LOWER ARSENAL MIXED USE SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORT

RECIRCULATION OF SELECT SECTIONS

STATE CLEARINGHOUSE #2007062021

LSA

April 2008

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Submitted to the:

City of Benicia
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I. INTRODUCTION

A. INTRODUCTION

This recirculation of select topical sections from the Draft EIR has been prepared to update and provide additional analysis of the Lower Arsenal Mixed Use Specific Plan, pursuant to *CEQA Guidelines* section 15088.5. The environmental effects of the Lower Arsenal Mixed Use Specific Plan were evaluated in a Draft Environmental Impact Report (EIR), which was released for public and agency review on July 19, 2007. During and after the public/agency review period (which formally ended on September 6, 2007), 19 comment letters were submitted. In responding to these comment letters, and revising the information in the Draft EIR accordingly, "significant new information" (as defined in *CEQA Guidelines* section 15088.5) was added to the Draft EIR. *CEQA Guidelines* section 15088.5 requires recirculation of a Draft EIR "when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review. . . but before certification." The significant new information added to the Draft EIR includes the identification of new hazards and cultural resources impacts that were not previously identified in the Draft EIR. No changes have occurred to the Lower Arsenal Mixed Use Specific Plan since release of the Draft EIR for public/agency review.

This document includes: 1) instructions for submitting comments on the recirculated materials; 2) a discussion of CEQA's requirements for recirculation; 3) a summary of substantial new information that is being added to the Draft EIR, requiring recirculation; and 4) complete copies of Chapter II, Summary, and Sections IV.E, Hazards, and IV.K, Cultural Resources, of the Draft EIR that show significant new information introduced since publication of the Draft EIR.

The enclosed CD in the back of this document contains a complete EIR, including revised Chapter II and Sections IV.E and IV.K.

B. COMMENTING ON THE RECIRCULATED EIR

These recirculated materials will be released for public/agency review for 45 days, consistent with *CEQA Guidelines* section 15105. Submit all comments to Damon Golubics, Principal Planner, City of Benicia, 250 East L Street, Benicia, CA 94510, by June 12, 2008. The City of Benicia is requesting that reviewers limit their comments to the recirculated materials, consistent with CEQA Guidelines section 15088.5(f)(2). Therefore, agencies, organizations, and individuals who wish to comment on this document should limit their comments to the changes made to Sections IV.E, Hazards, and IV.K, Cultural Resources. Comments received during the initial circulation period and recirculation period will be addressed in a forthcoming Response to Comments Document.

Questions and comments regarding the preparation of these materials and City review of the project should be directed to:

Charlie Knox, Community Development Director
City of Benicia
250 East L Street
Benicia, CA 94510

C. PURPOSE OF RECIRCULATION

CEQA requires recirculation when "significant new information" is added to an EIR after publication of the Draft EIR, but before certification.[1] New information is considered significant under CEQA when: "The EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement."[2]

"Significant new information" requiring recirculation includes a disclosure showing:

1. A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented;

2. A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance;

3. A feasible project alternative or mitigation measure, which is considerably different from others previously analyzed, would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it; or

4. The Draft EIR is so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment are precluded.

"Recirculation is not required where the new information added to an EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR." [3]

D. SUBSTANTIAL NEW INFORMATION

Substantial new information has been added to Sections IV.E, Hazards, and IV.K, Cultural Resources, of the Draft EIR. All revisions made to these sections are included herein.

The substantial new information added to Section IV.E, Hazards includes:

[1] *CEQA Guidelines* §15088.5; *Laurel Heights Improvement Ass'n v. Regents of the Univ. of Cal.*, 6 Cal. 1112 [1993]).

[2] Ibid.

[3] Ibid.

- Descriptive information about remedial investigations and clean-ups that have been undertaken at the former Benicia Arsenal by the U.S. Army Corps of Engineers;
- Descriptive information related to hazardous materials concerns associated with the 50 Series Complex, fuel storage tanks, and groundwater contamination; and
- Identification of a new impact associated with development that would occur in areas with documented and/or partly characterized environmental releases associated with historical site uses, and an associated mitigation measure that would reduce this impact to a less-than-significant level.

The substantial new information added to Section IV.K, Cultural Resources, includes:

- Identification of Impact CULT-2 (impact to potential historic buildings) as potentially significant and unavoidable, even after mitigation;
- Identification of Impact CULT-9 (impact to potential historic buildings in the Grant Street Zone) as potentially significant and unavoidable, even after mitigation;
- Identification of a new impact (Impact CULT-11) to the setting of Historic District D (this impact would be reduced to a less-than-significant level with implementation of Mitigation Measure CULT-11); and
- Identification of Impact CULT-12 (impact to potential historic buildings in the South of Grant Zone) as potentially significant and unavoidable, even after mitigation.

The attached Sections IV.E, Hazards, and IV.K, Cultural Resources, show all changes made to these sections, including the addition of substantial new information. New impacts and mitigation measures identified in these two sections are also shown in the revised Chapter II, Summary. No substantial new information has been added to other sections of the Draft EIR. Deleted text is shown with the ~~strikeout~~ feature; added text is <u>underlined</u>. The page numbers shown are those of the revised document.

II. SUMMARY

A. PROJECT UNDER REVIEW

This EIR has been prepared to evaluate the environmental impacts of the proposed *Lower Arsenal Mixed Use Specific Plan* (the "Draft Specific Plan" or "proposed project"). The proposed project includes implementation of a Specific Plan for the Lower Arsenal site, which is designated for mixed uses in the Benicia General Plan. The Specific Plan covers four distinct zones, each of which exhibits a unique physical character. The Specific Plan would implement a form-based code to shape future development on the project site, with a primary emphasis on the physical form and character of new development. After build-out of the Draft Specific Plan, the area would contain approximately 741,865 square feet of mixed uses, 22 residential units, and 6.39 acres of open space. The Specific Plan area currently contains approximately 525,000 square feet of mixed uses. Existing and proposed uses are described below, for each of the four development zones:

- **Jefferson Ridge/Officers' Row Zone:** Approximately 2.99 acres of open space and 230,575 square feet of new and redeveloped mixed uses, including institutional, office, commercial, and limited residential uses;
- **Adams Street Zone:** Approximately 1.30 acres of open space and 200,100 square feet of new and redeveloped mixed uses, including office, commercial, light industrial, work/live, and limited residential uses;
- **Grant Street Zone:** Approximately 0.92 acres of open space and 32,775 square feet of redeveloped mixed uses, including office, commercial, light industrial, work/live, and limited industrial uses; and
- **South of Grant Zone:** Approximately 1.19 acres of open space and 278,415 square feet of redeveloped mixed uses, including office, commercial, light industrial, and work/live uses.

A detailed description of the Draft Specific Plan is provided in Chapter III, Project Description.

B. SUMMARY OF IMPACTS AND MITIGATION MEASURES

This summary provides an overview of the analysis contained in Chapter IV, Setting, Impacts and Mitigation Measures. CEQA requires a summary to include discussion of: 1) potential areas of controversy; 2) significant impacts; 3) recommended mitigation measures; and 4) alternatives to the proposed project.

1. Potential Areas of Controversy

The potential areas of controversy surrounding the proposed project identified as part of the EIR scoping and Notice of Preparation (NOP) processes are evaluated in Chapter IV of this EIR and are listed below. The City received a total of six comment letters in addition to the verbal comments from individuals and the City of Benicia Planning Commission at a public meeting on April 12, 2007 (see Appendix A).

- land use compatibility;
- historic landscapes;
- transit, bicycle, and pedestrian access;
- preservation of existing land uses, including Port uses;
- traffic congestion and roadway hazards;
- on-site noise and air quality;
- lighting and aesthetics
- policy consistency;
- global warming and sustainability; and
- development alternatives.

2. Significant and Less-than-Significant Impacts

Under CEQA, a significant effect on the environment is defined as: a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance.[1]

As discussed in Chapter IV of this EIR, implementation of the proposed project has the potential to result in adverse environmental impacts in several areas. Impacts associated with the following environmental topics would be significant without the implementation of mitigation measures, but would be reduced to a less-than-significant level if the mitigation measures recommended in this EIR are implemented:

- Land Use and Planning Policy
- Geology, Soils and Seismicity
- Hazards and Hazardous Materials
- Biological Resources
- Transportation and Circulation
- Air Quality
- Noise
- Visual Resources
- Cultural and Paleontological Resources

Impacts associated with the following environmental topics would be considered less than significant and would not require any mitigation measures based on the identified criteria of significance:

- Population, Employment and Housing

[1] CEQA Sections 21060.5 and 21068.

- Hydrology and Water Quality
- Public Services
- Utilities and Infrastructure
- Sustainability and Energy

3. Significant Unavoidable Impacts

The Draft Specific Plan would not result in any significant and unavoidable impacts.

4. Alternatives to the Project

The following alternatives to the project are considered in this EIR:

- The **No Project alternative**, which assumes that the Draft Specific Plan is not implemented, but that existing uses in the project site continue to evolve and intensify.
- The **Option 1 alternative**, which would rehabilitate the historic buildings and landscapes in the Jefferson Ridge/Officers' Row Zone but would not introduce new buildings to the area.
- The **Option 1.5 alternative**, which would strike a balance between the development objectives of Option 1 and Option 2 (analyzed as the proposed project): historic buildings and landscapes in Jefferson Ridge/Officers' Row would be rehabilitated, two new structures would be constructed in the area, and an "Arsenal Memorial Park" would be developed south of Jefferson Street.
- The **Senior Housing alternative**, which would be the most intensely-developed of all the project alternatives, and would consist of construction of a 50-unit senior apartment complex north of Jefferson Street between the Commanding Officer's Quarters and the Lieutenant's Quarters, and construction of 30 market-rate townhouse units south of Jefferson Street.

The **Option 1 alternative** is identified as the environmentally superior alternative. Each alternative is described and analyzed in Chapter V of this EIR.

C. SUMMARY TABLE

Table II-2 identifies impacts and mitigation measures associated with the proposed project. The information in the tables is organized to correspond with environmental issues discussed in Chapter IV. The table is arranged in four columns: 1) environmental impacts; 2) level of significance prior to mitigation measures; 3) mitigation measures; and 4) level of significance after mitigation. For a complete description of potential impacts and recommended mitigation measures, refer to Chapter IV.

Table II-1: Summary of Impacts and Mitigation Measures

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
A. LAND USE AND PLANNING POLICY			
LU-1: Residential uses developed within the Plan Area may be incompatible with existing industrial uses.	S	LU-1: The following changes shall be made to Action 1.5.3: Action 1.5.3: Allow residential uses, including artist live/work units, where it can be demonstrated that adequate buffers exist, including noise buffers, and that the presence of residents will not significantly constrain industrial operations, including the flow of goods and materials. Proposed residential uses located in areas where industrial uses can be seen or heard shall be evaluated to determine that they would not be incompatible with industrial uses. Site specific evaluation may include acoustical or air quality analysis as determined by the City. New work/live uses shall not be permitted along those portions of Jackson Street that are south of Grant Street and west of Park Street.	LTS
LU-2: Implementation of the Draft Specific Plan could result in conflicts between residential uses and industrial uses.	S	LU-2: Implement Mitigation Measure LU-1.	LTS
B. POPULATION, EMPLOYMENT AND HOUSING			
There are no significant *Population, Employment and Housing* impacts.			
C. GEOLOGY, SOILS AND SEISMICITY			
GEO-1 (All Zones): Seismically-induced ground shaking in the Specific Plan Area could result in damage to life and/or property at new development sites.	S	GEO-1a (All Zones): Prior to the issuance of any site-specific grading or building permit in the Specific Plan Area, a final design-level geotechnical investigation report shall be prepared and submitted to the City of Benicia Planning and Building Department for review and confirmation that the proposed project fully complies with the California Building Code (Seismic Zone 4). The report shall determine the project site's geotechnical conditions and address potential seismic hazards such as seismic shaking. The report shall recommend foundation techniques appropriate to minimize seismic damage. In addition, the geotechnical investigation shall conform to the California Division of Mines and Geology (CDMG) recommendations presented in the *Guidelines for Evaluating Seismic Hazards in California*, CDMG Special Publication 117.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
GEO-1 *Continued*		All subsequent parcel-specific development and building plans shall comply with the California Building Code (Seismic Zone 4) requirements, or requirements superseding California Building Code requirements. In addition, future development plans shall comply with the requirements of the final design-level geotechnical investigation report unless superseded by a parcel-specific design-level geotechnical investigation report. All mitigation measures, design criteria, and specifications set forth in the geotechnical reports shall be fully implemented.	
GEO-2 (All Zones): Seismically-induced ground shaking in the Specific Plan Area could result in damage to life and/or property in adaptively reused buildings.	S	GEO-2 (All Zones): Prior to approval of an occupancy permit for redeveloped buildings in the Specific Plan Area, a design-level seismic upgrade report shall be prepared, submitted to the City for review and approval, and the upgrade recommendation(s) shall be fully implemented. Prior to approving the design-level report, the City shall independently review the seismic upgrade report to determine the adequacy of the hazards evaluation and proposed mitigation measures. Such reviews shall be conducted by a structural engineer or registered civil engineer who has competence in the field of seismic hazard evaluation and mitigation.	LTS
GEO-3 (All Zones): Damage to structures or property related to shrink-swell potential of project soils and/or settlements of non-engineered fill could occur.	S	GEO-3a (All Zones): Prior to the issuance of a site-specific grading permit or the construction of new roadways, sidewalks, and utility lines, a design-level geotechnical investigation shall be prepared by licensed professionals and approved by the City of Benicia Planning and Building Department. The design-level geotechnical investigation shall include measures to ensure potential damages related to expansive soils and differential settlement are minimized. Mitigation options for expansive soils may range from removal of the problematic soils and replacement, as needed, with properly conditioned and compacted fill, to design and construction of improvements to withstand the forces exerted during the expected shrink-swell cycles and settlements. Recommendations for specific foundation designs which minimize the potential for damage related to settlement shall be presented in the report.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
GEO-3 *Continued*		GEO-3b (All Zones): Designs of all open space and park areas shall be reviewed and approved by the City of Benicia Planning and Building Department. The designs of all open space and park areas shall incorporate low water-need plantings to minimize the potential for damage to pavements, utilities, and structures from expansive soils. The use of similar landscaping shall be encouraged at private development parcels by providing information to new tenants regarding the relationship between irrigation and subsequent property damage. A document which describes the potential for damage from expansive soils from over-irrigation and includes solutions such as drought-tolerant plant material and drip irrigation systems shall be prepared by the applicant and provided to all occupants of the Plan Area.	
GEO-4 (Adams Street Zone, Grant Street Zone, and South of Grant Street Zone): Damage to structures or property related to liquefaction, ground displacement, and ground failure could occur.	S	GEO-4 (Adams Street Zone, Grant Street Zone, and South of Grant Street Zone): Prior to the issuance of a site-specific grading permit or the construction of new roadways, sidewalks, and utility lines, a design-level geotechnical investigation shall be prepared by licensed professionals and approved by the City of Benicia Planning and Building Department. The design-level geotechnical investigation shall include measures to ensure potential damages related to liquefaction, ground displacement, and ground failure are minimized.	LTS
GEO-5 (Jefferson Ridge Zone): Damage to structures or property could occur at the Jefferson Ridge Zone due to existing or induced slope instability resulting in landsliding.	S	GEO-5a (Jefferson Ridge Zone): Prior to the issuance of any site-specific grading or building permit, a design-level geotechnical investigation report shall be prepared and submitted to the City of Benicia Planning and Building Department for review and confirmation that the proposed project fully complies with the California Building Code (Seismic Zone 4). The applicant shall incorporate all recommendations of the final geotechnical investigation report regarding mitigation of slope instability into the project design.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
GEO-5 *Continued*		GEO-5b (Jefferson Ridge Zone): All grading plans, cut and fill slopes, compaction procedures, and retaining structures shall be designed by a licensed professional engineer and inspected during construction by a licensed professional engineer (or representative) or Certified Engineering Geologist (or representative). All designs shall be submitted to, and approved by, the City of Benicia prior to implementation.	
D. HYDROLOGY AND WATER QUALITY			
There are no significant *Hydrology and Water Quality* impacts.			
E. HAZARDS AND HAZARDOUS MATERIALS			
HAZ-1: Site development would occur in areas with documented and/or partly characterized environmental releases associated with historical site uses.	S	HAZ-1: Existing contamination shall be remediated, or engineering controls (engineered caps, vapor barriers, or other appropriate technologies) and administrative controls (withholding of building permits) shall be implemented, to ensure that potential future occupants of the Plan Area are not exposed to site-related contamination that exceeds acceptable health standards. The parties responsible for implementing site clean-up actions may include the USACE, other historical owners/operators of properties within the Plan Area, current owners of properties within the Plan Area, future developers of the properties within the Plan Area, or the City of Benicia. Acceptable health standards for the purpose of site clean-up shall mean an incremental lifetime cancer risk within the U.S. EPA's risk management range of one in ten thousand to one in a million (10^{-4} to 10^{-6}) or less and a non-cancer health hazard index of less than one based on the results of site-specific multimedia human health risk assessment(s). Groundwater health standards shall meet CalEPA requirements for the designated beneficial use(s) of groundwater in the Plan Area. CalEPA and the City shall certify that these requirements have been met before the City issues a Certificate of Occupancy for buildings constructed as part of redevelopment projects within the Plan Area.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HAZ-1 *Continued*		The nature and extent of contamination at the site is not fully characterized. In accordance with the requirements of the DTSC's Preliminary Endangerment Assessment process or other acceptable EPA or CalEPA regulatory guidance for site investigations, soil and groundwater samples shall be collected and analyzed in areas with inadequate historical information to determine whether chemicals in the soil and groundwater are present at concentrations that exceed acceptable health standards. To ensure that future site occupants are not exposed to site-related contamination that exceeds acceptable health standards the following shall activities shall be conducted: • The nature and extent of chemicals in soil and groundwater shall be investigated and described for each parcel or group of parcels to be redeveloped, with oversight by the appropriate regulatory agency, such as the DTSC, RWQCB, or SCEHS. • The environmental data collected as part of the site investigation shall be used as input for human health risk assessment(s) to determine whether any chemicals in soil or groundwater will present an unacceptable risk to site occupants (i.e., exceed acceptable health standards as described above) given the site uses proposed in the Specific Plan and any subsequent redevelopment plans proposed for the parcel(s). • The results of the human health risk assessment shall be used to determine whether no further action is required prior to redevelopment or that remediation of contamination or implementation of engineering or administrative controls is required to ensure that potential future occupants of the Plan Area are not exposed to site-related contamination that exceeds acceptable health standards. • If remediation, engineering controls, or administrative controls are required to ensure that human health risk does not exceed acceptable health standards, these actions shall be completed before the site is occupied.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HAZ-1 *Continued*		Monitoring and compliance shall consist of the following: • Before the City issues building permits for a site within the Plan Area, it shall confirm that: a finding of No Further Action has been made by the overseeing regulatory agency with regard to site contamination and clean-up, or that a Remedial Action Plan or equivalent and a site health and safety plan are complete and incorporated as part of the redevelopment construction plans for the site; and that engineering controls are in place and functioning or included in the project design plans, and/or that land use covenants are in place for the property that will ensure future occupants of the site are not exposed to contamination that exceeds acceptable health standards.	
HAZ-2~~1~~: Construction activities may unexpectedly encounter hazard materials or hazardous waste in soil or groundwater.	S	HAZ-2~~1~~a: If soil, groundwater or other environmental media with suspected contamination (e.g., identified by odor or visual staining) is encountered unexpectedly during construction activities for individual development projects or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered, the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notifying the SCEHS and implementing actions to determine the nature and extent of any observed contamination. An environmental professional shall oversee the subsequent assessment of the site (including the collection, analysis and interpretation of any samples of soil, groundwater or other environmental media) in accordance with local, State and federal hazardous materials and hazardous waste laws and regulations. The professional shall provide recommendations, as applicable, regarding soil/waste management, worker health and safety training, and regulatory agency notifications. General construction work shall not resume in the area(s) affected until the recommendations have been implemented under the oversight of the SCEHS or other regulatory agency, as appropriate.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HAZ-1 *Continued*		HAZ-2~~1~~b: The contractor involved in site grading and site development activities for an individual development project shall ensure that underground pipelines or other underground or aboveground utilities within the project site are identified and clearly marked prior to earthworking activities to avoid unexpected contact with these utilities. Emergency procedures shall be developed by the contractor that can be implemented in the event utilities are ruptured; these procedures shall be reviewed and approved by the City of Benicia Planning and Building Department, prior to the issuance of a grading or building permit. On-site workers shall be trained in how to implement these procedures.	
F. BIOLOGICAL RESOURCES			
BIO-1: Mature trees that are protected under the City's Tree Ordinance may be removed as part of the development on the project site.	S	BIO-1: Prior to development of individual projects, a tree report shall be prepared by an arborist or biologist to identify the location, size, and health of trees on the site, and to map and identify the trees that would be preserved and removed during construction of the project. The report shall also specify measures to protect all preserved trees during construction, including creation of Tree Protection Zones. The project sponsor shall apply for a Tree Permit for the removal of all protected trees. As part of the Tree Permit, an arborist or biologist shall develop a tree replacement program in accordance with the City's tree ordinance. Two 15-gallon trees are generally required for the replacement of each mature tree that is removed. In some cases, one or two 24-inch box trees, or a mature tree shall be required for the replacement of one mature tree.	LTS
BIO-2 (Jefferson Ridge/Officers' Row Zone): Development in the Jefferson Ridge/Officers' Row Zone (including the Clocktower Area) may result in the fill of jurisdictional wetlands that are subject to jurisdiction as waters of the United States under Section 404 of the Clean Water Act and/or are waters of the State subject to jurisdiction under the Porter-Cologne Act .	S	BIO-2a (Jefferson Street/Officers' Row Zone): Prior to approving any development project in the Jefferson Ridge/Officers' Row Zone, a formal wetland delineation will be conducted to determine the extent of jurisdictional waters of the United States and waters of the State on the site. Potential impacts to jurisdictional waters will be avoided where feasible, and unavoidable impacts shall be minimized to the extent that is feasible.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-2 *Continued*		BIO-2b (Jefferson Street/Officers' Row Zone): Applicants for individual development projects on the site of any delineated wetlands shall obtain the appropriate federal and State permits authorizing the fill of jurisdictional wetlands and other waters, including waters of the State. The applicant shall provide proof to the City of Benicia of compliance with the terms and conditions of the permits prior to issuance of the grading permit. All work in jurisdictional areas shall be in compliance with the terms and conditions of the federal and State permits.	
		BIO-2c (Jefferson Street/Officers' Row Zone): All waters of the United States or waters of the State that are filled as a result of project development will be mitigated at a minimum 1:1 ratio or the higher of the ratios stipulated in the federal or state permit authorizing fill of the wetlands or non-wetland waters. Mitigation for impacts to wetlands or other waters may be accomplished by 1) on- or off-site creation of wetlands or non-wetland waters at an appropriate mitigation site, or 2) by purchasing credit at an approved off-site mitigation bank.	
		BIO-2d (Jefferson Street/Officers' Row Zone): The project sponsor will implement a wetland mitigation and monitoring plan as mitigation for impacts to jurisdictional wetlands and waters. The plan will detail the mitigation design, wetland planting design, maintenance and monitoring requirements, reporting requirements, and success criteria. The mitigation wetlands shall be monitored for a minimum of 5 years. This plan shall be approved by the Corps and the City prior to implementation.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-2 *Continued*		BIO-2e (Jefferson Street/Officers' Row Zone): During construction of individual development projects, no material shall be allowed to enter or be stored in any wetlands that are to be preserved. Project-related dirt and other material shall be kept sufficiently far away from preserved wetlands and drainages to prevent material from entering these features. If earthmoving activities or material stock-piling occurs upslope from a preserved wetland or drainage, silt fencing shall be installed around the preserved feature to prevent soil from entering the wetland or drainage. Silt fencing shall be installed at the least 5 feet from the edges of preserved wetlands and drain-ages. Silt fencing shall also be installed around preserved features whenever earthmoving activities or material stockpiling occurs within 20 feet of a preserved feature. All equipment washing shall occur down slope from preserved wetlands to prevent the runoff from entering the preserved wetlands. Berms or other barriers shall be constructed outside of preserved wetlands or drainages to prevent wash water runoff from entering the preserved wetlands.	
		BIO-2f (Jefferson Street/Officers' Row Zone): A conservation easement shall be established over the mitigation wetlands to preserve these wetlands in perpetuity. The City of Benicia or other public resource agency shall hold the easement to ensure retention of this land in perpetuity.	
		BIO-2g (Jefferson Street/Officers' Row Zone): Applicants for individual development projects on the site of any delineated wetlands shall provide financial assurances of a type (i.e., bond, letter of credit) and amount to be determined by the Corps and the City to ensure successful implementation of the wetland mitigation and monitoring plan. The project sponsor shall also provide a long-term funding mechanism for the maintenance of the mitigation wetlands in the conservation easements in perpetuity.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-3: Development on the project site may impact special-status plants.	S	BIO-3a: Prior to construction of the project, a rare plant survey according to CNPS, CDFG, and USFWS protocols will be conducted in all potential habitat areas of the site. The survey should be conducted by a qualified botanist familiar with the flora of the Benicia area and with expertise in the identification of the special-status species potentially occurring onsite. Surveys will be conducted as appropriate throughout the growing season to ensure that all target species are observed.	LTS
		BIO-3b: If no special-status plant populations are identified, the botanist shall prepare and submit a report to the City documenting the negative findings of the survey. At a minimum, the report shall include a list of the target species for which surveys were conducted, dates of surveys, names of surveyors, and a list of all plants observed. No additional mitigation shall be required if special-status plants are not found during the protocol-level surveys.	
		BIO-3c: If special-status plant populations are observed, a mitigation and monitoring plan shall be developed by the applicant of individual development projects to avoid and/or compensate for the loss of special-status plant populations. Plants designated as endangered, threatened, candidate, or rare under the federal or State Endangered Species Acts, or listed on the CNPS List 1B or CNPS List 2 shall be mitigated either by avoidance or through compensatory mitigation. The mitigation monitoring and reporting plan shall be prepared in accordance with the following guidelines: • Whenever feasible, special-status plant populations should be avoided and the populations protected in place. Avoidance measures may include fencing the existing plants with Environmentally Sensitive Area (ESA) fencing prior to construction, establishing a buffer zone of at least 20 feet around rare plant populations, and implementing a training program for construction personnel to ensure avoidance of the preserved plant populations.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-3 *Continued*		• If impacts to special-status plant populations are unavoidable, the project sponsor shall mitigate for the impact by preserving existing plant populations of the same species at an offsite mitigation site at a minimum 2:1 ratio (2 acres of occupied habitat preserved for each acre of occupied habitat impacted). • The project sponsor shall develop a mitigation and monitoring plan for the plants that are impacted and submit the plan to the City and the appropriate resource agency (CDFG, USFWS) for approval. • A conservation easement shall be established over the mitigation site to preserve it in perpetuity as rare plant habitat. The City of Benicia or other public resource agency shall hold the easement to ensure retention of this land in perpetuity. • The project sponsor shall provide financial assurances of a type (i.e., bond, letter of credit) and amount to be determined by the City and CDFG to ensure successful implementation of the rare plant mitigation plan. The project sponsor shall also provide a long-term funding mechanism for the maintenance of the mitigation site in the conservation easements in perpetuity.	
BIO-4: Development on the project site may result in the loss of nesting habitat for breeding birds, and may result in direct take of special-status bird species through injury or mortality.	S	BIO-4a: Prior to tree pruning, tree removal, ground disturbing activities, or construction activities associated with individual development projects, a qualified biologist shall conduct raptor and passerine nest surveys to locate any active nests on or immediately adjacent to the site. Preconstruction surveys shall be conducted no more than 14 days prior to the start of pruning, construction, or ground disturbing activities if the activities occur during the nesting season (February 1 and August 31). Preconstruction surveys shall be repeated at 30-day intervals until construction has been initiated in the area. Locations of active nests shall be described and protective measures implemented. Protective measures shall include establishment of clearly delineated (i.e., orange construction	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-4 *Continued*		fencing) avoidance areas around each nest site that are a minimum of 300 feet from the dripline of the nest tree or nest for raptors and 50 feet for passerines. The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be submitted to the City at the end of the construction season documenting the observations made during monitoring.	
		BIO-4b: A preconstruction survey shall be conducted no more than 30 days prior to modification, demolition, or removal of buildings. If no owls are observed, then demolition or removal may proceed. If owls are observed during the preconstruction survey, a determination shall be made on whether birds are roosting or nesting. If a single owl is roosting, demolition or removal of the structure can proceed after the owl has been persuaded to move from the roost area. Non-invasive techniques include light shining into the roost space for one or two nights and days. If barn owls (or other owls species) are found to be actively nesting in the barn, work on or demolition of the structure shall be postponed until one of the following conditions have been met: 1) a qualified biologist monitoring the nest determines that the owls have abandoned the nest without any outside interference or 2) a qualified biologist monitoring the nest has determined that the young have fledged and are capable of relocating and using another roost site. Under either scenario, the monitor shall ensure that all owls have left the building prior to construction or demolition activities. Once the young have fledged, non-invasive techniques may be used to encourage the owls to leave the barn. The barn owl nesting period is typically between February 15 and July 15. Buildings being used by nesting owls shall be fenced and designated off-limits to prevent entry into the buildings.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-5: Development on the project site may result in the loss of western burrowing owl habitat and direct take of this species through injury or mortality.	S	BIO-5a: Preconstruction surveys shall be conducted for burrowing owls in all potential habitat areas of the site (i.e., all areas shown as containing seasonal wetlands, ruderal/non-native grasslands, or native and non-native trees on Figure IV.F-1 of the Draft EIR) prior to preparation, grading, and construction of sites for individual development projects. These surveys shall conform to the survey protocol established by the California Burrowing Owl Consortium. Preconstruction surveys shall be conducted no more than 30 days prior to the initiation of construction activities and at 30-day intervals if construction activities have not been initiated in an area. The following measures shall also apply: a) If burrowing owls are found onsite, they shall be avoided to the extent practicable. A clearly defined area (i.e., an area demarcated by orange construction fencing) shall be established around each burrowing owl burrow to be avoided. No disturbance shall occur within 160 feet (50 meters) of occupied burrows during the non-breeding season (September 1 through January 31) or within 250 feet (75 meters) of an occupied burrow during the breeding season (February 1 through August 31). b) If burrowing owls occur at the development site and construction would begin before February or after the end of August, and the burrows cannot be avoided, then passive relocation techniques may be used to relocate owls from the site. These passive relocation techniques would include excavating all potential burrows after excluding owls from the burrow for the required length of time. Passive relocation shall be undertaken according to the current protocol established by the CDFG. Artificial burrows shall be provided on the mitigation site for each occupied burrow destroyed at the project site at a ratio of 2:1 (two artificial burrows created for each occupied burrow destroyed).	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-5 *Continued*		c) If western burrowing owl occurs at the development site and construction would begin during the breeding season (February through August), then a buffer of a radius of 250 feet (75 meters) shall be established around any burrows containing owls. d) Removal of burrowing owls at development site shall conform to the requirements of CDFG's *Staff Report on Burrowing Owl Mitigation.* This shall entail establishing 6.5 acres of suitable habitat for each pair of burrowing owls displaced from the project site. These 6.5 acres shall be adjacent to an area already used by burrowing owls. The replacement mitigation site shall be preserved in perpetuity for use as burrowing owl and wild-life habitat through a conservation easement. The project spon-sor shall develop a management plan for the mitigation site and submit the plan to the City and CDFG for approval. An endow-ment in an amount determined by the City and CDFG for management and monitoring the mitigation site shall also be established by the project sponsor. BIO-5b: As an alternative to purchasing land as mitigation for burrowing owls, the project sponsor may purchase credits at a CDFG-approved mitigation bank authorized to sell credits for burrowing owl mitigation. The City of Benicia shall be included in the service area of the mitigation bank. The number of credits to be purchased shall be equivalent to purchasing 6.5 acres per pair or single bird observed on the site. The final mitigation requirement shall be determined following the completion of the protocol-level survey. The sponsor shall provide the City with evidence of completion of the mitigation or purchase of mitigation credits at least 60 days prior to the initiation of construction activities.	
BIO-6: Development on the project site may result in the loss of foraging and roosting habitat for the pallid bat, Townsend's western big-eared bat, and other bat species, and may result in direct take of these species through injury or mortality.	S	BIO-6a: Preconstruction surveys for bat roosts shall be conducted in all buildings or trees that will be removed or modified. The survey shall take place no more than 30 days prior to construction/ demo-lition/removal activities. Preconstruction surveys shall be repeated if demolition or construction activities are delayed more than 30 days.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-6 *Continued*		BIO-6b: If a bat roost is found in a building or tree cavity, the species of bat using the roost shall be identified and methods to encourage the bats to leave the roost or to prevent them from returning to the roost shall be implemented prior to roost removal. A mitigation plan shall be developed to specify the methods to be used and the timing of the activities, and this mitigation plan shall be submitted to the City for review and approval.	
		BIO-6c: Materials from roost sites shall be salvaged, when feasible, to be used in the construction of artificial roosts.	
		BIO-6d: If special-status bats (i.e., pallid bat, Townsend's western big-eared bat) are found onsite, and the roost would be destroyed during development, an artificial roost shall be provided for the bats. The roost shall be constructed and placed onsite prior to removal of the original roost. A mitigation plan specifying the construction details and siting of the structure shall be prepared and approved by the City and CDFG prior to removal of the existing roost. The project sponsor shall provide a secure source of funding for the monitoring of the artificial roost for a period of at least 5 years. A report documenting the implementation of the plan shall be provided to the City within 1 month of completion of the artificial roost. The plan shall be completed and implemented prior to the issuance of the grading permit.	
		BIO-6e: Removal of maternity roosts for special-status bats shall be coordinated with CDFG prior to removal. Maternity roosts for any species of bat, either common or special-status, shall not be demolished until the young are able to fly independently of their mothers.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
G. TRANSPORTATION AND CIRCULATION			
TRANS-1: Unacceptable LOS at the intersection of **East 5th Street / I-780 Westbound Ramps**. The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.	S	TRANS-1: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. This intersection operates at unacceptable conditions and meets signal warrants prior to the addition of project-related traffic. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 11.7 and 12.5 seconds for the AM and PM peak hours, respectively.	LTS
TRANS-2: Unacceptable LOS at the intersection of **East 5th Street / I-780 Eastbound Ramps**. The effect of project traffic would result in the intersection operating at LOS E with a delay of 44.6 seconds during the PM peak hour.	S	TRANS-2: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the PM peak hour. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with 14.5 seconds of delay during the PM peak hour.	LTS
TRANS-3: Unacceptable LOS at the intersection of **East 5th Street / I-780 Westbound Ramps**. The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.	S	TRANS-3: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. This intersection operates at unacceptable conditions and meets signal warrants prior to the addition of project-related traffic. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 12.1 and 16.6 seconds for the AM and PM peak hours, respectively.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
TRANS-4: Unacceptable LOS at the intersection of **East 5th Street / I-780 Eastbound Ramps**. The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.	S	TRANS-4: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. Reconfigure the northbound approach to provide one left-turn lane, one through lane, and one right-turn lane. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 15.5 and 14.9 seconds for the AM and PM peak hours, respectively.	LTS
TRANS-5: Unacceptable LOS at the intersection of **East 2nd Street / Military East**. The effect of project traffic would result in the intersection operating at LOS E with a delay of 57.1 seconds during the PM peak hour.	S	TRANS-5: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Overlap the southbound right turn with the eastbound left turn phase, and re-time the signal. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS D with 42.5 seconds of delay during the PM peak hour.	LTS
TRANS-6: Unacceptable LOS at the intersection of **Park Road / Industrial Way**. The effect of project traffic would result in the intersection operating at LOS E with delays of 41.3 and 43.6 seconds during the AM and PM peak hours, respectively.	S	TRANS-6: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 14.5 and 13.8 seconds for the AM and PM peak hours, respectively.	LTS
TRANS-7: Unacceptable LOS at the intersection of **Park Road / Bayshore Road**. The effect of project traffic would result in the intersection operating at LOS F with delays of over 50.0 seconds during both the AM and PM peak hours.	S	TRANS-7: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement:	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
TRANS-7 *Continued*		Reconfigure the southbound approach to provide two exclusive left-turn lanes, and one shared through-right lane. Reconfigure the west-bound approach to provide one shared through-left lane, and two exclusive right-turn lanes. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B and LOS C with delays of 14.5 and 17.6 seconds for the AM and PM peak hours, respectively.	
TRANS-8: Temporary transportation impacts would result from truck movements and construction worker vehicles traveling to and from the project site.	S	TRANS-8: Prior to the issuance of each building permit, the project sponsor of an individual development project and construction contractor shall meet with the Benicia Public Works Department and other appropriate City of Benicia agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of the project. The project sponsor shall develop a construction management plan for review and approval by the City Public Works Department. The plan shall include at least the following items and requirements: • A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, provisions for truck queuing, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. • Identification of any transit stop relocations. • Provisions for parking management and spaces for all construction workers to ensure that construction workers do not park in on-street spaces. • Identification of parking space removal and any relocation of parking for employees, and public parking during construction. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
TRANS-8 *Continued*		• Provisions for accommodation of pedestrian flow. • No construction traffic shall be allowed on East 5th Street south of Military East. • Location of construction staging areas for materials, equipment, and vehicles. • Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provisions for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project sponsor. • A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager.	
TRANS-9: High volumes of heavily laden trucks have an incremental impact on the condition of streets and highways.	S	TRANS-9: The project sponsor of an individual development project shall prepare an overall construction traffic management plan to limit the effects of trucks and other construction traffic on surface conditions of area roads and intersections. This plan shall be prepared in coordination with the City of Benicia, and shall include the following provisions: • Prior to implementation of the proposed project, the project sponsor shall survey the condition of truck access route roadways and prepare an existing conditions report to document roadway baseline conditions. • During the construction of the project, or periodically throughout the project's construction period, the project sponsor shall make periodic improvements to area roadways to maintain minimum standards, including clean-up of construction debris (e.g., sand and gravel) and spot repaving of potholes or other severe pavement section damage.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
TRANS-9 *Continued*		• Upon completion of all or most project construction activities, the project sponsor shall identify any impacts to roadway conditions. The project sponsor will install improvements and/or pay an impact fee to mitigate any damages to the existing street pavements on Military East and East 5th Street to/from the project site caused by heavy construction traffic accessing the project site.	
H. AIR QUALITY			
AIR-1: Demolition and construction period activities could generate significant dust, exhaust, and organic emissions.	S	AIR-1: Consistent with guidance from the BAAQMD, the following actions shall be required of construction contracts and specifications for individual development projects: *Demolition.* The following controls shall be implemented during demolition: • Water during demolition of structures and break-up of pavement to control dust generation; • Cover all trucks hauling demolition debris from the site; and • Use dust-proof chutes to load debris into trucks whenever feasible. *Construction.* The following controls shall be implemented at all construction sites: • Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust; • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard; • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites; • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; water sweepers shall vacuum up excess water to avoid runoff-related impacts to water quality;	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
AIR-1 *Continued*		• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; • Apply non-toxic soil stabilizers to inactive construction areas; • Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.); • Limit traffic speeds on unpaved roads to 15 mph; • Install sandbags or other erosion control measures to prevent silt runoff to public roadways; • Replant vegetation in disturbed areas as quickly as possible. • Install base rock at entryways for all exiting trucks, and wash off the tires or tracks of all trucks and equipment in designated areas before leaving the site; and • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. • Implementation of this mitigation measure would reduce construction period air quality impacts to a less-than-significant level.	
AIR-2: The proposed project could expose future residents within the Lower Arsenal Specific Plan to potentially high cancer risks from exposure to diesel emissions from the adjacent port operations.	S	AIR-2: To determine if a specific development proposal would expose sensitive receptors to toxic air contaminants in excess of the BAAQMD significance criteria, the project proponent of a residential project shall coordinate with the BAAQMD to prepare a health risk assessment specific to the development parcel proposed for residential use. The assessment shall incorporate emissions sources from activities associated with the Port of Benicia. Residential sites that are determined to exceed a probability of contracting cancer for the Maximally Exposed Individual (MEI) of 10 in 1 million or have ground-level concentrations of non-carcinogenic toxic air contaminants that would result in a Hazard Index greater than 1 for the MEI shall incorporate interior air filtration systems that would reduce the cancer risk or hazard index to below the BAAQMD significance criteria.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
I. NOISE			
NOI-1: Construction period activities could create significant short-term noise impacts on adjacent residential properties and on buildings that are currently or would become occupied within the Plan Area before completion of Specific Plan buildout.	S	NOI-1a: During all on-site excavation and grading, the project contractors for individual development projects shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards. All heavy construction equipment used on project sites within the Plan Area shall be maintained in good operating condition, with all internal combustion, engine-driven equipment equipped with intake and exhaust mufflers that are in good condition. "Quiet" models of air compressors and other stationary noise sources shall be utilized where such technology exists.	LTS
		NOI-1b: The project contractors for individual development projects shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the construction site.	
		NOI-1c: The construction contractors for individual development projects shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the construction site during all project construction. The construction contractors shall post signs prohibiting unnecessary idling of internal combustion engines.	
		NOI-1d: The contractors for individual development projects shall further designate a "noise disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaints (e.g. beginning work too early, bad muffler) and institute reasonable measures warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at all construction sites within the Plan Area.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
NOI-1 *Continued*		NOI-1e: The construction contractor shall ensure that all noise producing construction-related activities within 500 feet of any residential land uses shall be restricted to the hours of 7:00 a.m. to 10:00 p.m.; all excavating, grading, and filling activity, including, but not limited to, warming of equipment motors, shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Saturday.	
NOI-2: Implementation of the proposed Specific Plan would increase traffic noise levels within the Plan Area and in surrounding areas.	S	NOI-2: A project-specific acoustical analysis report shall be completed which shall include measures that would reduce traffic noise impacts to below the maximum allowable noise exposure standard of 60 dBA CNEL. These measures shall be incorporated into the project. This analysis shall be performed for all proposed noise sensitive land use development projects in the following areas: • Within 60 feet of the centerline of Adams Street; • Within 55 feet of the centerline of Grant Street; and • Within 53 feet of the centerline of Park Road.	LTS
NOI-3: Implementation of the proposed Specific Plan would expose sensitive land uses to significant operational noise impacts.	S	NOI-3a: Project-specific acoustical studies shall be performed for all proposed noise-sensitive development within the Plan Area. The acoustical studies shall describe how the City's exterior and interior performance standards (shown in Table 4-4 [see Table IV.I-8 above] of the Noise Element of the General Plan) for proposed noise sensitive land uses which may be affected by stationary noise sources will be achieved. These acoustical studies must satisfy the requirements set forth in Title 24, Part 2, of the California Administrative Code, Noise Insulation Standards, for multiple-family attached residential units, hotels and motels.	LTS
		NOI-3b: Project-specific acoustical studies shall be performed for all proposed projects within the Plan Area located adjacent to noise sensitive land uses, and that would include the operation of any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device that would generate noise levels in excess of the City's exterior noise standards. These studies shall include mitigation that would reduce these stationary noise impacts to comply with the City's standards set forth in the City's Municipal Code section *8.20.140*.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
J. VISUAL RESOURCES			
VIS-1: Development projects built as part of the Draft Specific Plan could block scenic views.	S	VIS-1: The following changes shall be made to Action 4.5.2 of the Draft Specific Plan: Action 4.5.2. Require ~~Consider~~ visual impact studies, such as computer simulation, photo montage, on-site story poles, and rear streetscape frontage perspectives of all proposed development projects that are located within view corridors as identified on the "Historic Guidelines Overlay Plan" figure in the Draft Specific Plan~~, to~~ These studies shall document the impacts of proposed development or alteration of existing structures on views or view corridors. If these studies show that new development would diminish view corridors, the project design shall be altered so that views are not diminished.	LTS
K. CULTURAL AND PALEONTOLOGICAL RESOURCES			
CULT-1: Ground disturbance in the form of building construction parking lot construction, street construction, street tree planting, building demolition, the redevelopment of open spaces, or other ground disturbance may result in a significant impact to unrecorded cultural resources, including human remains.	S	CULT-1a: Prior to implementation of individual development projects, a qualified archaeologist shall: (1) assess the potential for subsurface archaeological remains that may meet the definition of historical or archaeological resources and may be adversely affected by project activities; and (2) make project-specific recommendations, as warranted, about the treatment of such resources such that the eligibility of significant resources is maintained, or, if this is not feasible, the resource's loss of eligibility is offset by appropriate mitigation (e.g., data recovery excavation). The City shall ensure that the treatment recommendations of the consulting archaeologist are implemented prior to project construction, or any actions that could adversely affect the resource in question. A report of the results of this archaeological assessment shall be submitted to the project proponent, the City and the Northwest Information Center (NWIC).	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-1 *Continued*		CULT-1b: If unidentified archaeological deposits are discovered during construction activities associated with individual development projects, all work within 25 feet of the find shall be redirected. A qualified archaeologist shall: 1) evaluate the finds to determine if they meet the definition of a historical or archaeological resource; and 2) make recommendations regarding the treatment of such finds. If the finds do not meet the definition of a historical or archaeological resource, then no further study or protection is necessary prior to project implementation. If the finds do meet the definition of a historical or archaeological resource, then they shall be avoided by project activities. If avoidance is not feasible, impacts to such resources shall be mitigated in accordance with the recommendations of the evaluating archaeologist. The City shall ensure that the treatment recommendations of the consulting archaeologist are implemented prior to project construction or actions that could adversely affect the resource in question. Project personnel shall not collect or move any cultural material. Fill soils that may be used for construction purposes shall not contain archaeological materials. Upon completion of the archaeological evaluation, a report documenting the methods, results, and recommendations of the archaeologist shall be prepared and submitted to the project proponent, the City and the NWIC.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-1 *Continued*		CULT-1c: If human remains are encountered by project activities, construction activities shall be halted and the County Coroner shall be notified immediately. If the remains are of Native American origin, the Coroner shall notify the NAHC within 24 hours of this identification, and a qualified archaeologist shall be contacted to assess the situation. The NAHC shall identify a Native American Most Likely Descendent (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. The City shall ensure that the treatment recommendations of the consulting archaeologist and MLD are implemented prior to project construction or actions that could adversely affect the remains in question. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations regarding the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. This report shall be submitted to the project proponent, the City, and the NWIC.	
~~CULT-2: Individual development projects may adversely affect historic architectural resources.~~	~~S~~	~~CULT-2a: The list of buildings or structures recognized as historic resources or contributors to historic districts within the Benicia Arsenal shall be reviewed and updated prior to demolition of any building constructed prior to base closure in 1963. This information shall be added as addenda to the Arsenal Historic Conservation Plan and the Lower Arsenal Mixed Use Specific Plan.~~	LTS
		~~CULT-2b: If specific development project plans call for the demolition of existing buildings and structures over 45 years old, a historian or architectural historian shall review such buildings or structures to determine if they have the potential to meet the definition of a historical resource under CEQA.~~	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
~~CULT-3: Architectural Standards for new buildings may conflict with the Secretary of Interior's Guidelines for Rehabilitation.~~		~~CULT-3: Plans for individual development projects shall be reviewed and evaluated by a historian or architectural historian prior to implementation as part of the permitting process to determine if the plans conform to the Secretary of Interior's Standards and the Draft Specific Plan. If the plans do not substantially conform to the Standards, the consulting historian or architectural historian shall recommend changes to the proposed design to avoid or reduce such inconsistency. The recommendations shall be developed in consultation with the project proponent and the City so that all parties can provide input on what constitutes feasible changes that can still achieve project objectives. The City shall ensure that the recommendations developed through the feasibility consultation are implemented in the design and construction of the project.~~	
~~CULT-4: Rehabilitation of the historic buildings could diminish their historical integrity and result in significant impacts to cultural resources.~~	~~S~~	~~CULT-4: The rehabilitation of historic buildings in the Lower Arsenal is subject to the pre-existing Arsenal Historic Conservation Plan rather than the Draft Specific Plan. The City shall ensure that the project plans follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Secretary's Standards). Pursuant to CEQA Guidelines §15064.5(b)(3), if the project plans conform to the Secretary's Standards, then potential impacts to historical resources will be considered mitigated to a less-than-significant level.~~	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-2~~5~~: The construction of new buildings and roads could adversely affect the setting of Historic District C.	S	CULT-2~~5~~a: The Draft Specific Plan contains several policies and design approaches that would avoid or lessen the severity of impact CULT-2~~5~~. The form, materials, and massing of new construction shall be designed to complement the architectural style and setting of the zone, as well as provide sight lines and view corridors to retain the visual character of the Arsenal as a whole. The City shall ensure that the guidance provided in the Draft Specific Plan is followed with respect to new construction. Once formal plans for the new buildings proposed at the southern and northern boundaries of Officers' Square are prepared, these shall be reviewed by a qualified architectural historian or preservation architect to ensure that the designs do not result in a "substantial adverse change" to the historical resources of the Jefferson Ridge/Officers' Row Zone and the Benicia Arsenal Historic District. The architectural historian or preservation architect shall prepare a report that includes recommendations, as warranted, for design changes to the new buildings so as to avoid or mitigate impacts to historical resources. The report recommendations shall be incorporated in the final design of the new buildings, which must be approved by the Benicia Historic Preservation Review Commission prior to construction. In addition, the pre-project conditions of the new construction locations shall be documented through landscape photography ~~and historical reports~~ to document the setting prior to alteration. A report shall also be prepared that documents the history and setting of Jefferson Ridge prior to alteration. The photographs may vary in format and perspective, but shall at a minimum document important sight lines and visual axes that may be impaired by the introduction of new buildings. The photographic documentation shall be prepared in accordance with the *HABS/HAER Photographs: Specifications and Guidelines* (2001) and shall supplement the existing Historic American Building Survey documentation of the Arsenal, and shall be included in the report and in an update of the DPR 523 record of National Register District C. A copy of the report and photodocumentation shall be submitted to the City, the Benicia Museum, the Benicia Public Library, and the Northwest Information Center.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-2 *Continued*		CULT-2~~5~~b: Historical photographs and/or maps, accompanied by text, shall be presented as part of an interpretative display describing the original configuration of Jefferson Ridge as well as the area's historical significance.. This interpretative display shall be developed in consultation with the Benicia Historical Museum and the Benicia Historical Society.	
CULT-3~~6~~: The creation of open spaces such as the Clocktower Green and Cork Oak Ridge Park could result in significant impacts to cultural resources.	S	CULT-3~~6~~: Implement Mitigation Measures CULT-1a, -1b, and -1c. ~~Implementation of this mitigation measure will reduce impact CULT-6 to a less-than-significant level.~~	LTS
CULT-4~~7~~: The creation of new roads and the extension of existing roads could result in a significant impact to cultural resources.	S	CULT-4~~7~~: Implement Mitigation Measures CULT-1a, -1b, and -1c.	LTS
~~CULT-8: The demolition of existing buildings as part of development of the Adams Street Zone could result in a significant impact to cultural resources.~~	~~S~~	~~CULT-8: Implement Mitigation Measures CULT-2a and CULT-2b.~~	~~LTS~~
CULT-5~~9~~: The development of the Adams Street Zone could adversely affect cultural resources.	S	CULT-5~~9~~: Implement Mitigation Measures CULT-1a, -1b, and -1c.	LTS
~~CULT-10: The demolition of existing buildings as part of development of the Grant Street Zone could result in a significant impact to cultural resources.~~	~~S~~	~~CULT-10: Implement Mitigation Measures CULT-2a and CULT-2b.~~	~~LTS~~
CULT-6~~11~~: The development of the Grant Street Zone could disturb intact archaeological deposits.	S	CULT-6~~11~~: Implement Mitigation Measures CULT-1a, -1b, and -1c.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-7: The construction of new buildings could adversely affect the setting of Historic District D.	S	CULT-7a: The Draft Specific Plan contains several policies and design approaches that would avoid or lessen the severity of impact CULT-7. The form, materials, and massing of new construction shall be designed to complement the architectural style and setting of the zone, as well as maintain sight lines and view corridors identified in the Conservation Plan to retain the visual character of the Arsenal as a whole. The City shall ensure that the guidance provided in the Draft Specific Plan is followed with respect to new construction. Once formal plans for new buildings proposed for the South of Grant Street Zone are prepared, these shall be reviewed by a qualified architectural historian or preservation architect to ensure that the designs do not result in a "substantial adverse change" to the historical resources of District D and the Benicia Arsenal Historic District. The architectural historian or preservation architect shall prepare a report that includes recommendations, as warranted, for design changes to the new buildings so as to avoid or mitigate impacts to historical resources. The report recommendations shall be incorporated in the final design of the new buildings, which must be approved by the Benicia Historic Preservation Review Commission prior to construction.	LTS
		CULT-7b: Historical photographs and/or maps, accompanied by text, shall be presented as part of an interpretative display describing the configuration of historical buildings in District D as well as their historical significance. This interpretative display shall be developed in consultation with the Benicia Historical Museum and the Benicia Historical Society.	
~~CULT-12: The demolition of buildings as part of development of the South of Grant Street Regulatory Zone could result in a significant impact to cultural resources.~~	~~S~~	~~CULT-12: Implement Mitigation Measures CULT-2a and CULT-2b.~~	~~LTS~~
CULT-8~~13~~: The development of the South of Grant Street Regulatory Zone could disturb intact archaeological deposits.	S	CULT-8~~13~~: Implement Mitigation Measures CULT-1a, -1b, and -1c.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
PALEO-1: Project ground disturbance could result in significant impacts to paleontological resources.	S	PALEO-1: If paleontological resources are discovered during activities associated with individual development projects, all work within 25 feet of the discovery shall be redirected and a qualified paleontologist contacted to assess the finds. The paleontologist shall make recommendations regarding the treatment of the discovery. Project personnel shall not collect or move any paleontological resources. It is recommended that adverse impacts to such paleontological resources be avoided by project activities. If such resources cannot be avoided, they shall be assessed to determine their paleontological significance. If the paleontological resources are not significant, then avoidance is not necessary. If the paleontological resources are significant, they shall be avoided or adverse impacts shall be mitigated. Upon completion of the assessment, the paleontologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the paleontological resources. The City shall ensure that the recommendations of the consulting paleontologist are implemented prior to actions that could adversely affect the resource in question.	LTS
L. PUBLIC SERVICES			
There are no significant *Public Services* impacts.			
M. UTILITIES AND INFRASTRUCTURE			
There are no significant *Utilities and Infrastructure* impacts.			
N. SUSTAINABILITY AND ENERGY			
There are no significant *Sustainability and Energy* impacts.			

E. HAZARDS AND HAZARDOUS MATERIALS

This section describes existing hazardous materials and hazards-related conditions in the vicinity of the Plan Area, discusses policies relevant to these hazards, evaluates potential impacts resulting from implementation of the Draft Specific Plan, and identifies mitigation measures to reduce the significance of potential impacts, as appropriate. Development and operations within the Plan Area could cause temporary and permanent increases in hazardous materials use and expose demolition workers to hazardous building materials or subsurface hazards. The section also addresses emergency response and evacuation issues for the Plan Area.

The setting discussion for hazards and hazardous materials employs a number of acronyms and abbreviations associated with environmental and military terminology. These acronyms and abbreviations are compiled in Table IV.E-1 for ease of reference.

Table IV.E-1: List of Acronyms and Abbreviations

Abbreviation	Meaning
ACM	asbestos containing materials
ARPP	Accidental Release Prevention Plans
BAAQMD	Bay Area Air Quality Management District
Cal/EPA	California Environmental Protection Agency's
CANS	Community Alert and Notification System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DCE	dichloroethene
DoD	Department of Defense
DTSC	Department of Toxic Substances Control
EOP	Emergency Operations Plan
FUDS	Formerly Used Defense Sites
HAZWOPER	Hazardous Waste Operations and Emergency Response
HUD	United States Department of Housing and Urban Development
MTBE	Methyl Tertiary-Butyl Ether
OSHA	Occupational Safety and Health Administration
PAHs	polyaromatic hydrocarbons
RCRA	Resource Conservation and Recovery Act
RWQCB	San Francisco Bay Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SCEHS	Solano County Environmental Health Services
SWPPP	Storm Water Pollution Prevention Plan
TCE	trichloroethene
U.S. EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers

1. Setting

The existing context for hazards and hazardous materials includes the following topics: regulatory framework; physical setting with regard to known hazardous waste release sites within the Plan Area, including parts of the former Benicia Arsenal ~~hazardous materials uses and investigations~~; emergency response and evacuation plans; and goals, policies and programs in the City of Benicia General Plan.

a. Regulatory Framework. The following section describes the regulatory framework that affects the management of hazardous materials and hazardous waste (including site investigation and remediation), worker health and safety, and lead, ~~/~~asbestos, and other hazardous building materials.

(1) Hazardous Waste Regulations. The United States Environmental Protection Agency (U.S. EPA) defines a "hazardous" waste as one "which because of its quantity, concentrations, or physiochemical or infectious properties, may either increase mortality or produce irreversible or incapacitating illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed." Materials and wastes that exhibit hazardous properties require special handling and management. Their treatment, storage, transport and disposal are highly regulated by the federal, State and local governments. Compliance with federal and State hazardous materials laws and regulations minimizes the risk to the public presented by these potential hazards.

~~**(1) Site Investigation and Remedial Regulation Requirements.** Many laws and regulations at the federal, State, and local levels affect the management of hazardous materials, including site investigation and remedial actions.~~ In California, the U.S. ~~Environmental Protection Agency (U.S.~~ EPA~~)~~ has granted most enforcement authority over federal hazardous materials and hazardous waste regulations to the California Environmental Protection Agency's (Cal/EPA) offices, boards, and departments. The Department of Toxic Substances Control (DTSC) and ~~or~~ San Francisco Bay Regional Water Quality Control Board (RWQCB) ~~Water Board) may~~ provide oversight on investigation and remediation of sites affected by hazardous materials releases in Benicia. Oversight may also ~~Alternatively, oversight may~~ be provided on the County level by the Solano County Environmental Health Services (SCEHS) division.

The federal hazardous waste laws are generally known as the Resource Conservation and Recovery Act (RCRA). These laws provide for the "cradle to grave" regulation of hazardous materials and wastes. Any business, institution or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused or disposed. The EPA has primary responsibility for implementing RCRA but individual states are encouraged to seek authorization to implement some or all RCRA provisions. California received authorization to implement RCRA in August 1992. The DTSC is the State agency responsible for implementing RCRA. The DTSC is also responsible for implementing and enforcing California's own hazardous waste laws, which are known collectively as the Hazardous Waste Control Law. The California Hazardous Waste Control Law and its associated regulations are similar to RCRA but regulate a larger number of chemicals because they define hazardous waste more broadly. Hazardous wastes regulated by California but not by the U.S. EPA are called non-RCRA hazardous wastes.

The investigation and cleanup of hazardous materials or wastes that have been released to the environment are governed under several State and federal laws (e.g., RCRA, Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA)). Various federal, State and/or local agencies have oversight of these investigations and cleanups in California. The agencies with potential oversight at sites with environmental releases in the Plan Area include the EPA, DTSC, San Francisco Bay RWQCB, and SCEHS. Information about the sites is maintained in government agency lists, files and databases. The lists identify sites with leaking underground fuel tanks, hazardous waste facilities subject to corrective actions, solid waste disposal facilities from which there is a known migration of hazardous waste, and other sites where environmental releases have occurred. The lists are sometimes collectively referred to as the Cortese list. Pursuant to Government Code §65962.5, before a local agency accepts an application as complete for any development project, the applicant must certify whether or not the project site is on the compiled lists.

(2) Former Department of Defense Sites. The U.S. Army Corps of Engineers (USACE) manages and executes a program for investigating and cleaning up properties that were formerly owned, leased, possessed, or operated by the Department of Defense (DoD). Such properties are known as Formerly Used Defense Sites (FUDS). FUDS are properties used by the military prior to October 1986 to train and support personnel, as well as to test weapons and warfare capabilities. The former Benicia Arsenal is a FUDS property. The FUDS program is part of the DoD's Defense Environmental Restoration Program. The program gives the DoD the authority and responsibility for restoration activities at current and formerly owned military sites that may pose a threat to human health and the environment. One of the laws that governs hazardous site cleanups at DoD sites is the Comprehensive Environment Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). (42 United States Code § 9601 et seq.). SARA established the Defense Environmental Restoration Program funding program.

(3) Hazardous Materials Management and Worker Health and Safety Requirements. Several local, State, and federal requirements pertain to hazardous materials management, including use, storage, disposal, and training of workers handling hazardous materials. Generally, State requirements mirror federal requirements, and in some cases are more stringent. State requirements, which can be implemented through the adoption of local ordinances, are often enforced by the local administering agency, such as the fire department or county environmental health department.

There are specific requirements for storage of hazardous materials in excess of threshold limits. For example, the State Office of Emergency Services requires a Hazardous Materials Business Plan (Business Plan)[1] for storage of quantities of hazardous materials equal to or greater than 55 gallons of liquid hazardous materials (including hazardous wastes), 500 pounds of solids, or 200 cubic feet of compressed gases. Although specific future businesses have not yet been identified for the industrial, manufacturing and processing land areas within the Plan Area, some examples of hazardous materials that could be stored by future businesses in quantities subject to the Business Plan requirements include petroleum hydrocarbons (e.g., gasoline, diesel, motor oil, grease, lubricants), paints, and compressed gases, acids, and pesticides/herbicides for landscape management. In Benicia, the requirements for Business Plans are administered by the SCEHS. The Business Plan is required to contain facility maps, up-to-date inventories of all hazardous materials equal to or above the threshold limits stated above, emergency response procedures, equipment, and an employee training program.

Businesses that generate hazardous waste (e.g., waste oil, waste antifreeze) are subject to Business Plan and Contingency Plan requirements, if these wastes are generated in quantities equal to or greater than the threshold requirements outlined above. Contingency Plan[2] requirements include identification of an emergency coordinator, identification and location of emergency response equipment, and reporting procedures in the event of a spill or other emergency. Hazardous wastes must be properly packaged, stored, manifested, and disposed of at a permitted off-site facility in accordance with local, State, and federal requirements; generators of hazardous wastes must be registered by the U.S. EPA.[3] Requirements for hazardous waste management are regulated by DTSC and the U.S. EPA.

[1] California Health and Safety Code, Chapter 6.95, Section 25500 et seq; 19 CCR 2620 et seq.

[2] Title 22, California Code of Regulations (CCR) Section 66265.50-66265.56.

[3] Title 22, CCR; 40 Code of Federal Regulations (CFR).

In addition to the Business Plan and Contingency Plan requirements, preparation of Accidental Release Prevention Plans (ARPP) for acutely hazardous materials may be required of future businesses in the Plan Area if there is a significant likelihood that the businesses' use of hazardous materials could pose an accidental release risk for acutely hazardous materials stored above threshold quantities.[4] Facilities with aboveground or underground tanks are also required to be permitted.[5] Other plans, such as Spill Prevention Control and Countermeasures Plans,[6] may be required for aboveground tanks, depending on the tank size, location and contents. Some facilities located within the Plan Area may be required to prepare Process Safety Management Plans for their operations. The purpose of these plans is to eliminate, to a substantial degree, the risks to which employees are exposed to hazardous materials in facility processes.[7]

Worker training programs and establishment of employer programs for worker health and safety training related to hazardous materials uses are also likely to be required for some businesses within the Plan Area. Some of these requirements include: Hazard Communications and worker training,[8] Injury and Illness Prevention Plan and training,[9] Emergency Action Plan and training,[10] Fire Prevention Plan and training,[11] Permissible Exposure Limits for hazardous materials,[12] and other applicable programs, based on the work to be performed and the hazardous material used. Workers at hazardous waste sites (or persons working with hazardous wastes that are encountered during excavation of contaminated soils) must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations.[13] Regulations have also been developed for workers potentially exposed to lead[14] and asbestos.[15] Cal/Occupational Safety and Health Administration (OSHA) conducts on-site evaluations to identify non-compliance with the requirements above and issues notices of violation to enforce necessary health and safety practices.

(4) Lead, Asbestos and Other Hazardous Building Materials. The Plan Area contains many older buildings, most of which would be rehabilitated as the Plan Area is developed (see Section A.1.b below). Prior to 1978, lead compounds were commonly used in interior and exterior

[4] California Health and Safety Code, Section 25531 et seq; 40 CFR Part 68.

[5] California Health and Safety Code, Section 25270 et seq.; California Health and Safety Code Section, Section 25280 et seq.; Uniform Fire Code; 3 United States Code (USC) 1251; 42 USC 6991; Title 23 CCR Section 2610-2873; 40 CFR Part 112 et seq.; 40 CFR Parts 112.3 and 112.7; 40 CFR Part 280.

[6] 40 CFR Parts 112.3 and 112.7.

[7] Title 8, CCR Section 5189 and 40 CFR Part 1910.119.

[8] Title 8, CCR Section 5194.

[9] Title 8, CCR Section 1509 and 3203.

[10] Title 8, CCR Section 3220.

[11] Title 8, CCR Section 3221.

[12] Title 8, CCR Section 5155.

[13] Title 8, CCR Section 5192.

[14] 29 CFR Part 1926.62; Title 8, CCR Section 532.1; CDHS Training, Certification and Workpractices Rule.

[15] 29 CFR Part 1926.1101; 40 CFR Part 61 and 152; Title 8, CCR Section 1529; Bay Area Air Quality Management District Regulation 11, Rule 2.

paints. Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance to the materials. If maintained in good condition, lead-based paint and asbestos-containing materials are not expected to present a health risk; however, demolition or renovation of buildings containing these materials has the potential to release lead particles and/or asbestos fibers to the air, where they may be inhaled by construction workers and the general public. In addition, other common items, such as electrical transformers, fluorescent lighting, electrical switches, heating/cooling equipment, and thermostats can contain hazardous materials, which may pose a risk if not handled and disposed of properly.

Lead is a suspected human carcinogen, a known teratogen (i.e., causes birth defects), and a reproductive toxin. Asbestos is a known human carcinogen. Federal, State, and local requirements govern the abatement requirements for lead based paint and removal of asbestos or suspected asbestos containing materials (ACM), including special construction worker health and safety standards for sites where lead and/or asbestos may be present. For example, the U.S. EPA and DTSC require that lead-based paint with lead concentrations equal to or greater than the U.S. Department of Housing and Urban Development (HUD) definition of lead-based paints (greater or equal to 1 mg/cm^2 or 0.5 percent lead by weight) be removed prior to demolition if the paint is loose and peeling. If the paint is securely adhering to the substrate, the entire material may be disposed of as demolition debris, which is a non-hazardous waste. Loose and peeling paint must be disposed of as a State and/or federal hazardous waste, if the concentration of lead exceeds applicable waste thresholds. Hazardous wastes must be managed, labeled, transported, and disposed of in accordance with local requirements by trained workers, as described above. State and federal construction worker health and safety regulations, described above, require air monitoring and other protective measures during demolition or renovation activities where lead-based paint is present.

Removal of asbestos or suspect ACM, including removal as part of building demolition, is regulated by the U.S. EPA, federal and State OSHA, DTSC, and the Bay Area Air Quality Management District (BAAQMD). All friable (crushable by hand) ACM, or non-friable ACM subject to damage, must be abated prior to demolition in accordance with applicable requirements. Friable ACM must be disposed of as an asbestos waste at an approved facility. Non-friable ACM may be disposed of as a non-hazardous waste at landfills that accept such wastes. Workers conducting asbestos abatement must be trained in accordance with State and federal OSHA requirements, described above.

Fluorescent lighting tubes and ballast, computer displays, and several other common items containing hazardous materials are regulated as "universal wastes" by the State. Universal waste regulations allow common, low-hazard wastes to be managed under less stringent requirements than other hazardous wastes. Management of other hazardous wastes is governed by DTSC hazardous waste rules, as described above.

b. Hazardous Materials Setting. The following discussion describes historic and existing hazardous materials issues within the Plan Area. An assessment of existing hazardous materials usage and known historic releases of hazardous materials or hazardous waste within the Plan Area is based on the results of a search of ~~State,~~ federal, State, and local databases that track businesses that use, store and dispose of hazardous materials and available site-specific investigations within the Plan

Area.[16] [17] [18] [19] [20] The search included databases that comprise the Cortese list,[21] which were reviewed to determine whether any properties within the Plan Area are identified on any list of hazardous materials release sites compiled pursuant to Government Code Section 65962.5. Aerial photographs for the Plan Area for various years between 1937 and 1998, and historic topographic maps for years between 1898 and 1980, were reviewed to develop a general understanding of historic land uses and development of the Plan Area.[22]

Benicia Arsenal.~~Historical Hazardous Materials Uses within the Plan Area.~~ The Plan Area lies within the borders of the former Benicia Arsenal, which was operated by the DoD until 1962. In February 1965, the last property was transferred to the City of Benicia. After site closure, the Arsenal was vacant from 1965 to 1975. In February 1975, the City leased the Arsenal property (except for six buildings currently maintained by the City) to Benicia Industries, Inc., a private land development firm. Some parcels have subsequently been sold or leased to others. The 2,700-acre site is currently occupied by a combination of residential uses, light to heavy industrial and commercial activities, and warehousing. Major site occupants include the Valero Refinery and the Port of Benicia. The Port of Benicia, which is located south of the Plan Area,~~constructed between 1852 and 1911, with additional buildings added during World War II. The Arsenal is clearly marked on the earliest topographic maps of the area (as "US Arsenal") and is visible in the earliest (1937) aerial photograph. In 1937 the Plan Area contained few buildings, mostly the historic structures that are present today. The largest structure at the arsenal at the time was located south of the railroad spur that formerly ran along Tyler Street just outside of the Plan Area. Development appears to have been substantial during the World War II era because by the 1950s many buildings had been constructed in the area bounded by Washington Street, Lincoln Street, Tyler Street, Adams Street and Bayshore Road. From the late~~

[16] Jacobs Engineering, 1999. Benicia Arsenal Records Research Report, prepared for the U.S. Army Corps of Engineers, Sacramento District. ~~[16] EDR, 2007. The EDR Radius Map with GeoCheck, Inquiry No. 1902163.2s, Benicia Lower Arsenal, Benicia, California.~~ April ~~12~~.

[17] Forsgren Associates/Brown and Caldwell, 2004. Final - Preliminary Assessment, Benicia Arsenal, Benicia, California, prepared for the U.S. Army Corps of Engineers, Sacramento District. March.

[18] EDR, 2007. The EDR Radius Map with GeoCheck, Inquiry No. 1902163.2s, Benicia Lower Arsenal, Benicia, California. April 12.

[19] Northgate Environmental Management, Inc., 2000. Soil Sampling Report for Property at Jefferson and Adams Street, Benicia, California. October 2.

[20] ERAS Environmental, Inc., 2002. Phase 1 Environmental Assessment Update, Grant Street Parcels APN 080-150-320 and 080-150-330, Benicia, California. October 23.

[21] State Water Resources Control Board (SWRCB) Geotracker Database, 2006. Website: geotracker.swrcb.ca.gov. September 25. The Geotracker database includes: leaking underground storage tank sites (LUST), registered underground storage tank sites (UST), and sites within the spills, leaks and investigation cleanups program (SLIC).

Solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit. List of ~~-~~active Cleanup and Abatement Orders from the SWRCB.

DTSC Hazardous Waste and Substance Site List. Website: www.envirostro.dtsc.ca.gov. The DTSC list includes Federal Superfund National Priority List (NPL) sites, State response sites, voluntary cleanup sites, and school cleanup sites.

Hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

[22] Aerial photographs were for the years 1937, 1957, 1965, 1970, 1982, 1992 and 1998. Topographic maps from the United States Geological Survey and other sources were from 1898, 1901, 1902, 1947, 1959, 1968 and 1980.

~~1950s until the 1970s, aerial photographs show that few changes occurred in the numbers and types of buildings present. By the 1990s, most buildings south of Tyler and Lincoln Streets had been demolished but many World War II era buildings in the Plan Area remained. In recent years, these buildings have been converted to residential, commercial, and industrial uses, including live-work studios. The nearby Port of Benicia~~ handles primarily agricultural products and vehicles. The largest operation at the Port~~port~~ involves receiving, storing and transporting automobiles. The Port is also a pipeline terminal for the Valero Refinery, which receives feedstocks and ships product through the Port.~~port.~~ The refinery and pipeline are~~is~~ located outside of the Plan Area to the north and east.

Remedial investigations and some clean-ups have been undertaken at the former Benicia Arsenal by the USACE. For purposes of investigating and describing known and potential sources of contamination the USACE divides the property into five areas—the Warehouse (W) Area, the Industrial/Manufacturing (I) Area, the Revetment/Explosives Holding Area, the Motor Pool and Historical Ordnance Storage (M) Area, and the Magazine Storage Expansion (S) Area (Figure IV.E-1). The five areas are referred to collectively by the acronym WIRMS. The Lower Arsenal Specific Plan Area is located within Area I, the Industrial/Manufacturing Area, which occupies approximately 200 acres of the FUDS property. Area I was the main industrial and manufacturing area for the Arsenal. The processes and chemicals that were historically used at each building or location within Area I are documented in a 1999 *Records Research Report*, a 2004 *Preliminary Assessment*, and other site documents.[23] [24] A summary is provided here.

Area I contained machine shops, a blacksmith shop, welding shop, vehicle and artillery repair shops and small arms shops. The shops housed a variety of equipment manufacturing, maintenance and repair activities, including steam cleaning, paint stripping, degreasing, rust removal, and painting of equipment. Typical hazardous materials used in these processes reportedly included paints, acids, alkalis, petroleum hydrocarbons, and chlorinated and non-chlorinated solvents. The waterfront area was the Arsenal's primary shipping and receiving area, containing wharf facilities and warehouses. The waterfront buildings provided areas for storing or handling chemicals, including ordnance and chemical warfare agents used at other Arsenal facilities or awaiting transfer to other DoD facilities. Inventory surveys indicate that the Arsenal used various inorganic, organic and organochlorine pesticides and that gasoline, kerosene, diesel and fuel oil were stored in above- and below-ground tanks at many locations.

Area I also housed administrative offices, most of the permanent housing facilities in the Arsenal, photographic laboratories, a firehouse, and a hospital. The photographic laboratories reportedly used various solvents, acids and other chemicals. Two landfills and a quarry have been identified within Area I. Areas of the quarry that had been mined were reportedly backfilled with waste from the Arsenal. As records were not maintained, or have been lost, the waste disposal practices during the early operation of the Arsenal and the types of chemicals that may be present in the landfills and quarries are currently undocumented.

Area I was and is served by storm sewers and a sanitary sewer system. Historical records from the operational period of the Arsenal indicate that wastes were released to these systems as a method of

[23] Jacob Engineering, 1999.

[24] Forsgren Associates/Brown and Caldwell, 2004.

disposal. Other potential sources of hazardous materials in soil and groundwater included runoff and debris from historic building fires.

Subsequent to the Arsenal's closure, buildings at the site have been used for a variety of commercial and industrial purposes.[25] These include vehicle maintenance and repair, machine maintenance, furniture manufacturing, metal working, painting, and chemical manufacturing. A search of federal, State, and local databases identified several facilities in the Plan Area that store hazardous materials or generate hazardous waste and a few that have reported releases to the environment. These sites are described in Section V-E.1.b(2) that follows this description of the former DoD use of the Arsenal.

The USACE is responsible for investigating and cleaning up contamination caused by former DoD operations at the Arsenal. The investigation and clean up of contamination that occurred after the military vacated the property is the responsibility of others. However, because some locations had more than one historical military and/or non-military occupant that stored or handled similar types of chemicals it may be difficult to identify which operations released the chemicals and which party is responsible for the subsequent clean up. The ensuing process of investigation and negotiation complicates and usually prolongs the clean-up process. One or more parties may eventually be required to pay the clean-up costs. Under the USACE's FUDS program, land previously owned, leased, or used by the DoD that is characterized as having been used by subsequent landowners or lessors in a manner that would either mask contamination caused by DoD or continue contamination in the same manner is excluded from further consideration. Thus, the clean up of contamination at some sites within the Plan Area may not be eligible for FUDS funding, although other sources of federal, State, local or private funds may be available.

Some areas within the Plan Area that have been investigated by the USACE include the Series 50 Complex, various sites that utilized fuel storage tanks, and potential sources of chlorinated solvents in groundwater.[26] [27] [28] [29] The investigations are summarized in the following paragraphs.

50 Series Complex. The 50 Series Complex (identified as the Shop Buildings in the Arsenal Historic Conservation Plan) is in the central portion of Area I and southern portion of the Plan Area

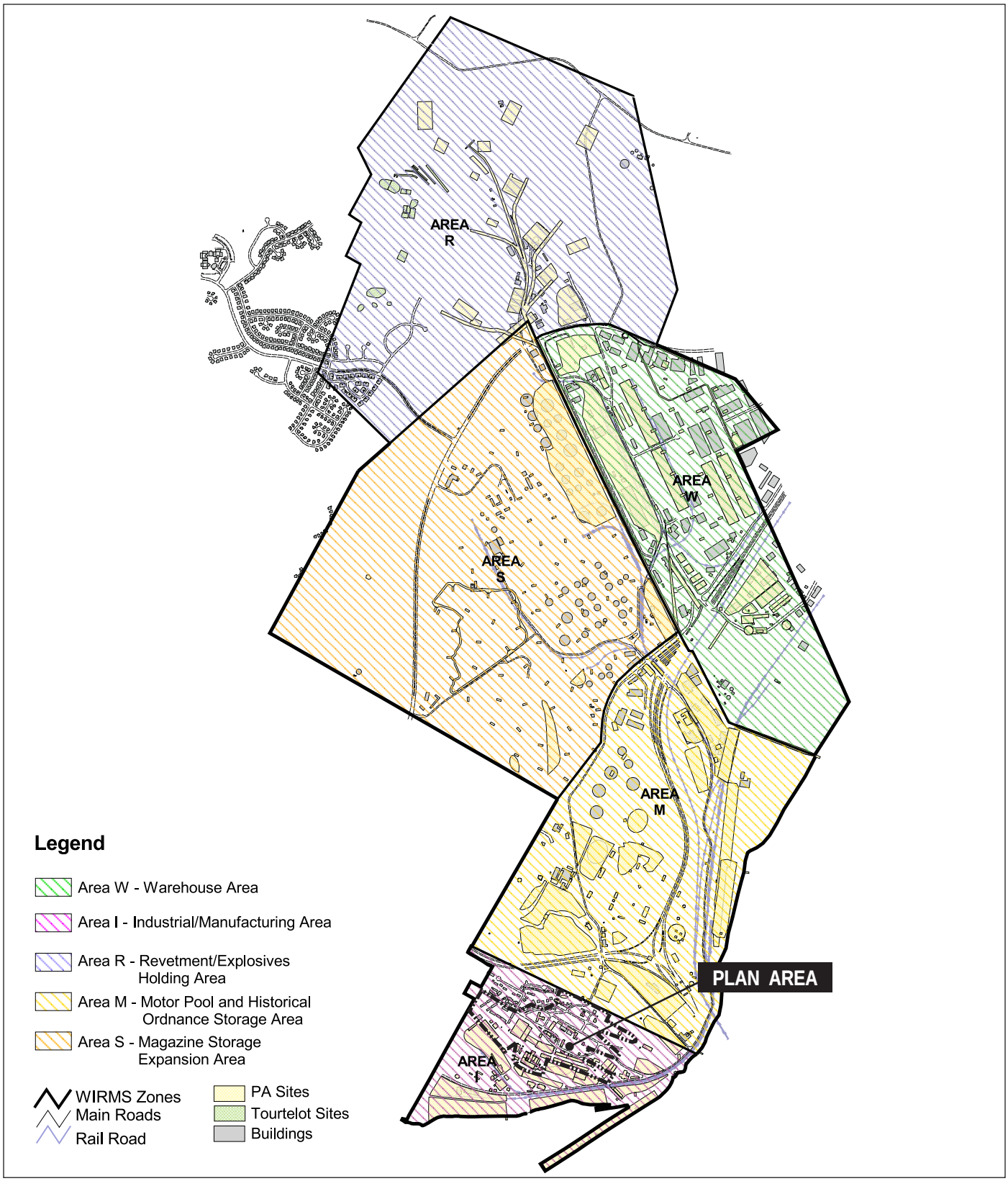
[25] Jacobs Engineering, 1999.

[26] Brown and Caldwell, 2005. Treatability Study Work Plan for TCE and its Degradation Products in Groundwater in the Lowlands Geology of the Industrial Area, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. June.

[27] Forsgren Associates/Brown and Caldwell, 2000. *Technical Memorandum Field Site Investigations for Area I Fuel Facilities Buildings 53, 73, 103 and 154 for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. June.

[28] Forsgren Associates/Brown and Caldwell, 2002. *Technical Memorandum Field Site Investigation Fuel Only Facilities (Area I Fuel Storage Facilities at Buildings 15, 25, 26, 27, 28, 45, 46(B), 54, 118(A), 152 and 178) for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. March.

[29] Brown and Caldwell, 2004. *Expanded Site Inspection Field Site Investigation Plan for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. April.



LSA

FIGURE V.E-1

Lower Arsenal Mixed Use Specific Plan EIR

Preliminary Assessment (PA) Study Areas

SOURCE: FORSGREN ASSOCIATES/BROWN AND CALDWELL, 2007

I:\CIB0701 lower arsenal\figures\Fig_VE1.ai (1/7/08)

(Figure IV.E-2). The complex was originally constructed as three separate workshop buildings between 1876 and 1884. The remodeling of these buildings occurred over many phases, and included the addition of new buildings and the removal and relocation of existing buildings. Many historical land uses have been identified at the 50 Series Complex, and a variety of locations may have been affected by chemical releases from former DoD operations. The following activities that may have been associated with hazardous materials releases were identified for the 50 Series Complex as part of investigations at the Arsenal: ordnance storage (supplies, ammunition, small arms parts and accessories); small arms manufacture and testing; manufacture of mobile and seacoast artillery targets; and vehicle maintenance. Since closure in 1964, land use has been predominantly commercial/industrial, although the Arsenal and surrounding areas also currently support residential and park/open space uses.

Chlorinated solvents, including trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) were detected in soil samples collected in the vicinity of the 50 Series Complex and beyond the complex to the southwest and northeast. The extent of TCE and cis-1,2-DCE in soil are similar and appear to be present under much of the 50 Series Complex. The data indicate that the TCE is degrading into cis-1,2-DCE. Groundwater contamination by chlorinated solvents was investigated in a subsequent study that is summarized later in this section.Petroleum hydrocarbons were also detected in soil and groundwater during the investigation of the 50 Series Complex. Diesel and motor oil were detected most frequently. Gasoline and diesel were also detected in groundwater. The highest concentrations of diesel and motor oil are at the locations of former underground storage tanks (USTs) beneath Building 56A, Building 55 and within a utility tunnel. Gasoline concentrations are elevated in soil and groundwater in the area of the former Building 154 USTs and at USTs beneath Building 56(A). Up to seven separate fuel releases have been identified at and in the vicinity of the 50 Series Complex: 1) southwest of Building 56A; 2) southeast of Building 56A; 3) south of Building 55; 4) beneath Building 57A; 5) north of the 50 Series Complex; 6) north of Building 120; and 7) at Building 103.

The fuels in groundwater to the southwest and southeast of Building 56A and Building 103 are associated with former USTs. The petroleum hydrocarbons near Building 120 may be associated with suspected USTs. The sources of the other fuels in groundwater are unknown based on the available data. Methyl Tertiary-Butyl Ether (MTBE), a fuel oxygenate used since the early 1970s, was detected in three groundwater samples. Because MTBE was first used as an additive in fuel in the 1970s, after Arsenal closure, the presence of MTBE suggests a post-Army gasoline release. MTBE is found in groundwater near Building 57A and southeast of Building 56A.

Typical metals associated with former activities at the 50 Series Complex include antimony, arsenic, copper, and lead. Elevated concentrations of copper and lead were found in soil samples from beneath the basement, near the former foundry in Building 55, near a vat in Building 56 and the boiler room at former Building 65(B). Lead was also found in soil at elevated concentrations in the western portion of Building 56A, which may be associated with the former USTs at Building 154.

Polyaromatic hydrocarbons (PAHs) are commonly associated with fuels, particularly diesel fuel and fuel oils, or areas that have burned, as they may be produced by the incomplete combustion of organic materials. PAHs were identified in soil and groundwater in the area of the tool house at former Building 59(A), boiler house at former Building 65(A) and former Building 58, the transformer room in Building 56A, and the soil removed from the former boiler room in Building 65(B).

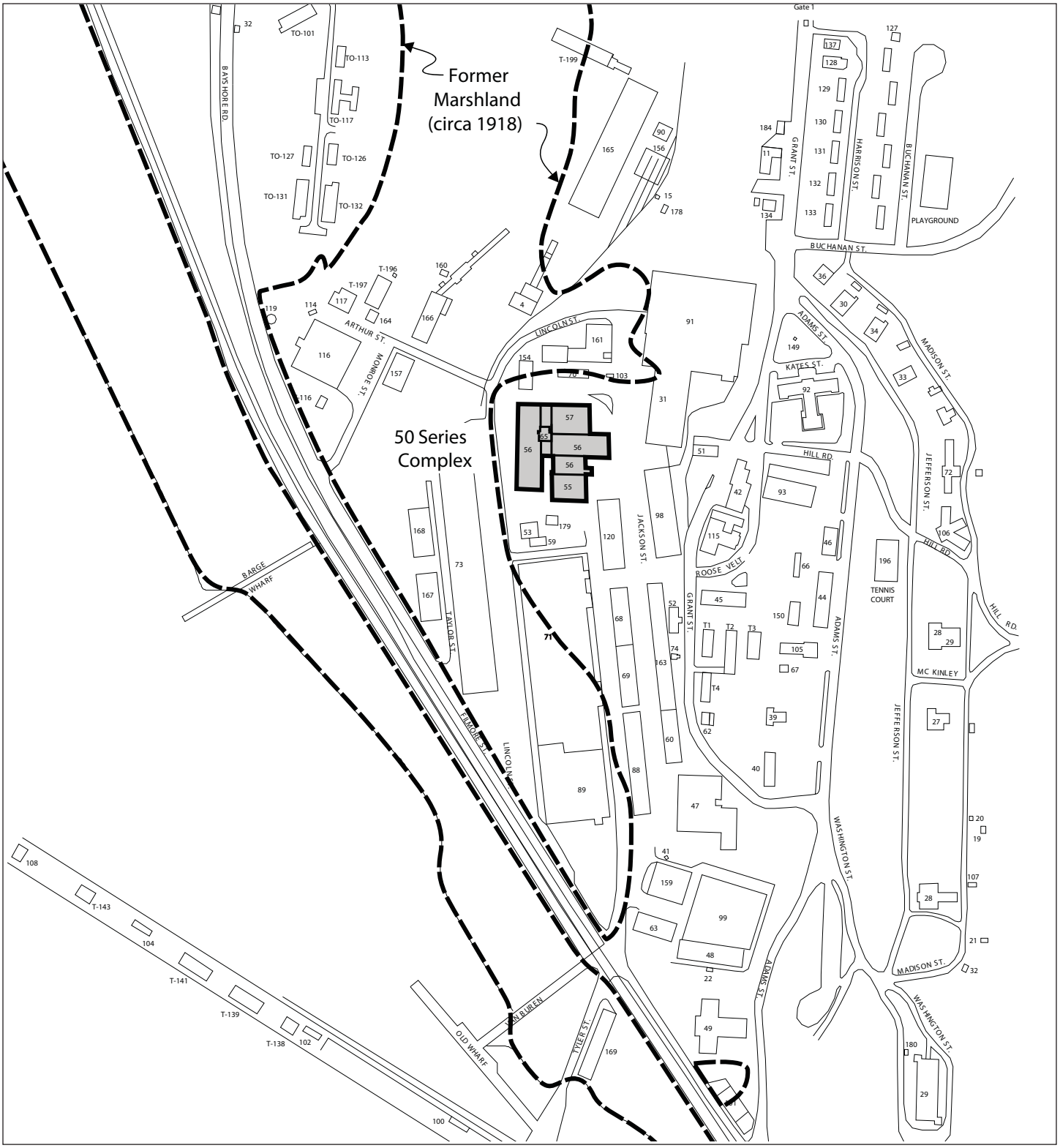


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FIGURE V.E-2

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NOT TO SCALE

Lower Arsenal Mixed Use Specific Plan EIR

50 Series Complex

SOURCE: FORSGREN ASSOCIATES/BROWN AND CALDWELL, 2004

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A risk assessment associated with the investigation concluded that inhalation of vapors released from subsurface soil to enclosed indoor spaces may be a potentially complete exposure pathway (i.e., a way that people may be exposed to the chemicals in soil underlying buildings) for commercial or industrial workers and residents. The risk assessment looked at site occupants who lived or worked in above-ground areas of buildings with slab-on-grade foundations and found that TCE was the only volatile organic chemical associated with an incremental lifetime cancer risk above one in a million (1×10^{-6}). No volatile organic chemicals were associated with unacceptable non-cancer health risks. For a below-grade basement exposure scenario, TCE was the only volatile organic chemical associated with an incremental risk above 1×10^{-6}, and no volatile organic chemicals were associated with unacceptable non-cancer health risks. The USACE is conducting further study of the area to determine the best way to reduce the health risk associated with chlorinated solvents in soil and groundwater.[30]

Fuel Storage Tanks. Former fuel storage tanks were identified at many locations within Area I as part of the 1999 *Records Research Report*, including Buildings 15, 25, 26, 27, 28, 45, 46(B), 53, 54, 73, 103, 118(A), 152, 154, and 178 (see Figures IV.E-2 and IV.E.3) and sites identified at the Series 50 Complex as noted previously. The above- and below-ground tanks were associated with vehicle fueling facilities as well as buildings where they were used to store fuels for boilers, furnaces and other equipment. The types of petroleum hydrocarbons contained in the tanks included gasoline, diesel fuel, fuel oil and kerosene, depending upon the facility. Some sites have been investigated further by the USACE. Tanks, associated equipment and contaminated soil have been recommended for removal when a release was discovered.[31] [32]

Groundwater Contamination. An Expanded Site Inspection of the former Arsenal was conducted by the USACE in 2004 and included investigation of 34 sites within Area I. The Expanded Site Inspection focused primarily on potential groundwater impacts at the former Arsenal. Soil samples were collected from only a few locations. One outcome of the Expanded Site Inspection was a more complete delineation of a plume of chlorinated solvent located in groundwater along the southern border of the Plan Area (Figure IV.E-3). The groundwater plume contains TCE and other chemicals. The highest concentrations of TCE and its breakdown products in groundwater occur near Building 165 and Building 120. Because TCE concentrations are highest in these areas, the potential contamination sources are believed to be associated with the two buildings. Another source of TCE in shallow groundwater was found near the 50 Series Complex but concentrations were much lower than at the other two buildings. Further access to delineate potential contamination in this area was reportedly restricted by the landowner. The USACE is conducting further study of the area to determine the best way to reduce the health risk associated with chlorinated solvents in soil and groundwater.[33]

[30] Brown and Caldwell, 2005.

[31] Forsgren Associates/Brown and Caldwell, 2000.

[32] Forsgren Associates/Brown and Caldwell, 2002.

[33] Brown and Caldwell, 2005.

Table IV.E-2~~1~~: Documented Environmental Releases, Hazardous Materials Usage or Hazardous Waste Generation in Plan Area[a]

Site Name[b, c]	Address	Reason(s) for Regulatory Listing	Notes
Star Motors	986 Adams Street	Hazardous waste generator	Reported waste includes hydrocarbon solvents
Superior Rentals	932 Grant Street	Underground storage tank	UST is reported as inactive
Benicia Arsenal Site – Powder Magazine	Benicia Industrial Park SE CNR Benicia	Environmental release	Site screening by regulatory agency concluded no further action required.
Benicia Mini Storage	711 Jackson Street	Leaking underground storage tank	LUST case reported closed on SWRCB website. UST is reported as inactive.
Auto Styles	711 Jackson Street	Underground storage tank	Status not reported (may be same site as Benicia Mini Storage).
L&R Truck Trailer and Bus Painting	750 Jackson Street	Hazardous waste generator	Reported waste includes hydrocarbon solvents.
Military Family Housing	750 Jackson Street	Hazardous waste generator; environmental release	Reported waste includes oxygenated solvents such as acetone, ethyl acetate and various alcohols. Database search indicated site had been on Cortese List. DTSC and SWRCB websites no longer list site.
UNICO Services, Inc.	1209 Polk Street	Hazardous waste generator	Reported waste identified as oil-containing waste and halogenated organic compounds.
OLIN Corporation	Building 68 Benicia Business Park	Hazardous waste generator; environmental release	Listing is in part due to recordkeeping violations. Site was evaluated for CERCLA action and was deferred to RCRA program. RCRA corrective action evaluation assigned a "low priority" rating to the site.
J.R. Schneider Co., Inc.	849 Jackson Street	Hazardous waste generator; environmental release	Reported waste includes organic and inorganic solids and oxygenated solvents, such as acetone, ethyl acetate, and various alcohols. Database search indicated site had been on Cortese List. DTSC and SWRCB websites no longer list site.
—	1020 Tyler Street	Environmental release	No details on nature of release provided.
—	950 Tyler Street	Environmental release	No details on nature of release provided.
Amports Maintenance Facility	1051 Tyler Street	Underground storage tank	Reported as inactive.
Benicia Industries	1051 Tyler Street	Leaking underground storage tank; Hazardous waste generator;	LUST case reported closed on SWRCB website. Reported waste includes halogenated organic compounds, waste oil and mixed oil, and aqueous solution with less than 10% organic residues.
Glovis America, Inc.	1050 Tyler Street	Hazardous waste generator	Reported waste identified as waste oil and mixed oil.
—	1050 Tyler Street	Environmental release or spill	No details on nature of release provided.
Keith Moon, Fine woodworking	1209 Polk Street, Unit 5	Hazardous waste generator	Reported waste includes oxygenated solvents, such as acetone, ethyl acetate and various alcohols.
—	711 Jackson Street	Drug lab	No details on nature of release or hazardous materials use/storage provided.

Table IV.E-~~2~~1 *Continued*

Site Name [b, c]	Address	Reason(s) for Regulatory Listing	Notes
Benicia Industries, Inc.	2650 Harbor Way	Leaking underground storage tank; Hazardous waste generator	LUST case reported closed on SWRCB website. Reported waste includes hydrocarbon solvents, organic liquids, halogenated organic compounds and PCBs.
Amports	2650 Harbor Way	Leaking underground storage tank	May be same tank as listed for Benicia Industries at same address. SWRCB website contained no separate listing for this business name. Reported as inactive.

[a] Information regarding air emissions, which are generated by a few sites, is not included in the table. Typical air emissions included components of vehicle exhaust, hydrocarbons, and other solvents, such as those that might be generated by painting operations.

[b] Site names in **bold** were reported on the Cortese List. Some sites may no longer be on the active regulatory databases that currently comprise the Cortese List. See site notes.

[c] If site name is blank, only an address was provided by the database search results.

Source: EDR 2007

~~Environmental releases at facilities outside of the Plan Area could be carried on-site by groundwater or surface water flows, or by prevailing winds. Based on local topography, the local shallow groundwater and surface water flow direction is presumed to be toward the Carquinez Strait, which lies south of the Plan Area. Prevailing winds within the vicinity of the project site are generally from the northwest to the southwest. However, during the fall and winter, winds can also be from the east-northeast.[34] Therefore, sites with releases of hazardous materials affecting groundwater or surface~~

Other~~Given that many structures in the Plan Area were built prior to the 1980s, if they have not been rehabilitated or renovated previously, they may contain hazardous materials such as lead-based paint and ACM. Older buildings may have been heated by furnaces that burned heating oil, which was historically stored in either aboveground or underground tanks near the building being served. If the piping and tank(s) have not been removed, they may be a source of environmental contamination. In addition, current and former site occupants, including the Army, may have stored hazardous materials and/or generated hazardous wastes during normal business practices. As formal recordkeeping of hazardous materials/waste storage and disposal practices is a relatively recent regulatory requirement, there is a potential for older facilities to have had unreported releases of hazardous materials to soil or groundwater, and these materials may persist to the present day.~~ **Documented** ~~environmental releases, hazardous materials usage and hazardous waste generation within the Plan Area are discussed in the following section.~~

(1) ~~Documented~~ Environmental Releases, Hazardous Materials Use, and Hazardous Waste Generation. The results of the regulatory agency database search contained approximately 20 sites with reported environmental releases, recent use or storage of hazardous materials, and/or disposal of hazardous waste. The sites are listed in Table IV.E-2.~~1.~~ In general, hazardous materials usage and storage is associated with vehicle maintenance and repair facilities and other small businesses. Typical hazardous materials reported in the database search include solvents (such as might be used for metal cleaning, painting or furniture refinishing), waste oil, and fuels. A number of sites historically used underground storage tanks (USTs) to store fuel or other materials and a few of these tanks reportedly leaked. The reported leaking USTs have been investigated by ~~regulatory agencies and, according to the database search results and information on the SWRCB website, all previously reported leaking UST cases in the Plan Area have been remediated, as needed, and closed. Although three of the sites remain on the agencies' databases that currently comprise the Cortese List, all three are reported closed.~~
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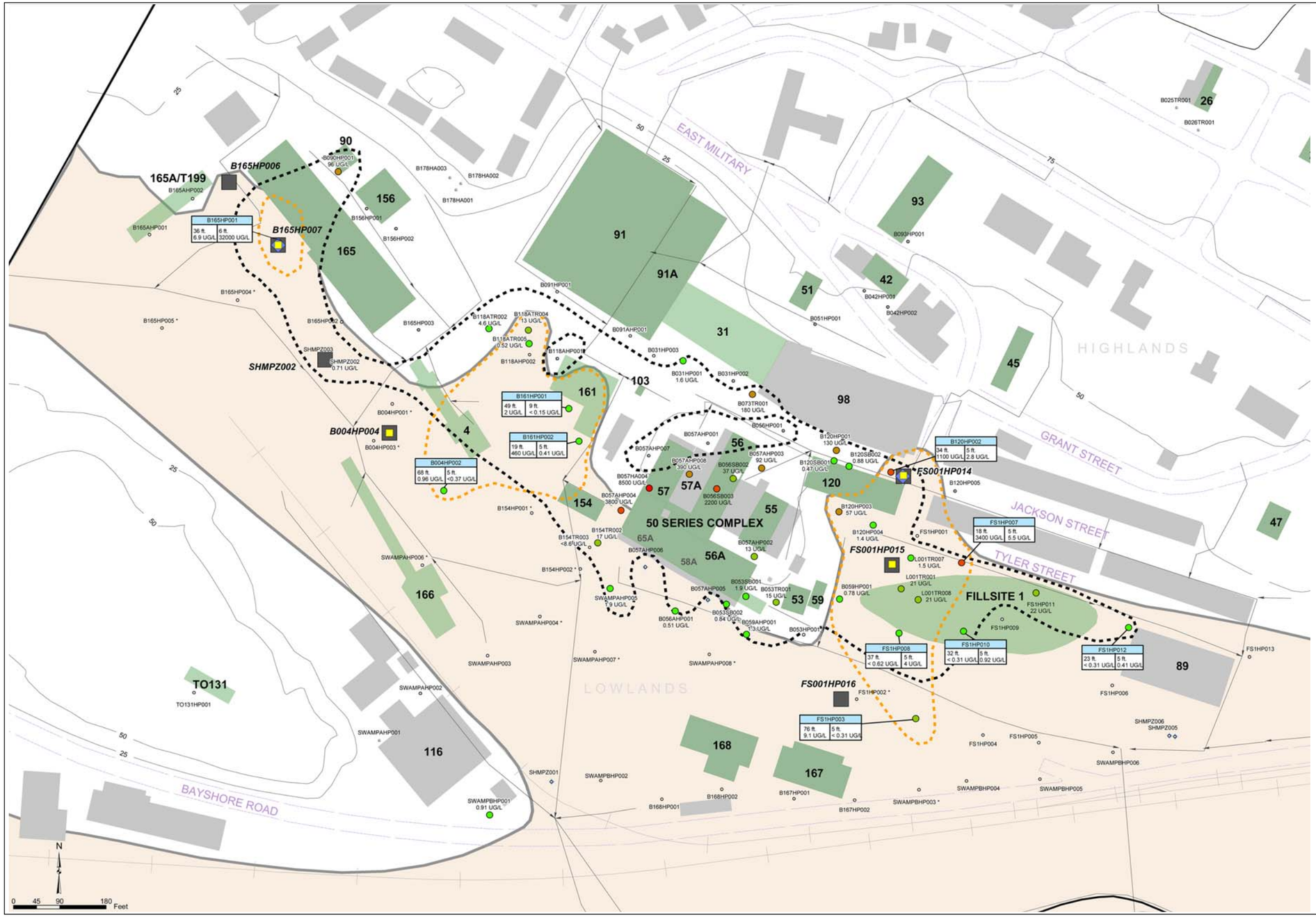
~~[34] California Environmental Protection Agency, Air Resources Board, 2002. *Review of Current Ambient Air Monitoring Activities Related to California Bay Area and South Coast Refineries*, March, Attachment B-4: Seasonal Wind Roses at Valero (Benicia) Oil Refinery, year 2000.~~



Legend

- Proposed Biodegradation Groundwater Sample Location
- Proposed Bench Scale Soil Test Location
- Proposed Geotechnical Soil Location

Sample Locations

Detections

- 0 - 5 UG/L
- 5 - 50 UG/L
- 50 - 500 UG/L
- 500 - 5000 UG/L
- 5000 UG/L and above

- Non-Detections
- Dry - no groundwater
- Wells
- Area I boundary
- Railroad
- Roads
- Storm Drains(1958) -arrows indicate direction of flow
- Elevation Contours (100ft.)
- Elevation Contours (25ft.)
- Lowland/Highland Boundary
- Delineation of TCE in shallow groundwater (< 15 feet bgs)
- Delineation of TCE in deeper groundwater (> 15 feet bgs)
- Lowlands
- Buildings
- PA Sites (Existing buildings)
- PA Sites (Former building or site)

Sample Location	
Depth (ft. bgs.)	**Depth (ft. bgs.)**
Value	Value

Notes:

1- Unless otherwise noted, groundwater samples were collected at depths of < 15 ft bgs.

2 - All detected results are shown, including older data.

3 - Plumes delineated to non-detect

4 - * Denotes locations with NO detectable concentration at shallow and deep groundwater.

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FIGURE V.E-3

Lower Arsenal Mixed Use Specific Plan EIR

Trichloroethene Detected in Groundwater and Proposed Treatability Locations

SOURCE: BROWN AND CALDWELL, 2005

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northeast.[35] Therefore, sites with releases of hazardous materials affecting groundwater or surface water north of the project site, and sites emitting airborne contaminants southwest to northwest of the project site (and to a lesser extent sites to the east-northeast), could potentially release hazardous materials that could affect soil, groundwater, air, and/or any surface water conditions at the project site.

Nearby off-site land uses with air emissions include a facility on Bayshore Road, which has reported carbon monoxide emissions (a gaseous product of combustion). Other businesses in the area that handle solvents and other volatile chemicals would have some air emissions. Ships using the Port of Benicia also generate air emissions. These emissions are addressed in the air quality section of the EIR. A car dealership on Oak Road, which is about 1/8-mile north of the Plan Area, has historically had a leaking UST. This site is currently listed as closed. These and other businesses near the Plan Area have historically used, stored, generated, and disposed of hazardous materials. If releases of hazardous materials have occurred from these sites, there is some potential for the releases to migrate and affect soil, groundwater, air and/or any surface water within the project site.

c. Emergency Response and Evacuation Plans. The Benicia Fire Department is responsible for maintaining the City's Emergency Operations Plan (EOP), in accordance with the General Plan.[36] The EOP is a multi-hazard plan that identifies procedures for various types of emergencies. It is intended to ensure that City government can continue to function in the event of a disaster. In an emergency, major arterials would serve as principal routes for evacuating people from the disaster zone. These arterials would also serve as routes for moving emergency equipment and supplies. Major identified arterials that could serve the Plan Area include Military East and Adams Street, which run in an east-west direction through the Plan Area, and Park Road, which extends to the north from the Plan Area.[37]

The City of Benicia has also implemented the Community Alert and Notification System (CANS), a network of safety sirens and media links to warn and inform the community of potential hazards to public health and safety.[38] The Plan Area is within the area that is covered by the sirens in the CANS. Upon activation of CANS, citizens would tune into the appropriate television or radio station to obtain further information in the event of the emergency.

2. City of Benicia General Plan

Applicable goals, policies, and programs related to hazardous materials management, groundwater and surface water contamination, fire hazards, emergency response and other safety hazards from the City of Benicia General Plan are presented below.

[35] California Environmental Protection Agency, Air Resources Board, 2002. *Review of Current Ambient Air Monitoring Activities Related to California Bay Area and South Coast Refineries*, March, Attachment B-4: Seasonal Wind Roses at Valero (Benicia) Oil Refinery, year 2000.

[36] City of Benicia, 1999. ~~op. cit.~~ Chapter 4, Community Health and Safety, p. 158.

[37] City of Benicia, 1999. ~~op. cit.~~ Figure 2-5 Circulation Diagram, Chapter 2, p. 56.

[38] California Asthma Partners, 2006. www.asthmapartners.org/resources/show_resource/798/. September 26.

Responses to Hazards

- *Community Hazards Goal 4.7:* Ensure that existing and future neighborhoods are safe from risks to public health that could result from exposure to hazardous materials.
  - *Community Hazards Policy 4.7.1:* Actively recruit industries and businesses that sustain environmental quality and have sound, responsible environmental practices and policies, such as best available control technology (BACT), source reduction, reduced use of hazardous materials in production, and reduced waste.
  - *Community Hazards Policy 4.7.2:* Establish a "Community Right-to-know" program to promote general public understanding of Benicia's toxic problems as they affect current and future generations.
  - *Community Hazards Policy 4.7.3:* Protect existing and future development from contaminated sites, hazardous landfill waste and debris, chemical spills, and other hazards including unexploded ordnance and explosive waste.
  - *Community Hazards Policy 4.7.4:* Promote enforcement of regulatory requirements over the entire term of monitoring of identified hazardous sites within the City limits, especially sites located in residential neighborhoods and near school playing fields and parks.
  - *Community Hazards Policy 4.7.5:* Require that all sites known or suspected to have unexploded ordnance and/or a toxic history be tested and remediated before any development can occur.
  - *Community Hazards Policy 4.7.7:* Where environmental testing has been required by State regulatory agencies but is not yet completed, withhold City approvals for site grading and other construction activities until a site evaluation is available that provides a reasonable basis for determining that it is safe to commence such activities.
- *Community Hazards Goal 4.14:* Prevent ground and surface water contamination.
  - *Community Hazards Policy 4.14.1:* Implement non-point source pollution strategies.
    - *Community Hazards Program 4.14.C:* Provide information to the public on provisions of the City's Stormwater Pollution Prevention Plan (SWPPP) program and preparation of SWPPPs for all construction projects of five acres or more. Implement Best Management Practices (BMPs) for stormwater runoff and erosion controls for all development.
- *Community Hazards Goal 4.16:* Require hazardous materials and hazardous waste management handling and disposal procedures that are protective of human health and the environment.
  - *Community Hazards Policy 4.16.1:* Support the Solano County Hazardous Waste Management Plan and its goals, policies, and implementation guidelines for hazardous waste reduction, hazardous waste facility siting, hazardous waste handling and disposal, public education and involvement, and program coordination with regulatory requirements.
    - *Community Hazards Program 4.16A:* As part of the permitting process, ensure that the County reviews the design and operating plans for handling and disposal of hazardous wastes for existing and proposed new businesses.
    - *Community Hazards Program 4.16B:* Contact the Solano County Environmental Management Department annually to confirm that hazardous waste generators in Benicia have been granted permits for handling hazardous substances in compliance with federal and State laws, that they dispose of their wastes in accordance with applicable laws, and that they have filed Hazardous Materials Management Plans and Risk Management and Prevention Plans.
  - *Community Hazards Policy 4.16.3:* Control water runoff that comes from hazardous substance handling or that enters hazardous substance handling areas.
- *Community Hazards Goal 4.17:* Minimize hazardous waste generation.
  - *Community Hazards Policy 4.17.1:* Ensure enforcement of Title 22 California Code of Regulations (CCR) Section 67100 regarding implementation of source reduction plans by hazardous waste generators.
    - *Community Hazards Program 4.17.A:* Contact the Solano County Environmental Management Department each September to confirm that new businesses have filed their source reduction plans, if applicable.
    - *Community Hazards Program 4.17.B:* Situate all new hazardous materials storage and handling areas to minimize the possibility of environmental contamination in the event of an accidental spill.

        - *Community Hazards Program 4.17.C:* Enclose areas where hazardous liquids are handled to minimize any rain or moisture coming into contact with hazardous substances.

- *Community Hazards Goal 4.20:* Reduce health and safety hazards associated with hazardous materials users, hazardous waste generators, and hazardous waste disposal sites and toxic air contaminants.
    - *Community Hazards Policy 4.20.1:* Establish buffer zones between sensitive land uses and those land uses which involve the significant use, storage, or disposal or hazardous materials, hazardous waste, or toxic air contaminants.
        - *Community Hazards Program 4.20.E:* Coordinate with the Solano County Environmental Management Department to ensure enforcement of community right-to-know laws (Chapter 6.95 of the Health and Safety Code, Section 25500 et seq.)
        - *Community Hazards Program 4.20.F:* Enforce the Hazardous Waste Property and Border Zone Property Law (Health and Safety Code, Article 11, Section 25520 through 25241).
- *Community Hazards Goal 4.22:* Update and maintain the City's Emergency Response Plan.
    - *Community Hazards Policy 4.22.1:* Provide an early community alert and notification system and safe evacuation plan for emergency incidents.
        - *Community Hazards Program 4.22.B:* Develop a siren system to alert and notify the community in an emergency.
        - *Community Hazards Program 4.22.D:* Consider a City radio station to inform residents in the event of an emergency.
    - *Community Hazards Policy 4.22.2:* Develop at least two exit routes, where feasible, for new developments. One of the exits could be a pedestrian route.
    - *Community Hazards Policy 4.22.3:* Provide the public with information on specified emergency evacuation routes.

3. Draft Specific Plan

The Draft Specific Plan contains the following policies and actions related to hazards and hazardous materials management.

- *Infrastructure Policy 2:* Work to safeguard public health, safety and prosperity by providing and maintaining facilities that enable the community to live in harmony with sustainable practices and natural systems.
    - *Infrastructure Action 6.2.8:* Require a soil and/or groundwater analysis prior to new development in areas where there has been prior hazardous materials use or storage, including unexploded ordnance and explosive waste. Monitor and identify potential areas of concern.
    - *Infrastructure Action 6.2.9:* Test and remediate sites known or suspected to have unexploded ordnance or a toxic history before development can occur.
    - *Infrastructure Action 6.2.10:* Work with State and federal agencies to require that any unauthorized hazardous substances be removed.

4. Impacts and Mitigation Measures

This section analyzes the impacts related to hazards that could result from implementation of the Draft Specific Plan. The section begins with criteria of significance, which establish the thresholds for determining whether a project impact is significant. The latter part of this section presents the potential hazards impacts associated with the proposed project. Mitigation measures are provided, as appropriate.

a. Criteria of Significance. The Draft Specific Plan would have a significant impact on public health and safety from hazards and hazardous materials if it would:

- Create a significant hazard to the public or environment through the transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment;
- Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan; or
- Result in an increased risk of exposure to wildland or urban fire hazards.

b. Less-than-Significant Hazards and Hazardous Materials Impacts.

(1) Transport Use or Disposal of Hazardous Materials and Risk of Upset. Both the construction period and operation period, which would bring new commercial and light industrial businesses to the Plan Area, could increase the volumes and types of hazardous materials transported, stored, used, and disposed within the Plan Area and the possible risk of upset and accidents involving the release of these materials. However, compliance with the General Plan (specifically Goals 4.7, 4.16, 4.17, 4.20 and associated policies and programs), and applicable local, State, and federal regulations for hazardous materials and hazardous waste (including worker training), described above, would avoid or mitigate significant hazardous materials impacts associated with new commercial and light industrial development in the Plan Area. Infrastructure Policy 2 of the Draft Specific Plan, which provides guidance on future hazardous materials usage and public safety within the Plan Area, is consistent with and supports General Plan goals related to hazardous materials.

Construction Period Impacts. Buildings would be demolished or rehabilitated during development of specific sites within the Plan Area. Site workers involved in demolition activities could be exposed to lead-based paint and asbestos-containing building materials, or other hazardous materials. Federal and State regulations govern the demolition or renovation of structures where lead or materials containing lead are present. Federal, State, and local regulations require the removal and proper disposal of asbestos or suspected asbestos-containing materials prior to demolition. Buildings would be inspected for lead-based paint and asbestos prior to demolition or rehabilitation. All lead-based paint and asbestos removal activities are required to be conducted by trained workers under direction of an appropriate health and safety plan to minimize potential exposure. Federal and State regulations also govern the management, transport, and disposal of hazardous materials (including hazardous wastes). Compliance with these laws and regulations would ensure the health and safety of workers and the public and reduce impacts to less-than-significant levels.

Diesel-powered earthmoving equipment, such as graders and excavators, would be used during construction of projects within the Plan Area. Fuels, degreasing agents and other hazardous materials used to operate or maintain the equipment could leak from storage containers or equipment, or be spilled. Other hazardous materials (e.g., paints, curing agents) would be brought into project sites

during construction. Transport, storage, or handling of these materials could result in releases to the environment and associated adverse human health effects. Project applicants and their construction managers would be required to comply with local, State and federal hazardous materials regulations. Typical compliance measures include storage of hazardous liquids with secondary containment and preparation of a spill response plan as part of the site-specific construction phase Storm Water Pollution Prevention Plan (SWPPP). Compliance with the laws and regulations governing the transport, storage and handling of hazardous materials would ensure the health and safety of workers and the public and reduce impacts to less-than-significant levels.

Operation Period Impacts. New commercial and light industrial businesses would be required to store, handle and dispose of hazardous materials and hazardous waste in accordance with local, State and federal laws and regulations. As noted above, local, State and federal regulations govern the management, transport, and disposal of hazardous materials and hazardous wastes. Compliance with these laws and regulations would ensure the health and safety of workers and the public and reduce impacts to less-than-significant levels.

(2) Hazardous Emissions and Hazardous Materials Use Near Schools. There are no existing schools or proposed schools within ¼-mile of the Plan Area.[39] The nearest public and private schools are located approximately ½-mile to the west. Therefore, development within the project site would not emit hazardous air pollutants or result in the use of hazardous or acutely hazardous materials, substances, or waste within ¼-mile of an existing or proposed school.

(3) Sites Listed Pursuant to Government Code Section 65962.5. Five sites within the Plan Area are listed or have been listed in the past on the lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Table IV.E-2~~.1~~). Two of the sites are not currently on the lists and three sites are designated as "closed."[40] As a result, the sites would not create a significant hazard to the public or the environment based on the previously identified site contamination.

(4) Emergency Response and Evacuation. Implementation of the Draft Specific Plan would include mixed use development, including residential uses, in an area that is currently primarily commercial and light industrial, although some live-work units are present. Development of the Plan Area would include the construction of internal streets to enhance circulation. In an emergency, major streets in the Plan Area (Military East, Adams Street, and Park Road) would serve as principal routes for evacuating people. Secondary streets within the Plan Area would be designed to provide access to these streets, which would serve as routes for moving emergency equipment and supplies. The proposed development within the Plan Area would not interfere with an existing emergency response or evacuation plan, given that it would conform to the following City goals/programs: 1) updating of the existing Emergency Operations Plan by the Benicia Fire Department, as required by the General Plan (Goal 4.22 and associated policies and programs); and 2) the City's notification to new businesses of the CANS as part of obtaining a business license.[41]

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[39] Benicia Unified School District, 2007. http://www.benicia.k12.ca.us. Great Schools, 2007. http://www.greatschools.net/city/Benicia/CA. June 4.

[40] Cal EPA, 2007. Cortese List Data Resources, http://www.calepa.ca.gov/SiteCleanup/CorteseList/default.htm, accessed June 1.

[41] Fiori, 1999.~~ op. cit.~~

(5) Wildland and Urban Fires. The Plan Area is not located in an area prone to wildland fires; the area is developed and is susceptible to urban fires. As noted in Table IV.E-2~~.1~~, some businesses currently operating within the Plan Area store and use hazardous materials and some of these materials are flammable (e.g., solvents and fuels). Commercial and light industrial development within the Plan Area under the Draft Specific Plan could increase the volumes and types of hazardous materials stored and used in the area and thus increase the risk of exposure to fires involving these materials. However, compliance with the General Plan (specifically Goals 4.7, 4.16, 4.17, 4.20 and associated policies and programs), and applicable local, State, and federal regulations for hazardous materials (including worker training), described above, would avoid or mitigate significant hazardous materials impacts associated with new commercial and light industrial development. Infrastructure Policy 6.2 of the Draft Specific Plan, which provides guidance on future hazardous materials usage and public safety within the Plan Area, is consistent with and supports the General Plan Goals.

b. Significant Hazards and Hazardous Materials Impacts and Mitigation Measures. Two~~One~~ potentially significant impacts have ~~impact has~~ been identified and are ~~is~~ discussed below.

Impact HAZ-1: Site development would occur in areas with documented and/or partly characterized environmental releases associated with historical site uses. (S)

The Plan Area has areas of known and potential, but as yet uncharacterized, or only partly characterized, soil and groundwater contamination associated with historic site uses. Potential sources of the contamination include former military operations as well as subsequent commercial and industrial uses that have occupied the Plan Area buildings after closure of the Arsenal. The chemicals in the soil and groundwater are hazardous and exposure to the chemicals via direct contact, inhalation or other means may present a risk to future site occupants. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure HAZ-1: Existing contamination shall be remediated, or engineering controls (engineered caps, vapor barriers, or other appropriate technologies) and administrative controls (withholding of building permits) shall be implemented, to ensure that potential future occupants of the Plan Area are not exposed to site-related contamination that exceeds acceptable health standards. The parties responsible for implementing site clean-up actions may include the USACE, other historical owners/operators of properties within the Plan Area, current owners of properties within the Plan Area, future developers of the properties within the Plan Area, or the City of Benicia.
>
> Acceptable health standards for the purpose of site clean-up shall mean an incremental lifetime cancer risk within the U.S. EPA's risk management range of one in ten thousand to one in a million (10^{-4} to 10^{-6}) or less and a non-cancer health hazard index of less than one based on the results of site-specific multimedia human health risk assessment(s). Groundwater health standards shall meet CalEPA requirements for the designated beneficial use(s) of groundwater in the Plan Area. CalEPA and the City shall certify that these requirements have been met before the City issues a Certificate of Occupancy for buildings constructed as part of redevelopment projects within the Plan Area.
>
> The nature and extent of contamination at the site is not fully characterized. In accordance with the requirements of the DTSC's Preliminary Endangerment Assessment process or other

acceptable EPA or CalEPA regulatory guidance for site investigations, soil and groundwater samples shall be collected and analyzed in areas with inadequate historical information to determine whether chemicals in the soil and groundwater are present at concentrations that exceed acceptable health standards. To ensure that future site occupants are not exposed to site-related contamination that exceeds acceptable health standards the following shall activities shall be conducted:

- The nature and extent of chemicals in soil and groundwater shall be investigated and described for each parcel or group of parcels to be redeveloped, with oversight by the appropriate regulatory agency, such as the DTSC, RWQCB, or SCEHS.

- The environmental data collected as part of the site investigation shall be used as input for human health risk assessment(s) to determine whether any chemicals in soil or groundwater will present an unacceptable risk to site occupants (i.e., exceed acceptable health standards as described above) given the site uses proposed in the Specific Plan and any subsequent redevelopment plans proposed for the parcel(s).

- The results of the human health risk assessment shall be used to determine whether no further action is required prior to redevelopment or that remediation of contamination or implementation of engineering or administrative controls is required to ensure that potential future occupants of the Plan Area are not exposed to site-related contamination that exceeds acceptable health standards.

- If remediation, engineering controls, or administrative controls are required to ensure that human health risk does not exceed acceptable health standards, these actions shall be completed before the site is occupied.

Monitoring and compliance shall consist of the following:

- Before the City issues building permits for a site within the Plan Area, it shall confirm that: a finding of No Further Action has been made by the overseeing regulatory agency with regard to site contamination and clean-up, or that a Remedial Action Plan or equivalent and a site health and safety plan are complete and incorporated as part of the redevelopment construction plans for the site; and that engineering controls are in place and functioning or included in the project design plans, and/or that land use covenants are in place for the property that will ensure future occupants of the site are not exposed to contamination that exceeds acceptable health standards. (LTS)

~~(1) Accidental Encounter of Hazardous Materials or Waste during Construction.~~

Businesses that transport, store and handle hazardous materials have operated in the Plan Area in the past and continue to operate there now. In addition to hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Table IV.E-2~~.1~~), there are other businesses in the area that have reported hazardous materials releases or usage, including the storage of fuel or other chemicals in USTs and transport via pipelines. There is some possibility that historic or current businesses in the Plan Area have had unreported releases of hazardous materials. If these materials are encountered unexpectedly during construction they would present a risk to workers, the public or the environment.

Impact HAZ-2~~1~~: Construction activities may unexpectedly encounter hazard materials or hazardous waste in soil or groundwater. (S)

Construction activities, by disturbing soil and groundwater, could result in the release of hazardous materials not identified as part of Mitigation Measure HAZ-1. Implementation of the following two-part mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure HAZ-2a~~-1a~~: If soil, groundwater or other environmental media with suspected contamination (e.g., identified by odor or visual staining) is encountered unexpectedly during construction activities for individual development projects or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered, the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notifying the SCEHS and implementing actions to determine the nature and extent of any observed contamination. An environmental professional shall oversee the subsequent assessment of the site (including the collection, analysis and interpretation of any samples of soil, groundwater or other environmental media) in accordance with local, State and federal hazardous materials and hazardous waste laws and regulations. The professional shall provide recommendations, as applicable, regarding soil/waste management, worker health and safety training, and regulatory agency notifications. General construction work shall not resume in the area(s) affected until the recommendations have been implemented under the oversight of the SCEHS or other regulatory agency, as appropriate.
>
> Mitigation Measure HAZ-2b~~1b~~: The contractor involved in site grading and site development activities for an individual development project shall ensure that underground pipelines or other underground or aboveground utilities within the project site are identified and clearly marked prior to earthworking activities to avoid unexpected contact with these utilities. Emergency procedures shall be developed by the contractor that can be implemented in the event utilities are ruptured; these procedures shall be reviewed and approved by the City of Benicia Community Development Department, prior to the issuance of a grading or building permit. On-site workers shall be trained in how to implement these procedures. (LTS)

5. References

Brown and Caldwell, 1999. *Arsenal-Wide Investigation Workplan for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. February.

Brown and Caldwell, 2004. *Expanded Site Inspection Field Site Investigation Plan for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. April

Brown and Caldwell, 2005. *Treatability Study Work Plan for TCE and its Degradation Products in Groundwater in the Lowlands Geology of the Industrial Area*, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. June.

Forsgren Associates/Brown and Caldwell, 2000. *Technical Memorandum Field Site Investigations for Area I Fuel Facilities Buildings 53, 73, 103 and 154 for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. June.

Forsgren Associates/Brown and Caldwell, 2002. *Technical Memorandum Field Site Investigation Fuel Only Facilities (Area I Fuel Storage Facilities at Buildings 15, 25, 26, 27, 28, 45, 46(B), 54, 118(A), 152 and 178) for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. March.

Forsgren Associates/Brown and Caldwell, 2004. *Final - Preliminary Assessment, Benicia Arsenal, Benicia, California*, prepared for the U.S. Army Corps of Engineers, Sacramento District. March.

Forsgren Associates/Brown and Caldwell, 2004. *Area I 50 Series Complex Site Investigation Report for Environmental Investigation at the Formerly Used Defense Site (FUDS) Benicia Arsenal, Benicia, California*, FUDS site number J09CA075600, prepared for the Department of Defense, U.S. Army Corps of Engineers, Sacramento District. October.

Jacobs Engineering, 1999. *Benicia Arsenal Records Research Report*, prepared for the U.S. Army Corps of Engineers, Sacramento District. April.

K. CULTURAL AND PALEONTOLOGICAL RESOURCES

This section assesses the potential for project impacts to cultural and paleontological resources, and recommends mitigation measures to avoid or reduce the severity of potentially significant impacts. The section is divided into components that include: 1) a description of the methods used for the cultural and paleontological resources analysis; 2) a summary of the Plan Area's cultural and paleontological setting, which includes a description of recorded resources, archaeological and paleontological sensitivity, and the applicable laws, codes, and regulations; and 3) an analysis of potential impacts and mitigation measures to reduce the significance of such impacts where possible.

1. Methods

This section describes the methods used to conduct this cultural and paleontological resources analysis.

a. Cultural Resources. Background research, consisting of archival research and contacts with potentially interested parties, was undertaken for this analysis. Each is described below.

(1) Archival Research. A records search (#06-1616) for the Plan Area and a ¼-mile radius was done on April 13, 2007, at the Northwest Information Center (NWIC) of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California. The NWIC is an affiliate of the California Office of Historic Preservation and is the official State repository of cultural resources reports and records for a 16-county area, including Solano County. The purpose of this record search was to identify cultural resources studies that have been prepared for sites in and around the Plan Area, and any identified cultural resources.

LSA also reviewed the following cultural resource inventories:

- *California Inventory of Historic Resources;*[1]
- *Five Views: An Ethnic Historic Site Survey for California;*[2]
- *California Historical Landmarks;*[3]
- *California Points of Historical Interest;*[4] and
- *Directory of Properties in the Historic Property Data File for Solano County.*[5]

  The Directory of Properties includes the listings in the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), California Historical Landmarks, and California Points of Historical Interest.

[1] California Department of Parks and Recreation, 1976. *California Inventory of Historic Resources.* Sacramento.

[2] California Department of Parks and Recreation, Office of Historic Preservation, 1988. *Five Views: An Ethnic Historic Site Survey for California.* Sacramento.

[3] California Department of Parks and Recreation, Office of Historic Preservation, 1990. *California Historical Landmarks*. Sacramento.

[4] California Department of Parks and Recreation, Office of Historic Preservation, 1992. *California Points of Historical Interest*. Sacramento.

[5] California Department of Parks and Recreation, Office of Historic Preservation, 2006. *Directory of Properties in the Historic Property Data File*. Sacramento.

The following Benicia planning documents were also reviewed to identify pertinent local cultural and paleontological resource policies and guidelines:

- City of Benicia General Plan;[6] and
- Arsenal Historic Conservation Plan[7]

(2) Contacts With Potentially Interested Parties. On April 20, 2007, LSA faxed a letter describing the Draft Specific Plan and maps depicting the Plan Area to the Native American Heritage Commission (NAHC) in Sacramento requesting a review of its sacred land file for any Native American cultural resources that might be affected by the proposed project. Debbie Pilas-Treadway, NAHC Environmental Specialist III, responded in a faxed letter on April 26, 2007, that a review of the sacred land file did not indicate "the presence of Native American cultural resources in the immediate project area."

On April 20, 2007, LSA sent letters describing the Plan Area and maps depicting the Plan Area to the Benicia Historical Society and to the Benicia Historical Museum and Cultural Foundation requesting information or concerns regarding historical sites in the Specific Plan Area. Benicia Historical Society did not respond to repeated requests for comments. In a phone call, a representative of the Benicia Historical Museum and Cultural foundation did not have any specific environmental concerns about the project.

b. Paleontological Resources. Background research, consisting of a fossil locality search and literature review, was undertaken to determine if paleontological resources (fossils) and geologic units known to contain fossils are within or adjacent to the Plan Area.

(1) Fossil Locality Search. A fossil locality search was conducted by the staff at the University of California, Berkeley, Museum of Paleontology, on May 21, 2007. The search identified 22 fossil localities within a 10-mile radius of the Plan Area. None of these localities are within or adjacent to the Plan Area. Fossils identified in the search included representatives of various Pleistocene mammals, such as mammoth and mastodons, ground sloth, horse, bison, camel, and whale, as well as Cretaceous aged fish, shark, and an unidentified mammal. The Cretaceous-aged localities are located in the Great Valley Sequence, which is present in the Plan Area. However, parts of California underlain by the Great Valley Sequence are large, varied, and very heavily faulted; therefore, it is unclear if the members of the Great Valley Sequence containing the fossil localities and the members present in the Plan Area are significantly related geologically or temporally.

(2) Literature Review. LSA reviewed paleontological and geological literature relevant to the project area and its vicinity. This review identified formations underlying the project area as being known to contain micro fossils as well as marine invertebrate fossils.

2. Cultural and Paleontological Setting

The section provides an overview of the cultural and paleontological settings of the Plan Area, including: 1) a brief overview of Benicia's prehistory and ethnography; 2) an overview of the historic

[6] City of Benicia Department of Community Development, 1999. *City of Benicia General Plan.* San Jose, California.

[7] Cannon Group. 1993. *Arsenal Historic Conservation Plan*. San Francisco, California.

period in Benicia; 3) a detailed description of the Specific Plan Area's history of military and defense-related facilities; 4) a summary description of cultural resources within and adjacent to the Plan Area; 5) a description of the regulatory context for cultural and palontological resources in Benicia; 6) an assessment of the Plan Area's archaeological sensitivity; 7) a brief overview of the paleontological setting of Benicia; and 8) an assessment of the Plan Area's paleontological sensitivity.

a. Prehistory and Ethnography. The Carquinez Strait area, including Benicia, was probably settled by native Californians between 12,000 and 6,000 years ago.[8] The Paleo-Archaic-Emergent cultural sequence developed by David Fredrickson (1974) is commonly used to interpret the prehistoric settlement of Central California.[9] The sequence is broken into three broad periods: the Paleoindian period (10,000-6000 B.C.); the three-staged Archaic period, consisting of the Lower Archaic (6000-3000 B.C.), Middle Archaic (3000-1000 B.C.), and Upper Archaic (1000 B.C.-A.D. 500); and the Emergent period (A.D. 500-1800).

The Paleoindian Period began with the first entry of people into California. These people probably subsisted mainly on big game and minimally processed plant foods, and had no trade networks. Current research, however, is indicating more sedentism, plant processing, and trading than previously believed. The Archaic Period is characterized by increased use of plant foods, elaboration of burial and grave goods, and increasingly complex trade networks. The Emergent Period is marked by the introduction of the bow and arrow, the ascendance of wealth-linked social status, and the elaboration and expansion of trade networks, signified in part by the appearance of clam disk bead money.[10]

Prior to Euro-American contact, the Plan Area was in the ethnographic territory of the Patwin. The Patwin spoke Southern Wintu, a branch of the Penutian language family. Patwin territory generally consisted of the southern Sacramento Valley, from the town of Princeton south to San Pablo and Suisun bays. Politically, the Patwin were organized as tribelets, which consisted of a primary village and several outlying villages. Settlements were typically established along large watercourses, such as the Sacramento River and Cache and Putah creeks. Patwin structures were semi-subterranean and earth-covered constructions. These structures functioned as dwellings, menstrual huts, sweathouses, and ceremonial dance houses.[11]

The Patwin exploited a wide variety of terrestrial and marine plant and animal resources within their territory. Fishing was an important Patwin industry, with weirs and nets used to great advantage to harvest such Sacramento River fish as salmon, sturgeon, perch, chub, sucker, pike, trout, and steelhead. Mussels were also harvested from the river. Some of the animals taken for food and craft material included tule elk, bear, antelope, duck, geese, quail, and turtle. As with many other Native American cultures in California, acorns and seeds were harvested in seasonal rounds. Some of the seed crops included sunflower, alfilaria, clover, bunchgrass, and wild oat. Other sources of plant food

[8] Moratto, Michael J., 1984. *California Archaeology.* Academic Press, Orlando, Florida.

[9] Fredrickson, David A., 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41-54.

[10] Moratto, Michael J., op. cit.

[11] Johnson, Patti J., 1978. Patwin. In *California*, edited by Robert F. Heizer, pp. 350-360. Handbook of North American Indians, vol. 8, William J. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

included buckeye, pinenuts, juniper berries, manzanita berries, blackberries, wild grapes, and tule roots.[12]

The Patwin were accomplished craftspeople, creating a wide variety of garb and utilitarian items from surrounding plant and animal communities. Hemp was used for cordage; fibrous plants yielded material for coiled or twined baskets; bone, wood, and stone provided toolmaking materials; and tule reeds offered the means to construct boats for river and delta navigation.

The earliest historic records begin around 1800 with the Spanish mission registers of baptisms, marriages, and deaths of Indian neophytes. Spanish emissaries from Missions San Francisco de Asis, San Francisco Solano, and San Jose actively proselytized the Patwin people, who were brought to live and work at the missions. The mission system was dissolved in the early 1830s, and by the 1860s, the few Patwin who had survived almost 100 years of epidemics and conflict with the Spanish, Mexican, and Euro-Americans, were either working as laborers for ranches or were placed on small reservations established by the United States government.[13]

b. Historic Period. Benicia was born from an agreement between Lieutenant Robert Semple, a young Kentucky dentist, and Thomas Larkin, a prominent settler, to purchase a tract of land from General Mariano Vallejo. Completing the purchase in 1847, Semple and Larkin established a settlement on the Carquinez Strait, naming it Benicia in honor of the General's wife. By the end of 1847, fifteen buildings, a wharf, and a hotel had been built.

Benicia's advantageous location on the Carquinez Strait offered a convenient and profitable shipment point for supplies and miners heading to the Sierran gold fields. In 1850, the Pacific Mail and Steamship Company established a facility in Benicia to accommodate the increasing freight and mail traffic between California and the eastern United States. Industrial activity in Benicia increased as wharves were built to handle the ever-increasing flow of maritime commerce. As commerce and industry flourished, residents were drawn to Benicia, and in 1850 there were over 100 houses in the town.

Benicia's prominence is indicated by two governmental distinctions conferred upon it during California's early statehood. Benicia was one of the first two cities incorporated in California, and briefly served as the State capitol in 1853 and 1854. When Sacramento was selected as the permanent capitol, Benicia lost a measure of political influence, but retained a host of prominent citizens active in financial, social, and religious circles. Several religious schools were established in Benicia, and it became known as a refined, relatively quiet community, in contrast to California's rough-and-ready mining and ranching communities.

In the 1860s and 1870s, easy access by water and the railroad were two important precursors to industrial development in Benicia. In 1879, the Southern Pacific extended rail lines to Benicia's waterfront and began operation of the first railcar ferry west of the Mississippi River. The ferry operated from 1879 to 1930, transporting freight from the east destined for San Francisco and shipping finished products from Benicia to market.

[12] Ibid.

[13] Ibid.

As Benicia's industries and waterfront grew, so did its economic base. The Hume Carquinez Packing Company began canning salmon in 1865, and continued in this capacity until a ban on commercial salmon fishing in inland waters limited the supply in 1955. The tanning industry was even more visible and, due to Benicia's central location, more lucrative. In the late-19th and early-20th centuries, the mass production of leather products in the United States created a huge demand for tanned hides, and Benicia became the principal hide tanning center on the Pacific Coast. The hide tanning industry ceased in Benicia by 1930.

c. Benicia Arsenal. Benicia's mild climate and strategic importance as a trading center led the U.S. Army to establish the Benicia Barracks and a Quartermaster's Supply Depot in 1849. The Benicia Arsenal was later founded in 1852 as the only permanent arsenal on the Pacific Coast, one of five in the country. While numerous wooden buildings were constructed during the early life of the Benicia Arsenal, the first permanent structures consisted of two large storehouses now known as the Camel Barns, a small engine house, and two powder magazines located in what is referred to as the "Upper Arsenal." The Arsenal moved south in 1858 and took over the location of the Quartermaster's Supply depot and soon built the monumental Main Arsenal Storehouse, commonly referred to as the "Clock Tower." The Main Arsenal Storehouse was originally designed as a three story building flanked by four corner towers for defense against uprisings of the local population. Only two towers were eventually incorporated into the design and after an explosion and fire in 1912, the structure was rebuilt as a smaller, two-story building.

The Benicia Arsenal supplied munitions and supplies for all of the troops in the western states during World War I. The Arsenal expanded greatly during World War II from 345 acres to 2,192 acres and reached its peak size during the Korean War. The Arsenal was deactivated in 1963 and the land transferred to City ownership in 1965. The majority of the Arsenal's property was transferred to Benicia Industries in the 1970s, with the exception of such historically significant structures as the Main Arsenal store house, the Commanding Officer's Quarters, the Camel Barns, and the original powder magazines.

d. Cultural Resources Summary. Cultural resources within ¼-mile of the Specific Plan Area consist of prehistoric and historical archaeological sites, and historical architectural properties consisting of buildings, structures, and districts. Known cultural resources within or adjacent to the Specific Plan Area include the Benicia Arsenal, a California State Historic Landmark and a National Register District. Information about this resource was compiled from multiple sources, including national, State, and local inventories.

The Benicia Arsenal National Historic District is comprised of four smaller districts (A-D), two of which (C, D) are within the Plan Area.[14] Districts "A" and "B" are outside of the Plan Area in the Upper Arsenal, and contain the original Benicia Barracks, Military Cemetery, Hospital, and the original Arsenal storehouses and powder magazines. District "C" is within, and extends beyond, the Plan Area to the east and west and includes the Jefferson Ridge/Officers' Row Zone, the Adams Street Zone, and a small portion of the Grant Street Zone. This District contains the "Clock Tower" (Main Arsenal Storehouse), the Commanding Officer's Quarters, the Lieutenants' House, the Officers' Duplex, and several Officers' Quarters. District "D" is entirely within the Plan Area and contains portions of the Grant Street Zone and the South of Grant Street Zone. District "D" contains

[14] A map showing the locations and boundaries of subdistricts A, B, C, and D is on page 7 of the Arsenal Historic Conservation Plan (1992). Page 1-5 of the Draft LAMUSP shows the locations of the Plan Area and subdistricts C and D.

an 1872 barracks and three machine shops, including the Blacksmith's Shop. Table IV.K-1 indicates properties within Districts C and D that were previously determined to contribute to the National Register and California Register eligibility of the Benicia Arsenal Historic District.

Table IV.K-1: Contributing Historic Properties of Benicia Arsenal Districts C and D

Building Name & Number[a]	District	Date Constructed	Description
Officers' Quarters, #24	C	1868	Colonial Revival style, one and a half story, wood-framed building.
Officers' Quarters, #33	C	1870	Colonial Revival style, one and a half story, wood-framed building.
Officers' Quarters, #34	C	1870	Colonial Revival style, one and a half story, wood-framed building.
Officers' Quarters, #35	C	1870	Colonial Revival style, one and a half story, wood-framed building.
Officers' Duplex, #25 & 26	C	1874	Classical Revival style, T-shaped, brick and sandstone duplex building.
Officers' Quarters, #27	C	1861	Classical Revival style, two-story T-shaped, brick and sandstone building.
Commanding Officer's Quarters, #28	C	1860	Greek Revival and early Classical Revival influenced two-story, L-shaped, stucco clad, brick and sandstone residence.
Original Arsenal (Clock tower), #29	C	1859	Gothic style rectangular, gable-roofed, sandstone building. Originally designed and built as a three-story structure with two four-story crenellated towers located on opposite far corners, an explosion and fire in 1912 gutted the structure, and the top floor of the main structure and the rear tower were not rebuilt.
Guardhouse, #39	C	1872	Small, T-shaped, hip-roofed building constructed of brick and now covered in stucco.
Headquarters Building, #47	C	1870	Colonial Revival style, three-story, rectangular, brick and sandstone building.
Barracks, #45	D	1872	Greek and Classical Revival style, three-story, rectangular brick and sandstone building.
Arsenal Shop, #55	D	1876	Large, Italianate and Classical styles influenced, single-story, rectangular building. One of three similar buildings (#56 & 57) it forms the southern part of a collective "E" shaped work facility.
Arsenal Shop, #56	D	1877	Large, Italianate and Classical styles influenced, single-story, rectangular building. One of three similar buildings (#55 &57), it forms the longer, central part of a collective "E" shaped work facility.
Arsenal Shop, #57	D	1884	Large, Italianate and Classical styles influenced, single-story, rectangular building. One of three similar buildings (#55 & 56), it forms the northern part of a collective "E" shaped work facility.

[a] Reference #'s from LSA and the National Register of Historic Places Inventory Nomination Form.
Source: Arsenal Historic Conservation Plan, 1993 and LSA Associates, Inc., 2008.

Various architectural properties within the Benicia Arsenal were recorded by the Historic American Buildings Survey[15] (HABS) in the late 1970s. Properties recorded within the Plan Area include the "Clock Tower" (Main Arsenal Storehouse), the Commander's house, the Lieutenants' house, the Officers' duplex, the Blacksmith's Shop and neighboring machine shops, two office buildings, a barracks, a guard house, and a barracks.

The Benicia Arsenal, California State Historic Landmark 176, was documented in 1936 by John Adam Hussey as part of the W.P.A. Federal Writer's Project.[16]

The City of Benicia's Arsenal Historic Conservation Plan (Conservation Plan) designates historical resources in the Arsenal as Landmark Buildings, Potentially Contributing Buildings, and Contributing Buildings, and includes a list of the resources within the Benicia Arsenal. The Plan Area contains ten~~17~~ Landmark Buildings and six Contributing Buildings. The Conservation Plan notes that many of the buildings from World War II and later within the Benicia Arsenal were "utilitarian in both use and design" and "not yet fifty years of age," and not eligible for inclusion as contributing elements of a district at the time of their assessment. The Conservation Plan also states that "open space, landscape features, and urban design elements" contribute to the historical significance of the District.

e. Archaeological Sensitivity. The Specific Plan Area was assessed to determine the likelihood that subsurface archaeological deposits exist below the current built environment. The assessment included research at the NWIC and historical research to identify the property-specific history of subject parcels within the Plan Area. This historical information was used to predict the type and nature of archaeological remains that may be present within the Plan Area.

The sensitivity assessment indicates that the Specific Plan Area has a high likelihood of containing both prehistoric and historic archaeological deposits, as discussed below.

(1) Prehistoric Archaeological Sensitivity. The Plan Area is in an area of high prehistoric archaeological sensitivity. However, there are no existing studies of prehistoric archaeology within the Benicia Arsenal.

N. C. Nelson conducted the first intensive survey of archaeological sites in the San Francisco Bay region between 1906 and 1908, during which he documented 425 "earth mounds and shell heaps" along the San Francisco Bay shoreline.[17] These shellmounds were generally found at locations that allowed the native peoples to utilize the resources of coastal, bay, estuary, or marsh environments. A series of such shellmounds has been identified in coves and inlets along the northern Carquinez Strait shoreline. According to archaeologist Kent Lightfoot, "Most shell mounds are distributed along the

[15] The Historic American Buildings Survey (HABS) is the nation's first federal preservation program, begun in 1933 to document America's architectural heritage. HABS recording combines drawings, historical documentation and photography to produce a comprehensive, interdisciplinary record. Documents are available online at the Library of Congress: http://memory.loc.gov/ammem/collections/habs_haer/

[16] Online Archive of California. 2007. Website: content-backend-a.cdlib.org. April 25.

[17] Nels C. Nelson, 1909. *Shellmounds of the San Francisco Bay Region* (University of California Publications in American Archaeology and Ethnology 7, No. 4).

bayshore where freshwater streams empty into the bay."[18] Because the Lower Arsenal is located near the shoreline of Carquinez Strait, near the outlets of freshwater streams, it may contain prehistoric resources. Before siltation associated with 19th century hydraulic mining in the Sierra Nevada, the shoreline extended much farther north than it does today, to the southern edge of the Plan Area.

The proximity of the historical bay margins and the nearby diversity of rich ecological communities from which early inhabitants could obtain necessary plant and animal resources indicates that the Plan Area is sensitive for prehistoric archaeological sites. No formal or informal archaeological surveys have documented prehistoric archaeological sites in the Lower Arsenal, possibly due to security issues when in the ownership of the U.S. Army and a lack of visibility of native soils due to modern development. However, despite the lack of identifiable prehistoric resources, the area is highly sensitive for unrecorded and possibly buried prehistoric archaeological sites.

(2) Historical Archaeological Sensitivity. The Specific Plan Area is also in an area of high historical archaeological sensitivity. While there have been numerous studies of historical architecture in the Benicia Arsenal, no studies have been conducted of historical archaeology in the Plan Area.

As one of the first American military establishments in California, the landscape of the Benicia Arsenal has a rich history of use and re-use over the last 150 years. Historic maps indicate that the entire Plan Area has been intensively utilized throughout its history. This intensive historical use has undoubtedly resulted in a variety of historical deposits and remains throughout the Plan Area.

A HABS survey map,[19] prepared in 1976, indicates the location of existing buildings and their date of construction. Using this map as a baseline, earlier maps were examined to determine whether the development zones in the Plan Area could contain the remains of historic structures. As the U.S. Army produced numerous maps of the Plan Area throughout its tenure at Benicia Arsenal, each showing changing street alignments, the addition or destruction of buildings, and the changing natural landscape, it is possible to determine whether certain locations are archaeologically sensitive for historical deposits. The majority of the Plan Area has previously contained structures, buildings, and objects of possible significance. Only on the areas on the slopes of Jefferson Ridge did documentary evidence indicate little possibility of historical development.

f. Paleontological Setting. The geology of this area of California has been heavily affected by faulting and uplift and the Plan Area is located on three differently-aged geologic units. These units become progressively younger as one goes from north to south. The youngest unit is Holocene aged alluvial fan deposits. Underlying these sedimentary deposits is the Paleocene aged Vine Hill Sandstone, which is also exposed to the north of the alluvial fan deposits. The oldest unit, the Great Valley Sequence, is in the northern section of the Plan Area.

The Plan Area consists of the historic deposits and geologic formations described below:

[18] Lightfoot, Kent, 1997. "Cultural Construction of Coastal Landscapes: A Middle Holocene Perspective from San Francisco Bay," in *Archaeology of the California Coast During the Middle Holocene*, Jon M. Erlandson and Michael A. Glassow, Editors. (Institute of Archaeology, University of California, Los Angeles, 1997).

[19] White, John. and Ken Peyson. 1976. *Benicia Arsenal* Historic American Building Survey. Office of Archaeology and Historic Preservation, National Parks Service.

(1) Artificial Fill (Historic). Artificial fill is loose to very well-consolidated gravel, sand, silt, clay, rock fragments, organic matter, and manmade debris in various combinations. The thickness is variable and may exceed 90 feet in places. Some is compacted and quite firm, but fill made before 1965 is usually not compacted and consists simply of dumped materials.[20] Artificial fill does not contain paleontological resources.

(2) Bay Mud (Holocene [present to 10,000 years ago]). Bay mud is a series of water-saturated estuarine deposits. It is dark, silty clay that is rich in organic material and locally contains beds of peat and gastropod and pelecypod shells. Bay mud may be as much as 120 feet thick beneath the bay, but thins to less than 1-foot-thick around the margins of the bay. It may be less than 10 feet thick in estuaries. Bay mud contains no significant paleontological resources.[21]

(3) Alluvial Fan and Fluvial Deposits (Holocene [present to 10,000 years ago]). Alluvial fan deposits are brown or tan and are composed of gravelly sand or sandy gravel. They grade upwards to sandy or silty clay. These deposits are too young to contain significant paleontological resources.

(4) Vine Hill Sandstone (Paleocene [58 to 65 million years ago]). The Vine Hill sandstone is a member of the Martinez Assemblage. It is made up of glauconitic sandstone and shale. It may contain such paleontological resources as nanoplankton[22] and gastropods.[23]

(5) Great Valley Sequence (Early and Late Cretaceous [65 to 144 million years ago]). The Great Valley Sequence is composed of inter-bedded sandstones and shales that were deposited during the Cretaceous when the Pacific Ocean extended to the western edge of the Sierra Nevada. It is in places several thousand meters deep, and has been known to contain such age diagnostic micro-fossils as dinoflagellates[24] and marine fossils such as mollusks.[25]

g. Paleontological Sensitivity. The alluvial fan deposits, which underlie the southern third of the Plan Area, are Holocene in age (present to 10,000 years old) and are not paleontologically significant. The Vine Hill Sandstone, which underlies the center of the Specific Plan Area has been known to

[20] Ibid.

[21] Helley, E.J., K.R. La Joie, W.E. Spangle, and M.L. Blair, 1979. *Flatland Deposits of the San Francisco Bay Region, California-Their Geology and Engineering Properties, and their Importance to Comprehensive Planning*. Geological Survey Professional Paper 943. U.S. Geological Survey and Department of Housing and Urban Development, Washington, D.C.

[22] Campbell, Kathleen A., 1996. Gastropods of Mesozoic cold-seep carbonates, California. *Abstracts with Programs – Geological Society of America*, vol. 28, no. 7. pp. 298.; Harden, Deborah R., 2004, *California Geology, Second Edition*, pp 271-274. Prentice Hall, New Jersey.; Klosterman, Susan L., Michael R. Sandy, Kathleen A. Campbell, 2001. A new occurrence of the Late Jurassic rhynchonellid Cooperrhynchia (Brachiopoda) from the Great Valley Group, California, confirming a cold-seep community association. *Abstracts with Programs – Geological Society of America*, vol. 33, no. 4, pp. 24.

[23] Ibid.

[24] Squires, Richard L., 1997. Taxonomy and Distribution of the Buccinid Gastropod Brachyshingus from Uppermost Cretaceous and Lower Cenozoic Marine Strata of the Pacific Slope of North America. *Journal of Paleontology*, vol. 71, no. 5, pp. 847-861; Watson, Elizabeth A., 1942, Age of the Martinez Formation of Pacheco Syncline, Contra Costa County, California. *American Midland Naturalist*, vol. 28, no. 2, pp. 451-456

[25] Harden, Deborah R., 2004. *California Geology, Second Edition*, pp 271-274. Prentice Hall, New Jersey.

contain microfossils[26] as well as marine invertebrates.[27] The Great Valley Sequence, which underlies the northern third of the Specific Plan Area, is marine in origin[28] and has been known to contain marine fossils[29] and microfossils.[30]

3. Regulatory Context

The section below briefly discusses laws, codes, and regulations applicable to cultural and paleontological resources within the City of Benicia.

a. California Environmental Quality Act. Historical and paleontological resources as they relate to CEQA are discussed below.

(1) Historical Resources. Under the provisions of the California Environmental Quality Act (CEQA), "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (§1506-4.5(b)). CEQA defines a "historical resource" as a resource that is eligible for listing on the California Register (California Register), listed in a local register of historical resources (as defined at PRC 5020.1(k)), identified as significant in a historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, or determined to be a historical resource by a project's lead agency (§15064.5(a)).

A historical resource consists of: "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (§15064.5(a)(3)).

(2) Paleontological Resources. Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils and their immediate environmental context as significant nonrenewable paleontological

[26] Sullivan, Frank R., 1964. Lower Tertiary nannoplankton from the California Coast Ranges; Part 1, Paleocene. *University of California Publications in Geological Sciences*, vol. 44, no. 3, pp. 163-228.

[27] Squires, Richard L., 1997. Taxonomy and Distribution of the Buccinid Gastropod Brachyshingus from Uppermost Cretaceous and Lower Cenozoic Marine Strata of the Pacific Slope of North America. *Journal of Paleontology*, vol. 71, no. 5, pp. 847-861; Watson, Elizabeth A., 1942, Age of the Martinez Formation of Pacheco Syncline, Contra Costa County, California. *American Midland Naturalist*, vol. 28, no. 2, pp. 451-456

[28] Ibid.

[29] Campbell, Kathleen A., 1996. Gastropods of Mesozoic cold-seep carbonates, California. *Abstracts with Programs – Geological Society of America*, vol. 28, no. 7. pp. 298.; Harden, Deborah R., 2004, *California Geology, Second Edition*, pp 271-274. Prentice Hall, New Jersey.; Klosterman, Susan L., Michael R. Sandy, Kathleen A. Campbell, 2001. A new occurrence of the Late Jurassic rhynchonellid Cooperrhynchia (Brachiopoda) from the Great Valley Group, California, confirming a cold-seep community association. *Abstracts with Programs – Geological Society of America*, vol. 33, no. 4, pp. 24.

[30] Harden, Deborah R., 2004. *California Geology, Second Edition*, pp 271-274. Prentice Hall, New Jersey; Kariminia, Seyed Mohsen, 2004. Dinoflagellate cysts from Great Valley Supergroup. *Abstracts with Programs Geological Society of America*, vol. 36, no. 5, pp. 363.

resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.[31]

CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) §15126.4 (a)(1)). California Public Resources Code §5097.5 also applies to paleontological resources (see above).

(3) City of Benicia General Plan. The City of Benicia General Plan contains goals, policies, and programs for the identification, preservation, and management of cultural resources. Most of the goals, policies, and programs pertinent to cultural resources as addressed in this section (buildings, sites, structures, objects, and districts) are contained in the Historic Resources section of the Community Identity element (Chapter 3). These goals, policies, and programs are listed below.

- *Historic Preservation Goal 3.1:* Maintain and enhance Benicia's historic character;
  - *Historic Preservation Policy 3.1.1:* Encourage reuse of historic buildings; if feasible, encourage relocation rather than demolition;
  - *Historic Preservation Policy 3.1.2:* Enhance the economic potential of historic and architectural assets;
  - *Historic Preservation Policy 3.1.3:* Preserve historic trees and landscapes;
  - *Historic Preservation Policy 3.1.6:* Promote restoration of public and privately-owned historic and architecturally significant properties;
- *Historic and Archeological Resources Goal 3.2:* Protect archaeological (including underwater) sites and resources;
  - *Historic and Archeological Resources Policy 3.2.1:* Ensure the protection and preservation of artifacts in known, and as yet unidentified, areas;
    - *Historic and Archeological Resources Program 3.2.B:* Refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory; [32]
    - *Historic and Archeological Resources Program 3.2.D:* Require that all sites with archaeological resources likely to be disturbed by a proposed project be analyzed by a qualified archaeologist and an appropriate program developed to mitigate any impacts from the project.

(4) Benicia Arsenal Historic Conservation Plan. In October of 1987, the City enacted an "historic overlay district" provision as part of its zoning ordinance. The purpose of this provision was to allow the City or members of the public to designate historic districts and/or landmark buildings within existing zoning districts. The ordinance requires that a conservation plan be prepared for areas zoned as historic districts. To this end, the Arsenal Historic Conservation Plan (1993) was published to set forth policies and guidelines for development, alterations to properties and the landscape within, and management of, the Benicia Arsenal and its four designated sub-districts. The purpose of the Conservation Plan is to ensure that modifications within the Benicia Arsenal plan area are undertaken in such a manner so as to maintain the historic integrity of the district.

[31] Conformable Impact Mitigation Guidelines Committee, 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines. *Society of Vertebrate Paleontology News Bulletin* 163:22-27.

[32] The California Archaeology inventory has been renamed the California Historical Resources Information System (CHRIS). The CHRIS office serving Solano County is the Northwest Information Center, housed at Sonoma State University.

The seven overarching objectives of the Conservation Plan—all of which aim to maintain the Benicia Arsenal's historic character—are to:

1) Establish and reinforce the distinct qualities of individual sub-districts;
2) Preserve, maintain, and promote appropriate adaptive reuse of historic buildings, especially those recognized as being of landmark quality;
3) Preserve important natural features, including hillsides, slopes, and vegetation which have been identified as integral to the district's character or to a particular building's setting;
4) Maintain established plantings which are an integral feature of a building's historic setting;
5) Maintain key views of historic structures and the water;
6) Maintain the character of existing site improvements and features such as retaining walls, timber guard rails, and so on, which are appropriate to the scale and design of nearby buildings; and
7) Encourage public and private site and urban design improvements which harmonize with each sub-district's character and clarify key access points and circulation route.

4. Draft Specific Plan

Numerous goals, actions, and policies in the Draft Specific Plan apply to historic built environment and archaeological resources. In particular, the policies and actions listed under Goals 1 (Land Use), 3 (Circulation), and 4 (Historic Preservation) ~~4 ("Preserve, enhance, and promote Benicia's Arsenal Historic Conservation District as an important remnant of one of the Nation's most prominent military arsenals.")~~ are applicable to prehistoric and historic resources in the Plan Area. These policies and actions are intended to mitigate potential development impacts within the Plan Area and to preserve the Benicia Arsenal's historical setting. ~~The following actions relate to archaeological resources:~~ The Draft Specific Plan actions that relate to historic and archaeological resources are listed below.

- ~~*Historic Preservation Action 4.6.3.* Require the services of an archaeologist to conduct archival and field studies on sites with potential archaeological resources on a project specific basis.~~
- ~~*Historic Preservation Action 4.6.4.* Where cultural resources are encountered during grading, require developers to avoid altering the materials and their context until a qualified cultural resource expert has evaluated the situation and recorded identified cultural resources.~~

- Draft Specific Plan Goal 1: Land Use;
  - *Land Use Action 1.1.1.* Enforce standards for infill projects that conform built structures and surrounding open space design with the historic character of the larger Arsenal Historic District through form based code.
  - *Land Use Action 1.1.2.* Enforce detailed placement criteria for buildings and structures adjacent to historic structures to provide an appropriate design orientation and buffer zone between historic buildings and new development.
  - *Land Use Action 1.1.6.* Ensure that the Arsenal Historic District planning and development takes into consideration PRC § 21084.1, the state law provision (CEQA) that provides, "any project that may cause a substantial adverse change in the significance of an historical resource is a project that may have significant effect upon the environment."
  - *Land Use Action 1.2.1.* Preserve the historic context of the Jefferson Ridge/Officer's Row and its image as a former residential officers' enclave, particularly the embankment north of Adams Street and the promontory land form of the Clocktower site.

- *Land Use Action 1.2.2.* Consider the option of purchasing private property or historic conservation easements or transferring development rights within the Jefferson Ridge/Officer's Row planning area to consolidate the design, function, and accessibility of the Arsenal Historic District.
- *Land Use Action 1.2.3.* Incorporate plans for the Clocktower Building into plans for the Jefferson Ridge, even though outside the Specific Plan area, because of its complementary relationship to historic structures in the Jefferson Ridge/Officer's Row setting.
- *Land Use Action 1.2.4.* Restore the architecture of the Clocktower Building to enhance the historic setting of the Commanding Officer's Quarters, recognizing their interrelated functions. Restoration should occur in the first phase of development of the Jefferson Ridge, but lack of public funding for a complete restoration should not delay development.
- *Land Use Action 1.2.5.* Restore the Commandant's Quarters to active uses compatible with its preservation as an historic structure. Restoration should occur in the first phase of development of the Jefferson Ridge, but lack of public funding for a complete restoration should not delay development.
- *Land Use Action 1.2.7.* Consider defining the northern edge of the Officer's Square by the addition of an architecturally distinguished building, located to screen the square from the sights and sounds of Interstates 680 and 780 and to provide additional building space for the potential destination campus.
- *Land Use Action 1.4.3.* Review form and massing along Grant Street to create a uniform building fabric that promotes visual and physical connections between the Jefferson Ridge and the Lower Arsenal.
- *Land Use Action 1.5.4.* Except for historic structures that have already been identified, all other buildings should be evaluated for historic significance. Consideration should be given to restoration throughout the elimination of additions or non-contributing structures.
- *Land Use Action 1.6.4.* Establish a formal program to recognize the heritage trees. Develop special permit requirements for removal or alteration.
- *Land Use Action 1.6.5.* Require landscaped setbacks from the street for buildings where appropriate to maintain the historical setting. Parking and loading areas should be designed to minimize visual intrusion.

- Draft Specific Plan Goal 3: Circulation;
  - *Circulation Action 3.2.1.* Restore the historic character of Jefferson Street with high hedges along the sidewalk on the north side of the street and on-street on the south side.
- Draft Specific Plan Goal 4: Historic Preservation;
  - *Historic Preservation Action 4.1.1.* Maintain the National Register of Historic Places listing for the Benicia Military Arsenal Historic District.
  - *Historic Preservation Action 4.1.2.* Ensure that specific rehabilitation projects follow the Secretary of Interior's Standards.
  - *Historic Preservation Action 4.2.1.* Protect historic context which includes open space, landscape features, and urban design elements surrounding historic structures that contribute to the National Registry of Historic Places designation.
  - *Historic Preservation Action 4.2.2.* Maintain the character of existing site improvements and support infrastructure, such as retaining walls, timber guardrails, and street features that are appropriate to the scale and design of nearby buildings.
  - *Historic Preservation Action 4.2.3.* Maintain the design integrity and distinguishing features of historic buildings. Retain the traditional façade elements, proportions, original materials and colors, and architectural details that give historic buildings their special character, and use appropriate replacements where necessary.
  - *Historic Preservation Action 4.3.1.* Require the use of scaled and limited night-lighting to supplement street lighting and to highlight and complement the historic and architectural features of historic structures.
  - *Historic Preservation Action 4.3.2.* Avoid the use of fences or walls and other supplemental designed structures, incorporating traditional designs and applications that conform to the historic character of the area and do not obstruct or obscure historical elements.

- *Historic Preservation Action 4.3.3.* Require sign types, lighting, and designs compatible with the historical features of buildings and that enhance the character of the district as a whole, including illumination standards that mitigate visual disturbance.
- *Historic Preservation Action 4.4.1.* Discourage designs in new structures that call undue attention to themselves in favor of those that reflect architectural qualities that tie the buildings of the district together.
- *Historic Preservation Action 4.4.2.* Encourage site improvements that are consistent with the historic character of surrounding structures and will serve to unify the area into a visually more cohesive district.
- *Historic Preservation Action 4.4.3.* Ensure that all new development is compatible in scale, character, and materials with the historical resources of the Plan Area.
- *Historic Preservation Action 4.4.4.* Create compatibility in street design, public improvements, and utility infrastructure with the built environment of the Arsenal Historic District.
- *Historic Preservation Action 4.4.5.* Provide design review for industrial equipment installations, operating mechanical equipment, pipelines, tanks, and other industrial infrastructure that are visually prominent to ensure that the visual and operating components do not compromise the National Register of Historic Places designation. Encourage and require vaults where feasible.
- *Historic Preservation Action 4.5.1.* Minimize new development within view corridors, where possible, and review under strict design requirements to ensure that structures and improvements are built of a scale and design that do not dominate, overpower or interfere with views of landmarks.
- *Historic Preservation Action 4.5.2.* Consider visual impacts studies, such as computer simulation, photo montage, on-site story poles, or front alteration of existing structures on views or view corridors.
- *Historic Preservation Action 4.5.3.* Maintain strong visual connections to the waterfront from inland points within the Arsenal to maintain connections to the Arsenal's waterfront history, and to compensate for lack of public access to the waterfront and port activities.
- *Historic Preservation Action 4.6.1.* Apply the California State Historical Building Code to maintain the historical integrity of the specific plan area.
- *Historic Preservation Action 4.6.2.* Prior to the issuance of a demolition permit for any structure determined by the city staff to have potential historic significance, update the designation of historic and cultural resources eligible for listing in local, state and national registers based upon the 50-year age guideline through the maintenance of an online database.
- *Historic Preservation Action 4.6.3.* Require the services of an archaeologist to conduct archival and field studies on sites with potential archaeological resources on a project specific basis.
- *Historic Preservation Action 4.6.4.* Where cultural resources are encountered during grading, require developers to avoid altering the materials and their context until a qualified cultural resource expert has evaluated the situation and recorded identified cultural resources.
- *Historic Preservation Action 4.7.1.* Promote the education and understanding of the City's cultural resources, criteria for historic designation, historic design review processes, building permit requirements, and methods for rehabilitating and preserving historic buildings, sites, and landscapes.
- *Historic Preservation Action 4.7.2.* Prepare and distribute educational guides and walking tour brochures of places of historical, architectural or cultural interest to increase public awareness of the resources in the Arsenal Historic District.
- *Historic Preservation Action 4.8.1.* Provide financial incentives to preserve, maintain, and promote appropriate adaptive reuse of historic buildings, especially those recognized as being of landmark quality.
- *Historic Preservation Action 4.8.2.* Consider funding for staffing and maintenance of historic preservation program in compliance with the California State Office of Historic Preservation's Certified Local Government program.

5. Impacts and Mitigation Measures

Implementation of the proposed project has the potential to adversely affect cultural and paleontological resources. Significance criteria, the potential impacts of several components of the proposed project, and recommended mitigation measures are described below.

a. Criteria of Significance. Significance thresholds based on the CEQA Guidelines are presented below for cultural resources, followed by a description of the significance criteria used to identify a resource's eligibility for listing in the California Register of Historical Resources (California Register).

(1) Cultural Resources Significance Thresholds. The proposed project would have a significant effect on cultural resources if it would:

- Result in the physical demolition, destruction, relocation, or alteration of a historical resource as defined in *CEQA Guidelines* Section 15064.5 (i.e., a historical resource is one that is eligible for listing on the California Register, listed in a local register of historical resources (as defined at PRC 5020.1(k)), identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, or determined to be a historical resource by the City of Benicia (§15064.5(a));
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5; or
- Disturb any human remains, including those interred outside of formal cemeteries.

(2) California Register of Historical Resources Significance Criteria. Under CEQA, the historical significance of properties in Benicia is considered under the criteria of the California Register. The California Register criteria are parallel to those used by the National Register of Historic Places, but are oriented to document the unique history of California. The California Register consists of resources that are listed automatically (those listed in or eligible for the National Register of Historic Places, or State Historical Landmarks numbered 770 or greater), under the provisions of Public Resources Code §5024.1, and those that may be listed by application to and acceptance by the California State Historical Resources Commission.

In order for a resource to be eligible for listing in the California Register, a building, site, or object must be significant at the local, State, or national level, under one or more of the following criteria:

- It is associated with events or patterns of events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or
- It is associated with the lives of persons important to the nation or California's past; or
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important to the prehistory or history of the State or the nation.

Beyond possessing historical significance, a resource must also possess historical integrity, which is the ability of the resource to convey its significance. California Office of Historic Preservation

guidance states that: "All resources nominated for listing must have integrity, which is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is proposed for nomination."[33]

b. Less-than-Significant Impacts. The following discussion examines potential less-than-significant impacts of the proposed project.

(1) Benicia Arsenal Historic District Setting. In a letter from Dr. Knox Mellon of the Office of Historic Preservation to Dr. William J. Murtagh, Keeper of the National Register, Dr. Mellon states: "Because Benicia Arsenal has been converted as an industrial park, it has suffered a severe loss of overall integrity of setting. Many buildings have been demolished while others have been extensively altered for conversion to modern industrial purposes."[34]

As currently recorded, the Benicia Arsenal Historic District is a non-contiguous historical resource consisting of four distinct subdistricts. The I-780 corridor is an intrusive visual barrier separating the two northern subdistricts from the southern subdistricts. Previous construction of modern buildings and industrial facilities, such as the Port of Benicia, within and adjacent to the Benicia Arsenal Historic District, has significantly affected the integrity of the entire district and prevents the historic district from being treated as a geographically cohesive historic property. Therefore, implementation of the Draft Specific Plan would not substantially adversely affect the integrity of the Benicia Arsenal Historic District as a whole.

The two northern subdistricts (Districts A and B) are well outside of the Plan Area and would not be directly affected by the proposed Draft Specific Plan. Alterations to the existing conditions within subdistricts C and D, including construction of new buildings and roads within and immediately adjacent to these subdistricts, are designed to be mitigated through implementation of Mitigation Measures CULT-2a, CULT-2b, CULT-7a, and CULT-7b (see below) and the Draft Specific Plan Vision Plan and Form-Based Code, which have been drafted to incorporate the goals, policies, and guidelines of the Conservation Plan.

(2) Potential Historic Architectural Resources. There are several buildings built between 1920 and the base closure in the 1960s located within the Plan Area that were originally classified by the Conservation Plan as "strictly utilitarian in both use and design, and in many cases were intended as temporary structures. Furthermore, a number of these structures are not yet fifty years of age." While these resources may not have been considered significant resources in 1993 by the Conservation Plan, they may now be eligible for the California or National Register as properties in their own right or as contributors to the Benicia Arsenal Historic District.

[33] California Office of Historic Preservation, 1999. *California Register of Historical Resources: The Listing Process.* Technical Assistance Series #5, Sacramento.

[34] Letter from Dr. Knox Mellon, Historic Preservation Coordinator, to Dr. William J. Murtagh, Keeper of the National Register (August 17, 1976).

Utilitarian and/or temporary military buildings are often considered to have significance.[35] To properly represent the historic landscape and importance of the Benicia Arsenal, portions of the landscape should: 1) reflect the time when the San Francisco Bay Area, and in particular the Benicia Arsenal, played a great part in America's "Arsenal of Democracy"[36] and 2) reflect the Arsenal's importance as a military establishment during the beginning of the Cold War.

The Draft Specific Plan includes Land Use Policy 1.5.4, which requires that all buildings not previously identified as historical resources should be evaluated for their historic significance. The Draft Specific Plan also includes several policies and actions that preserve the National Register listing of the Arsenal Historic District and mitigate development impacts to historical resources. A significant impact to historic architectural resources not identified by previous historical resource inventories would occur from their demolition. However, Plan policies and actions effectively preclude demolition of historically significant buildings. Implementation of the Draft Specific Plan, therefore, is not anticipated to have a significant impact on buildings that may be historically significant but were not previously identified as such under the Conservation Plan or the National Register of Historic Places nomination.

(3) Rehabilitation and Restoration of Historic Architectural Resources. Rehabilitation of historic buildings in the Plan Area, including those in the Jefferson Ridge/Officers' Row zone, may occur under the Draft Specific Plan. Rehabilitation or restoration of a historical resource that is not accomplished according to the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Preservation, Rehabilitation, Restoration, and Reconstruction of Historic Buildings* may result in a significant impact on a resource's integrity and its historical significance. Pursuant to Historic Preservation Action 4.1.2 of the Draft Specific Plan, however, rehabilitation projects within the Plan Area must follow the Secretary of the Interior's Standards. Pursuant to CEQA Guidelines §15064.5(b)(3) and §15331, if the project plans conform to the Secretary's Standards, then potential impacts to historical resources would be mitigated to a less-than-significant level.

c. Significant Impacts. This section analyzes potentially significant impacts that could occur as a result of policy-level actions implemented as part of the Draft Specific Plan. Accordingly, further project-specific environmental review may be necessary for specific development activities. Policy actions proposed by the Draft Specific Plan are only generally defined; specific plans for their implementation have not been finalized. Detailed project descriptions for each specific action do not yet exist, but careful development planning can mitigate impacts to cultural resources. ~~achieve project goals and objectives without significant adverse impacts to cultural resources~~. Impact avoidance is the first and most desirable option, but this is not always feasible in a densely-built and history-rich area such as the Lower Arsenal.

The vision presented in the Draft Specific Plan calls for the "preservation, enhancement, and promotion of the Benicia Arsenal National Historic District" through "the restoration of the Specific Plan Area into a unified ensemble of high-quality, 19th and 20th-century architecture through major

[35] For instance: Buhler, Michael, 2007. "Honorable Discharge: New Life for World War II Sites in the San Francisco Bay Area." Website: www.cr.nps.gov/nr/travel/wwIIbayarea/preservation.

[36] National Park Service, 2007. "World War II in the San Francisco Bay Area: A National Register of Historic Places Travel Itinerary." National Park Service Website: www.cr.nps.gov/nr/travel/wwIIbayarea.

restoration and rehabilitation of existing historic buildings and sites, and the careful placement and integration of new structures" in order to "enhance the distinct and historic characteristics of the Arsenal and to create a finely integrated mixed-use district with a cluster of high-quality, interconnected and compatible places."

The Draft Specific Plan focuses on the inclusion of new structures and a re-organization of space within the Lower Arsenal area. The earlier Conservation Plan would "continue to be the primary review document for the remaining portions of the Arsenal Historic District not covered by this specific plan as well as for any alterations or additions to existing historic buildings."

The following impact analysis is organized to parallel the subsections within the Draft Specific Plan. Area-wide impacts are discussed first, followed by zone-specific impacts.

(1) Area-Wide Impacts. The goals set forth in the Draft Specific Plan and the earlier Conservation Plan serve almost exclusively to protect the historic architectural fabric of the Benicia Arsenal. However, these goals and associated policies and actions do not adequately address historical resources of an archaeological nature (i.e., prehistoric and historic-period archaeological deposits).

The Lower Arsenal is a highly valued historical resource that is listed on national and State registers. Since its founding in 1849, the landscape of the Lower Arsenal has become an icon of historical use and re-use. The intensity of historical land use and a favorable prehistoric environment suggest that the area has a high sensitivity for buried archaeological deposits, which may include prehistoric archaeological deposits, historical archaeological deposits, and, possibly, associated human remains. The lack of recorded archaeological deposits is not due to their absence, but rather due to the fact that very little archaeological survey of the Lower Arsenal has been done. While the Draft Specific Plan provides for the protection of built environment resources and sensitive new development in historical areas, its implementation may impact unrecorded archaeological deposits and, possibly, human remains.

Draft Specific Plan Actions 4.6.3 and 4.6.4 would require that archaeologists conduct archival research and field studies on sites with potential archaeological resources, and that identified archaeological resources be evaluated. These actions would reduce impacts to archaeological resources, but the actions are not adequately detailed to reduce impacts to a less-than-significant level.

Impact CULT-1: Ground disturbance in the form of building construction parking lot construction, street construction, street tree planting, building demolition, the redevelopment of open spaces, or other ground disturbance may result in a significant impact to unrecorded cultural resources, including human remains. (S)

Implementation of the following three-part mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure CULT-1a: Prior to implementation of individual development projects, a qualified archaeologist[37] shall: (1) assess the potential for subsurface archaeological remains that may meet the definition of historical or archaeological resources[38] and may be adversely affected by project activities; and (2) make project-specific recommendations, as warranted, about the treatment of such resources such that the eligibility of significant resources is maintained, or, if this is not feasible, the resource's loss of eligibility is offset by appropriate mitigation (e.g., data recovery excavation). The City shall ensure that the treatment recommendations of the consulting archaeologist are implemented prior to project construction, or any actions that could adversely affect the resource in question. A report of the results of this archaeological assessment shall be submitted to the project proponent, the City and the Northwest Information Center (NWIC).

Mitigation Measure CULT-1b: If unidentified archaeological deposits are discovered during construction activities associated with individual development projects, all work within 25 feet of the find shall be redirected. A qualified archaeologist shall: 1) evaluate the finds to determine if they meet the definition of a historical or archaeological resource[39]; and 2) make recommendations regarding the treatment of such finds. If the finds do not meet the definition of a historical or archaeological resource, then no further study or protection is necessary prior to project implementation. If the finds do meet the definition of a historical or archaeological resource, then they shall be avoided by project activities. If avoidance is not feasible, impacts to such resources shall be mitigated in accordance with the recommendations of the evaluating archaeologist. The City shall ensure that the treatment recommendations of the consulting archaeologist are implemented prior to project construction or actions that could adversely affect the resource in question.

Project personnel shall not collect or move any cultural material. Fill soils that may be used for construction purposes shall not contain archaeological materials. Upon completion of the archaeological evaluation, a report documenting the methods, results, and recommendations of the archaeologist shall be prepared and submitted to the project proponent, the City and the NWIC.

Mitigation Measure CULT-1c: If human remains are encountered by project activities, construction activities shall be halted and the County Coroner shall be notified immediately. If the remains are of Native American origin, the Coroner shall notify the NAHC within 24 hours of this identification, and a qualified archaeologist shall be contacted to assess the situation. The NAHC shall identify a Native American Most Likely Descendent (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. The City shall ensure that the treatment recommendations of the consulting archaeologist and MLD are implemented prior to project construction or actions that could adversely affect the remains in question.

[37] "Qualified" is defined as meeting the Professional Qualifications Standards of the *Secretary of the Interior's Standards and Guidelines.* These standards are found online at http://www.nps.gov/history/local-law/arch_stnds_9.htm

[38] Prehistoric archaeological materials can include flaked-stone tools (e.g. projectile points, knives, choppers) or obsidian, chert, or quartzite toolmaking debris; culturally darkened soil (i.e., midden soil often containing heat affected rock, ash and charcoal, shellfish remains, and cultural materials); and stone milling equipment (e.g., mortars, pestles, handstones). Historical materials can include wood, stone, concrete, or adobe footings, walls and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, and other refuse.

[39] As defined in CEQA Guidelines §15064.5(a) and PRC §21083.2(g).

Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations regarding the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. This report shall be submitted to the project proponent, the City, and the NWIC. (LTS)

~~Impact CULT-2~~: ~~Individual development projects may adversely affect historic architectural resources. (S)~~

~~There are several buildings built between 1920 and the base closure in the 1960s located within the Plan Area that were originally classified by the Conservation Plan as "strictly utilitarian in both use and design, and in many cases were intended as temporary structures. Furthermore, a number of these structures are not yet fifty years of age." While these resources may not have been considered significant resources in 1993 by the Conservation Plan, they may now be eligible for the California or National Register as properties in their own right or as contributors to the Benicia Arsenal National Historic District.~~

~~Utilitarian and/or temporary military buildings are often considered to have significance.[40] To properly represent the historic landscape and importance of the Benicia Arsenal, portions of the landscape should: 1) reflect the time when the San Francisco Bay Area, and in particular the Benicia Arsenal, played a great part in America's "Arsenal of Democracy"[41] and 2) the Arsenal's importance as a military establishment during the beginnings of the Cold War.~~

~~Implementation of the following two-part mitigation measure would reduce impacts to potentially historic buildings that were not classified as such in the Conservation Plan:~~

> ~~Mitigation Measure CULT-2a: The list of buildings or structures recognized as historic resources or contributors to historic districts within the Benicia Arsenal shall be reviewed and updated prior to demolition of any building constructed prior to base closure in 1963. This information shall be added as addenda to the Arsenal Historic Conservation Plan and the Lower Arsenal Mixed Use Specific Plan.~~
>
> ~~Mitigation Measure CULT-2b: If specific development project plans call for the demolition of existing buildings and structures over 45 years old, a historian or architectural historian shall review such buildings or structures to determine if they have the potential to meet the definition of a historical resource under CEQA.~~
>
> ~~If the buildings or structures do have the potential to qualify as historical resources, a historian or architectural historian shall formally evaluate the California Register eligibility of such structures and, if they are eligible, recommend mitigation to avoid or reduce the severity of impacts to the resources' integrity. Appropriate mitigation may include impact avoidance, reuse of the building elements, relocation of the building, HABS-like photo-documentation, a~~

[40] For instance: Buhler, Michael, 2007. "Honorable Discharge: New Life for World War II Sites in the San Francisco Bay Area." Website: www.cr.nps.gov/nr/travel/wwIIbayarea/preservation.

[41] National Park Service, 2007. "World War II in the San Francisco Bay Area: A National Register of Historic Places Travel Itinerary." National Park Service Website: www.cr.nps.gov/nr/travel/wwIIbayarea.

written historical description of the resource and/or public outreach in the form of informational brochures and exhibits at such venues as schools, libraries or museums. The City shall ensure that the recommendations of the historian or architectural historian are integrated into the design phase to determine, through feasibility consultation with the proponent and the City, what design changes can be made or what mitigation can be implemented to avoid or lessen the potential impact.

Implementation of this mitigation measure would reduce this potential Specific Plan impact to a less-than-significant level. (LTS)

Impact CULT-3: Architectural Standards for new buildings may conflict with the Secretary of Interior's Guidelines for Rehabilitation. (S)

The architectural standards in the Draft Specific Plan detail specific building types and architectural styles for each development zone within the Specific Plan Area. Precedents for these building types come from the Presidio of San Francisco, Mare Island, and the Benicia Arsenal itself, with aesthetic elements of new industrial buildings of the Bay Area added, where appropriate.

The Secretary of the Interior has issued Standards for the Treatment of Historic Properties with Guidelines for the Preservation, Rehabilitation, Restoration, and Reconstruction of Historic Buildings. These standards are considered under CEQA to reduce effects to historical resources to a less-than-significant level (§15126.4(b)(3)). These standards were promulgated to promote preservation practices that help protect the qualities of historical resources so that their significance is maintained. The guidelines state that for modifications to historical buildings, or new construction adjacent to such buildings, "The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment."

The Draft Specific Plan's architectural standards seek to emulate the architectural styles and features that are typical for San Francisco Bay Area historic military and industrial areas and share proportion, size, and scale with existing buildings, in accordance with the Secretary of Interior's standards.

The early historical buildings were produced from materials sent from the eastern U.S. and from material quarried locally. The Conservation Plan permits limited quarrying of sandstone for restoration material for historic buildings structures only. The use of similar building materials and the design of buildings in a style consistant with the Arsenal's various settings will result in new construction that is consistent with the Secretary's Standards. However, they should be reviewed by a qualified historic architect or architectural historian to ensure that project-specific designs do not violate the intent of the Secretary's Standards by diminishing the integrity of existing historical resources.

Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure CULT-3: Plans for individual development projects shall be reviewed and evaluated by a historian or architectural historian prior to implementation as part of the permitting

~~process to determine if the plans conform to the Secretary of Interior's Standards and the Draft Specific Plan. If the plans do not substantially conform to the Standards, the consulting historian or architectural historian shall recommend changes to the proposed design to avoid or reduce such inconsistency. The recommendations shall be developed in consultation with the project proponent and the City so that all parties can provide input on what constitutes feasible changes that can still achieve project objectives. The City shall ensure that the recommendations developed through the feasibility consultation are implemented in the design and construction of the project. (LTS)~~

Impact PALEO-1: Project ground disturbance could result in significant impacts to paleontological resources. (S)

Paleontological resources include fossil plants and animals, and evidence of past life such as trace fossils and tracks. Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Terrestrial sediments may contain fossil representing mammoth, camel, saber tooth cat, horse, and bison. Paleontological resources also include plant imprints, petrified wood, and animal tracks.

The strata present in the Plan Area do not contain recorded, or otherwise known, significant paleontological resources. However, because geological formations in the Plan Area may contain paleontological resources, there is the possibility that fossils could be discovered during ground disturbing activities. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure PALEO-1: If paleontological resources are discovered during activities associated with individual development projects, all work within 25 feet of the discovery shall be redirected and a qualified paleontologist contacted to assess the finds. The paleontologist shall make recommendations regarding the treatment of the discovery. Project personnel shall not collect or move any paleontological resources. It is recommended that adverse impacts to such paleontological resources be avoided by project activities. If such resources cannot be avoided, they shall be assessed to determine their paleontological significance. If the paleontological resources are not significant, then avoidance is not necessary. If the paleontological resources are significant, they shall be avoided or adverse impacts shall be mitigated. Upon completion of the assessment, the paleontologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the paleontological resources. The City shall ensure that the recommendations of the consulting paleontologist are implemented prior to actions that could adversely affect the resource in question. (LTS)

(2) Zone-Specific Impacts. The Draft Specific Plan includes four distinct geographical zones: (A) Jefferson's Ridge/Officers' Row; (B) Adams Street; (C) Grant Street; and (D) South of Grant Street. Actions have been developed to implement Draft Specific Plan policies in the four regulatory zones identified above. Development associated with these actions could result in significant impacts to cultural resources in the vicinity.

(A) Jefferson Ridge/Officers' Row Regulatory Zone. The Draft Specific Plan provides two options for this area. Option 2 is considered the proposed project, and is discussed below. Option 1 is an alternative to the project and is discussed in Chapter IV.

Option 2 includes the rehabilitation of historic buildings, the construction of new buildings, the renovation of the Jefferson Ridge open spaces, and the creation of new streets.

~~**Impact CULT-4: Rehabilitation of the historic buildings could diminish their historical integrity and result in significant impacts to cultural resources. (S)**~~

~~Several buildings in the Jefferson Ridge/Officer's Row are listed on the National Register, California Register, and/or the Benicia Historical Resources Survey. Rehabilitation of these buildings could adversely affect their historic integrity. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:~~

> ~~Mitigation Measure CULT-4: The rehabilitation of historic buildings in the Lower Arsenal is subject to the pre-existing Arsenal Historic Conservation Plan rather than the Draft Specific Plan. The City shall ensure that the project plans follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Secretary's Standards). Pursuant to CEQA Guidelines §15064.5(b)(3), if the project plans conform to the Secretary's Standards, then potential impacts to historical resources will be considered mitigated to a less-than-significant level. (LTS).~~

Impact CULT-2~~5~~: The construction of new buildings and roads could adversely affect the setting of Historic District C. (S)

The Jefferson Ridge/Officers' Row Zone is part of National Register District C and contains historical buildings that are listed in the National Register, California Register, and/or the Benicia Historical Resources Survey. The setting of the District is an important aspect of its historical integrity, and the preservation of such integrity is addressed in the Conservation Plan under "Urban Design Issues."

Approximately 184,575 square feet of new mixed-use development within the Jefferson Ridge/ Officers' Row zone is allowed under the Draft Specific Plan. Development that would ~~A~~alter~~ing~~ the "natural setting" of Jefferson Ridge would affect National Register District C. As there is no evidence of previous structures along the northern and ~~western~~ southern boundaries of "Officers' Square," the proposed development could adversely affect the District's integrity of feeling and setting. The scale and massing of the proposed buildings to the north and south of Officers' Square is out of proportion with the existing Commandant's House and Lieutenants' House on the east and west sides of the Square, respectively, although the designs presented in the Draft Specific Plan are conceptual, and a final design for these buildings has not been approved. New construction may also conflict with the AHCP's Urban Design Issue 10, which acknowledges that "some of these [natural features] are intrinsically linked to the historic architecture."

Alterations to the landscape may have positive effects as well as adverse impacts. Proposed new construction such as the "architecturally distinguished building" on the northern edge of Officers' Square ~~that~~ would block the view of Highway 780, and two new buildings south of Officers' Square ~~that~~ would incorporate ~~flank~~ a publicly-accessible viewing terrace. ~~to the south of Officer's Square demonstrate a desire to both retain the visual historic character of the ridge while expanding its~~

~~function.~~ Development of Jefferson Ridge would also include restoration of historic elements of the existing landscape (see Draft Specific Plan Circulation Action 3.2.1).

Implementation of the following two-part mitigation measure would reduce impacts associated with changes to the landscape of Jefferson Ridge/Officers' Row Zone to a less-than-significant level.

Mitigation Measure CULT-2~~5~~a: The Draft Specific Plan contains several policies and design approaches that would avoid or lessen the severity of impact CULT-2~~5~~. The form, materials, and massing of new construction shall be designed to complement the architectural style and setting of the zone, as well as provide sight lines and view corridors to retain the visual character of the Arsenal as a whole. The City shall ensure that the guidance provided in the Draft Specific Plan is followed with respect to new construction. Once formal plans for the new buildings proposed at the southern and northern boundaries of Officers' Square are prepared, these shall be reviewed by a qualified architectural historian or preservation architect to ensure that the designs do not result in a "substantial adverse change" to the historical resources of the Jefferson Ridge/Officers' Row Zone and the Benicia Arsenal Historic District. The architectural historian or preservation architect shall prepare a report that includes recommendations, as warranted, for design changes to the new buildings so as to avoid or mitigate impacts to historical resources. The report recommendations shall be incorporated in the final design of the new buildings, which must be approved by the Benicia Historic Preservation Review Commission prior to construction.

In addition, the pre-project conditions of the new construction locations shall be documented through landscape photography ~~and historical reports~~ to document the setting prior to alteration. A report shall also be prepared that documents the history and setting of Jefferson Ridge prior to alteration. The photographs may vary in format and perspective, but shall at a minimum document important sight lines and visual axes that may be impaired by the introduction of new buildings. The photographic documentation shall be prepared in accordance with the *HABS/HAER Photographs: Specifications and Guidelines* (2001) and shall supplement the existing Historic American Building Survey documentation of the Arsenal, and shall be included in the report and in an update of the DPR 523 record of National Register District C. A copy of the report and photodocumentation shall be submitted to the City, the Benicia Museum, the Benicia Public Library, and the Northwest Information Center.

Mitigation Measure CULT-2~~5~~b: Historical photographs and/or maps, accompanied by text, shall be presented as part of an interpretative display describing the original configuration of Jefferson Ridge as well as the area's historical significance. This interpretative display shall be developed in consultation with the Benicia Historical Museum and the Benicia Historical Society. (LTS)

Impact CULT-3~~6~~: The creation of open spaces such as the Clocktower Green and Cork Oak Ridge Park could result in significant impacts to cultural resources. (S)

The development of these open spaces may affect sites or objects that are cultural resources. Sites could include archaeological deposits, such as the remains of historic privies or foundations, or prehistoric deposits; objects could include natural features such as the remains of formal historic gardens. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure CULT-3~~6~~: Implement Mitigation Measures CULT-1a, -1b, and -1c. ~~Implementation of this mitigation measure would reduce impact CULT-3 to a less-than-significant level.~~ (LTS)

Impact CULT-4~~7~~: The creation of new roads and the extension of existing roads could result in a significant impact to cultural resources. (S)

The development of new roads and extending existing roads would involve ground disturbance, which could adversely affect unrecorded archaeological deposits. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure CULT-4~~7~~: Implement Mitigation Measures CULT-1a, -1b, and -1c. (LTS)

(B) Adams Street Zone. The Adams Street Zone showcases the area's signature historic buildings: the 1942 Administration Building and the 1872 Guard House. A formal entry into the Arsenal and a renovated and improved green open space in front of the 1942 Administration building would be developed. A new open space would be developed directly north of the Guard House. Uniformly-constructed buildings would flank the eastern and western sides of the 1872 Guard House.

~~**Impact CULT-8: The demolition of existing buildings as part of development of the Adams Street Zone could result in a significant impact to cultural resources. (S)**~~

~~There are several building built between 1920 and the base closure in the 1960s in this regulatory area. The Draft Specific Plan indicates the intention to create new buildings and structures where buildings currently exist. While these resources may not have been considered significant resources in 1993 by the Conservation Plan, they may now be eligible for the California or National Register individually as properties or as contributors to the California and National Register Districts. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:~~

~~Mitigation Measure CULT-8: Implement Mitigation Measures CULT-2a and CULT-2b. (LTS)~~

~~However, if buildings proposed for demolition are historical resources under CEQA and if avoidance is not feasible, the impact would remain significant and unavoidable even with the implementation of the mitigation measures. (SU)~~

Impact CULT-5~~9~~: The development of the Adams Street Zone could adversely affect cultural resources. (S)

Historic maps indicate that the Adams Street Zone has been intensively used and may contain deposits of historic-period artifacts or the remains of structures. For example, the Guardhouse Green may contain deposits or remains associated with two barracks and a company mess shed located north of the 1872 Guard house, as depicted on a U.S. Army 1918 map.[42] While this area of the proposed Guardhouse Green is currently an asphalt parking surface, it is unknown if this area was extensively

[42] U.S. Army, 1893 (revised 1918). *Map of the Benicia Arsenal Reservation.* Ordinance Department, U.S. Army. On file in the Benicia Arsenal HABS survey, Library of Congress. Website: memory.loc.gov/ammem/collections/habs_haer/index. Accessed April 20.

disturbed or if remains of the structures or other archaeological deposits remain intact beneath the surface. Because this zone was heavily utilized from the beginning of the military presence in Benicia to the Arsenal's closure over 40 years ago, the Adams Street area has a high sensitivity for unrecorded archaeological deposits. Implementation of the following mitigation measure would reduce impacts to archaeological resources in the Adams Street Zone to a less-than-significant level:

Mitigation Measure CULT-~~5~~9: Implement Mitigation Measures CULT-1a, -1b, and -1c. (LTS)

(C) Grant Street Regulatory Zone: Grant Street is an eclectic area and is planned to continue that way, with a variety of land uses. Grant Street would be a pedestrian- friendly area with street adjustments and improvements to move traffic to the north. Historical buildings identified in the Draft Specific Plan include the 1872 Barracks building and the 1870 office building.

~~**Impact CULT-10: The demolition of existing buildings as part of development of the Grant Street Zone could result in a significant impact to cultural resources. (S)**~~

~~Similar to the situation at Adams Street, there are a number of buildings located in the Grant Street Zone that were constructed between 1920 and the facility closure in the 1960s. These resources include a 1919 garage, a 1920s storehouse, a 1942 cafeteria, and a 1945 warehouse. While these resources may not have been considered significant resources in 1993 by the Conservation Plan, they may now be eligible for the California or National Register individually as properties or as contributors to the California and National Register Districts. Implementation of the following mitigation measure would reduce impacts to these potential resources to a less-than-significant level:~~

~~Mitigation Measure CULT-10: Implement Mitigation Measures CULT-2a and CULT-2b. (LTS)~~

~~However, if buildings proposed for demolition are historical resources under CEQA and if avoidance is not feasible, the impact would remain significant and unavoidable even with the implementation of the mitigation measures.~~

Impact CULT-~~6~~11: The development of the Grant Street Zone could disturb intact archaeological deposits. (S)

Because the Grant Street Zone was intensively used from the beginning of the military presence in Benicia to the Arsenal's closure over 40 years ago, this area has a high sensitivity for unrecorded archaeological deposits. Implementation of the following mitigation measure would reduce impacts to archaeological resources to a less-than-significant level:

Mitigation Measure CULT-~~6~~11: Implement Mitigation Measures CULT-1a, -1b, and -1c. (LTS).

(D) South of Grant Street Regulatory Zone: South of Grant Street is primarily an industrial area that currently is home to an eclectic mix of industrial and artisan uses. The streets follow old rail lines and the majority of buildings were constructed as large utilitarian forms set on high plinths to facilitate loading and unloading. The area includes numerous historical structures, including the 1876 blacksmith's shop complex and the 1919 Storehouses. The Draft Specific Plan envisions an area that continues to provide an informal and flexible environment for industry and artisans.

Impact CULT-7: The construction of new buildings could adversely affect the setting of Historic District D. (S)

The South of Grant Street Zone includes a part of National Register District D, and contains historical buildings that are listed in the National Register, California Register, and the Benicia Historical Resources Survey. The setting of the District is an important aspect of its historical integrity, and the preservation of such integrity is addressed in the Arsenal Historic Conservation Plan under "Urban Design Issues." Construction of new buildings in the South of Grant Street Zone has the potential to impact National Register District D if the number of non-contributing modern buildings increases within or adjacent to the district.

Mitigation Measure CULT-7a: The Draft Specific Plan contains several policies and design approaches that would avoid or lessen the severity of impact CULT-7. The form, materials, and massing of new construction shall be designed to complement the architectural style and setting of the zone, as well as maintain sight lines and view corridors identified in the Conservation Plan to retain the visual character of the Arsenal as a whole. The City shall ensure that the guidance provided in the Draft Specific Plan is followed with respect to new construction. Once formal plans for new buildings proposed for the South of Grant Street Zone are prepared, these shall be reviewed by a qualified architectural historian or preservation architect to ensure that the designs do not result in a "substantial adverse change" to the historical resources of District D and the Benicia Arsenal Historic District. The architectural historian or preservation architect shall prepare a report that includes recommendations, as warranted, for design changes to the new buildings so as to avoid or mitigate impacts to historical resources. The report recommendations shall be incorporated in the final design of the new buildings, which must be approved by the Benicia Historic Preservation Review Commission prior to construction.

Mitigation Measure CULT-7b: Historical photographs and/or maps, accompanied by text, shall be presented as part of an interpretative display describing the configuration of historical buildings in District D as well as their historical significance. This interpretative display shall be developed in consultation with the Benicia Historical Museum and the Benicia Historical Society. (LTS)

~~**Impact CULT-12: The demolition of buildings as part of development of the South of Grant Street Regulatory Zone could result in a significant impact to cultural resources. (S)**~~

~~Similar to the situation at Adams and Grant streets, there are a number of buildings located in this Regulatory Zone that were constructed between 1920 and the 1960s. These resources include a 1919 powerhouse, a 1945 auto parts building, 1943 boiler building, and a 1945 warehouse. While these resources may not have been considered significant resources in 1993 by the Conservation Plan, they may now be eligible for the California or National Register individually as properties or as contributors to the California and National Register Districts.~~

~~Mitigation Measure CULT-12: Implement Mitigation Measures CULT-2a and CULT-2b. (LTS)~~

~~However, if buildings proposed for demolition are historical resources under CEQA and if avoidance is not feasible, the impact would remain significant and unavoidable even with the implementation of the mitigation measures.~~

Impact CULT-8~~13~~: The development of the South of Grant Street Regulatory Zone could disturb intact archaeological deposits. (S)

As this Regulatory Zone was intensively used from the beginnings of the military presence in Benicia to the Arsenal's closure over 40 years ago, this area has a high sensitivity for unrecorded archaeological deposits. The historical proximity to the shoreline and piers of the Carquinez Strait, before siltation from 19th century hydraulic mining in the Sierra Nevada, indicates that this area was likely used for a variety of purposes relating to water access, such as a dumping ground, as shown on the 1918 map.[43] As this was the natural shoreline during historic times, there is also a probability that the area may contain prehistoric archaeological deposits. Implementation of the following mitigation measure would reduce impacts to archaeological resources to a less-than-significant level:

Mitigation Measure CULT-8~~13~~: Implement Mitigation Measures CULT-1a, -1b, and -1c. (LTS).

[43] U.S. Army, 1893 (revised 1918). *Map of the Benicia Arsenal Reservation.* Ordinance Department, U.S. Army. On file in the Benicia Arsenal HABS survey, Library of Congress . Website: memory.loc.gov/ammem/collections/-habs_haer/index.html. Accessed April 20.