APPENDIX E

HCP Aquatic Resource Avoidance and Minimization Measures Consistency Table

Consistency of Project with HCP Aquatic Avoidance and Minimization Measures (HCP Table 6-2)

ID	Avoidance and Minimization Measure	Project Consistency
	General	
1	Minimize the potential impacts on covered species most likely to be affected by changes in hydrology and water quality.	The Project improves hydrology through the use of longer bridge spans than under existing conditions and widening of the channel to reduce flow velocities and scour issues. Post-construction water quality treatment is provided as part of the Project.
2	Reduce stream pollution by removing pollutants from surface runoff before the polluted surface runoff reaches local streams.	Post-construction water quality treatment is provided as part of the Project.
3	Maintain the current hydrograph and, to the extent possible, restore the hydrograph to more closely resemble predevelopment conditions.	See the response to ID #1.
5	Invasive plant species removed during maintenance will be handled and disposed of in such a manner as to prevent further spread of the invasive species.	Measure BIO-14 addresses procedures for invasive species removal to prevent further spread.
7	Personnel shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.	Spill prevention is addressed in the SWPPP (Measure BIO-06).
8	Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).	See response to ID #7.
9	Personnel shall implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means when removing sediments from the streams.	Hazardous materials management during construction is an element of the SWPPP (Measure BIO-06).
11	Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.	Washing of vehicles will occur only at approved areas (Measure BIO-06).
12	No equipment servicing shall be done in the stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).	Servicing of equipment will be done at least 100 feet from the top of bank as part of the SWPPP (Measure BIO-06).
15	If native fish or non-covered, native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, a native fish and aquatic vertebrate relocation plan shall be implemented when ecologically appropriate as determined by a qualified biologist to ensure that significant numbers of native fish and aquatic vertebrates are not stranded.	Fish capture and relocation prior to dewatering will be implemented by a qualified biologist (see Measures BIO-03, BIO-04, and BIO-05).

ID	Avoidance and Minimization Measure	Project Consistency
16	When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, except where it has been determined by a qualified biologist that the least environmentally disruptive approach is to work in a flowing stream. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site.	The Project's dewatering plan includes diverting the entire streamflow prior to work in the channel.
17	Coffer dams shall be installed both upstream and downstream not more than 100 feet from the extent of the work areas. Coffer dam construction shall be adequate to prevent seepage into or from the work area. Stream flow will be pumped around the work site using pumps and screened intake hoses. All water shall be discharged in a non- erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices, etc.).	Coffer dam locations are within 100 feet of the work area, as shown in Figure 8 of the Draft IS/MND. Measure BIO-5 incorporates the recommended coffer dam construction methods.
20	Diversions shall maintain ambient stream flows below the diversion, and waters discharged below the project site shall not be diminished or degraded by the diversion. All materials placed in the channel to dewater the channel shall be removed when the work is completed. Normal flows shall be restored to the affected stream as soon as is feasible and safe after completion of work at that location.	The proposed diversion method will maintain streamflow and all materials will be removed at the end of each in-channel work window.
22	To the extent feasible, all temporary diversion structures and the supportive material shall be removed no more than 48 hours after work is completed.	Incorporated in Measure BIO-05.
23	Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing the work.	Temporary fills will be removed and the channel restored according to the HMMP (Measure BIO-07)
24	To prevent increases in temperature and decreases in dissolved oxygen (DO), if bypass pipes are used, they shall be properly sized (i.e., larger diameter pipes to better pass the flows).	Bypass pipes have been appropriately sized considering historical flow data in the Guadalupe River.

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25	Diversions shall maintain fish passage when the project meets the following conditions: 1) the length of the area dewatered exceeds 500 feet, and/or 2) the length of time the stream is dewatered exceeds two weeks in length. Conditions for fish passage shall be met as long as the diversion 1) maintains contiguous flows through a low flow channel in the channel bed or an artificial open channel, 2) presents no vertical drops exceeding six (6) inches and follows the natural grade of the site, 3) maintains water velocities that shall not exceed eight feet per second (8 ft/sec), and 4) maintains adequate water depths consistent with normal conditions in the project reach. An artificial channel used for fish passage shall be lined with cobble/gravel. A closed conduit pipe shall not be used for fish passage. The inlets of diversions shall be checked daily to prevent accumulation of debris.	Conditions for maintaining fish passage are incorporated in the dewatering plan.
26	Any sediment removed from a project site shall be stored and transported in a manner that minimizes water quality impacts.	Protection of water quality during construction is addressed in the SWPPP (Measure BIO-06).
28	Where practical, the removed sediments and gravels will be re-used.	Removed sediment and gravels will be reused; incorporated in Measure BIO-07.
	Design Measures	
36	Use flow control structures such as swales, retention/detention areas, and/or cisterns to maintain the existing (pre- project) peak runoff.	Runoff management will be addressed through post-construction stormwater treatment (bioswales).
37	Direct downspouts to swales or gardens instead of storm drain inlets.	See response to ID #36.
38	Use flow dissipaters at runoff inlets (e.g., culvert drop-inlets) to reduce the possibility of channel scour at the point of flow entry.	See response to ID #36.
39	Minimize alterations to existing contours and slopes, including grading the minimum area necessary.	Grading has been minimized to the extent practicable; however, grading of the river banks is necessary to reduce erosion and bank failure issues posed by the existing overly steep banks in the vicinity of the MT-1 and MT-2 bridges.
40	Maintain native shrubs, trees and groundcover whenever possible and revegetate disturbed areas with local native or non-invasive plants.	Protection of existing vegetation is addressed by Measure BIO-13. Revegetation is addressed by Measure BIO-07 (HMMP).
41	Combine flow-control with flood control and/or treatment facilities in the form of detention/retention basins, ponds, and/or constructed wetlands.	Post-construction stormwater treatment areas are proposed as part of the Project.
42	Use flow control structures, permeable pavement, cisterns, and other runoff management methods to ensure no change in post-construction peak runoff volume from pre-project conditions for all covered activities with more than 5,000 square feet of impervious surface.	Post-construction stormwater treatment areas are proposed as part of the Project.

ID	Avoidance and Minimization Measure	Project Consistency
43	Site characteristics will be evaluated in advance of project design to determine if non-traditional designs, such as bioengineered bank treatments that incorporate live vegetation, can be successfully utilized while meeting the requirements of the project.	This will be an element of the HMMP (Measure BIO-07)
44	Maintenance of natural stream characteristics, such as riffle-pool sequences, riparian canopy, sinuosity, floodplain, and a natural channel bed, will be incorporated into the project design.	This will be an element of the HMMP (Measure BIO-07)
45	Stream crossings shall incorporate a free-span bridge unless infeasible due to engineering or cost constraints or unsuitable based on minimal size of stream (swale without bed and banks or a very small channel). If a bridge design cannot free-span a stream, bridge piers and footings will be designed to have minimum impact on the stream. A hydraulics analysis must be prepared and reviewed by the jurisdictional partner, including SCVWD as appropriate, demonstrating that piers or footings will not cause significant scour or channel erosion. Whenever possible, the span of bridges will also allow for upland habitat beneath the bridge to provide undercrossing areas for wildlife species that will not enter the creek. Native plantings, natural debris, or scattered rocks will be installed under bridges to provide wildlife cover and encourage the use of crossings.	The Project has been designed to have the minimum impact on the river through an extensive hydraulic analysis. Piers of new MT-1 bridge are outside the low-flow channel. The Project will reduce scour and erosion by widening the channel.
46	Whenever possible, the span of bridges will also allow for upland habitat beneath the bridge to provide undercrossing areas for wildlife species that will not enter the creek.	Upland habitat for wildlife crossing will be present underneath the bridges the majority of the time (except during storm/ high flow events).
49	The project or activity must be designed to avoid the removal of riparian vegetation, if feasible. If the removal of riparian vegetation is necessary, the amount shall be minimized to the amount necessary to accomplish the required activity and comply with public health and safety directives.	Vegetation removal will be minimized (see Measure BIO-13).
53	When possible, maintain a vegetated buffer strip between staging/excavation areas and receiving waters.	Vegetated buffer strips will be considered in the SWPPP (Measure BIO-06).
54	When not within the construction footprint, deep pools within stream reaches shall be maintained as refuge for fish and wildlife by constructing temporary fencing and/or barrier so as to avoid pool destruction and prevent access from the project site.	No construction in the river will occur outside the active construction area to be dewatered. Therefore, pools will be protected.
56	Increased water velocity at bank protection sites may increase erosion downstream. Therefore, bank stabilization site design shall consider hydraulic effects immediately upstream and downstream of the work area. Bank stabilization projects will be designed and implemented to provide similar roughness and characteristics that may affect flows as the surrounding areas just upstream and downstream of the project site.	Hydraulic effects will be considered in the final design of the channel restoration measures.

ID	Avoidance and Minimization Measure	Project Consistency
58	Existing access routes and levee roads shall be used if available to minimize impacts of new construction in special status species habitats and riparian zones.	The Project construction access plans incorporate existing access roads and paths to minimize habitat disturbance.
61	Minimize ground disturbance to the smallest area feasible.	Disturbance is minimized through environmentally sensitive area designations (Measure BIO-13).
62	Use existing roads for access and disturbed area for staging as site constraints allow. Off-road travel will avoid sensitive communities such as wetlands and known occurrences of covered plants.	The use of existing roads and disturbed areas for access/staging has been incorporated in the design to the extent practicable.
63	Prepare and implement sediment erosion control plans.	Addressed in the SWPPP (Measure BIO-6).
64	No winter grading unless approved by City Engineer and specific erosion control measures are incorporated.	The Project incorporates a June 15-October 15 work window for the major construction elements that involve grading in the channel. Winter grading is not proposed. The SWPPP and permit conditions will include measures that generally prohibit construction occurring in wet weather.
65	Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels (e.g., using silt fences or straw wattles).	Specific slope stabilization and channel protection measures will be included in the SWPPP (Measure BIO-06).
66	Control sediment runoff using sandbag barriers or straw wattles.	See response to ID #65.
67	No stockpiling or placement of erodible materials in waterways or along areas of natural stormwater flow where materials could be washed into waterways.	Addressed in the SWPPP (Measure BIO-06).
68	Stabilize stockpiled soil with geotextile or plastic covers.	Addressed in the SWPPP (Measure BIO-06).
69	Maintain construction activities within a defined project area to reduce the amount of disturbed area.	Disturbance is minimized through environmentally sensitive area designations (Measure BIO-13).
70	Only clear/prepare land which will be actively under construction in the near term.	This will be considered in the final design of the construction sequence and erosion control plans.
71	Preserve existing vegetation to the extent possible.	Disturbance is minimized through environmentally sensitive area designations (Measure BIO-13).
72	Equipment storage, fueling and staging areas will be sited on disturbed areas or non-sensitive habitat outside of a stream channel.	Fueling and servicing of mobile equipment to be done at least 100 feet from the top of bank as part of the SWPPP (Measure BIO-06). Due to site constructions, some staging within the Reach 6 flood basin is unavoidable. Equipment will be removed if a precipitation event is forecasted that would result in water being present in the flood channel.

ID	Avoidance and Minimization Measure	Project Consistency
73	Avoid wet season construction.	A June 15- October 15 work window for major in-channel construction elements is included in the Project.
74	Stabilize site ingress/egress locations.	Addressed in the SWPPP (Measure BIO-06).
75	Dispose of all construction waste in designated areas and prevent stormwater from flowing onto or off of these areas.	Addressed in the SWPPP (Measure BIO-06).
76	Prevent spills and clean up spilled materials.	Addressed in the SWPPP (Measure BIO-06).
77	Sweep nearby streets at least once a day.	Street sweeping is incorporated in the Project's construction air quality BMPs for dust control.
78	In-stream projects occurring while the stream is flowing must use appropriate measures to protect water quality, native fish and covered wildlife species at the project site and downstream of the project site.	Appropriate measures to protect water quality and wildlife are incorporated in the Project, as documented in the Draft IS/MND.
79	If mercury contamination may be present, the channel must be dewatered prior to commencement of the activity.	The channel will be dewatered and BMPs to address potential mercury contamination are incorporated in the Project (see Hazardous Materials section of the Draft IS/MND).
80	All personnel working within or adjacent to the stream setback (i.e., those people operating ground-disturbing equipment) will be trained by a qualified biologist in these avoidance and minimization measures and the permit obligations of project proponents working under this Plan.	Addressed by worker environmental awareness training (Measure BIO-12).
81	Temporary disturbance or removal of aquatic and riparian vegetation will not exceed the minimum necessary to complete the work.	Disturbance is minimized through environmentally sensitive area designations (Measure BIO-13).
82	Channel bed temporarily disturbed during construction activities will be returned to pre-project or ecologically improved conditions at the end of construction.	Channel bed will be improved as part of Project (Measure BIO-07).
83	Sediments will be stored and transported in a manner that minimizes water quality impacts. If soil is stockpiled, no runoff will be allowed to flow back to the channel.	Addressed in the SWPPP (Measure BIO-06).
84	Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into wetlands, ponds, streams, or riparian vegetation. Fiber rolls used for erosion control will be certified as free of noxious weed seed. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control measures will be placed between the outer edge of the buffer and the project site.	Incorporated in Measure BIO-06.

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85	Seed mixtures applied for erosion control will not contain invasive nonnative species and will be composed of native species or sterile nonnative species. If sterile nonnative species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive nonnatives.	Included in Measure BIO-14.
86	Topsoil removed during soil excavation will be preserved and used as topsoil during revegetation when it is necessary to conserve the natural seed bank and aid in revegetation of the site.	Incorporated in Measure BIO-07.
87	Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be deleterious to aquatic life.	Incorporated in Measure BIO-06.
88	Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.	Incorporated in the Project to the extent practicable; however, some storage outside of existing disturbed areas is necessary given the limited space available in the immediate vicinity of the bridges.
89	The potential for traffic impacts on terrestrial animal species will be minimized by adopting traffic speed limits.	Incorporated in construction air quality BMPs (20 mph speed limit on access roads).
90	All trash will be removed from the site daily to avoid attracting potential predators to the site. Personnel will clean the work site before leaving each day by removing all litter and construction-related materials.	Addressed in the SWPPP (Measure BIO-06).
94	Personnel shall use existing access ramps and roads if available. If temporary access points are necessary, they shall be constructed in a manner that minimizes impacts to streams.	Existing access roads are incorporated in the construction access and staging plan.
95	To prevent inadvertent entrapment of animals during excavation, all excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks.	Incorporated in Measure BIO-08.
96	Isolate the construction area from flowing water until project materials are installed and erosion protection is in place.	The Project is consistent through implementation of dewatering plan.
97	Erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (straw bales, silt fences, etc.) are in place downstream of project site.	Addressed in the SWPPP (Measure BIO-06).

Note: Non-applicable policies are not shown