4.17 Water Resources

This section evaluates the potential impacts of the Moosa 100K Alternative on water resources. This evaluation includes an assessment of the direct, indirect, short-term, long-term, and cumulative effects of the Moosa 100K Alternative on surface water and groundwater quality, flow patterns, flow rates, and flooding. The evaluation is based on available data relevant to the project area and regulatory information published by the San Diego Regional Water Quality Control Board (RWQCB) and other agencies.

4.17.1 Affected Environment

4.17.1.1 Environmental Setting

The following discussion describes the existing water resources conditions within the Moosa 100K study area.

Water Supply and Distribution

The Moosa 100K Alternative reservoir site is located in a relatively steep-walled canyon cut by Moosa Creek, an ephemeral stream that drains in a westerly to northwesterly direction. Moosa Creek is a tributary of the San Luis Rey River. Moosa Creek was impounded in the southeastern end of the canyon to form Turner Reservoir. Turner Reservoir is owned by the VCMWD. VCMWD holds an appropriative water right (A022992) from the SWRCB to divert and store up to 3,000 AF annually from Moosa Creek for municipal, domestic, and irrigation uses. A022992 includes a number of terms and conditions related to protection of uses in the Moosa Creek watershed, as well as the San Luis Rey River watershed.

Turner Reservoir is not currently used for domestic supply due to water quality concerns, has and currently only provides storage capacity of approximately 1,700 AF. Water levels in Turner Reservoir are not actively managed and when water levels are high, and it is not uncommon for spills to occur. No historical data on frequency or volumes of spill are available. Water could be drafted from the reservoir through a 36-inch diameter outlet line and pumped to two regulating reservoirs connected to VCMWD's Betsworth pump station.

Implementation of the Moosa 100K Alternative would require the transfer of the existing water rights for Turner Reservoir from the VCMWD to the Water Authority. The Water Authority is not proposing any changes in the amount of water diverted and stored under the existing water right, or the present uses for the water, but the Water Authority would need to apply for a change in the point of diversion and authorized place of use for the water stored in the new Moosa Reservoir. Please refer to Section 1.8.1 (Water Rights and Permits) of this EIR/EIS for a detailed description of the state's water rights process.

Hydrology

The Moosa 100K study area lies within the larger San Luis Rey Hydrologic Unit, in the Lower San Luis Hydrologic Area, specifically situated in the Moosa Hydrologic Subarea, as defined by the Comprehensive Water Quality Control Plan for the San Diego Region (RWQCB, 1994). The San Luis Rey Hydrologic Unit covers an area of approximately 565 square miles, with annual rainfall ranging from less than 12 inches at the coast to 45 inches in the high mountain ranges (Palomar Mountain). The San Luis Rey River is the major stream system in this unit, and drains Oceanside, San Luis Rey, Valley Center, as well as portions of Fallbrook and Camp Pendleton.

Groundwater within the Moosa Hydrologic Subarea is currently used for the irrigation of golf courses, landscaping, and agricultural land, as well as for domestic uses. A number of private wells exist in the Moosa Canyon area. Some of these uses may be lost through the construction and operation of the Moosa 100K Alternative.

Water Quality

Surface waters within the Lower San Luis Hydrologic Area have been designated by the RWQCB (1994) as having the following beneficial uses: agricultural supply, industrial service supply, warm freshwater habitat, water contact recreation, non-contact water recreation, and wildlife habitat. Groundwater has been designated by the RWQCB (1994) as having the following beneficial uses: municipal, domestic, agricultural, and industrial service supply.

Turner Reservoir lies in Moosa Canyon and collects water from Moosa Creek and surface water runoff from its 10-square-mile watershed. Water quality within the watershed is characterized by poor quality agricultural runoff. The reservoir periodically experiences algal blooms, probably as a result of nutrient inputs from the agricultural watershed. Concentrations of TDS within Turner Reservoir are in excess of state recommended drinking water criteria (500 mg/l). The poor water quality combined with VCMWD's lack of water treatment facilities precludes the use of Turner Reservoir for urban water supply.

Aquatic Resources

Bulrush, cattails, duckweed, watercress, and water pimpernel are present along the edges of Turner Reservoir (see Section 4.6 [Biological Resources for the Moosa 100K Alternative] of this EIR/EIS). Recreational fishing is not permitted at Turner Reservoir. Details relating to fish species present within Turner Reservoir are not readily available. However, if Turner Reservoir is similar to most ponds in California, it probably supports a population of warm-water game fish such as largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), various sunfish (*Lepomis* spp), and probably some forage fish. Because it is not used as a water supply, water levels should fluctuate seasonally, creating relatively stable naturalistic conditions for aquatic resources.

4.17.1.2 Regulatory Setting

The Moosa 100K Alternative and the Proposed Action would both be located in San Diego County in California; therefore, the same general state laws and regulations for the Proposed Action would apply to the Moosa 100K Alternative. Please refer to Section 3.17.1.2 (Water Resources for the Proposed Action) of this EIR/EIS for the state water resources regulatory setting for the Moosa 100K Alternative, including information on Executive Order 11988 (Floodplain Management), Federal Endangered Species Act of 1973, Resource Conservation and Recovery Act (RCRA) of 1976, Safe Drinking Water Act (40 U.S.C. 100 et seq.), the Federal Clean Water Act of 1972 (33 U.S.C. 1251 et seq.), the Porter-Cologne Water Quality Control Act of 1969, Public Health Guidelines for Recreational and Other Development at Reservoirs Used as Sources of Domestic Water Supply (California Department of Health, 1974), California Water Code, California Fish and Game Code, SDCWA Regional Water Facilities Master Plan, San Diego Regional Water Quality Plan, SDCWA Urban Water Master Plan, and other local water quality management policies.

4.17.2 Project Design Features

General Conditions and Standard Specifications that will be included in the project construction documents to reduce water quality impacts associated with construction and operation of the Proposed Action are summarized in Section 1.9.9 (Introduction, Water Resources) of this EIR/EIS. Refer to Section 3.17.2 (Water Resources for the Proposed Action) of this EIR/EIS for a list of project design features that also apply to the Moosa 100K Alternative.

4.17.3 Direct and Indirect Effects

4.17.3.1 Thresholds of Significance

The thresholds of significance used to evaluate potential water resource impacts for the Moosa 100K Alternative are the same as those used to evaluate impacts for the Proposed Action and the SV 50K/Moosa 50K Alternative. The thresholds are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant impact on water resources would occur if the Moosa 100K Alternative would:

1. Violate any water quality standards or waste discharge requirements.
2. Substantially alter the existing drainage pattern of the site or area, in a manner that would result in substantial erosion or siltation on or off site.
3. Substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.
4. Place structures within a 100-year flood hazard area, which would impede or redirect flood flows.

4.17.3.2 Impact Analysis

Methodology

The Water Resources analysis provided in the ESP EIR/EIS was updated as necessary through discussions with appropriate agency staff, and research of engineering reports and agency websites.

Analysis

Threshold 1: Violate any water quality standards or waste discharge requirements

Changes in Reservoir Water Quality

Reservoir Area

Construction Activities. The Moosa 100K Alternative would include project design features that would prevent violation of any water quality standards or waste discharge requirements during construction. These project design features would include, but would not be limited to design and implementation of a SWPPP and implementation of appropriate storm water best management practices. Therefore, impacts during construction would be less than significant.

Operation of the Reservoir. The Moosa 100K Alternative would impound precipitation within a catchment area of approximately 11 square miles, with a maximum runoff yield estimated to be less than 2,000 AF per year (GEI, 2007d). Moosa Reservoir would also be filled with imported water supplies from MWD and IID. Initially, water quality would be influenced by the leaching of soluble material from the flooded canyon site (Baxter, 1977). Vegetation that was not removed prior to flooding would decompose and decrease the amount of DO available in the water column. To maintain water quality of the filled reservoir (see Section 3.17.3.2 [Water Resources for the Proposed Action] of this EIR/EIS), approximately 20 percent of the Moosa Reservoir volume (if filled) would need to be removed and replaced annually (on average over the long term) to meet TDS goals (GEI, 2007c). The Moosa 100K Alternative would include project design features to prevent improper disposal of groundwater dewatering; and to prevent downstream scour, erosion, and sedimentation from construction areas and downstream operational flows, as described for the Proposed Action in Section 3.17.2 (Water Resources for the Proposed Action) of this EIR/EIS (e.g., BMPs in contractor approved SWPPPs, reservoir water quality maintenance plans). These project features would help ensure that applicable RWQCB water quality standards and discharge requirements would be met, and that beneficial uses will be possible with waters in the new reservoir. Therefore, water quality impacts due to operation of the Moosa Reservoir would be less than significant.

Based on the estimates of potential sedimentation (GEI, 2007d), the estimated total sedimentation over a lifespan of 100 years would be approximately 1,800 AF for the Moosa 100K Alternative. This estimate is equivalent to covering the entire area of inundation uniformly with approximately 2.5 feet of sediment. There are some very severe slopes in the watershed of

the reservoir that are highly erodible; however the low frequency of heavy and sustained storm events occurring in these areas would result in relatively little erosion. In addition, the water quality maintenance plans to achieve RWQCB water quality standards and discharge requirements (see Section 3.17 [Water Resources for the Proposed Action] of this EIR/EIS) would ensure that sedimentation from the Moosa 100K Alternative would not violate any water quality standards or waste discharge requirements. Therefore, water quality impacts due to operation of the Moosa Reservoir would be less than significant.

Valley Center Landfill

Water quality can be influenced by the presence of certain land use types within a watershed. The closed Valley Center Landfill is located adjacent to the northeast portion of the Moosa Reservoir, immediately upgradient of the proposed Moosa 100K Alternative. The landfill site covers 42 acres and has a landfill area of 11 acres. The landfill received a total of approximately 130,000 tons of refuse. There is no record of the landfill having accepted chemical, hazardous, or toxic waste, septage, or infectious wastes. In general, waste disposal was limited to residential and commercial waste, primarily organic rubbish. The landfill site is currently used as an equestrian center and has no permanent structures on site.

A water quality Solid Waste Assessment Test (SWAT) at the Valley Center Landfill was conducted by the IT Corporation in 1991 for the County of San Diego Department of Public Works. A summary of their findings was included in the ESP EIR/EIS in Section 10, Water Resources. According to the SWAT report, the site was not producing any leachate, although the landfill is not equipped with a leachate collection system. Site geology is relatively uniform and the condition of the landfill appeared to be stable. The landfill was constructed without a liner system. The landfill cover/cap consists of native decomposed granite with an average thickness of 3 feet. Other than the groundwater monitoring wells, no leak detection system has been installed.

Construction Activities. The closed landfill would not be directly affected by construction of the dam or other components of the Moosa 100K Alternative. However, impacts would occur upon inundation of the reservoir, as discussed below.

Operation of the Reservoir. The permeability of the natural decomposed granitic rocks constituting the landfill cover could allow substantial infiltration of precipitation into the landfill in the event that surface runoff is not properly conveyed. Surface water runoff from the adjacent area and minor runoff from the landfill cover are diverted to trenches and concrete lined drains, and returned to the natural channels down gradient of the landfill. However, because the landfill is located in the upper portion of an ephemeral stream valley, the potential for surface water contamination exists.

When Moosa Reservoir is at total storage capacity, the MNP elevation would be 1,244 feet above sea level. When the reservoir is filled to capacity, the southwestern portion of the landfill would become inundated by the reservoir, allowing waste within the landfill to become saturated and contact the drinking water supply. GEI (2007d) determined that the surcharge elevation of the reservoir during flood conditions would be 1,255 feet above sea level, 10 feet higher than the

MNP. Flood conditions would inundate additional landfill material. A major storm event or an earthquake could also jeopardize the stability of the landfill or the on-site surface water features. This could expose the landfill material, which could then enter the reservoir via wind or surface water transport. As described in Section 4.13.3 (Public Safety for the Moosa 100K Alternative) of this EIR/EIS, the project includes mitigation measures (M/HM 1-2) that would mitigate potential impacts on water quality from hazardous materials, including Valley Center Landfill material, to less than significant. Therefore, water quality impacts due to the proximity of the Valley Center Landfill to the Moosa Reservoir would be less than significant.

Other potential hazardous materials impacts (non-landfill related) from this facility are discussed in Section 4.14.3.2 (Public Services for the Moosa 100K Alternative) of this EIR/EIS and would also need to be removed prior to inundation of the area in order to maintain water quality. Mitigation Measures M/HM 1-1 through M/HM 1-8 address these issues. Therefore, water quality impacts due to the use, transport or disposal of other hazardous waste materials during construction or operation of the Moosa 100K Alternative would be less than significant.

Aquatic Resources. Refer to Section 4.6.3.2 (Biological Resources for the Moosa 100K Alternative) of this EIR/EIS for the analysis of water quality-related effects on aquatic resources**.**

Groundwater

Impounding a large quantity of surface water within Moosa Canyon would provide some recharge of the bedrock aquifer with imported water (mixed with runoff), which would fill the reservoir. Given the relatively high quality of this imported water compared to water in Turner Reservoir, there would not be any direct negative effect on groundwater quality. Therefore, groundwater impacts due operation of the Moosa 100K Alternative would be less than significant.

An indirect result of the enhanced recharge would be a localized "mounding" effect superimposed on the regional groundwater table in the vicinity of the reservoir, which could raise groundwater levels along the perimeter of the reservoir to an elevation essentially equal to that of the water surface within the reservoir. At that elevation, groundwater would be in direct contact with buried solid waste located on a portion of the Valley Center Landfill. Raising of groundwater levels owing to impounding surface water within the reservoir would increase the potential for contamination of groundwater by landfill leachate. However, water quality of the Moosa 100K Alternative would be monitored and maintained such that RWQCB water quality objectives would be met and, if necessary, any hazardous material in the Valley Center Landfill would be removed prior to inundation. Therefore, the Moosa 100K Alternative would not violate any water quality standards and impacts would be less than significant.

Downstream Water Quality

Construction Activities. Existing water in Turner Reservoir would be drawn down during construction and discharged into Moosa Creek in order to provide storage space in Turner Reservoir for flood control during the construction period, which would protect the construction site downstream. Turner Dam would not be breached (demolished) after the completion of

Moosa Dam, so sediments trapped by Turner Dam would become a part of the larger Moosa 100K Alternative reservoir and downstream drainages. Turner Reservoir would be inundated upon the completion of Moosa 100K Alternative dam and filling of the new reservoir. Therefore, impacts on downstream water quality due to the drawdown of Turner Reservoir and filling of the Moosa Reservoir would be less than significant.

Reservoir Operations. California Fish and Game Code Section 5937 requires that fish populations downstream of dams must be maintained in "good condition". The terms of VCMWD's existing water rights to storage in Turner Reservoir provide that certain conditions to protect downstream resources are before any diversion or storage can take place. In addition, the operation of the existing dam is such that all flows beyond the storage capacity of the reservoir (1,700 AF) are bypassed for downstream uses. The Water Authority has indicated that these conditions will continue after the transfer of A022992 from the VCMWD.

In addition, periodic releases of water from the Moosa 100K Alternative reservoir to maintain existing habitats downstream of the reservoir are planned. The storage of water in the reservoir prior to release can result in changes in temperature, DO, nutrients, and sediments. If water were released from the bottom layer, the stream could receive water that is colder and has less oxygen than water that originally flowed into the creek. Sediment particles would be trapped by the dam and water released from the dam could increase downstream erosion. However, the imported water in the Moosa 100K Alternative reservoir would be of better quality than that which currently exists in Turner Reservoir. Flow to Moosa Creek downstream of the dam would reflect higher quality imported water stored in the new Moosa 100K Alternative reservoir. Also, runoff would be diluted in the larger reservoir, further improving the quality of water that may be released downstream. Therefore, downstream water quality impacts due to the operation of the Moosa Reservoir would be less than significant.

During normal reservoir operations, erosion and sedimentation are expected to decrease because the amount of inundated area relative to the total watershed area would increase, thereby reducing the surface area threatened by erosion. Runoff during rain events, the major cause of erosion, would affect a smaller area. Furthermore, temporary and permanent BMPs implemented as part of the SWPPP for the Moosa 100K Alternative would reduce impacts on downstream water quality both during and after construction (refer to Section 3.17.2 [Water Resources for the Proposed Action] of this EIR/EIS). Therefore, downstream water quality impacts due to the construction and operation of the Moosa 100K Alternative would be less than significant.

Downstream Groundwater

Construction and Operation. Construction of a dam and impoundment of surface water flow within the reservoir would prevent natural runoff from the upstream (above the dam) portion of the Moosa Creek watershed from flowing downstream. However, the planned releases of water downstream would maintain the recharging of the alluvial aquifer. Because the upstream portion of the watershed (4,941 acres) is much smaller than the downstream portion (12,793 acres), and most surface runoff is generated downstream of the dam, impacts on groundwater recharge within the alluvium are expected to be minimal. In addition, the project includes provisions for

periodic releases of water into the creek to maintain biological resources. Also, very few wells in the area are installed at shallow depths, tapping the alluvial aquifer. Most of the wells in the Moosa Basin range from 200 to 1,500 feet deep and tap the fractured bedrock aquifer, which should be even less sensitive to changes in the streamflow regime because this aquifer is influenced by more regional groundwater flow characteristics. Therefore, downstream groundwater impacts due to the construction and operation of the Moosa 100K Alternative would be less than significant.

The Moosa 100K Alternative would not cause violations of water quality standards during construction of the dam or when the new reservoir is completed. With implementation of project design features, such as BMPs specified in the SWPPP, the Moosa 100K Alternative would not degrade downstream water quality during construction and reservoir operations, and would not affect downstream water quality upon project completion. Therefore, impacts of the Moosa 100K Alternative would be less than significant.

Threshold 2: Substantially alter the existing drainage pattern of the site or area, in a manner that would result in substantial erosion or siltation on or off site

Construction of the Moosa 100K Alternative would change the drainage pattern of the area between the site of the existing Turner Reservoir dam and the proposed Moosa 100K dam. Specifically, construction of the Moosa 100K Alternative would involve installation of a temporary new outlet tower several hundred feet upstream of the dam site. Runoff captured upstream of the construction site would be diverted through a pipe to the existing creek downstream of the dam. The new outlet works facilities would reduce the potential for flooding in the dam construction zone. The diversion pipe would allow releases of runoff around the dam construction zone to maintain flows in Moosa Creek. Downstream flows would therefore be maintained during construction. The Water Authority has proposed that downstream flows below the new Moosa dam would also be maintained in a manner similar to the existing conditions associated with Turner Reservoir.

The Moosa 100K Alternative pipeline would be constructed within and near Moosa Creek. Trenching and other construction activities, including dewatering, could result in changes to the direction or velocity of surface water flows. Dewatering water from the pipeline construction would be discharged to Moosa Creek. Dewatering water would be pumped to the drainage nearest each of the pump stations. For the Moosa Pump Station, water would be pumped to Moosa Creek and would flow in a westerly direction to the San Luis Rey River. For VCMWD North Pump Station, water would be pumped to an ephemeral tributary to Moosa Creek. And, for VCMWD South Pump Station, water would be pumped to Reidy Canyon Creek, which flows in a southerly direction. Discharge of dewatering water and other construction activities could result in varying degrees of temporary drainage alteration including changes in surface water runoff patterns. These changes could result in changes to the direction or velocity of surface water flows. However, BMPs implemented as part of the SWPPP would minimize the amount of erosion and sedimentation that would occur as a result of construction of the project (refer to Section 3.17.2 [Water Resources for the Proposed Action] of this EIR/EIS). Therefore, erosion

and siltation impacts due to the construction of the Moosa 100K Alternative would be less than significant.

Peak storm water runoff rates from pump station sites for the Moosa 100K Alternative were estimated as ranging from 0.03 to 0.44 cfs. These small runoff rates would not adversely affect downstream flows. Runoff water from upstream of the reservoir would be collected and impounded behind the reservoir under normal flow conditions. Therefore, erosion and siltation impacts due to the operation of the Moosa 100K Alternative would be less than significant.

The Moosa 100K Alternative would not cause violations of water quality standards during construction of the dam or when the new reservoir is completed. With implementation of project design features, such as BMPs specified in the SWPPP, the Proposed Action would not degrade downstream water quality during construction and reservoir operations, and would not affect downstream water quality upon project completion. Therefore, impacts of the Moosa 100K Alternative would be less than significant.

Threshold 3: Substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site

The Moosa 100K Alternative would dam Moosa Creek, and impound stream flow and runoff flow from upstream of the dam. Historically, Turner Dam has offered some detention of runoff in Moosa Creek. Similarly, the Moosa 100K Alternative reservoir would impound precipitation within a watershed of approximately 11 square miles, with an estimated runoff yield of less than 2,000 AF per year (GEI, 2007d). The potential for downstream flooding would be decreased upon completion of the new dam, as a larger area than at Turner Reservoir would be impounded and a higher dam would provide increased flood protection. Releases from the reservoir are planned in order to maintain existing downstream biological resources. Therefore, flooding impacts due to the construction and operation of the Moosa Reservoir would be less than significant.

The Moosa 100K Alternative dam would increase the amount of water stored in Moosa Canyon; therefore, spills from flows in the surrounding watershed would be even less likely. The Moosa dam and reservoir would not cause increased flooding downstream. The issue of flooding from a catastrophic dam failure, which would have an extremely low risk of occurrence, is addressed in Section 4.13 (Public Safety for the Moosa 100K Alternative) of this EIR/EIS.

The marina built for the Moosa 100K Alternative would add a limited amount of impervious surface to the Moosa watershed (refer to Section 4.15.2 [Recreation for the Moosa 100K Alternative] of this EIR/EIS), which would increase runoff. However, as a result of the SWPPP, permanent BMPs would be in place to minimize impacts on water quality and dissipate any increased flows. Furthermore, runoff from the marina would be diverted into the reservoir and would not contribute to downstream flows. There would be no downstream flooding due to storm drain runoff from the new marina. Therefore, flooding impacts due to the construction of the marina for the Moosa Reservoir would be less than significant.

The Moosa 100K Alternative would not substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Therefore, impacts of the Moosa 100K Alternative would be less than significant.

Threshold 4: Place structures within a 100-year flood hazard area, which would impede or redirect flood flows

According to FEMA floodplain maps, a portion of Moosa Creek upstream of Turner Reservoir and partially within the Moosa 100K Alternative inundation areas is within the 100-year floodplain. However, the Moosa 100K Alternative would not result in placement of structures within the mapped floodplain area. In addition, this alternative would not cause an increase in base flood elevations within the Moosa Creek floodplain downstream of the dam. Therefore, there would be no flooding impacts due to the construction of the Moosa Reservoir.

The Moosa 100K Alternative would not place structures in the 100-year floodplain, which would impede or redirect flood flows. Therefore, there would be no impacts from the Moosa 100K Alternative.

4.17.3.3 Mitigation Measures

Impacts on water resources would be less than significant. Measures that would mitigate potential impacts on water quality from hazardous materials, including Valley Center Landfill material, to less than significant, are provided (see Mitigation Measures M/HM 1-1 through M/HM 1-8) in Section 4.13.3.3 (Public Safety for the Moosa 100K Alternative) of this EIR/EIS. Therefore, no additional mitigation measures are required.

4.17.3.4 Residual Impacts after Mitigation

No residual impacts would remain after implementation of the standard conditions, planned project design features, and mitigation measures listed above.

4.17.4 Cumulative Effects

4.17.4.1 Other CIP Projects

As described in Section 4.2 (Cumulative Projects for the Moosa 100K Alternative) of this EIR/EIS, it was determined that Hubbard Hill Flow Regulatory Structure, North County Distribution Pipeline Flow Regulatory Structure, and Second Crossover Pipeline are the only CIP projects with the potential for cumulative impacts when combined with the Moosa 100K Alternative. The PEIR for the Regional Water Facilities Master Plan concluded that the Water Authority's water infrastructure projects would result in significant cumulative impacts on water quality from increased runoff when combined with the effects of other development projects within the same watershed. The above CIP construction projects have the potential to cause

increased erosion from exposed soil areas that may contribute to sediment-laden runoff into local drainage courses. Erosion can be destructive to the immediate area and sedimentation can clog waterways and downstream wetland and lagoon areas. However, Water Authority projects would be required to meet federal, state, and local permit requirements for storm water and water resources impacts. The above conclusions are incorporated into the cumulative analyses in Section 4.17.4.2 below.

4.17.4.2 Other Planned Projects with CIP Projects

This section evaluates the cumulative water resources impacts of the Moosa 100K Alternative when considered in conjunction with the other planned projects listed in Table 4.2-1, and incorporates the cumulative water resources impacts associated with the CIP projects described above. The following cumulative water resources analysis addresses each of the four significance thresholds listed in Section 4.17.3 above.

Cumulative Threshold 1: Violate any water quality standards or waste discharge requirements

The Moosa 100K Alternative would not cause violations in water quality standards during construction of the reservoir or when the new dam is completed. The Moosa 100K Alternative would not degrade downstream water quality during construction with implementation of project design features such as BMPs specified in the SWPPP and reservoir operations, and would not affect downstream water quality upon completion. Other cumulative projects in the area primarily include several small and large subdivisions, along with a few small commercial, institutional and industrial developments (see Table 4.2-1). In accordance with state and federal law, these cumulative projects and the CIP projects listed above would also be required to follow water quality standards and waste discharge requirements in order to maintain downstream water quality. Regulations would require that each project implement a SWPPP and utilize construction (temporary) and post-construction (permanent) storm water BMPs. Therefore, short-term (construction related), and long-term (operational) cumulative water quality impacts due to the Moosa 100K Alternative, when combined with water quality impacts from the CIP and other planned cumulative projects listed above, would be less than significant.

Cumulative Threshold 2: Substantially alter the existing drainage pattern of the site or area, in a manner that would result in substantial erosion or siltation on or off site

With implementation of project design features, such as BMPs specified in the SWPPP, construction of the Moosa 100K Alternative would not change downstream surface and ground water flows and associated siltation effects. Operation of the expanded reservoir would also not change downstream surface and ground water flows and associated siltation effects. Other cumulative projects in the area primarily include several small and large subdivisions, along with a few small commercial, institutional and industrial developments (see Table 4.2-1). In accordance with state and federal law, these cumulative projects and the CIP projects listed above would also be required to implement a SWPPP and appropriate construction (temporary) and post-construction (permanent) storm water BMPs in order to avoid substantial erosion and siltation on or off site. Therefore, short-term (construction related), and long-term (operational)

cumulative erosion and siltation impacts due to the Moosa 100K Alternative, when combined with erosion and siltation impacts from the CIP and other planned cumulative projects listed above, would be less than significant.

Cumulative Threshold 3: Substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site

The Moosa 100K Alternative would not substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Other cumulative projects in the area primarily include several small and large subdivisions, along with a few small commercial, institutional and industrial developments (see Table 4.2-1). The cumulative impact of additional impervious area added to any watershed increases the rate and amount of surface runoff and could result in flooding. However, these cumulative projects and the CIP projects listed above would be required to implement a SWPPP and appropriate temporary and permanent storm water BMPs in order to avoid runoff impacts downstream. Therefore, cumulative increases in the rate or amount of surface runoff as a result of the Moosa 100K Alternative, when combined with increases in the rate or amount of surface runoff associated with the CIP and other planned cumulative projects listed above, would not result in on- or off-site flooding and would be less than significant.

Cumulative Threshold 4: Place structures within a 100-year flood hazard area, which would impede or redirect flood flows

The Moosa 100K Alternative would not place structures in the 100-year floodplain. Therefore, impacts due to the Moosa 100K Alternative on flood flows as a result of placement of structures in a 100-year floodplain would not be cumulatively considerable. Therefore, there would be no cumulative impacts on flood flows due to the Moosa 100K Alternative.

The Moosa 100K Alternative would not violate any water quality standards or waste discharge requirements; substantially alter existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on or off site, or substantially increase the rate or amount of runoff in a manner that would result in flooding on or off site; or place structures within a 100-year flood hazard area, which would impede or redirect flood flow. The Moosa 100K Alternative would implement project design features and mitigation measures that would reduce all impacts to below a level of significance. Therefore, short-term (construction related), and long-term (operational) cumulative water resources impacts due to the Moosa 100K Alternative, when combined with water resources impacts of the CIP projects listed above and other cumulative projects listed in Table 4.2-1, would be less than significant.