CHAPTER FIVE

CUMULATIVE EFFECTS/IMPACTS

Cumulative effects/impacts[1] on the environment result from the incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or entity under-takes such other actions. State *CEQA Guidelines* and Council on Environmental Quality (CEQ) NEPA regulations require that the cumulative impacts of a proposed project be addressed in the EIS/EIR when the cumulative impacts are expected to be significant (14 CCR 15130[a], 40CFR 1508.25[a][2]). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. Cumulative impacts for the No Action Alternative are also presented.

5.1 GEOLOGY AND SOILS

5.1.1 Area of Potential Effects/Impacts

Alternatives 1 and 2

In the region, erosion potential is the main issue of concern and the resultant siltation which could adversely effect/impact creeks and ultimately the Sacramento River. The two Alternatives lie within the Stillwater Creek Basin. Cumulative impacts would result from the potential erosion from other projects within the basin and the Alternatives. The erosion effect would result in the deterioration of the watershed over a period of time.

Alternative 3

The Alternative is located within the Clover Creek and Churn Creek Basins which drain to the Sacramento River. Cumulative impacts would result from the potential erosion from the Alternative other projects within these basins. The erosion effect would result in the deterioration of the watershed over a period of time.

5.1.2 Analysis of Cumulative Effects/Impacts

Alternatives 1, 2, and 3

The main impacts resulting from grading operations is the potential for erosion during and after construction which could result in potential **significant impacts**. This is true for all projects currently being constructed or proposed in the region. However, **Mitigation Measures 4.1.4-1** and **4.1.4-2** advanced in the EIS/EIR will reduce potential impacts to a **less than significant** level. Likewise, all current and future grading operations in the region are required to adhere to the State Regional Water Quality Control regulations, City of Redding's Storm Water Quality Improvement Plan, the California Storm Water Quality Associations BMP Handbooks, the California Department of Transportation storm water quality handbooks, or other such design practices that are deemed suitable at the time of development.

[1] The two words are use interchangeably throughout this document.

Implementation of mitigation measures and adherence to City and State standards will reduce potential cumulative significant impacts related primarily to erosion to **below a level of significance**.

No Action Alternative

Under the No-Action Alternative the site and other undeveloped sites will remain as is and the effects on geology and soils will be similar to those that have occurred in the past due to timber harvesting, crop production, and grazing activities except for those areas which have not been disturbed. Existing natural surfaced roads on-site and within the region will continue to erode.

5.2 VEGETATION, WILDLIFE, AND WETLANDS

5.2.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

The geographic scope for this analysis of cumulative impacts/effects on vegetation, wildlife, and wetlands is the Planning Area described in the City of Redding General Plan Background Report (City of Redding Development Services Department et al. 1988). Approximately 63,490 acres are inside the Planning Area, including more than 75 percent of the Stillwater and Churn Creek watersheds and 100 percent of the Clover Creek Watershed.

This analysis of cumulative impacts/effects is based on the projections of development that are described in the City of Redding General Plan Final Environmental Impact Report (City of Redding Development Services Department et al. 2000). Projections of development are supplemented representative existing and probable future projects that have the potential to contribute to a significant cumulative effect.[2]

The City of Redding General Plan has anticipated considerable future development in the eastern portion of the Planning Area where the Proposed Project would occur. The General Plan (2000) concludes that "The General Plan goals, policies, guidelines, and mitigation options, together with all other appropriate legal routes necessary for adherence to other applicable policies and regulations, would reduce impacts to a less-than-significant level and should adequately protect biological resources in the city of Redding." However, it also notes that "…project-specific environmental review (impacts assessments, mitigation measures, and alternatives) would need to be established as individual projects arise in order to fully protect the biological resources in the urban area".

5.2.2 Analysis of Cumulative Effects/Impacts

Riparian Habitat

Riparian habitat throughout the Planning Area has been substantially degraded by conversion to agricultural activities and urban development. Presently, approximately 5 percent of the Planning Area (3,320 acres) is covered by riparian vegetation (City of Redding Development Services Department et al. 1988).

[2] **Appendix _** provides a list of the existing and probable future projects.

Implementation of any of the three Alternatives would result in direct and indirect impacts on riparian habitat (up to 7.38 acres of direct impacts for Alternative 1, 6.56 acres for Alternative 2, and 1.80 acres for Alternative 3). The General Plan includes the following policies regarding riparian areas:

NR6A Preserve watercourses, vernal pools, riparian habitat, and wetlands in their natural state unless preservation is determined to be infeasible. Fully mitigate unavoidable adverse impacts such as wetlands filling or disturbance.

NR6B Provide adequate buffering of sensitive habitats whenever necessary.

NR6C Ensure that uses allowed within riparian corridors:

- Minimize the creation of erosion, sedimentation, and increased runoff.
- Emphasize retention and enhancement of natural riparian vegetation.
- Provide for unimpaired passage of fish and wildlife.
- Avoid activities or development of new features that result in disturbance of wildlife.
- Avoid channelization.
- Avoid substantial interference with surface and subsurface flows.
- Incorporate natural vegetation buffers.

In addition, the City of Redding Municipal Code requires minimum river and creek corridor development setbacks (Ordinance 2310 Section 3, 2003; Ordinance 2301 Section 3 [Att. A (part)], 2002).

The Proposed Project is consistent with all of the aforementioned policies and implementation of Mitigation Measure 4.2-1 would ensure that completion of the Proposed Project would result in no net loss of riparian habitat with the Planning Area. Thus, cumulative impacts to riparian habitat are considered **less than significant**.

Upland Plant Communities

The Project Study areas are located primarily within the Sacramento-Lower Cow-Lower Clear Watershed (USGS Hydrologic Map Unit Number 18020101). According to California GAP Analysis data (USGS 1998) for this watershed, the upland plant communities within the project study areas are regionally abundant: blue oak woodland (38,697 acres), blue oak-gray pine (77,103 acres), annual grassland/pasture (15,559 acres), cropland (2,867 acres), and urban (10,165 acres).

Construction of any of the three Proposed Project Alternatives would result in direct effects on upland plant communities. The General Plan includes the following policies regarding riparian areas:

NR7A Promote existing native oaks, especially valley oaks, by establishing standards for the design of development projects. The preservation of stands of trees within developments is preferred over preservation of individual trees, with the exception of special-status species and heritage trees.

NR7B Identify and establish appropriate "tree mitigation areas" to be used for the planting of native trees in concert with development project mitigation.

The Proposed Project is consistent with all of the aforementioned policies. Further, implementation of the Proposed Project would result in the loss of less than 10% of the existing acreage for that community within the watershed. Thus, cumulative impacts to upland plant communities are considered **less than significant**.

Jurisdictional Wetlands and Other Waters of the U.S.

Wetlands in the City of Redding Planning Area have not been comprehensively mapped; however, many wetland habitats are known to occur including several major vernal pool complexes (City of Redding Development Services Department et al. 1988).

Implementation of any of the three Proposed Project Alternatives would result in direct and indirect impacts on jurisdictional wetlands and other waters of the U.S. (up to 9.55 acres of direct impacts for Alternative 1, 7.13 acres for Alternative 2, and 9.62 acres for Alternative 3). The General Plan includes the following policies regarding riparian areas:

NR5A Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR6A Preserve watercourses, vernal pools, riparian habitat, and wetlands in their natural state unless preservation is determined to be infeasible. Fully mitigate unavoidable adverse impacts such as wetlands filling or disturbance.

NR6B Provide adequate buffering of sensitive habitats whenever necessary.

The Proposed Project is consistent with all of the aforementioned policies as well as the regulations of the California Regional Water Quality Control Board. Implementation of Mitigation Measures 4.2-3 and 4.2-4 would ensure there is no net-loss of aquatic function and value resulting from direct discharge of fill into waters of the U.S. during implementation of the Proposed Project. Thus, cumulative impacts to jurisdictional wetlands and other waters of the U.S. are considered **less than significant**.

Federal or State Listed Plant Species

Three federal or state listed plant species may occur in the Planning Area. Implementation of any of the three Proposed Project Alternatives would result in direct and indirect impacts on habitat for these species. Up to 3.82 acres of direct impacts would occur under Alternative 1, 3.77 acres for Alternative 2, and 6.27 acres for Alternative 3. The General Plan includes the following policies regarding special-status plants and their habitat:

NR5A Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR6E Strive to conserve all "special status species" within the Planning Area. Ensure implementation of statutory protection for these species.

The Proposed Project is consistent with all of the aforementioned policies as well as the requirements of the Federal Endangered Species Act and the California Endangered Species Act. Implementation of Mitigation Measure 4.2-5 would ensure that completion of the Proposed Project would result in no net loss of habitat for these species within the Planning Area. Thus, cumulative impacts to federal or state listed plant species are considered to be **less than significant**.

Federal or State Listed Fish Species

Two federal or state listed fish species may occur in the Planning Area. Implementation of any of the three Proposed Project Alternatives would result in direct and indirect impacts on habitat for these species. Both steelhead and chinook salmon may be expected to occur in study areas. Construction activities that would require heavy equipment to work within the active channel of Stillwater Creek or Churn Creek may result in disturbance, harassment, injury, or mortality to migrating adult and rearing juvenile steelhead and salmon. Construction and operation of the proposed facilities, roads, and bridges may also result in indirect impacts to listed fish species. The General Plan includes the following policies regarding special-status fish and their habitat:

NR5A Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR5B Work to preserve and enhance fisheries in the Sacramento River and other identified streams.

NR6A Preserve watercourses, vernal pools, riparian habitat, and wetlands in their natural state unless preservation is determined to be infeasible. Fully mitigate unavoidable adverse impacts such as wetlands filling or disturbance.

NR6E Strive to conserve all "special status species" within the Planning Area. Ensure implementation of statutory protection for these species.

The Proposed Project is consistent with all of the aforementioned policies as well as the requirements of the Federal Endangered Species Act, the California Endangered Species Act, and the Magnuson-Stevens Fishery Conservation and Management Act. Further, implementation of Mitigation Measure 4.2-6 will reduce direct and indirect impacts to special-status fish species resulting from implementation of the Proposed Project to a less-than-significant level. Thus, cumulative impacts to federal or state listed fish species are considered to be **less than significant**.

Federal or State Listed Wildlife Species

Up to 299 species of wildlife may occur within the Planning Area including seven federal or state listed species (City of Redding Development Services Department et al. 1988). Implementation of any of the three Proposed Project Alternatives would result in direct and indirect impacts on federally listed vernal pool branchiopods and the valley elderberry longhorn beetle. Up to 3.83 acres of direct impacts on federally listed vernal pool branchiopod habitat would occur under Alternative 1, 3.79 acres for Alternative 2, and 6.27 acres for Alternative 3. The General Plan includes the following policies regarding special-status wildlife and their habitat:

NR5A Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR6E Strive to conserve all "special status species" within the Planning Area. Ensure implementation of statutory protection for these species.

The Proposed Project is consistent with all of the aforementioned policies as well as the requirements of the Federal Endangered Species Act, the California Endangered Species Act

and the Migratory Bird Treaty Act. Implementation of Mitigation Measure 4.2-5 would ensure that completion of the Proposed Project would result in no net loss of habitat for these species within the Planning Area. Thus, cumulative impacts to federal or state listed wildlife species are considered to be **less than significant**.

Non-Listed Special-Status Species

Up to 299 species of wildlife may occur within the Planning Area including several California Species of Special Concern (City of Redding Development Services Department et al. 1988). Implementation of any of the three Proposed Project Alternatives would result in direct and indirect impacts on non-listed special-status wildlife species. The General Plan includes the following policies regarding special-status wildlife and their habitat:

NR5A Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR6E Strive to conserve all "special status species" within the Planning Area. Ensure implementation of statutory protection for these species.

The Proposed Project is consistent with all of the aforementioned policies as well as the requirements of the Federal Endangered Species Act, the California Endangered Species Act and the Migratory Bird Treaty Act. Further, implementation of Mitigation Measure 4.2-9a-g would ensure that completion of the Proposed Project would result in no significant impacts to these species or their habitat within the Project area. Thus, cumulative impacts to federal or state listed wildlife species are considered to be **less than significant**.

Fish or Wildlife Migration/Travel Corridor

Implementation of either Alternative 1 or 2 would increase the fragmentation of habitat between the plains and Stillwater Creek, potentially disrupting the movement of terrestrial species to and from the riparian corridor. Implementation of Alternative 3 would also result in increased habitat fragmentation; however, no major migration/travel corridor was identified within the study area.

The General Plan includes the following policies regarding special-status wildlife:

NR8A Maintain, where possible, the habitat linkages/wildlife corridors and sensitive habitats that are created by the open-space ("Greenway") network established by the General Plan. Require development in areas depicted as "Greenway" on the General Plan Diagram to consider corridor impacts and, where necessary, provide alternate usable links between habitat types or areas and/or provide alternate development plans that avoid the open-space network and sensitive habitats.

NR8B Maintain and preserve other natural habitat linkages and wildlife corridors in the City where feasible. Discourage development impacts to these linkages and corridors and fully mitigate associated unavoidable adverse impacts.

The Proposed Project is consistent with all of the aforementioned policies. Furthermore, approximately 20 percent of the Alternatives 1 and 2 study area will be retained in Open Space, the majority of which will be concentrated in the northern third of the Proposed Project site where it will abut oak woodlands to the east. Thus, this Open Space will provide the opportunity for terrestrial wildlife to move from the plains to Stillwater Creek through

relatively undisturbed habitat with ample cover. Additionally, Open Space areas will occur along the entire length of Stillwater Creek, maintaining the connection to the riparian corridor to both the south and north of the Proposed Project site. Open Space areas would also be preserved throughout the Alternative 3 site. Thus, cumulative impacts to wildlife migration/travel corridors are considered **less than significant**.

5.3 HYDROLOGY AND WATER QUALITY

5.3.1 Area of Potential Effects/Impacts

Alternatives 1 and 2

Surface Water

The two Alternatives drain to Stillwater Creek. Cumulative adverse impacts would result if flooding occurs as a result of increasing surface elevations upstream and downstream due to the Proposed Project either filling within the 100-year floodplain or from bridge piers located in the floodplain and/or floodway.

Groundwater

The two Alternatives lie within the Redding Groundwater Basin. Cumulative adverse effects would occur if the Proposed Action and other projects significantly reduce groundwater in the basin.

Alternative 3

Surface Water

The Alternative drains to Clover Creek and Churn Creek. Cumulative adverse impacts would result if flooding occurs as a result of increasing surface elevations upstream and downstream due to the Proposed Project either filling within the 100-year floodplain or from bridge piers located in the floodplain and/or floodway.

Groundwater

Refer to the discussion for Alternatives 1 and 2.

5.3.2 Analysis of Cumulative Effects/Impacts

Alternatives 1 and 2

Surface Water

Analysis has determined that 100-year peak flows for Stillwater Creek for future land use will be the same as the 100-year post-project flows therefore cumulative impacts are **not significant**.

Groundwater

The Redding Groundwater Basin has an annual recharge averaging between 350,000 to 700,000 acre-feet per year within a basin that has more than 3 million acre-feet of stored groundwater. It is estimated that the City of Redding will need approximately 62,000 acre feet of water by the year 2030, which is approximately 18.1 percent of the 342,500 acre-feet of water needed to serve all users within the basin by year 2030. In 1995, City of Redding water consumption was about 25,000 acre-feet, of which 6,800 acre-feet was supplied from wells. The City of Redding is less susceptible to water cutbacks because it has three sources of supply to draw from, the Central Valley Water Project, pre-1914 water rights, and groundwater.

The City's current annual water production using groundwater wells and surface water treated at the City's Buckeye and Foothill Water Treatment Plants total approximately 46,000 acre-feet. The current three year average water usage for the City totals approximately 27,500 acre-feet per year or 60% of the total water supply, an approximate 2,500 acre-feet increase since 1995. The City Water Utility is in the engineering process to develop groundwater Well No. 14 in the 5500 block of Airport Road. This well will add an additional 2 million gallons of water per day to the water distribution system and an additional 2,200 acre-feet of water to the City's annual water production total for a total of 48,200 acre-feet.

The proposed Action is the development of general industrial, light industrial, professional fffices and employee support ammenities. Water usage for General Industrial would average 4,000 gallons per day (gpd) or approximately 4.5 acre feet of watet per year . Water usage for Light Industrial, Professional Offices and Park Employee Support Ammenities would average from 5,000 gallons to 20,000 gpd or a maximum of 22.4 acre feet of water per year, which would not include landscape irrigation. Water usage in the developable areas would amount to approximately 0.17 mgd or 190 acre feet of water per year which would not include any type of food processing or bottleing facilities. Current estimates for water usage for a proposed food processing plant or bottleing facility is estimated at 1,800 gallons per minute (gpm) or 2.6 million gallons per day (mgd). This would equate to an annual usage of approximately 2,900 acre feet of water per year. Landscape irrigation, which would include streetside frontage only, would amount to approximately 40 acre feet of water per year. The additional 2,940 acre-feet of water that would be consumed would increase the estimated 62,000 acre feet of water needed by the year 2030 to a 62,240 acre-feet which is approximately 18.17 percent of the total water needed to serve all uses within the basin by 2030. The 0.07 percent increase is insignificant. There are **no potential significant cumulative impacts** on the groundwater basin.

Alternative 3

Surface Water

Individual project mitigation of peak flows within the Churn Creek Drainage basin within the Project lies does not adequately address the runoff concern. Development of the Project and future development will need the design and construction of a facility to convey post-development peak flows directly to Churn Creek across the ACID drainage ditch. This will require the acquisition of private property and the need to obtain funding for the construction of this long-term solution. The impact is considered significant both at the Proposed Project specific level and on a cumulative basis. Even with a mitigation that has been advanced, the implementation may be difficult and could **result in an unavoidable adverse impact that may not be feasibly mitigated**.

Groundwater

Cumulative impacts will not be significant as identified for Alternatives 1 and 2 since Alternative 3 Project area also lays within the Redding Groundwater Basin. There are **no potential significant cumulative impacts** on the groundwater basin.

No Action Alternative

No significant cumulative effects to surface water or groundwater result from the No-Action Alternative.

5.4 LAND USE

5.4.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

Cumulative impacts were evaluated based on surrounding land uses and growth patterns. Based on the land use designations and potential buildout of the General Plan in this area of the City, it is possible to estimate how the Proposed Action with future growth will result in cumulative effects. In addition to established land use, measurements will be based on environmental plans or policies, and standards of governmental agencies with jurisdiction over the proposed Action.

5.4.2 Analysis of Cumulative Effects/Impacts

The following discussion is derived from the *Community Development and Design Element* of the *City of Redding 2000-2020 General Plan*. The discussion establishes that the cumulative effect of increasing the amount of industrial lands is **not cumulatively significant** for any of the Alternatives and that the removal of residential lands as part of Alternative 3 is also not cumulatively significant since the amount of land classified for industrial, commercial, and residential lands exceeds the amount needed to accommodate projected 2020 population.

"The analysis of existing land use contained in the *General Plan Background Report* is based on 1995 data and provides important information on the quantities of land that are consumed by various types of activities. In summary, that report indicates that retail and office uses, collectively described as "Commercial," occupied approximately 1,395 acres of land, or about 17.9 acres per 1,000 population. Industrial and heavy commercial uses accounted for an additional 1,697 acres, or 21.7 acres per 1,000 population. Assuming that industrial and commercial land needs are to increase in proportion to projected population growth within the City for the year 2020 (113,000 total population), the City will need to provide additional land to accommodate physical growth in these sectors. Under this assumption, the minimum amount of additional land needed in these categories will be:

Industrial/Heavy Commercial	–	564 total acres
Commercial	–	465 total acres

This (General) Plan recognizes the inherent limitations of data reliability as well the difficulty in predicting trends decades into the future. Further, it is desirable to plan for these types of uses beyond the time frame of this (General) Plan in order to adequately project infrastructure needs and to plan for appropriate adjacent land uses. Therefore, the (General)

Plan proposes that lands be classified for these uses in excess of projected 2020 needs. Land consumption will be based predominantly on market forces. It should be noted that the commercial component should provide sufficient retail and office lands to accommodate buildout of the (General) Plan. As noted in the policies of this element, significantly more industrially classified land is provided than demand would suggest is warranted. This ensures that there is a wide variety of land available to meet currently unknown needs for access, parcel configuration, separation of uses, and similar siting concerns."

The General Plan provides for a total of 2,749 acres of commercial designated lands whereas only 1,860 acres are needed for 2020 and 6,540 acres of industrial and heavy commercial designated lands, whereas only 2,261 acres are needed for 2020. A total of 36,780 acres of lands are designated for residential uses upon which 85,330 dwelling units could be developed. The projected population would be 201,379. The year 2020 population projection of 113,000 residents requires 47,881 dwelling units which are 37,449 less than the amount designated in the General Plan.

It should be noted that a total of 169 acres have been, or are proposed to be removed from the inventory of available industrial lands. One site is approximately 89-acres north of Knighton Road, east of Airport Road which was converted to Public Facility (to accommodate the proposed Veterans Home) and single family residential land uses. Another 80-acres is currently proposed for conversion from industrial use to single family residences on a portion of the Alternative 3 site.

Regardless of which Alternative site is selected, the Proposed Action has the potential to generate 7,000 employees and up to an additional 14,000 secondary jobs. Conclusions could be made that the creation of up to 21,000 new jobs would create a demand for 17,100 new homes, whose 42,480 residents would directly and indirectly impact the housing market, services, and facilities, in particularly schools. However, such a conclusion is erroneous due to several factors.

Many of the new jobs would not attract persons from outside the community. There are existing underemployed and unemployed residents who could fill positions. In addition, existing children who will be entering the job market over the next 15 years may be able to remain in the area if they are employed at the business park. However, they will need housing. Secondly, the City of Redding General Plan accommodates projected growth resulting from the development of the Proposed Action when it designated lands, including portions of the alternative sites as "General Industrial" Third, there is enough land designated for residential development that can easily accommodate additional population, even if it were to be totally from out of the area. Fourth, infrastructure throughout the City of Redding has been master planned to accommodate future development and infrastructure to serve the Proposed Action, regardless of site location. Lastly, it is highly unlikely that the business park will attract a significant amount of out of the area employees based on past and current trends.[3]

Alternatives 1 and 2

There are **no significant cumulative effects** to land use anticipated since development of the Alternatives will meet established land use, environmental plans or policies, and standards of all agencies with jurisdiction.

The additional 163 acres of land proposed for industrial use will increase the amount of industrial and heavy commercial lands to 6,703 acres, however, the proposed conversion of

[3] Refer to Chapter 5 – Growth Inducement

169 acres of industrial lands to public facility and residential uses off-sets the 163 acre increase. Regardless, a 2.5 percent increase is not cumulatively significant.

Alternative 3

Based on densities allowed by the underlying zoning approximately 1,100 single family homes, 2,805,000 square feet of general industrial, and 78,400 square feet of general commercial uses could be developed. The alternative will reduce the amount of future residential development by approximately 1,100 single family units and reduce the potential for 78,400 square feet of general commercial.

Currently the Shastina Ranch Subdivision is proposing to amend the general plan and rezone 231 acres of the approximate 600 acres that comprise this Alternative. Approximately 178 acres of Residential 2 to 3.5 dwelling units per acre[4] and 21 acres of General Industrial land[5] is proposed to be developed with 32 acres to remain as Greenway. A total of 446 single family residences are proposed to be developed. Alternative 3 would preclude the subdivision from proceeding.

Concerns have been raised that on a short-term basis, potentially 446 single family homes would be removed from the housing inventory plus an additonal 650 potential homes in the long-term which would create a significant impact on the housing market.

As of July 2004, estimates indicate that there are approximately 1,325 single-family lots and 850 multi-family residential units that have been approved and not yet constructed. In addition, there are approximately 1,700 single family and multi-family residential lots and units that are currently being processed for approval. Therefore, 3,865 residential housing units could be available in the short-term to replace the 446 single family homes proposed.

In the year 2000, the number of housing units in the City of Redding totaled 33,800. The City of Redding General Plan has a residential holding capacity, based on the mid-point of each residential density range, of approximately 220,000 persons. Based on a factor of 2.5 residents per household, at ultimate development, the City would have approximately 88,000 residential units, which are 54,200 more than in 2000.

The **cumulative effect** of removing 446 short-term potential single family residential dwelling units and an additional 650 units in the future **is insignificant** when compared to the potential number of residential dwelling units that could be developed in the City of Redding in the future.

No Action Alternative

Alternatives 1 and 2

This alternative assumes the site would stay in its' present state until development occurs under the present General Plan and Zoning on the property. The Sanders property would be able to develop 460 acres of industrial uses on the property. The City owned portion with 218-acres could be used to develop recreational park facilities. In the past there have been discussions and even a study commissioned regarding the development feasibility of a golf course on this property and the property on the west side of Stillwater Creek.

[4] The existing general plan designates 76.5 acres of Residential 2 to 3.5 and an addiition 24 acres are designated Residential 1 to 2.

[5] The existing general plan designates 98.5 acres of General Industrial.

While this alternative would meet some Project objectives of providing employment, it could create greater impacts than the Proposed Action. The approximate 460-acre Sander parcel, even with wetland avoidance could develop 316 acres at a .40 FAR which is allowed under the General Plan. Therefore approximately 5,500,000 square feet of industrial, not business park uses could be developed. This exceeds the Preferred Action Alternative 2 by 1,177,000 square feet and Alternatives 1 and 3 by 1,100,000 square feet. The increased amount of square footage would create incrementally greater impacts to transportation and circulation, and result in potentially higher air quality and noise impacts. However, this only addresses development on the Sanders Parcel.

Were the City to pursue the development of recreation facilities, in particular a golf course, on the 218-acre parcel held by the Municipal Airport the cumulative impacts from the industrial and golf course development would be significant.

Alternative 3

This alternative assumes development would occur under the present General Plan and Zoning on the property. However, there currently is a proposal (Shastina Ranch Subdivision) to the general plan to amend and rezone for development of 231 acres of the approximate 600 acres that comprise this alternative. Approximately 178 acres of Residential 2 to 3.5 dwelling units per acre[6] and 21 acres of General Industrial land[7] is proposed to be developed with 32 acres to remain as Greenway. A total of 446 single family residences are proposed to be developed.

In conjunction with the General Plan amendment and tentative subdivision map application for the Shastina Ranch subdivision, the City has required preparation of a Public Facilities Plan [PFPJ that encompasses the land adjacent to the subdivision and is located within the boundaries of Alternative 3. The public facility plan area contains approximately 500 undeveloped acres with a development potential of 840 to 1,470 dwelling units based upon the existing General Plan Designations and proposed General Plan Amendment. Other than a main sewer trunk line paralleling Clover Creek and a City of Redding well at the north edge, there is no public water, sewer or storm drains in this area. The City's General Plan Land Use Diagram depicts a school site and neighborhood park in the area west of Clover Creek. The diagram also illustrates a southerly extension of an arterial street, Shasta View Drive, into the Project area from Rancho Road. The City's Master Water Plan depicts two to three new municipal wells in the public facility planning area. The public facility plan will determine the improvements needed to serve both the Shastina Ranch Subdivision and buildout of the remaining plan area using the existing General Plan designations.

The development of the Shastina Ranch subdivision will require the extension or provision of several elements of public facilities to serve the new residents. The facilities would include, but not be limited to, extension of Shasta View Drive, second public-street access, set-aside of a public school site, dedication of public parklands and trails, storm water detention/flood-protection facilities, City waterline extension and provision of wells. The intent of the public facilities plan is to ensure that the extended improvements are adequate to serve buildout of the plan area as well as help the City establish the pro-rata share of responsibility for improvements needed to serve the entire plan area. The Public Facilities Plan is intended for use as a technical study by the Shastina Ranch Subdivision and by other future development within the planning area.

[6] The existing general plan designates 76.5 acres of RS 2-3.5 and an addiition 24 acres are designated RS 1 -2.
[7] The existing general plan designates 98.5 acres of General Industrial.

While this alternative would meet some Project objectives of providing employment, it could create greater impacts than the Proposed Action. There are approximately 600-acres within the boundaries of Alternative 3. Based on densities allowed by the underlying zoning (which is more restrictive than the General Plan designations) approximately 1,100 single family homes, 2,805,000 square feet of general industrial, and 78,400 square feet of general commercial uses could be developed. If the maximum General Plan densities were permitted, an additional 165 single family homes could be developed.

Cumulatively, the impacts are greater than the Preferred Project. The amount of traffic generated by the industrial is 19,523 average daily trips which is less than the 29,912 generated by the Preferred Alternative. However, the single family residential will generate 10,626 ADT's and the general commercial could generate another 17,400 ADT's. Up to 47,550 ADT's could result from the development of the property based on the existing zoning.

5.5 CULTURAL RESOURCES

5.5.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

Cumulative effects on archaeological and historic cultural resources would result if the Proposed Action and other development projects throughout the region disturbed and/or possibly destroyed resources.

5.5.2 Analysis of Cumulative Effects/Impacts

Alternatives 1 and 2

Potential impacts on cultural resources have been mitigated through Project re-design to avoid potentially significant cultural sites. A mitigation measure is advanced to avoid destruction or disturbance of previously unidentified cultural resources should they be encountered during construction. Given that this Project will not impact cultural resources and since all other discretionary projects in the region are required to obtain cultural clearance before development proceeds, the potential for cumulative impacts on cultural resources will be **less than significant**.

Alternative 3

A mitigation measure is advanced to avoid destruction or disturbance of previously unidentified cultural resources should they be encountered during construction. Given that this Project will not impact cultural resources and since all other discretionary projects in the region are required to obtain cultural clearance before development proceeds, the potential for cumulative impacts on cultural resources will be **less than significant**.

No Action Alternative

No significant cumulative effects to cultural resources are anticipated resultant from the No-Action Alternative.

5.6 AESTHETICS

5.6.1 Area of Potential Effects/Impacts

Alternatives 1 and 2

The Alternates are located within a rural area that has experienced limited development, primarily residences on large parcels (5 to 20-acres) and cattle grazing. In direct proportion to the loss of open space (vacant undeveloped lands that not designated or classified as *Greenway* or *Open Space* under the General Plan and Zoning, respectively), buildout will result in the loss of approximately 383 of 678-acres (56.5%). The loss of the vacant land will change the immediate appearance of the area, and to a lesser degree that of the region.

Alternative 3

The Alternative is located in a semi-rural area currently undergoing the conversion to an urban area. In direct proportion to the loss of vacant lands, buildout will result in the loss of approximately 437 of 565-acres (77.3 %). The loss of the open land will change the immediate appearance of the area, and to a lesser degree that of the region.

5.6.2 Analysis of Cumulative Effects/Impacts

Alternatives 1 and 2

At buildout, the Project will contribute to the conversion of a rural area to an urban use, even though 286 acres of the total 678 acres will be zoned as Open Space. However, 460 acres are already designated for General Industrial in the General Plan. The balance of the 678 acres, 218-acres is owned by the City of Redding Municipal Airport which could be developed for recreational purposes such as a golf course.

The aesthetic impacts are not "cumulatively considerable" in large part because their impacts will not compound or exacerbate the aesthetic impacts of the existing and potential future development, which are located in areas that are physically separated from each other within the Project area. Because people will not be able to view the entire area of the Alternative's land area, or many of the other existing or Proposed Projects within a larger geographic area at the same time, visual impacts are individualized and limited to the field of vision or the immediate geographic setting in which they are located.

Conformance with the Planned Development zoning proposed for the Project and the City of Redding standards and ordinances, regarding setbacks, architectural design and quality, and provision of landscaping will help reduce the visual impacts of developing the vacant land with urban uses. However, there is no mitigation available that would reduce the cumulative impacts of all of the existing and future development proposed in the City, especially in areas that are converted from rural to urban uses to a less than significant level.

Alternative 3

At buildout, the Project will contribute to the conversion of a semi-rural area to an urban use. Portions of the Project area have already been subdivided into residential parcels, albeit only a few. Furthermore, the City's General Plan has designated the area for residential, industrial, and commercial uses. Currently, the Shastina Ranch Subdivision Project is being

processed by the City of Redding which would convert approximately 240-acres of the Study Area into 446 residential parcels.

Based on densities allowed by the underlying zoning (which is more restrictive than the General Plan designations) approximately 1,100 single family homes, 2,805,000 square feet of general commercial, and 78,400 square feet of general commercial uses could be developed. If the maximum General Plan densities were permitted, an additional 165 single family homes could be developed.

The aesthetic impacts are not "cumulatively considerable" in large part because their impacts will not compound or exacerbate the aesthetic impacts of the existing and potential future development, which are located in areas that are physically separated from each other within the Project area. Because people will not be able to view the entire area of the Alternative's land area, or many of the other existing or Proposed Projects within a larger geographic area, at the same time, visual impacts are individualized and limited to the field of vision or the immediate geographic setting in which they are located.

Conformance with the Planned Development zoning proposed for the Project and the City of Redding standards and ordinances, regarding setbacks, architectural design and quality, and provision of landscaping will help reduce the visual impacts of developing the vacant land with urban uses. However, there is no mitigation available that would reduce the cumulative impacts of all of the existing and future development proposed in the City, especially in areas that are converted from rural to urban uses to a less than significant level. n areas that are converted from semi-rural to urban uses to a less than significant level.

No Action Alternative

Under the No-Action Alternative the effects on aesthetic resources will be similar to those that have occurred over the years which include grazing and tree cutting on all Alternative Sites

5.7 TRAFFIC, TRANSPORTATION & CIRCULATION

5.7.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

Future year traffic forecasts were developed consistent with the latest updated City of Redding traffic demand forecast model (updated in 2000-2001). Consistent with the City of Redding's future traffic model, which is nested within the larger Shasta Countywide Travel Demand Forecast Model, Year 2025 is used as the "cumulative year" of analysis for this EIR traffic study.

The Project site falls within the area represented as Traffic Analysis Zone (TAZ) 430 in the Shasta County model, which generates approximately only 500 daily trips (or approximately only 50 peak hour trips) per current year 2025 model land use assumptions. Since the Project site is currently planned to generate negligible number of trips (on a daily as well as peak hour basis), the "as is" version of the Shasta County model is practically identical to the "no project" version of the Shasta County model. A "year 2025 base" condition was developed for this EIS/EIR that simply considers the "as is" version of the year 2025 Shasta County model.

The following improvements within the study area and its vicinity have been broadly outlined in the *City of Redding General Plan Transportation Element*. These improvements will be constructed regardless of whether the Proposed Action is implemented or not and regardless of Alternative sites.

- Knighton Road Extension from Churn Creek Road to Airport Road as a four-lane arterial.
- Knighton Road Extension from Interstate 5 to State Route 273 as a two-lane collector.
- Shasta View Drive Extension from Rancho Road to Airport Road as a four-lane arterial.
- Venus Drive Extension from Shasta View Drive to Airport Road as a two-lane collector.
- Airport Road widening from Old 44 Drive to Dersch Road as a four-lane expressway.
- Hartnell Avenue widening from Victor Avenue to Shasta View Drive as a four-lane arterial.
- Interstate 5 widening north from Knighton Road interchange to East Lake Boulevard interchange to six-lane freeway.
- SR44 widening from Airport Road to Deschutes Road to four-lane expressway.
- Interstate 5/Knighton Road interchange improvements with four-lane freeway overcrossing.
- Interstate 5/SR44 interchange ramp improvements.

It should be noted that within the vicinity of the study area, several planned conceptual future transportation improvements (that include circulation, capacity and control improvements) on State facilities and on the local traffic circulation system are being considered and/or being evaluated for potential funding sources by Caltrans, City and other concerned agencies. As such, there are no definitive set of "programmed" year 2025 improvements that the City or Caltrans has recommended for use in this study. Based upon discussions with City and Caltrans staff, the following improvement projects were considered to be "in place by year 2025" in order to identify a reasonable set of "year 2025 base lane geometrics and control" at the study intersections:

- Airport Road will have been widened from Old 44 Drive to Dersch Road as a four-lane expressway, along with realignment of Hartnell Avenue to intersect Airport Road further to the south from its current location in order to avoid potential queuing problems between this intersection and SR44Airport Road interchange. With this realignment of Hartnell Avenue, the Argyle Road intersection with Airport Road will be abandoned, and Argyle Road will be realigned to connect to Hartnell Avenue west of Airport Road or possibly extended south to intersect with the Venus Way Extension. Old Oregon Trail would be realigned to intersect with the Hartnell Avenue extension segment connecting Airport Road and Stillwater Road.

- The Venus Drive Extension (Preserve Boulevard) from Shasta View Drive to Airport Road as a two-lane collector will be constructed.

Year 2025 – Cumulative Base Threshold

Year 2025 is utilized to measure impacts that will result due to existing projects and future development. This is the cumulative threshold year. The following identifies the Year Base 2025 impacts and mitigation measures resulting from improvements that are necessary

irrespective of the Proposed Action and the Alternative sites. The cumulative impact analysis is provided in the *Final Stillwater Business Park EIR Traffic Study* and the *Stillwater Business Park Alternatives – Traffic Analysis*.[8]

Impact 5.7.1-1

Airport Road – The four-lane expressway section for the Airport Road segment between the SR44 interchange and the intersection with Churn Creek Road/Dersch Road, is projected to provide sufficient capacity under year 2025 base conditions on a daily basis. Alternatively, the City is considering improving the southbound airport road segment between SR44 interchange and Rancho Road to arterial standards, while improving the northbound segment to expressway standards. Such a four-lane expressway-arterial "hybrid" cross-section is also projected to provide sufficient capacity under year 2025 base conditions. However, the unsignalized Airport Road intersections with Hartnell Avenue, possibly Venus Way, Rancho Road, Terminal Driveway/Knighton Road extension and Meadow view Drive will be operating at unacceptable LOS "F." In addition eastbound and westbound approaches at the Airport Road/Churn Creek Road/Dersch road signalized intersection will not function properly.

Mitigation Measure 5.7.1-1

> *The currently unsignalized Airport Road intersections with Hartnell Avenue, Rancho Road, Terminal Driveway/Knighton Road Extension and Meadow View Drive should be signalized under year 2025 base conditions. The Airport Road/Venus Way Extension (future) intersection should also be signalized under year 2025 base conditions. Widening of the eastbound and westbound approaches at the Airport Road/Churn Creek Road/Dersch Road signalized intersection is recommended under year 2025 base conditions.*

Impact 5.7.1-2

Rancho Road – The Rancho Road intersections with Churn Creek Road, Shasta View Drive, Old Oregon Trail, and the Churn Creek//Victor Avenue intersection will exceed the acceptable LOS "C" and operate at an LOS "F." In addition, the Victor Avenue and Churn Creek Road approaches to Rancho Road do not meet intersection spacing standards.

Mitigation Measure 5.7.1-2

> *The Ranch Road intersections with Churn Creek Road/Victor Avenue, Shasta View Drive shall be installed with traffic signals if these improvements have not been constructed beforehand. In addition, the Victor Avenue and Churn Creek Road approaches to Rancho Road shall be realigned and reconstructed so that the Rancho Road/Churn Creek Road/Victor Avenue intersection operates acceptably.*

Impact 5.7.1-3

Knighton Road – The unsignalized study intersections along Knighton Road, namely the intersections with Interstate 5 southbound and northbound ramps will meet Caltrans peak hour volume Warrant 11 (Urban Areas) during at least one peak hour period.

Mitigation Measure 5.7.1-3

[8] Both reports are on file at the City of Redding City Manager's office.

The Knighton Road intersections with Interstate 5 southbound and northbound ramps shall be installed with traffic signals. It is noted here that the Route 5/Knighton Road Interchange Modifications and Knighton Road Extension PSR (Approved, January 1998) has considered a four-lane overcrossing at the Knighton Road interchange along with other interchange improvements. The PSR improvements are expected to provide sufficient capacity under year 2025 base conditions.

Impact 5.7.1-4

Riverside Avenue – The Riverside Avenue intersections with Interstate 5 southbound and northbound ramps, and North Street, will exceed the acceptable LOS "D" and "C," respectively.

Mitigation Measure 5.7.1-4

Traffic signals shall be installed at the Riverside Avenue intersections with Interstate 5 southbound and northbound ramps, and North Street. It is noted here that the North Street/Riverside Avenue Improvements PSRE (Approved July 1999) recommended a four to five-lane cross-section on North Street and Riverside Avenue approaches at the North Street/Riverside Avenue/Airport under 2020-2025 conditions. The PSRE improvements are expected to provide sufficient capacity under year 2025 base conditions.

Impact 5.7.1-5

SR44/Stillwater Road – The SR44/Stillwater Road intersection currently operates at AM and PM peak hour LOS "F" conditions due to the long delays experienced by the traffic on Stillwater Road attempting to turn through acceptable "gaps" in the high-speed, high volume SR44 traffic stream. This intersection meets Caltrans peak hour volume Warrant-11 under existing AM peak hour traffic demands.

Mitigation Measure 5.7.1-5

Environmental studies are currently underway to assist in the identification of appropriate improvements at this intersection. The work is a Caltrans, Shasta County, and Regional Transportation Planning Agency project.

5.7.2 Analysis of Cumulative Effects/Impacts

The following identifies the Year 2025 cumulative impacts of the various Alternatives at buildout and associated mitigation measures. The cumulative impact analysis is provided in the *Final Stillwater Business Park EIR Traffic Study* and the *Stillwater Business Park Alternatives – Traffic Analysis*.

Alternative 1

Year 2025 Cumulative Base Threshold plus Project Buildout Conditions

The full build-out of the Proposed Project would contribute to an addition of approximately 41,000 daily vehicular trips to the study area circulation system, above and beyond year 2025 base traffic volumes.

Impact 5.5.1-6

Airport Road – The four-lane segment of Airport Road between the SR44 interchange and the realigned Hartnell Avenue will exceed LOS "C." The four-lane expressway section (or the expressway-arterial "hybrid" section) for the Airport Road segment south from Hartnell Avenue through the intersection with Churn Creek Road/Dersch Road will also exceed LOS "C."

It should be noted that the Airport Road frontage road system (that runs south from Hartnell Avenue through Rancho Road on the east side of Airport Road, and south from Rancho Road on the west side of Airport Road) is projected to have a minimal to negligible effect on alleviating Year 2025 Base plus Project traffic demands along the Airport Road corridor itself. Since the frontage road system is a localized connection offering potentially longer travel times, traffic on the Airport Road thoroughfare will not significantly benefit from the frontage roads. The primary purpose of the frontage road system is to limit the number of access points onto Airport Road.

Mitigation Measure 5.5.1-6

A six-lane expressway section shall be constructed provided for the Airport Road section between SR44 interchange and Realigned Hartnell Avenue, consistent with the ultimate plans for this segment. The four-lane expressway section (or the expressway-arterial "hybrid" section) for the Airport Road segment south from Hartnell Avenue through the intersection with Churn Creek Road/Dersch Road can be maintained through Year 2025 Base plus Project Build-out conditions, provided the Old Oregon Trail segment between Airport Road/Hartnell Avenue and Rancho Road is improved to four-lane arterial standards. If not, then this segment of Airport Road shall be constructed to six-lane arterial standards.

The Shasta County Interchange Improvement Study Final Report (prepared for Shasta County RTPA, July 1996) has considered two conceptual interchange improvement alternatives for the SR.44/Airport Road/Old Oregon Trail interchange (Alternative 1 that considers a diamond interchange and Alternative 2 that considers a par-clo interchange) that both included a six-lane overcrossing section on Airport Road. Preliminary analysis has indicated that both of these interchange alternatives would provide sufficient capacity to accommodate Year 2025 Base plus Project Build-out conditions, while Alternative 2 (par-clo configuration with loop ramps) is expected to provide more efficient traffic operations.

All Airport Road study intersections shall operate as signalized intersections under Year 2025 Base plus Project Build-out conditions.

Impact 5.5.1-7

Rancho Road – The Rancho Road segment between Churn Creek Road and Airport Road and the Rancho Road intersection with Old Oregon Trail will have an unacceptable LOS "F."

Mitigation Measure 5.5.1-7

Rancho Road segment between Churn Creek Road and Airport Road shall be widened to four-lane arterial standards, and the Rancho Road intersection with Old Oregon Trail widened and installed with a traffic signal.

The Project Proponent shall pay the proportionate fair-share cost of the improvement of the road segment between Churn Creek Road and Airport Road. The Project may have to make the

necessary improvements without any participation by other projects due to timing. However, some form of reimbursement agreement should be entered into whereby the Project proponent is reimbursed as other projects in the area are developed.

The Project Proponent shall be responsible for the widening of Rancho Road between Airport Road and Old Oregon Trail and traffic signal installation at Old Oregon Trail.

Impact 5.5.1-8

Knighton Road - The Knighton Road segment between Interstate 5 and Churn Creek Road and the Knighton Road and Churn Creek Road intersection will have unacceptable LOS "D" and LOS "F," respectively.

Mitigation Measure 5.5.1-8

The Knighton Road segment between Interstate 5 and Churn Creek Road shall be widened to four-lane arterial standard.

The ultimate improvements identified in the Route 5/Knighton Road Interchange Modifications and Knighton Road Extension PSR (Approved, January 1998), that considered a four-lane overcrossing at the Knighton Road interchange along with other interchange improvements, are projected to provide sufficient capacity through Year 2025 Base plus Project Build-out conditions.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements. The Project may have to make the necessary improvements without any participation by other projects due to timing. However, some form of reimbursement agreement should be entered into whereby the Project proponent is reimbursed as other projects in the area are developed.

Impact 5.5.1-9

Riverside Avenue – The Riverside Avenue segment between Interstate 5 and North Street/Airport Road will operate at an unacceptable LOS "D."

Mitigation Measure 5.5.1-9

The Riverside Avenue segment between Interstate 5 and North Street/Airport Road shall be widened to four-lane arterial standards.

It should be noted that the North Street/Riverside Avenue Improvements PSRE recommended a four to five-lane cross-section on North Street and Riverside Avenue approaches at the North Street/Riverside Avenue/Airport under 2020-2025 conditions. The PSRE improvements are expected to provide sufficient capacity under Year 2025 Base plus Project conditions.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

Impact 5.5.1-10

SR44/Stillwater Road – The SR44/Stillwater Road intersection will operate at AM and PM peak hour LOS "F" conditions and will meet Caltrans peak hour volume Warrant-11 under AM and PM peak hour traffic demands.

Mitigation Measure 5.5.1-10

A traffic signal or grade separation at this intersection should be constructed at this intersection under year 2025 base plus project conditions, consistent with recommendations from environmental studies that are currently underway to assist in the identification of appropriate improvements at this intersection through year 2025.

Impact 5.5.1-11

Churn Creek Road – The Churn Creek Road section between Interstate 5 and Victor Avenue/Ranch Road will operate at an unacceptable LOS "F."

Mitigation Measure 5.5.1-11

The Churn Creek Road segment between Interstate 5 and Victor Avenue/Rancho Road shall be upgraded to four-lane arterial standards.

Impact 5.5.1-12

Hartnell Avenue – Hartnell Avenue between Airport Road and Argyle Road will operate at an unacceptable LOS "E."

Mitigation Measure 5.5.1-12

The Hartnell Avenue segment between Airport Road and Argyle Road shall be widened to a three lane arterial standard.

Impact 5.5.1-13

Road "A" Southerly Extension –The intersection with Airport Road will not operate efficiently due to the lack of turn lanes.

Mitigation Measure 5.5.1-13

At the Airport Road/Road "A" intersection, dual westbound left-turn lanes shall be constructed.

Alternative 2

Year 2025 Cumulative Base Threshold plus Project Buildout Conditions

This alternative includes a total floor area of 4,323,600 square feet comprised of 245,000 square feet of Professional Offices, 1,053,400 square feet of Light Industrial, and 3,025,200 square feet of General Industrial. The roadway network in this alternative is the same as in the *Final Stillwater Business Park EIR Traffic Study*. Using the floor areas listed above, trip generation was estimated based on ITE 6th Edition rates. Table 14, in the *Traffic Study*, provides details on trip generation. The total trip generation for this alternative is summarized below in **Table 5.7-1**.

Table 5.7-1 Trip Generation Alternative 2 – Full Build Out							
Quantity Square Feet	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
		Total	In	Out	Total	In	Out
4,323,600	29,163	3,175	3,130	585	3,637	664	2,973

The full build-out of the Proposed Project would contribute to an addition of approximately 29,163 daily vehicular trips to the study area circulation system, above and beyond year 2025 base traffic volumes. Table-4 and Table-10 in the July 22, 2004 *Traffic Alternatives Analysis* provides roadway segment LOS conditions and intersection signal warrants, respectively.

Impact 5.5.1-14

Airport Road – The four-lane arterial section (or the expressway-arterial "hybrid" section) for the Airport Road segment between the SR44 interchange and the intersection with Rancho Road will exceed LOS "C."

It should be noted that the Airport Road frontage road system (that runs south from Hartnell Avenue through Rancho Road on the east side of Airport Road, and south from Rancho Road on the west side of Airport Road) is projected to have a minimal to negligible effect on alleviating Year 2025 Base plus Project traffic demands along the Airport Road corridor itself. Since the frontage road system is a localized connection offering potentially longer travel times, traffic on the Airport Road thoroughfare will not significantly benefit from the frontage roads. The primary purpose of the frontage road system is to limit the number of access points onto Airport Road.

Mitigation Measure 5.5.1-14

A four-lane expressway section shall be constructed for the Airport Road section between SR44 interchange and Rancho Road. The four-lane arterial section (or the expressway-arterial "hybrid" section) for the Airport Road segment south from Rancho Road through the intersection with Churn Creek Road/Dersch Road can be maintained through Year 2025 Base plus Project Build-out conditions.

The Shasta County Interchange Improvement Study Final Report (prepared for Shasta County RTPA, July 1996) has considered two conceptual interchange improvement alternatives for the SR.44/Airport Road/Old Oregon Trail interchange (Alternative 1 that considers a diamond interchange and Alternative 2 that considers a par-clo interchange) that both included a six-lane overcrossing section on Airport Road. Preliminary analysis has indicated that both of these interchange alternatives would provide sufficient capacity to accommodate Year 2025 Base plus Project Build-out conditions, while Alternative 2 (par-clo configuration with loop ramps) is expected to provide more efficient traffic operations.

All Airport Road study intersections shall operate as signalized intersections under Year 2025 Base plus Project Build-out conditions.

The Project Proponent shall pay the proportionate fair-share cost of the above off-site improvements.

Impact 5.5.1-15

Rancho Road – The Rancho Road segment between Churn Creek Road and Airport Road will have an unacceptable LOS "D."

Mitigation Measure 5.5.1-15

The Rancho Road segment between Churn Creek Road and Airport Road shall be widened to three-lane arterial standards.

The Project Proponent shall pay the proportionate fair-share cost of the improvement of the road segment between Churn Creek Road and Airport Road.

Impact 5.5.1-16

Churn Creek Road – The Churn Creek Road segment between Interstate 5 and Victor Avenue will have an unacceptable LOS "D."

Mitigation Measure 5.5.1-16

The Churn Creek Road segment between Interstate 5 and Victor Avenue shall be widened to four-lane arterial standards.

The Project Proponent shall pay the proportionate fair-share cost of the improvement of the road segment between Interstate 5 and Victor Avenue.

Impact 5.5.1-17

Knighton Road - The Knighton Road segment between Interstate 5 and Churn Creek Road will have an unacceptable LOS "D" and the intersections of Knighton Road with Churn Creek Road and with Interstate 5 southbound ramps will meet peak hour signal warrants.

Mitigation Measure 5.5.1-17

The Knighton Road segment between Interstate 5 and Churn Creek Road shall be widened to three-lane arterial standards, and traffic signals shall be installed at the intersections. of Knighten Road with Interstate 5 southbound ramps.

The ultimate improvements identified in the Route 5/Knighton Road Interchange Modifications and Knighton Road Extension PSR (Approved, January 1998), that considered a four-lane overcrossing at the Knighton Road interchange along with other interchange improvements, are projected to provide sufficient capacity through Year 2025 Base plus Project Build-out conditions.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

Impact 5.5.1-18

Riverside Avenue – The Riverside Avenue segment between Interstate 5 and North Street/Airport Road will operate at an unacceptable LOS "D."

Mitigation Measure 5.5.1-18

The Riverside Avenue segment between Interstate 5 and North Street/Airport Road shall be widened to three-lane arterial standards.

It should be noted that the North Street/Riverside Avenue Improvements PSRE recommended a four to five-lane cross-section on North Street and Riverside Avenue approaches at the North Street/Riverside Avenue/Airport under 2020-2025 conditions. The PSRE improvements are expected to provide sufficient capacity under Year 2025 Base plus Project conditions.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

Impact 5.5.1-19

Hartnell Avenue – Hartnell Avenue between Airport Road and Argyle Road will operate at an unacceptable LOS "D."

Mitigation Measure 5.5.1-19

The Hartnell Avenue segment between Airport Road and Argyle Road shall be widened to a three-lane arterial standard.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

Alternative 3

Year 2025 Base plus Project Buildout Conditions

This alternative includes a total floor area of 4,410,400 square feet comprised of 245,000 square feet of Professional Offices, 1,140,200 square feet of Light Industrial, and 3,025,200 square feet of General Industrial. The roadway network in this alternative is the same as in the *Final Stillwater Business Park EIR Traffic Study*, except that Shasta View Drive is extended from Rancho Road to Knighten Road. Using the floor areas listed above, trip generation was estimated based on ITE 6th edition rates. **Table 5.7-2** provides total trip generation for this alternative is:

TABLE 5.7-2
Trip Generation
Alternative 3 – Full Build Out

Quantity Square Feet	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
		Total	In	Out	Total	In	Out
4,410,400	28,812	3,813	3,216	597	3,754	678	3,076

The full build-out of the Proposed Project would contribute to an addition of approximately 29,812 daily vehicular trips to the study area circulation system, above and beyond year 2025 base traffic volumes. Table-8 and Table-12 in the July 22, 2004 alternatives analysis provide roadway segment LOS conditions and intersection signal warrants, respectively.

Impact 5.5.1-20

Airport Road – The four-lane arterial section (or the expressway-arterial "hybrid" section) for the Airport Road segment between the SR44 interchange and the intersection with Knighten Road will exceed LOS "C."

It should be noted that the Airport Road frontage road system (that runs south from Hartnell Avenue through Rancho Road on the east side of Airport Road, and south from Rancho Road on the west side of Airport Road) is projected to have a minimal to negligible effect on alleviating Year 2025 Base plus Project traffic demands along the Airport Road corridor itself. Since the frontage road system is a localized connection offering potentially longer travel times, traffic on the Airport Road thoroughfare will not significantly benefit from the frontage roads. The primary purpose of the frontage road system is to limit the number of access points onto Airport Road.

Mitigation Measure 5.5.1-20

A four-lane expressway section shall be constructed for the Airport Road section between SR44 interchange and Knighten Road. The four-lane arterial section (or the expressway-arterial "hybrid" section) for the Airport Road segment south from Knighten Road through the intersection with Churn Creek Road/Dersch Road can be maintained through Year 2025 Base plus Project Build-out conditions.

The Shasta County Interchange Improvement Study Final Report (prepared for Shasta County RTPA, July 1996) has considered two conceptual interchange improvement alternatives for the SR.44/Airport Road/Old Oregon Trail interchange (Alternative 1 that considers a diamond interchange and Alternative 2 that considers a par-clo interchange) that both included a six-lane overcrossing section on Airport Road. Preliminary analysis has indicated that both of these interchange alternatives would provide sufficient capacity to accommodate Year 2025 Base plus Project Build-out conditions, while Alternative 2 (par-clo configuration with loop ramps) is expected to provide more efficient traffic operations.

The Project Proponent shall pay the proportionate fair-share cost of the above off-site improvements. The Project may have to make the necessary improvements without any participation by other projects due to timing. However, some form of reimbursement agreement should be entered into whereby the Project Proponent is reimbursed as other projects in the area are developed.

Impact 5.5.1-21

Knighton Road - The Knighton Road segments between Interstate 5 and Airport Road will exceed LOS "C."

Mitigation Measure 5.5.1-21

The Knighton Road segment between Interstate 5 and Churn Creek Road shall be widened to four-lane arterial standards. The Knighton Road segment between Churn Creek Road and Airport Road shall be widened to three-lane arterial standards.

The ultimate improvements identified in the Route 5/Knighton Road Interchange Modifications and Knighton Road Extension PSR (Approved, January 1998), that considered a four-lane overcrossing at the Knighton Road interchange along with other interchange improvements, are projected to provide sufficient capacity through Year 2025 Base plus Project Build-out conditions. The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

Impact 5.5.1-22

Riverside Avenue – The unsignalized study intersection of Riverside Avenue/Interstate 5 southbound ramps will meet the peak-hour signal warrant.

Mitigation Measure 5.5.1-22

The Riverside Avenue intersection with Interstate 5 southbound ramps shall be installed with a traffic signal under Existing plus Project conditions. The recommended signalization of Interstate 5/Riverside Avenue interchange ramp intersection should be appropriately integrated with the long-term improvements planned for this interchange, as well as improvements planned for the Interstate 5/Knighton Road interchange.

It should be noted that the North Street/Riverside Avenue Improvements PSRE recommended a four to five-lane cross-section on North Street and Riverside Avenue approaches at the North Street/Riverside Avenue/Airport under 2020-2025 conditions. The PSRE improvements are expected to provide sufficient capacity under Year 2025 Base plus Project conditions.

The Project Proponent shall pay the proportionate fair-share cost of these off-site improvements.

No Action Alternative

Whereas, the Proposed Project would not be developed under the No Project Alternative, this does not preclude the site from developing under the existing General Plan and Zoning, depending on the intensity of development proposed, the No Project Alternative could result in greater traffic impacts, however, those impacts would probably be realized over a longer time frame than that of the Proposed Project since the land would not be developed in a master planned fashion.

5.8 AIR QUALITY

5.8.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

The thrust of the analysis involves the fact that individual projects evaluated under NEPA/CEQA may not exceed established thresholds. However, the cumulative effects of emissions of individual projects within the Northern Sacramento Air Basin, within which Shasta County is located, have the potential to result in significant impacts. In addition, it is possible that the Proposed Project could result in additional residential or commercial development that is not yet projected for the area although all that is quantifiable at this time is the cumulative impacts of all the sources that could operate as a result of the proposed action.. Therefore an evaluation of potential cumulative effects of the Proposed Action on air quality is presented.

This analysis is regional by nature because the air pollutants of concern in Shasta County are ozone and particulate matter, which are regional pollutants. Ozone is a secondary pollutant formed throughout a region by emissions of NOx and ROG "cooking" in sunlight. Particulate matter is similar but formed through many other pollutants than ozone and which includes some directly emitted particulate matter. Occasionally, therefore, it is possible for particulate matter to have localized effects although there are no available quantitative tools to evaluate this potential. It is not expected that there will be localized

effects that could cause or contribute to exceedances of any air quality standard, though, because emissions are lower than the thresholds that have been set to prevent this.

The evaluation is for the largest alternative because this maximizes estimated emissions of air pollutants and ensures that the Proposed Project has been analyzed for maximum potential impact. Therefore this evaluation is intended to cover all three Alternatives as emissions and associated air quality impacts will be the same or less for any given alternative.

5.8.2 Analysis of Cumulative Effects/Impacts

Alternatives 1, 2, and 3

The cumulative impacts of the Proposed Project exceed Level "A" threshold levels even without the addition of stationary sources. As noted in section 8, stationary source impacts cannot be quantified until data such as that which would be provided in a permit application is provided. Appendix A provides examples of emissions from the types of sources that could potentially locate in one of the alternatives.

For mobile sources, ROG, NOx and PM-10 exceed the Level "A" threshold but not the Level "B" threshold, even with mitigation. Other mitigation measures such as low emission vehicle fleets, measures identified by the AQMD, or permit application measures may contribute to cumulative emission reductions for the entire Proposed Project. Therefore it is suggested that specific projects may have to apply mitigation measures and provide more specific air quality analysis, possibly even in the context of an EIR and, if applicable, a NEPA EIA or EIS, depending on the combined impact of the stationary source emissions with operational mobile and area source emissions. The potential exists to apply for offset permits and/or apply additional mitigation measures in addition to those listed in the Standard Mitigation Measures (SMMs) and Best Available Mitigation Measures (BAMMs) of the *Air Quality Element* of the *City of Redding 2000-2020 General Plan.*

Shasta County is in attainment for all Federal air quality standards, and is expected to maintain that status with or without the Proposed Action. Shasta County is currently abiding by regulations that apply as a result of violations of some State air quality standards, as described in **Section 4.8.2 – Regulatory Setting**. The thrust of the City's responsibility under the regulations involves evaluation of a project's ability to exceed threshold levels of air pollutants, apply mitigation measures as needed, in addition to requiring emission offset fees and EIR/EIS analysis as needed. The evaluation is intended to identify actions that could result in emissions that are significant enough to affect the City's ability to maintain federal air quality standards.

The Proposed Action may not have significant impacts in terms of exceeding Level B emission thresholds, depending on which users locate in the business park. Some individual applicants may need to prepare supplemental air quality studies for their proposed use, and/or apply for emission offset credits. In terms of the maximum Proposed Action alternative impact as compared with regional emissions, the Project will contribute an approximate 0.18 percent emission increase of ROG, a 0.27 percent increase in NOx and a 0.57 percent increase in PM-10 in Shasta County. Basin-wide, the emissions increase associated with Stillwater ranges from 0.02 to 0.08 percent of an increase, as documented in **Table 5.8-1**. Clearly the total Proposed Project emissions are not substantial with respect to total emissions in the County or the Air Basin in which Shasta County is located. ARB, 2004b consists of a web site used to obtain emission projections for counties or air basins. This source was used to develop the projected estimates for Shasta County.

TABLE 5.8-1 COMPARISON OF PROJECTED REGIONAL EMISSIONS TO PROJECT RELATED IMPACTS[9] (All emissions expressed in units of lbs/day)			
Category (all	**ROG**	**NOx**	**PM-10**
Sacramento Valley Air Basin	347,986	273,166	505.868
Shasta County	40,948	42,448	72,164
Sillwater Business Park[10] (unmitigated)	72	115	409
Stillwater Business Park (mitigated)	63	101	358

Since the emission increase is very minimal, the conclusion is that the Proposed Action will have a **less than significant** cumulative effect. It should be noted that the Alternatives, including the No Action Alternative will result in an emission increase although the precise amount is unknown at this time.

5.9 NOISE

5.9.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

Increased development will bring more people and activity including vehicle traffic into the area which will increase noise levels along the major transportation corridors. Ambient noise levels will increase since existing vacant land designated for development will be converted to urban uses.

5.9.2 Analysis of Cumulative Effects/Impacts

Alternatives 1 and 2

The Proposed Project will contribute to cumulative traffic on the roadway network. The project-generated traffic is expected to result in traffic noise level increases over cumulative no-project levels ranging from 0 to 9 dB Ldn on the Project area roadways, as indicated in **Table 4.9-9** in **Section 4.9 - Noise**.

Pursuant to the Project's Significance Criteria, a substantial increase in traffic noise levels is defined as 3 dB. The Proposed Project's contribution to cumulative traffic noise levels is predicted to be less than 3 dB or less on all roadway segments except Old Oregon Trail between Airport and Rancho Road (9 dB). However, because there is no existing noise-sensitive land uses located along this roadway segment, no noise impact is identified. Therefore, this impact is considered **less than significant** and **no mitigation measures** are required.

Alternative 3

The Proposed Project will contribute to cumulative traffic on the roadway network. The Project-generated traffic is expected to result in traffic noise level increases over cumulative

[9] Emission projections for the entirety of Shasta County or the Northern Sacramento Air District are only available through the year 2020.

[10] Stationary source impacts are not included as they are as yet unknown

no-project levels ranging from 0 to 9 dB Ldn on the Proposed Project area roadways, as indicated by **Table 4.9-10** in **Section 4.9 - Noise**.

Pursuant to the Project's Significance Criteria, a substantial increase in traffic noise levels is defined as 3 dB. The Proposed Project's contribution to cumulative traffic noise levels is predicted to be less than 3 dB or less on all roadway segments except along Churn Creek Road between Rancho Road and Knighton Road and along Knighton Road between Churn Creek Road and Airport Road which have existing noise-sensitive residential land uses located along these roadway segments. However, noise barriers proposed to be constructed will mitigate noise levels to a **less than significant** level.

No Action Alternative

Under the No-Action Alternative the site and surrounding ambient noise levels will increase as the area develops under that existing General Plan and Zoning, as applicable. Ambient noise levels will increase regardless of whether the Proposed Project is implemented or not.

5.10 HAZARDS AND HAZARDOUS MATERIALS

5.10.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

As development occurs in the region the potential exists for additional exposure to hazards and hazardous materials. Of major concern are impacts to groundwater, impacts from the transport of hazardous materials, and exposure to electromagnetic fields (EMF).

5.10.2 Analysis of Cumulative Effects/Impacts

Alternatives 1, 2, and 3

Accidental releases are short-term events, although there could be long-term consequences, such as groundwater contamination, if a release is not cleaned up immediately and hazardous substances migrate in the subsurface. Longer-term impacts from hazardous substance releases are considered to be **less than significant** if the mitigation measures proposed above are implemented and Federal, State, and County regulations are followed properly. Adherence to these regulations and mitigations will preclude activities that could lead to longer-term, cumulative impacts.

The preferred routes transmission line routes for the Alternatives avoid densely populated residential areas to the extent practical, also reducing the potential for EMF impacts. The levels from the proposed 115kV transmission line are comparable to the levels experienced at some distance from common electrical appliances and office products (such as televisions, hair dryers, electric blankets, and computer terminals) and well below the levels experienced, temporarily, a few inches from these products. While current research does not support a finding of no increased risks from the predicted levels of electromagnetic fields, the evidence is inconclusive. The risks, if they do exist, are comparable to those at which the population at large is exposed. Mitigation measures are advanced that would reduce potential impacts to a **less than significant**.

No Action Alternative

No significant cumulative effects from hazardous materials and EMF result from the No-Action Alternative.

5.11 PUBLIC UTILITIES AND SERVICES

5.11.1 Area of Potential Effects/Impacts

Alternatives 1 and 2

The site currently has electrical service, however, in order to accommodate the Proposed Action electrical transmission lines which are already planned for the area will need to be constructed to provide adequate service. Development of the site will require the extension of water, sewer, gas, cable, and telephone lines. Any development of vacant land will require additional services such as solid waste, fire and police protection. Prudent communities master plan infrastructure to meet existing needs and to accommodate projected growth.

Alternative 3

The site currently has all utilities and services available which can be readily extended into the site. To accommodate the Proposed Action electrical transmission lines which are already planned for the area will need to be constructed to provide adequate service. The development of vacant land will great a demand for additional services such as solid waste, fire and police protection, and medical services.

5.11.2 Analysis of Cumulative Effects/Impacts

Alternatives 1 and 2

The Proposed Action does not result in significant cumulative impacts because the City has master planned the necessary infrastructure to meet needs through the year 2020 and beyond. Regardless of whether or not the Proposed Action proceeds, infrastructure in the area will be developed to accommodate existing and projected growth.

Alternative 3

The Proposed Action does not result in significant cumulative impacts, except for storm drainage increases, because the City has master planned the necessary infrastructure to meet their needs through the year 2020 and beyond. Regardless of whether or not the Proposed Action proceeds, infrastructure in the area will be developed to accommodate existing and projected growth.

Individual project mitigation of peak flows in this area will not adequately address the runoff concern. Therefore, the design and construction of a facility to convey post-development peak flows directly to Churn Creek across the A.C.I.D. drainage ditch will be required. Implementation of the measure may be difficult and could result in an **unavoidable short-term** and **cumulative adverse impact** that may **not be feasibly mitigated**.

No Action Alternative

Whereas, the Proposed Project would not be developed under the No Project Alternative, this not preclude the site from developing under the existing General Plan and Zoning, depending on the intensity of development proposed, the No Project Alternative could result in greater infrastructure impacts, however, those impacts would probably be realized over a longer time frame than that of the Proposed Project. However, future development will need to address the storm drainage issues associated with flows into Churn Creek.

5.12 POPULATION AND HOUSING

5.12.1 Area of Potential Effects/Impacts

Alternatives 1, 2 and 3

This analysis of cumulative impacts/effects is based on the projections of development that are described in the City of Redding General Plan Final Environmental Impact Report (City of Redding Development Services Department et al. 2000). Projections of development are supplemented representative existing and probable future projects that have the potential to contribute to a significant cumulative effect.[11] The City of Redding General Plan has anticipated considerable future development in the eastern portion of the Planning Area where the three Alternative Sites are located.

5.12.2 Analysis of Cumulative Effects/Impacts

Alternatives 1, 2, and 3

Conclusions could be made that the creation of 7,000 new jobs will create a demand for 5,700 new and existing homes, whose 14,100 residents would directly and indirectly impact the housing market, services, and facilities, in particularly schools. The number of secondary jobs created, 10,500 to 14,000 will result in a demand for an additional 8,550 to 11,400 housing units. Therefore, the total housing demand could range from 14,250 to 17,100 new residences.

As noted in **Tables 12-1** and **12-2** in **Section 4.12 – Population and Housing,** the number of housing units needed to accommodate the general and labor force population projections for the year 2020 is sufficient to accommodate the potential number of employees and secondary jobs the business park could generate. An ensuing discussion evaluates whether or not if the housing being constructed is necessary. It was determined that based on the City of Redding's General Plan holding capacity of 220,000 persons, at ultimate development, the City would have approximately 88,700 residential units, which is approximately 52,700 more than in 2003. Over a period of time, which is how development of the Proposed Action would occur, housing will be constructed to meet the demand by not only the Proposed Action, but by other commercial and industrial projects due to the sufficient amount of available residential land and planned infrastructure.

Given that there is a sufficient amount of vacant land to accommodate future residential development to meet the needs of those future primary and secondary employees that may

[11] **Appendix _** provides a list of the existing and probable future projects.

relocate to the area to work at the business park and for other commercial and industrial lands that develop thereby possibly requiring additional housing, the potential for cumulative impacts on housing will be **less than significant**.

No Action Alternative

No significant cumulative effects to housing would occur from the No-Action Alternative since the City General Plan and infrastructure master plans accommodate future development in the City, regardless of the Proposed Action.

Table 5.8-2 provides a comparative summary of the cumulative impacts of the Alternatives before and after mitigation.

TABLE 5.8-2
COMPARISON OF CUMULATIVE IMPACTS BEFORE AND AFTER MITIGATION

	Alternative 1		Alternative 2		Alternative 3	
	Impact	**Mitigated**	**Impact**	**Mitigated**	**Impact**	**Mitigated**
5.1 – Geology and Soils	S	LTS	S	LTS	S	LTS
5.2 – Vegetation, Wildlife, Wetlands	PS	LTS	PS	LTS	PS	LTS
5.3 – Hydrology and Water Quality	NS	NS	NS	NS	PS	PSP
5.4 – Land Use	NS	NS	NS	NS	NS	NS
5.5 – Cultural Resources	PS	LTS	PS	LTS	PS	LTS
5.6 – Aesthetics	LTS	LTS	LTS	LTS	LTS	LTS
5.7 – Traffic, Transportation & Circulation	PS	LTS	PS	LTS	PS	LTS
5.8 – Air Quality	PS	LTS	PS	LTS	PS	LTS
5.9 – Noise	PS	LTS	PS	LTS	PS	LTS
5.10 – Hazards and Hazardous Materials	PS	LTS	PS	LTS	PS	LTS
5.11 – Public Utilities and Services	NS	NS	NS	NS	PS	PSP
5.12 – Population and Housing	LTS	LTS	LTS	LTS	LTS	LTS

NO – No Impact
NS – Not Significant
PS – Potentially Significant
LTS – Less Than Significant
S – Significant
PSP – Potentially Significant Possibly No Mitigation