Summary

The California Department of Transportation (Caltrans) is the lead California Environmental Quality Act (CEQA) agency for the project. Effective July 1, 2007, Caltrans has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 U.S.C. 327. In cooperation with the Contra Costa Transportation Authority (CCTA), Caltrans proposes a phased sequence of improvements to the Interstate 680 (I-680)/State Route 4 (SR-4) interchange in Contra Costa County, California, to alleviate operational deficiencies currently experienced throughout the interchange. The configuration of the existing interchange, coupled with less-than-desirable interchange spacing on SR-4, does not adequately handle existing traffic and will not meet anticipated future need. Improvements to the interchange are needed to improve safety and increase capacity to decrease congestion and accommodate both near-term and design year (2030) traffic volumes, while improving the efficiency of related widening projects within the project vicinity.

Five phases of improvements for this interchange have been identified that can be implemented independently as funding is available. The *proposed project* refers to all five phases, although each of the phases could be constructed alone and meet the purpose and need. All five phases are included in the Metropolitan Transportation Commission's (MTC's) long-range *Transportation 2030 Plan* (MTC 2005). The project is included in MTC's 2007 Transportation Improvement Program (TIP)[1] for initial right-of-way acquisition. The 2009 TIP, expected to be approved in November 2008, also includes funding for environmental clearance of all phases of the project and for initial right-of-way acquisition for Phases 1 and 2 within the TIP period. Other phases are included in the plan outside of the TIP period.

- Phase 1 – Construct a two-lane flyover direct connector from northbound I-680 to westbound SR-4. The northbound I-680 to westbound SR-4 loop ramp would be removed in this phase.
- Phase 2 – Construct a two-lane connector from eastbound SR-4 to southbound I-680. The current eastbound SR-4 to southbound I-680 diagonal ramp would be removed. Both Phases 1 and 2 would provide new direct local access to and from I-680.

[1] MTC's *Transportation 2030 Plan* (MTC 2005) serves as the current program for long-range planning of Bay Area transportation projects over the next 25 years while the TIP identifies the region's priorities for specific project funding.

- Phase 3 – Widen SR-4 within the project limits to add eastbound and westbound lanes to improve on-ramp and off-ramp merging actions.
- Phase 4 – Replace the southbound I-680 to eastbound SR-4 loop ramp with a two-lane flyover direct connector. Construct an auxiliary lane on eastbound SR-4 from the connector to the Solano Way off-ramp.
- Phase 5 – Replace the westbound SR-4 to northbound I-680 single-lane diagonal ramp with a new two-lane diagonal connector. Replace the northbound I-680 to eastbound SR-4 single-lane diagonal ramp with a two-lane relocated diagonal connector. Widen the westbound SR-4 to southbound I-680 loop ramp from a single lane to two lanes.

Cumulative impacts are evaluated in Section 2.21 of this document. That evaluation consists of all five phases of the interchange improvement project considered together with other proposed projects. Other recent and planned projects that were considered for cumulative impacts included the new high-occupancy vehicle (HOV) lanes added to I-680 between Martinez and Walnut Creek, the second Benicia-Martinez Bridge, the Burlington Northern–Santa Fe Railroad crossing reconstruction, local road improvements at Pacheco Boulevard and Arnold Drive, and improvements in eastern Contra Costa County to SR-4.

This Initial Study/Environmental Assessment (IS/EA) addresses the proposed action's potential to have adverse impacts on the environment that are mitigated to less-than-significant impacts. Potential impacts and mitigation/minimization measures are summarized in Table S-1 (see next page).

This IS/EA has been prepared to meet the requirements of NEPA and CEQA. The project is also subject to other Federal, State, and local laws, policies, and guidelines that are addressed in this document. Applicable regulatory consultation or approvals have been completed or identified from the U.S. Fish and Wildlife Service (concurrence received that the project is unlikely to impact red-legged frog), U.S. Army Corps of Engineers (Nationwide Permit authorization required), National Oceanic and Atmospheric Administration (provided construction impact avoidance measures), State Historic Preservation Officer (consultation concluded that the project would not affect any historic property), California Department of Fish and Game (Streambed Alteration Agreement permit required), Regional Water Quality Control Board and State Water Resources Control Board (a water quality certification or waiver, and NPDES permit required).

Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact		Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
		Without Slip Ramps*	With Slip Ramps*				
Land Use	Consistency with the Martinez General Plan	Yes	Yes	Yes	Yes	None	None
	Consistency with the Contra Costa County General Plan	Yes	Yes	Yes	Yes	None	None
Farmland		None	None	None	None	None	None
Social and Economic		Increased capacity on roadways	Increased capacity on roadways	Increased capacity on roadways	None	No additional impacts	None
Relocation	Business Displacements	Portions of several properties required that do not affect continued use. One partial take affecting a warehouse might be necessary. A Caltrans-owned property currently leased to a self-storage business would not have its lease renewed.	Same, but with the addition of a full take of a truck camper/shell business/parcel, and the partial take of some parking spaces at a retail business on Pacheco Blvd.	None	None	No additional impacts	Assistance would be provided in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Polices Act
	Housing Displacements	Residents of 5 to 7 homes may be relocated	Residents of 5 to 7 homes may be relocated	None	None	No additional impacts	Assistance would be provided in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Polices Act

* Slip ramps are entry or exit ramps that connect local streets with freeway-to-freeway direct connector ramps.

Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact		Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
		Without Slip Ramps*	With Slip Ramps*				
Relocation	**Utility Service Relocation**	84-inch sanitary sewer line along Berry Drive would be relocated. Other smaller-diameter (6- to 12-inch diameter) sanitary sewer lines may also need to be relocated	84-inch sanitary sewer line along Berry Drive would be relocated. Other smaller-diameter (6- to 12-inch diameter) sanitary sewer lines may also need to be relocated	Four sanitary sewer lines beneath SR-4 and between I-680 and the Walnut Creek channel may require protection during Phases 4 and 5. Phase 5 may also impact use of frontage road near Central Contra Costa Sanitary District treatment plant tanks and impact some employee parking at plant	None	None	Coordination with affected utility service providers would take place when developing plans, specifications, and estimates (PS&E).
Air Quality		Fugitive dust during construction	Fugitive dust during construction	Same as Phases 1 and 2	None	No additional impacts	Dust control practices listed in Section 2.3.5 would be incorporated
Noise		Noise level would increase by 1 decibel. Existing and future noise levels would exceed thresholds for consideration of noise abatement at some locations	Noise level would increase by 1 decibel. Existing and future noise levels would exceed thresholds for consideration of noise abatement at some locations	Same as Phases 1 and 2	None	All five phases of interchange plus existing traffic and new I-680 HOV lane considered in evaluation.	Soundwalls are included where they meet minimum sound abatement criteria and were determined to be cost-effective. Measures outlined in Section 2.4.4.5 would minimize construction impacts
Waterways and Hydrologic Systems		Drainage patterns would change	Drainage patterns would change	Same as Phases 1 and 2	None	No additional impacts	Retention basins would be added to design (Section 2.12.4)

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Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact	Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
	Without Slip Ramps*	With Slip Ramps*				
Water Quality	Construction activities could increase organic pollutants or suspended/ dissolved solids in nearby creeks or Contra Costa Canal	Construction activities could increase organic pollutants or suspended/ dissolved solids in nearby creeks or Contra Costa Canal	Same as Phases 1 and 2	None	No additional impacts	Pollution control and soil erosion measures would be taken; and a Storm Water Pollution Prevention Plan would be implemented during construction (see Section 2.12.4)
Wetlands and Waters of the United States	0.005 ha (0.011 acre) of wetlands would be permanently impacted	0.005 ha (0.011 acre) of wetlands would be permanently impacted	0.004 ha (0.012 acre) of wetlands would be permanently impacted	None	0.009 ha (0.023 acre) wetland impacts by all 5 phases. (Total cumulative permanent fill is under the 0.2 ha [0.5 acre] limit consistent with a USACE Nationwide Permit #14)	Temporary and permanent impacts would be minimized and avoidance measures would be instituted as indicated in Section 2.6.4. Seasonal work windows shall be required for activities in Grayson and Walnut Creek channels (June 1 to October 31). Unavoidable permanent wetland fill may be mitigated through use of available conservation banks or in-lieu fees.

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Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact	Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
	Without Slip Ramps*	With Slip Ramps*				
Wildlife and Vegetation	Construction activities would require the removal of some trees	Construction activities would require the removal of some trees	Construction activities would require the removal of some trees	None	No additional impacts	Trees that provide nesting habitat would be avoided, if possible. If infeasible, replacement and/or replanting would occur as part of landscaping. Tree removal would be done prior to Feb. 15 of each construction year to avoid impacts to nesting birds. Contractor would be directed to control rodent populations prior to and during construction.
Floodplain	New pier at Grayson Creek would have minor increase (estimated at 1 inch) in flood water elevation	New pier at Grayson Creek would have minor increase (estimated at 1 inch) in flood water elevation	Additional piers and median widening encroach on floodplain	None	All five phases increase flood flow elevation by an estimated 3 inches	Project design revised to reduce restrictions in channel
Threatened or Endangered Species	Steelhead and chinook salmon may be affected if construction takes place when these species are present	Steelhead and chinook salmon may be affected if construction takes place when these species are present	Same as Phases 1 and 2	None	No additional impacts	Avoidance and minimization measures listed in Section 2.8.3 would be required of the contractor. These include seasonal restrictions or "work windows," restrictions on working within the creek channel area, requirements for storage and use of construction materials and equipment, erosion control, and monitoring if dewatering is necessary within a creek channel. The project may affect, but is not likely to adversely affect, these species with the implementation of required avoidance and minimization measures.

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Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact	Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
	Without Slip Ramps*	With Slip Ramps*				
Historic and Archaeological Preservation	Contra Costa Canal, a historical resource, is crossed by the project in Phases 1 and 2. Findings of the Historical Property Survey Report conclude that no historic properties would be affected.	Contra Costa Canal, a historical resource, is crossed by the project in Phases 1 and 2. Findings of the Historical Property Survey Report conclude that no historic properties would be affected.	Canal is also crossed by Phases 4 and 5; no historic properties affected	None	No additional impacts	No impacts are anticipated; however, if any cultural material is encountered or subject to impact, all work would stop until a qualified archaeologist makes an assessment and follows the appropriate protocol for the resource
Hazardous Waste Sites	Soils within project area may contain residual pesticides and lead.	Soils within project area may contain residual pesticides and lead.	Same as Phases 1 and 2	None	No additional impacts	All buildings acquired for the project would be investigated for contamination; soil and groundwater sampling may be carried out for four sites and for soils identified for grading or excavation; see Section 2.2.3

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Table S-1 Summary of Major Potential Impacts From Alternatives

Potential Impact	Phases 1 and 2		Phases 3, 4, 5	No Project Alternative	Cumulative	Mitigation/ Minimization
	Without Slip Ramps*	With Slip Ramps*				
Visual	Phase 1 and 2 connectors would be visible from residential areas near freeways. Soundwalls would be added at specific locations	Phase 1 and 2 connectors would be visible from residential areas near freeways. Soundwalls would be added at specific locations	Phases 4 and 5 introduce additional ramps and soundwalls	None	Phases 1 through 5 add structures to already visible cloverleaf interchange.	Landscaping would be incorporated into the project to reduce visual impacts. Native oak replacement planting would be included. Vines would be planted on soundwalls to reduce glare and visual dominance and to deter graffiti. Aesthetic treatments (color, texture and pattern) that are similar in design to existing walls within the corridor would be applied to all sound and retaining walls. Landscaping would be provided on Pacheco Boulevard in the vicinity of the intersection with the proposed slip ramps, pending a maintenance agreement between the local entity and the State.
Traffic and Transportation	Construction could result in some temporary traffic detours/delays	Construction could result in some temporary traffic detours/delays	Same as Phases 1 and 2	None	No additional impacts	Contractor would be required to minimize local traffic interruptions, and provide notification and signing
Energy	None	None	None	None	None	None
Growth Inducement	Possible	Possible	Possible	None	None	Existing land use controls

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Preferred Alternative

The preferred alternative is Alternative D2A, consisting of the five phases of interchange improvements described in Sections 1.1.3 and 1.3.1. The preferred alternative includes construction of slip ramps connecting Pacheco Boulevard to the proposed high-speed northbound I-680 to westbound SR-4 and eastbound SR-4 to southbound I-680 ramps.

The preferred alternative was developed as a result of conceptual engineering and environmental studies with input and oversight from local cities, Contra Costa County, the Pacheco Municipal Advisory Committee, and the regional Transportation Partnership and Coordination – Central County (TRANSPAC) committee. Alternative D2A was identified as the preferred alternative because it meets the purpose and need for the project and best achieves the design objectives for capacity and safety improvements through a phased sequence of construction. The preferred alternative would provide additional capacity for the principal directional traffic movements by constructing freeway-to-freeway high-speed ramps between I-680 and SR-4 that would supplement and/or replace (depending on the quadrant of the interchange) the existing tight-radius, lower-capacity loop and diagonal ramps. The preferred alternative would add new slip ramps that directly connect Pacheco Boulevard with the northbound I-680 to westbound SR-4 and eastbound SR-4 to southbound I-680 freeway connector ramps, providing important freeway access for the community of Pacheco and the nearby County Sheriff and California Highway Patrol offices. The alternative would improve safety by eliminating many of the existing interchange's congested merging and weaving sections. The preferred alternative is consistent with the long-range planning for this interchange and was ranked as one of the more economical alternatives studied. Environmental review of the project was integrated with the development of design options and selection of the preferred alternative, and is documented in this IS/EA.

The evaluation of alternatives considered improvements that could be made to the existing interchange, or to connecting or local roads, that would achieve the purpose and need of the project. The project does not involve relocation of either I-680 or SR-4, and therefore alternatives were limited to various design options, involving different ramp connections and configurations. Development of alternatives involved a sequence of evaluation steps during the Conceptual Engineering Studies phase (described in detail in Section 1.4) that first identified a range of possible modifications, resulting in 17 design options that were considered for short- and long-term improvements. Factors used for evaluation included the ability of each

alternative to meet the project's purpose and need, geometric considerations, traffic operations, constructability, right-of-way required, and costs and benefits. The alternatives considered but not proceeding further involved variations or combinations of reconfiguring the existing loop ramps, closing (or partially closing) the existing Pacheco Boulevard interchange, constructing interchange ramps at Glacier Road, and constructing variations of levels of connector ramps between I-680 and SR-4. These design alternatives were rejected for various reasons, including failure to resolve the already poor weaving conditions at the interchange, elimination of local freeway access at Pacheco Boulevard, unacceptable right-of-way requirements or relatively high costs, introduction of out-of-direction travel for some movements, inadequate spacing between the interchange and local road intersections, and unacceptable impacts to local streets.

Following completion of the initial concept design phase, additional design options for the proposed slip ramps and project geometrics were developed and reviewed during preparation of the Project Report. Features that would further enhance capacity and safety were identified and incorporated into the preferred alternative. These features involved widening the northbound I-680 to eastbound SR-4 diagonal ramp to two lanes and making improvements to enhance sight distance, and including the westbound SR-4 to southbound I-680 two-lane loop ramp. Several options for improving local intersections at nearby interchanges were also considered as possible alternatives to installing the proposed slip ramps at Pacheco Boulevard. Although some of these options could provide benefits to local traffic circulation and could be implemented by city or county jurisdictions independent of this project, they were ultimately rejected as inadequate substitutes for the access to and from the freeway system at Pacheco Boulevard that would be provided by the proposed slip ramps.

The project phases were designed and selected to achieve independent traffic operation benefits, such that each phase can be individually advanced. This necessary aspect of the preferred alternative provides flexibility for planning and implementing the improvements as funding is available.