 1) and hazard criteria evaluations (Table 2) for each of the four scenarios, the Existing Setting and the three Cumulative Development Scenarios. These output tables, appended to this Memorandum, provide the detail of the data and the intermediate results described above. The wind-tunnel ratios and the wind profile adjustment factors for each wind direction were included. The results were evaluated in the discussions that follow.

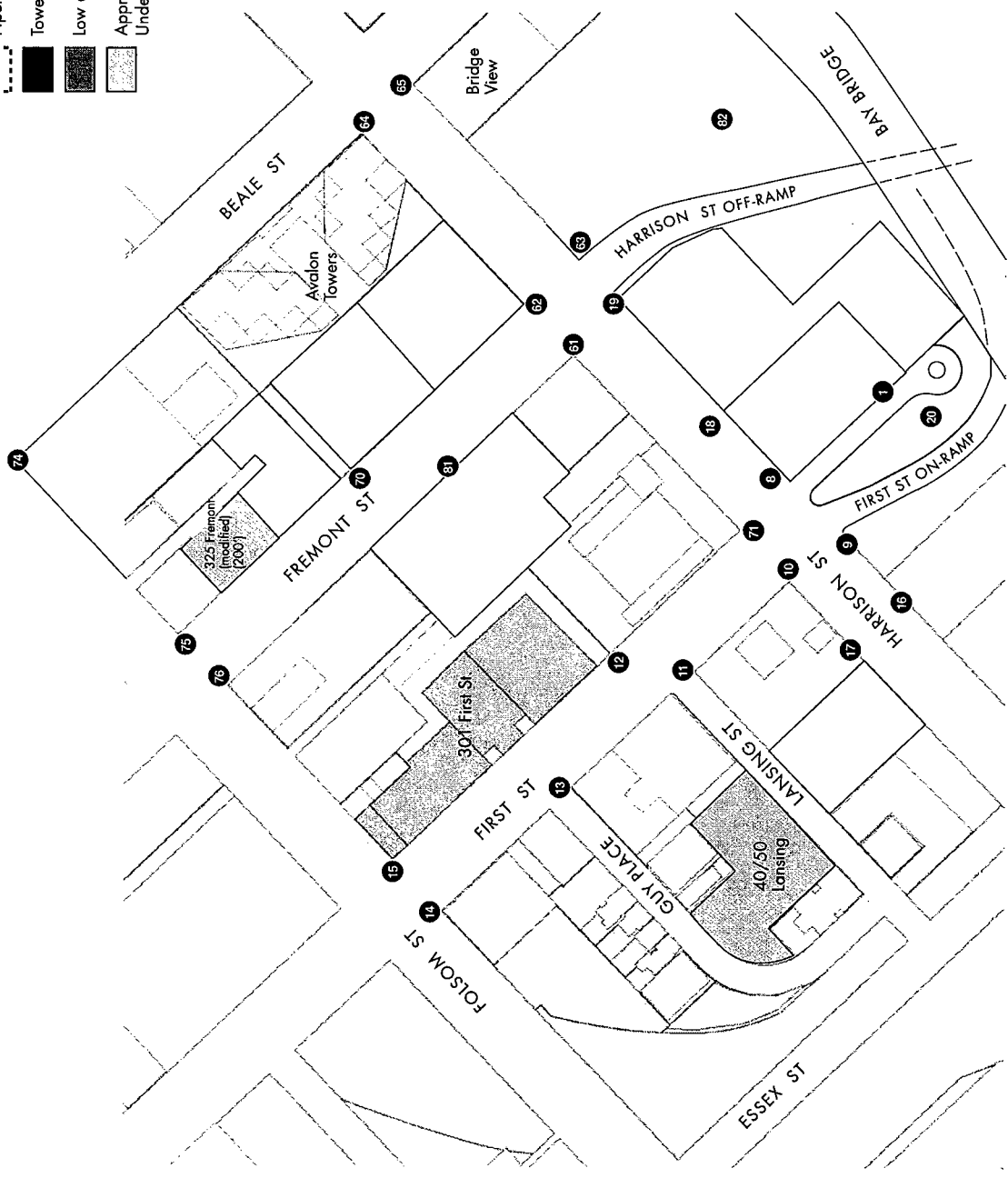
Figure 1 identifies the measurement point locations. Summary information about the wind-tunnel test results and evaluations of compliance with the comfort and hazard criteria were presented for the Existing and Project scenarios in summary Tables 1 and 2. Table 1 presents the Pedestrian-Comfort Analysis results, namely the measured 10% exceeded speed and the percentage of time that the comfort criterion is exceeded for each test location and test scenario. Table 2 presents the Wind Hazard Analyses results, the equivalent wind speed and the number of hours per year of exceedance of the hazard criterion for each test location and test scenario.

Throughout the following discussion, references are made to values from these Tables. Note that the times in hours and wind speeds in mph presented in those tables were rounded to the nearest integer value. The sums, differences and averages presented also were rounded after calculations that were made using the actual (unrounded) values. As a result, what may appear to be discrepancies in the tabular results, such as sums for each of the columns or differences between values for project and existing conditions, are simply due to the rounding of results. However, the rounded values of the differences in wind speeds and in hours exceedances in the Tables best represent the measured changes in those quantities.

Discussion

Throughout the following discussion the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10% of the time when referring to the pedestrian-comfort criterion, and winds exceeded 1 hour per year when referring to the wind hazard criterion.

-  Pipeline Project
-  Towers
-  Low and Mid-rise Buildings
-  Approved Plan or Under Construction



Rincon Hill Plan / 203516 ■ **Figure 1**
Existing Setting

TEST 1 - THE EXISTING WIND ENVIRONMENT

The Existing Setting

The setting consists generally of the existing buildings in the vicinity of the Rincon Hill Plan. Development in the area is characterized by low and mid-rise structures and scattered high-rise towers. In determining wind conditions, the more important mid- and high-rise buildings in the area include the 333 First Street towers (referred to in previous tests as 301 First Street) at the corner of First and Folsom Streets, and the generally 80 foot street wall buildings along the east side of First Street between Folsom and Harrison Streets, including the Sailors Union of the Pacific Building on Harrison Street, as well as the Avalon and the Bridge View Towers. Other buildings in the existing setting include the approved, but yet unbuilt, buildings at 40/50 Lansing Street, 325 Fremont Street, 201 Folsom Street and 300 Spear Street.

Existing Comfort Criterion Conditions

The general vicinity of the site is moderate to windy; the average wind speed for all 26 existing pedestrian test points is 11.2 mph. Wind speeds in pedestrian areas range from 7 to 19 mph. Wind speeds of 14 mph or more occur at 7 of the total 26 locations. The highest wind speeds in the vicinity (18 and 19 mph) occur on both sides of Harrison Street at First Street (#18, 71). Fourteen of the 26 points (#11, 14, 15, 17, 19, 61-64, 70, 74-75, 81, 82) currently are at or less than the Planning Code's 11 mph pedestrian-comfort criterion. See Figure 1 and Table 1.

At the five test points (#1, 8, 18-20) surrounding the First Street On-Ramp and Harrison Street Off-Ramp, wind speeds range from 9 to 18 mph. Speeds at all but one (#19) exceed the pedestrian comfort criterion.

At one test point (#82) located in the proposed park east of the Harrison Street off-ramp wind speed was 7 mph, within the pedestrian comfort criterion.

Wind speeds range from 7 mph to 19 mph at the thirteen locations (#8-10, 16-19, 61-65, 71) along Harrison Street between Essex and Beale Streets. The highest wind speeds (18-19 mph) occur on both sides of Harrison Street near the First Street on-ramp (#18) to the Bay Bridge and on the northeast side of intersection of Harrison and First Street. Winds at 6 of these 13 locations (#17, 19, 61-64) are at or less than the pedestrian-comfort criterion.

Along First Street from Harrison Street to Folsom Street, wind speeds at the nine measurement locations (#8-15, 71) range from 8 to 19 mph. Winds at three of the nine locations (#11, 14-15) are at or less than the pedestrian-comfort criterion.

Along Fremont Street between Folsom and Harrison Streets wind speeds at the eight test locations (#19, 61-63, 70, 75, 76, 81) range from 7 to 12 mph. Wind speeds at seven of the eight (#19, 61-63, 70, 75, 81) are at or less than the pedestrian-comfort criterion.

Winds at the five test locations (#14, 15, 74-76) along Folsom Street range from 8 mph to 12 mph; the lowest speed, 8 mph, occurs at the southeast corner of Folsom Street and Fremont Street (#75). Three of the five Folsom Street locations (#14, 15, 75) are at or less than the pedestrian-comfort criterion.

Wind speeds at the three test locations (#64, 65, 74) along the west side of Beale Street between Folsom Street and the Bridge range from 7 mph to 15 mph. Two (#64, 74) of the Beale Street locations are at or less than the pedestrian-comfort criterion.

Existing Hazard Conditions

The Code's wind hazard criterion is currently exceeded at one of the existing 26 existing pedestrian test locations. See Table 2. The existing wind hazard exceedance, with a duration of 2 hours per year, occurs on the south side of Harrison Street, at the bridge that spans Beale Street (#65).

Table 1 Wind Comfort Analysis – Existing, Project and Cumulative Conditions Proposed One Rincon Hill Project Wind-Tunnel Test, July 2004





Location Number	Comfort Criterion Speed (mph)	Measured Wind Speed (mph)	Percent of Time Wind Speed Exceeds Criterion	Speed Change Relative to Existing Setting (mph)	Measured Equivalent Wind Speed (mph)	Percent of Time Wind Speed Exceeds Criterion	Speed Change Relative to Existing Setting (mph)	Measured Equivalent Wind Speed (mph)	Percent of Time Wind Speed Exceeds Criterion	Speed Change Relative to Existing Setting (mph)	Measured Equivalent Wind Speed (mph)	Percent of Time Wind Speed Exceeds Criterion	Speed Change Relative to Existing Setting (mph)
1	11	12	14	1	10	6	-2	10	6	-2	10	6	-2
8	11	12	12	1	13	17	1	12	13	1	12	13	1
9	11	14	22	2	14	23	1	13	17	-1	13	17	-1
10	11	14	23	2	14	25	1	8	2	-6	8	2	-6
11	11	9	3	-2	10	6	1	13	21	4	13	21	4
12	11	16	28	5	15	24	-1	15	24	-1	15	24	-1
13	11	12	12	1	10	12	2	10	6	-1	9	2	-3
14	11	8	1	-3	9	2	1	8	2	1	9	2	1
15	11	9	2	-2	10	4	1	9	4	1	9	4	1
16	11	12	14	3	17	34	5	17	34	5	17	34	5
17	11	10	5	-1	11	12	2	11	12	2	11	12	2
18	11	18	29	7	12	13	-1	12	13	1	12	13	1
19	11	9	3	-2	20	42	11	19	39	10	17	34	8
20	11	15	26	4	14	21	-1	13	19	-2	12	14	-3
61	11	8	2	-3	10	6	2	13	15	5	11	11	4
62	11	8	2	-3	16	30	8	14	23	6	12	14	4
63	11	8	1	-3	10	7	2	9	2	1	14	19	7
64	11	7	1	-4	8	2	1	7	1	1	9	2	2
65	11	15	24	4	12	16	-2	12	13	-3	10	6	-5
70	11	9	4	-2	9	3	1	10	8	1	9	2	2
71	11	19	35	8	20	40	1	18	33	-1	17	31	-2
74	11	11	10	1	12	14	1	13	16	2	13	17	2
75	11	9	3	-2	8	1	-1	8	2	-1	9	3	3
76	11	12	14	2	10	5	-2	11	11	-1	11	8	-2
81	11	8	3	-3	8	4	3	11	9	3	8	2	2
82	11	7	0	-4	11	9	3	10	6	6	12	12	5
Average mph and %		11.2 mph	11%		12.3 mph	15%		11.9 mph	14%		12 mph	14%	
Exceedances:		Total	12	Total	15	Total	13	Total	13	Total	15	Total	15
Counts:		Existing	12	Existing or Project	11	Existing or Project	8	Existing or Project	8	Existing or Project	8	Existing or Project	8
		New, due to scenario	4	New, due to scenario	4	New, due to scenario	5	New, due to scenario	5	New, due to scenario	7	New, due to scenario	7
		New, at new location	0	New, at new location	0	New, at new location	0	New, at new location	0	New, at new location	0	New, at new location	0
		Eliminated	1	Eliminated	1	Eliminated	4	Eliminated	4	Eliminated	4	Eliminated	4

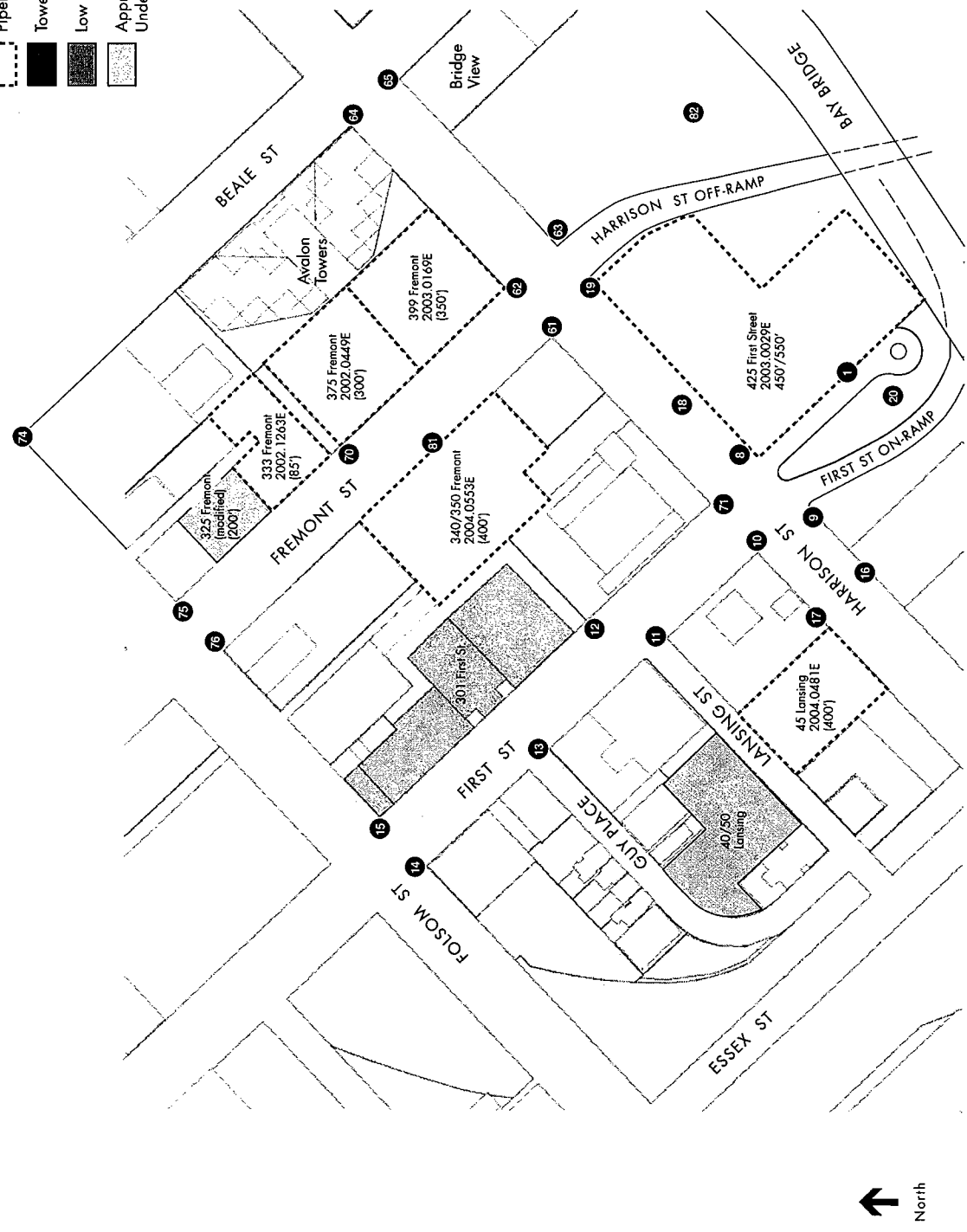
Note: Wind speeds and durations are rounded, so column totals and row differences may not add. See Section II, Test Output.

Table 2 Wind Hazard Analysis - Existing, Project and Cumulative Conditions Proposed One Rincon Hill Project, Wind-Tunnel Test, July 2004

References	Existing Setting	Cumulative 1	Cumulative 2	Cumulative 3
Location Number	Hazard Criterion Speed (mph)	Measured Equivalent Wind Speed (mph)	Hours per year Wind Speed Exceeds Hazard Criterion (mph)	Hours Change Relative to Existing Setting
1	36	20	21	23
8	36	25	26	30
9	36	24	28	32
10	36	26	33	30
11	36	24	30	38
12	36	29	27	23
13	36	21	21	15
14	36	13	16	14
15	36	16	22	20
16	36	21	34	33
17	36	23	35	30
18	36	33	28	28
19	36	16	41	33
20	36	27	25	28
61	36	23	30	28
62	36	22	30	27
63	36	20	21	27
64	36	14	16	16
65	36	38	24	25
70	36	20	22	15
71	36	34	30	29
74	36	19	23	27
75	36	16	19	17
76	36	22	20	22
81	36	19	21	16
82	36	13	20	22
Average mph and %	22 mph 2 hr	26 mph 5 hr 3 hr	24 mph 5 hr 3 hr	25 mph 1 hr -1 hr
Exceedances:	Total Existing 1	Total Existing or Project 1	Total Existing or Project 3	Total Existing or Project 1
Counts:	Existing 1	New, due to scenario 1 New, at new location 0 Eliminated 0	Existing or Project 0 New, due to scenario 3 New, at new location 0 Eliminated 0	Existing or Project 0 New, due to scenario 1 New, at new location 0 Eliminated 0

Note: Wind speeds and durations are rounded, so column totals and row differences may not add. See Section II, Test Output. A hazard criterion exceedance is shown by an entry of the number of hours per year that the hazard criterion is exceeded.

-  Pipeline Project
-  Towers
-  Low and Mid-rise Buildings
-  Approved Plan or Under Construction



Rincon Hill Plan / 203516

Figure 2

Cumulative 1- Pipeline Projects

TEST 2 – CUMULATIVE #1

In addition to the existing and approved buildings, the Cumulative #1 scenario also included potential future buildings currently in the Planning Department's "pipeline" of projects under review (See Figure 2). These pipeline projects include the following buildings:

- 333 Fremont, case 2002.1263E;
- 340/350 Fremont, case 2004.0553E
- 375 Fremont, case 2002.0449E;
- 399 Fremont, case 2003.0169E;
- 45 Lansing, case 2004.0481E;
- 435 First, case 2003.0029E.

Cumulative #1 Comfort Criterion Conditions

The following analysis focuses on the comparisons between the existing setting and Cumulative #1 scenario, which is the "pipeline" cumulative scenario that is historically evaluated in wind tunnel testing reporting. Comments are also made with respect to the other two cumulative scenarios, as appropriate or whenever material differences in wind conditions were observed.

Compared to existing setting, with the Cumulative #1 scenario, the average wind speed for all test points would increase slightly to 12.3 mph. Wind speeds in public pedestrian areas would range from 8 to 20 mph. Wind speeds of 14 mph or more would occur at 9 of the test locations. The highest wind speeds in the vicinity (20 mph) would occur at the southern corner of intersection of Harrison and Fremont (#19) and also occur in front of the Sailors Union of the Pacific building located at the northeast corner of Harrison and First Streets (#71).

Under the Cumulative #1 scenario, as compared to the existing setting, wind speeds in public areas would increase at 14 locations, remain unchanged at 4 locations, and decrease at 8 locations.

The Cumulative #1 scenario would eliminate one existing pedestrian-comfort criterion exceedances (#76) and add three new exceedances (#17, 19, 62). Wind speeds at 11 of the pedestrian locations would be at or less than the Planning Code's pedestrian-comfort criterion (#11, 14, 15, 61, 63, 64, 70, 75, 76, 81, 82). See Figure 1 and Table 1.

With the Cumulative #1 scenario, few consequential wind speed changes would occur. The largest increase, 11 mph, would occur on Harrison Street west of the Harrison off-ramp (#19). This increase would create a new exceedance. Across Harrison from that point, the wind speed would increase by 8 mph (#62). Decreases of slightly less amounts would occur on the south side Harrison, between the First Street on-ramp and Harrison street off-ramp.

At the five test points (#1, 8, 18-20) along Harrison Street, between the First Street on-ramp and Harrison Street off-ramp, wind speeds would range from 12 to 20 mph. Speeds at all would exceed the pedestrian comfort criterion.

Wind speeds would range from 8 mph to 20 mph at the thirteen locations (#8-10, 16-19, 61-65, 71) along Harrison Street. The highest wind speed (20 mph) would occur at two locations on the north side of Harrison Street, one at the southwest corner of Harrison and Fremont Street (#19) and one in front of the Sailors

Union of the Pacific building at the northeast corner of Harrison and First Streets (#71). Winds at 3 of these 13 locations (#61, 63, 64) would be at or less than the pedestrian-comfort criterion.

At one test point (#82) located in the proposed park east of the Harrison Street off-ramp wind speed was 11 mph, within the pedestrian comfort criterion.

Along First Street from Harrison Street to Folsom Street, wind speeds at the nine measurement locations (#8-15, 71) would range from 9 to 20 mph. Winds at three of the nine locations (#11, 14, 15) would be at or less than the pedestrian-comfort criterion.

Along Fremont Street between Folsom and Harrison Streets wind speeds at the eight test locations (#19, 61-63, 70, 75, 76, 81) would range from 8 to 20 mph with the cumulative scenario #1. Wind speeds at six of the nine (#61, 63, 70, 75, 76, 81) would be at or less than the pedestrian-comfort criterion

Winds at the five test locations (#14, 15, 74-76) along Folsom Street would range from 8 mph to 12 mph with the cumulative scenario #1. Wind speeds at four (#14, 15, 75, 76) of the five Folsom Street locations would be at or less than the pedestrian-comfort criterion.





With the cumulative scenario #1, wind speeds at the three test locations (#64, 65, 74) along Beale Street between Folsom Street and the Bridge would range from 8 mph to 12 mph. Wind speeds at one (#64) of the three locations along Beale Street would be at or less than the pedestrian-comfort criterion.

Compared to the existing setting, Cumulative #1 would have small detriments for the wind comfort conditions, slightly increasing the average wind speeds and increasing the number of comfort criterion exceedances by four (see Table 1).

Cumulative #1 Hazard Conditions

Under the Cumulative #1 scenario, the Code's wind hazard criterion would be exceeded at one pedestrian location (#19) at the south side of Harrison at the Harrison Street off-ramp. The exceedance would occur for a duration of 5 hours per year. The existing wind hazard exceedance would be eliminated (#65).

The effect of the Cumulative #1 development scenario on the wind hazard conditions would be slightly detrimental, increasing the duration of hazard exceedances by 3 hours per year compared with the hazard duration with the existing setting. Cumulative #1 would not meet the requirements of Planning Code Section 249.1(b)(3) without further mitigation that reduces the total duration of the wind hazard exceedances to 2 hours per year or less.

-  Pipeline Project
-  Towers
-  Low and Mid-rise Buildings
-  Approved Plan or Under Construction

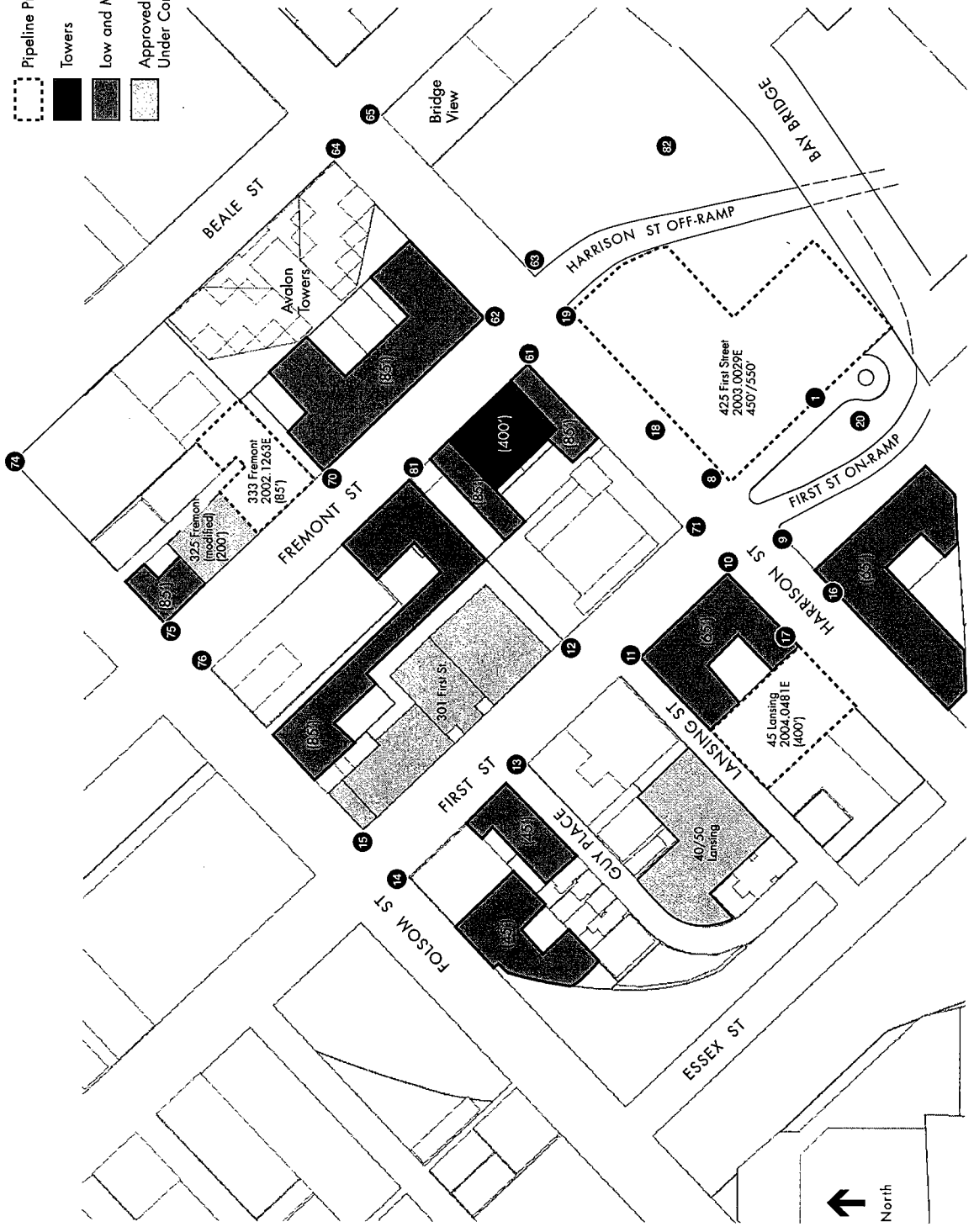


Figure 3

Cumulative 2- Preferred Option Plan

TEST 3 – CUMULATIVE #2

In addition to the existing and approved buildings, the Cumulative #2 scenario also included the Preferred Option for the Draft Rincon Hill Plan (See Figure 3). This scenario includes the following buildings:

- 333 Fremont, case 2002.1263E;
- 45 Lansing, case 2004.0481E;
- 400 ft tower near the corner of Fremont and Harrison;
- 85 ft high streetwall buildings on both sides of Fremont Street;
- 65 ft high streetwall buildings west of First and south of Lansing;
- 425 First, case 2003.0029E.

Cumulative #2 Comfort Criterion Conditions

Compared to existing setting, with the Cumulative #2 scenario, the average wind speed for all test points would increase slightly to 11.9 mph. Wind speeds in public pedestrian areas would range from 7 to 19 mph. Wind speeds of 14 mph or more would occur at 5 of the test locations. The highest wind speeds in the vicinity (19 mph) would be at the southern corner of intersection of Harrison and Fremont (#19).

Under the Cumulative #2 scenario, as compared to the existing setting, wind speeds in public areas would increase at 14 locations, remain unchanged at 1 location, and decrease at 11 locations.

The Cumulative #2 scenario would eliminate four existing pedestrian-comfort criterion exceedances (#1, 10, 13, 76) and add five new exceedances (#11, 19, 61, 62, 74). Wind speeds at 13 of the pedestrian locations would be at or less than the Planning Code's pedestrian-comfort criterion (#1, 10, 13, 14, 15, 17, 63, 64, 70, 75, 76, 81, 82). See Figure 3 and Table 1.

With the Cumulative #2 scenario, a few consequential wind speed changes would occur. The largest increase, 10 mph, would occur on Harrison Street west of the Harrison off-ramp (#19). This increase would create a new exceedance.

At the five test points (#1, 8, 18-20) along Harrison Street, between the First Street on-ramp and Harrison Street off-ramp, wind speeds would range from 10 to 19 mph. Speeds at all but one (#1) would exceed the pedestrian comfort criterion.

Wind speeds would range from 8 mph to 19 mph at the thirteen locations (#8-10, 16-19, 61-65, 71) along Harrison Street. The highest wind speed (19 mph) would occur at the north side of Harrison Street, one at the southwest corner of Harrison and Fremont Street (#19). Winds at 4 of these 13 locations (#10, 17, 63, 64) would be at or less than the pedestrian-comfort criterion.

At one test point (#82) located in the proposed park east of the Harrison Street off-ramp wind speed was 10 mph, within the pedestrian comfort criterion.

Along First Street from Harrison Street to Folsom Street, wind speeds at the nine measurement locations (#8-15, 71) would range from 8 to 18 mph. Winds at four of the nine locations (#10, 13, 14, 15) would be at or less than the pedestrian-comfort criterion.

Along Fremont Street between Folsom and Harrison Streets wind speeds at the eight test locations (#19, 61-63, 70, 75, 76, 81) would range from 8 to 19 mph with the Cumulative #2 scenario. Wind speeds at six of the eight (#63, 70, 75, 76, 81) would be at or less than the pedestrian-comfort criterion

Winds at the five test locations (#14, 15, 74-76) along Folsom Street would range from 8 mph to 13 mph with the Cumulative #2 scenario. Wind speeds at four (#14, 15, 75, 76) of the five Folsom Street locations would be at or less than the pedestrian-comfort criterion.





With the cumulative scenario #2, wind speeds at the three test locations (#64, 65, 74) along Beale Street between Folsom Street and the Bridge would range from 7 mph to 13 mph. Wind speeds at one (#64) of the three locations along Beale Street would be at or less than the pedestrian-comfort criterion.

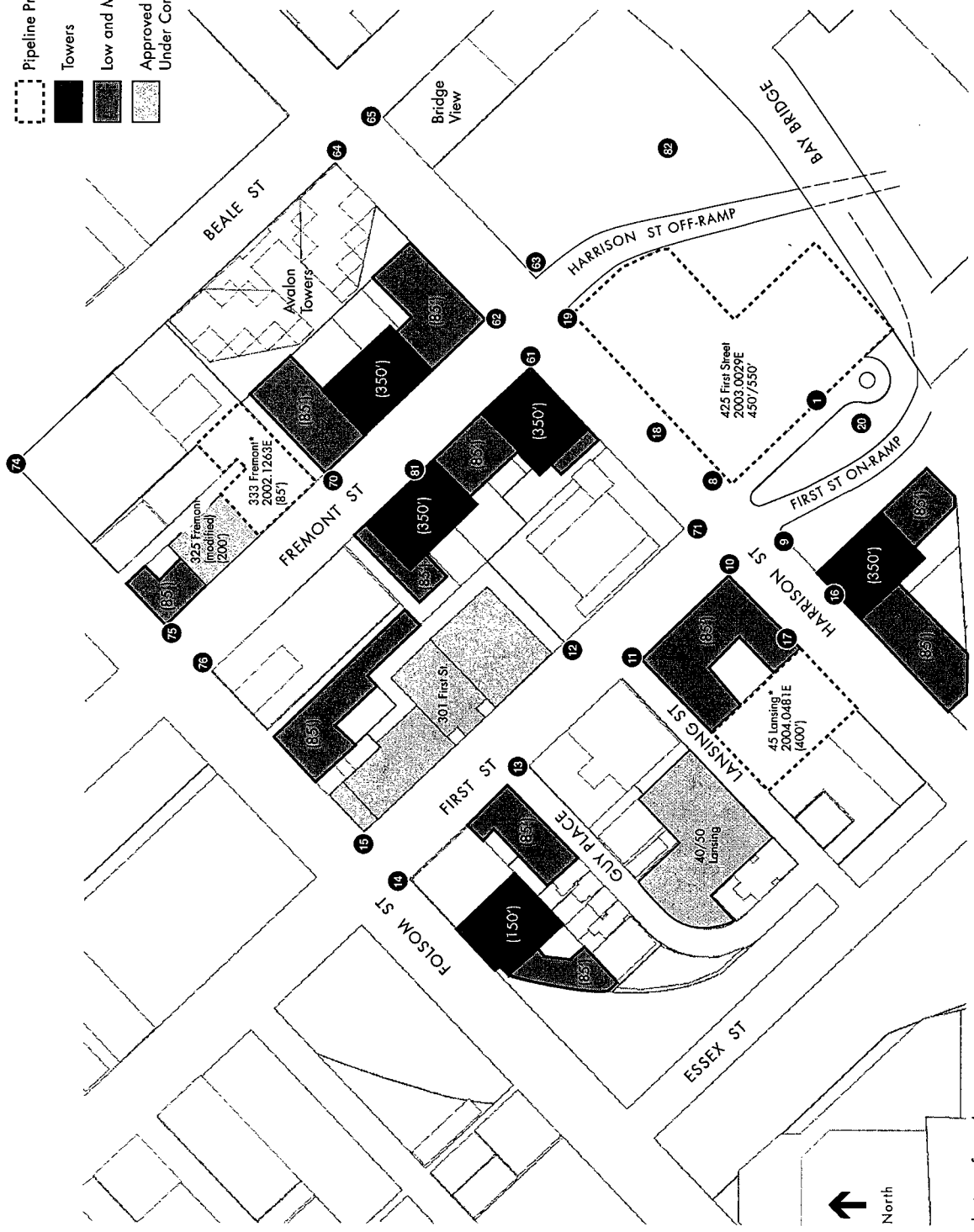
Compared to the existing setting, Cumulative #2 scenario would have small detriments for the wind comfort conditions, slightly increasing the average wind speeds and increasing the number of comfort criterion exceedances by five (see Table 1).

Cumulative #2 Hazard Conditions

Under the Cumulative #2 scenario, the Code's wind hazard criterion would be exceeded at three pedestrian locations (#11, 19, 62), two of the exceedances located at the intersection of Fremont Street and Harrison Street. The exceedances would occur for a total duration of 5 hours per year total, each individually ranging from 1 hour durations (at locations #11 and 62) to 3 hours per year duration at the third location (#19). The existing wind hazard exceedance would be eliminated (#65).

The effect of the Cumulative #2 scenario on the wind conditions would be adverse, increasing the total duration of hazard exceedances by 3 hours per year compared to the existing setting. Cumulative #2 would not meet the requirements of Planning Code Section 249.1(b)(3) without further mitigation that reduces the total duration of the wind hazard exceedances to 2 hours per year or less.

-  Pipeline Project
-  Towers
-  Low and Mid-rise Buildings
-  Approved Plan or Under Construction



* Uses design of pipeline project

TEST 4 – CUMULATIVE #3

In addition to the existing and approved buildings, the Cumulative #3 scenario included Rincon Hill development under the 82.5 ft. tower spacing and March 2003 heights (See Figure 4). This scenario includes the following buildings:

- 333 Fremont, case 2002.1263E;
- 45 Lansing, case 2004.0481E;
- 340/350 Fremont, case 2004.0553E, a 350 ft tower and 85 ft high streetwall buildings on the west side of Fremont Street;
- 375 Fremont, case 2002.0449E, and 85 ft high streetwall buildings on the east side of Fremont Street;
- 300 ft tower at the southwest corner of First and Harrison;
- 85 ft high streetwall buildings west of First and south of Lansing;
- 150 ft tower and 85 ft high streetwall buildings on the south side of Folsom, west of First;
- 425 First, case 2003.0029E

Cumulative #3 Comfort Criterion Conditions

With the Cumulative #3 scenario, the average wind speed for all test points would be 12 mph, slightly higher than under the existing setting. Wind speeds in public pedestrian areas would range from 8 to 17 mph. Wind speeds of 14 mph or more would occur at 8 of the test locations. The highest wind speeds in the vicinity (17 mph) would occur at four locations: on Harrison Street west of the First Street on-ramp (#9, 16), at the southwest corner of the intersection between Harrison Street and Fremont Street (#19), and in front of the Sailors Union of the Pacific building located at the northeast corner of Harrison and First Streets (#71). Only one of these locations (#19) would represent a new exceedance.

Compared to the existing setting, with the Cumulative #3 scenario wind speeds in public areas would increase at 12 locations, remain unchanged at 6 locations, and decrease at 8 locations.

The Cumulative #3 scenario would eliminate four existing pedestrian-comfort criterion exceedances (#10, 13, 65, 76) and add seven new exceedances (#11, 17, 19, 62, 63, 74, 82). Wind speeds at 11 of the pedestrian locations would be at or less than the Planning Code's pedestrian-comfort criterion (#10, 13, 14, 15, 61, 64, 65, 70, 75, 76, 81). See Figure 4 and Table 1.

At the five test points (#1, 8, 18-20) along Harrison Street, between the First Street on-ramp and Harrison Street off-ramp, wind speeds would range from 12 to 17 mph. Speeds at all would exceed the pedestrian comfort criterion.

Wind speeds would range from 9 mph to 17 mph at the thirteen locations (#8-10, 16-19, 61-65, 71) along Harrison Street. The highest wind speed (17 mph) would occur at four locations long Harrison Street. As outlined above, this would occur on Harrison Street west of the First Street on-ramp (#9, 16), at the southwest corner of the intersection between Harrison Street and Fremont Street (#19), and in front of the Sailors Union of the Pacific building located at the northeast corner of Harrison and First Streets (#71). Wind speeds at 4 of these 13 locations (#10, 61, 64, 65) would be at or less than the pedestrian-comfort criterion.

At one test point (#82) located in the proposed park east of the Harrison Street off-ramp wind speed would be 12 mph, exceeding the pedestrian comfort criterion.

Along First Street from Harrison Street to Folsom Street, wind speeds at the nine measurement locations (#8-15, 71) would range from 8 to 17 mph. Winds at four of the nine locations (#10, 13, 14, 15) would be at or less than the pedestrian-comfort criterion.

Along Fremont Street between Folsom and Harrison Streets wind speeds at the eight test locations (#19, 61-63, 70, 75, 76, 81) would range from 8 to 17 mph. Wind speeds at five of the eight (#61, 70, 75, 76, 81) would be at or less than the pedestrian-comfort criterion

Winds at the five test locations (#14, 15, 74-76) along Folsom Street would range from 9 mph to 13 mph. Wind speeds at four (#14, 15, 75, 76) of the five Folsom Street locations would be at or less than the pedestrian-comfort criterion.

With the Cumulative #3 scenario, wind speeds at the three test locations (#64, 65, 74) along Beale Street between Folsom Street and the Bridge would range from 9 mph to 13 mph. Wind speeds at two (#64, 65) of the three locations along Beale Street would be at or less than the pedestrian-comfort criterion.

Compared to the existing setting, Cumulative #3 scenario would adversely affect the wind comfort conditions, slightly increasing the average wind speeds and increasing the number of comfort criterion exceedances by three (see Table 1).

Cumulative #3 Hazard Conditions

Under the Cumulative #3 scenario, the Code's wind hazard criterion would be exceeded at a pedestrian location (#11) at the intersection of First Street and Lansing Street. The exceedance would occur for a duration of 1 hour per year total. The existing wind hazard exceedance would be eliminated (#65).

The effect of the Cumulative #3 scenario on wind conditions would be beneficial, decreasing the total duration of wind hazard exceedances by 1 hour per year compared with the existing setting. The decrease in duration of the wind hazard means that Cumulative #3 would meet the requirements of Planning Code Section 249.1(b)(3) without further mitigation.

IV. SUMMARY

General Conditions and Comfort Criteria

The general vicinity of the existing setting is moderate to windy. The average wind speed for all 26 existing setting test points is 11.2 mph. Wind speeds in pedestrian areas range from 7 to 19 mph. Wind speeds of 14 mph or more occur at 7 of the total 26 existing setting locations. The highest wind speeds in the vicinity (18 and 19 mph) occur on both sides of Harrison Street at First Street. Fourteen of the 26 points currently are at or less than the Planning Code's 11 mph pedestrian-comfort criterion.

With the three future cumulative development scenarios, the average wind speed for all 26 test points would increase, with averages of 11.9 to 12.3 mph. Wind speeds in pedestrian areas would range from 8 to 20 mph.

Under the Cumulative #1 scenario, as compared to the existing setting, wind speeds would increase at 14 locations, remain unchanged at 6 locations, and decrease at 6 locations. Wind speeds of 14 mph or more would occur at 9 pedestrian locations. The Cumulative #1 scenario would eliminate one project pedestrian-comfort criterion exceedance and create four new pedestrian-comfort criterion exceedances. Eleven of the points would be at or less than the Planning Code's 11 mph pedestrian-comfort criterion.

Under the Cumulative #2 scenario, as compared to the existing setting, wind speeds would increase at 14 locations, remain unchanged at 1 location, and decrease at 11 locations. Wind speeds of 14 mph or more would occur at 5 pedestrian locations. The Cumulative #2 scenario would eliminate four project pedestrian-comfort criterion exceedances and create five new pedestrian-comfort criterion exceedances. Thirteen of the points would be at or less than the Planning Code's 11 mph pedestrian-comfort criterion.

Under the Cumulative #3 scenario, as compared to the existing setting, wind speeds would increase at 12 locations, remain unchanged at 6 locations, and decrease at 8 locations. Wind speeds of 14 mph or more would occur at 8 pedestrian locations. The Cumulative #3 scenario would eliminate four project pedestrian-comfort criterion exceedances and create seven new pedestrian-comfort criterion exceedances. Eleven of the points would be at or less than the Planning Code's 11 mph pedestrian-comfort criterion.

Under all three scenarios, the locations that would experience the greatest increases in wind speeds are on the southwest and northeast corners of intersection of Fremont and Harrison Streets, on Harrison Street west of the First Street on-ramp and east of the Harrison off-ramp (#19, 62, 16 and 82, respectively). Not all locations exceed the comfort criteria under existing conditions and not all would exceed the comfort criterion as a result of the increases. Locations that would experience declines in wind speeds for all three scenarios are on Harrison Street between First Street and Fremont Street and on the corner of Harrison Street and Beale Street (#18 and 65, respectively). With one exception, the decreases would not eliminate existing comfort criteria exceedances.

Based on the fact that Cumulative #2 would have fewer locations where wind speeds would measure over 14 mph (5 as compared to 9 under Cumulative #1 and 8 under Cumulative #3) and the fact that it would have the most locations which would meet the pedestrian-comfort criterion (13 as compared to 11 under both Cumulatives #1 and #3), it would have small benefits for wind comfort conditions compared with the other two cumulative scenarios.

Wind Hazard Conditions

The Code's wind hazard criterion is currently exceeded at one of the 26 existing setting test locations. The existing exceedance, with a duration of 2 hours per year, occurs on the south side of Harrison Street, at the bridge that spans Beale Street.

Under the Cumulative #1 scenario, the Code's wind hazard criterion would be exceeded at one pedestrian location on the south side of Harrison Street at the Harrison off-ramp for a duration of 5 hours per year. That exceedance would represent a net increase of 3 hours per year over the existing 2 hour per year exceedance. The effect of the Cumulative #1 development scenario on the wind hazard conditions would be adverse and that scenario would not meet the requirements of Planning Code Section 249.1(b)(3) without further mitigation that reduces the total duration of the wind hazard exceedances to 2 hours per year or less.

Under the Cumulative #2 scenario, the Code's wind hazard criterion would be exceeded at three pedestrian locations – one at the intersection of First Street with Lansing Street (1 hour per year), one at Harrison Street and Harrison Street off-ramp (3 hours per year) and one across the street from the Harrison Street off-ramp, on the corner of Harrison Street and Fremont Street (1 hour per year). The exceedances would occur for a combined duration of 5 hours per year, a net increase of 3 hours per year over the existing 2 hour per year exceedance. The effect of the Cumulative #2 development scenario on the wind hazard conditions would be adverse and that scenario would not meet the requirements of Planning Code Section 249.1(b)(3) without further mitigation that reduces the total duration of the wind hazard exceedances to 2 hours per year or less.

Under the Cumulative #3 scenario, the Code's wind hazard criterion would be exceeded at one pedestrian location at the intersection of First Street with Lansing Street for duration of 1 hour per year. The exceedance would yield a net decrease in wind hazard exceedances of 1 hour per year. The Cumulative #3 development scenario would have a beneficial effect on the wind hazard conditions, decreasing the wind hazard criterion exceedances compared to the existing conditions. It is the only one of the three cumulative scenarios that results in such a net reduction in existing wind hazard exceedances and Cumulative #3 would meet the requirements of Planning Code Section 249.1(b)(3).

As can be seen in Table 2 and on the basis of the above, a only beneficial scenario with regards to wind hazards would be Cumulative Development #3. Both Cumulative #1 and Cumulative #2 would require further mitigation that reduces the total duration of the wind hazard exceedances to 2 hours per year or less. However, the mitigation required to make Cumulatives #1 and/or #2 conform to Planning Code Section 249.1(b)(3) is expected to be minimal.

Note that the results in all three scenarios are relatively quite similar and further testing that uses actual high-rise development designs, instead of conceptual or massing models, could provide much different results.

ATTACHMENTS – SAN FRANCISCO PLANNING CODE SECTIONS

**San Francisco Planning Code Section 148,
Reduction of Ground-level Wind Currents in C-3 Districts**

- (a) **Requirement and Exception.** In C-3 Districts, buildings and additions to existing buildings shall be shaped, or other wind-baffling measures shall be adopted, so that the developments will not cause ground-level wind currents to exceed, more than 10 percent of the time year round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 m.p.h. equivalent wind speed in areas of substantial pedestrian use and seven m.p.h. equivalent wind speed in public seating areas.

When preexisting ambient wind speeds exceed the comfort level, or when a proposed building or addition may cause ambient wind speeds to exceed the comfort level, the building shall be designed to reduce the ambient wind speeds to meet the requirements. An exception may be granted, in accordance with the provisions of Section 309, allowing the building or addition to add to the amount of time that the comfort level is exceeded by the least practical amount if (1) it can be shown that a building or addition cannot be shaped and other wind-baffling measures cannot be adopted to meet the foregoing requirements without creating an unattractive and ungainly building form and without unduly restricting the development potential of the building site in question, and (2) it is concluded that, because of the limited amount by which the comfort level is exceeded, the limited location in which the comfort level is exceeded, or the limited time during which the comfort level is exceeded, the addition is insubstantial.

No exception shall be granted and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year.

- (b) **Definition.** The term “equivalent wind speed” shall mean an hourly mean wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.
- (c) **Guidelines.** Procedures and Methodologies for implementing this section shall be specified by the Office of Environmental Review of the Department of City Planning. (Added by Ord. 414-85, App. 9/17/85)

ATTACHMENTS – SAN FRANCISCO PLANNING CODE SECTIONS

**San Francisco Planning Code Section 249.1
Rincon Hill Special Use District**

(b) Controls

(3) Reduction of Ground-level Wind Currents.

- (A) **Requirement.** New buildings and additions to existing buildings shall be shaped, or other wind-baffling measures shall be adopted, so that the developments will not cause ground-level wind currents to exceed, more than 10 percent of the time year-round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 m.p.h. equivalent wind speed in areas of substantial pedestrian use and seven m.p.h. equivalent wind speed in public seating areas. The term “equivalent wind speed” shall mean an hourly mean wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.

When preexisting ambient wind speeds exceed the comfort level, or when a proposed building or addition may cause ambient wind speeds to exceed the comfort level, the building shall be designed to reduce the ambient wind speeds to meet the requirements. The provisions of this Section 249.1(b)(3) shall not apply to any buildings or additions to existing buildings for which a draft EIR has been published prior to January 1, 1985.

- (B) **Exception.** The Zoning Administrator may allow the building or addition to add to the amount of time the comfort level is exceeded by the least practical amount if (1) it can be shown that a building or addition cannot be shaped and other wind-baffling measures cannot be adopted to meet the foregoing requirements without creating an unattractive and ungainly building form and without unduly restricting the development potential of the building site in question, and (2) it is concluded that, because of the limited amount by which the comfort level is exceeded, the limited location in which the comfort level is exceeded, or the limited time during which the comfort level is exceeded, the addition is insubstantial.

The Zoning Administrator shall not grant an exception and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year.

- (C) **Procedures.** Procedures and methodologies for implementing this Section shall be specified by the Office of Environmental Review of the Department of City Planning.

● CHAPTER X

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