National Flood Insurance Act, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Placer County participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage.

SAFE DRINKING WATER ACT

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated responsibility for California's drinking water program to Department of Health Services (DHS). DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA.

TRUCKEE RIVER OPERATING AGREEMENT

(Note to readers: this discussion is also included in Chapter 14, "Public Services and Utilities," as it relates to the water supply analysis.) The Olympic Valley Groundwater Basin is located within the Truckee River basin or watershed. In 1990, in order to resolve litigation involving claims to the Truckee River, Congress passed the Truckee-Carson-Pyramid Lake Water Rights Settlement Act (Pub.L. No. 101-618, Title II [Nov. 16, 1990]) (the Settlement Act). The Settlement Act mandated that the States of Nevada and California negotiate an agreement for Truckee River operations, and that the resulting operating agreement be promulgated as a federal regulation (Settlement Act Section 205). After almost 20 years of negotiations between the states and Truckee River stakeholders, the Truckee River Operating Agreement (TROA) was executed in September 2008. The TROA was first published in December 2008 (73 Fed. Reg. 74031 [December 5, 2008]) and its promulgation as a federal regulation became final in January 2009. Litigation ensued. On September 30, 2014, the District Court entered an Order granting the Amended Motion to Modify the Orr Ditch Decree as requested in the Amended Motion. (United States v. Orr Water Ditch Co. (Case No. 3:73-cv-00031-KDG (D. Nev.) (Re: Petition to Amend or Modify Orr Ditch Decree). This order is, however, just one of several steps that must take place before the TROA becomes effective and can be implemented. These steps include final adjudication/resolution of the existing litigation, changes to (or waiver of) tribal water rights, and extension of the TROA (which was scheduled to terminate if it had not become operative by December 31, 2014).

If and when the TROA becomes effective, two elements of the Settlement Act and the TROA are relevant to new groundwater production and uses within the Truckee River Basin. First, the Settlement Act allocates 32,000 acre-feet annually of total water diversions from all sources – both surface and groundwater – to California for use in the Truckee River basin (Settlement Act Section 204[c][1]). By its terms, the allocations and restrictions from section 204 of the Settlement Act do not become effective until such time that the TROA becomes effective (Settlement Act Section 210[a][2][A][i]). In its analysis of predicted water usage in California through 2033, the Environmental Impact Statement (EIS)/EIR for the TROA included water use projections from DWR. The TROA EIS/EIR analysis predicted that California's Truckee River basin total water usage (surface and groundwater) would not exceed 22,700 acre-feet annually by 2033. (U.S. Bureau of Reclamation et al. 2008:2-24, Attachment C.)

The EIS/EIR also concluded that total water use was anticipated to be the same under both the "no action" and TROA alternatives (U.S. Bureau of Reclamation et al. 2008:2-31). Compliance with California's allocation under the Settlement Act is to be implemented by DWR (Settlement Act Section 204[d][1]). Second, the TROA, when effective, will include specifications for new wells constructed in the Truckee River basin. Section 204(c)(1)(B) of the Settlement Act requires that new wells be designed to minimize any short-term surface water streamflow reductions to the maximum extent possible. To that end, TROA section 10.B designates "special zones" and criteria for each of those zones that, if observed, will lead to a presumption of compliance with the Settlement Act's mandate. Criteria for presumptive compliance within Olympic Valley Special Zone are set forth in TROA section 10.B.2(b). Those criteria require that any well to be constructed within the Olympic Valley watershed be drilled more than 500 feet from the centerline of the Truckee River or any Truckee River lake, and certain distances away from Deer Creek or any lake or pond associated with Deer Creek.

To ensure that all new wells comply with the Settlement Act, section 10.C.1 of the TROA requires a "Notice of Intent to Construct a Well" to be filed with the TROA Administrator prior to drilling. If the Notice is properly filed, it will operate to provide presumptive compliance with the TROA and the Settlement Act, and the well may be drilled once the County issues a permit pursuant to local regulations (TROA Section 10.C.3). Although the TROA is not yet in effect, DWR has developed a well notice form to be used during the interim period before the TROA is implemented. Parties who plan to drill a well in the TROA coverage area have the opportunity to complete the form and submit it to DWR and the TROA parties to confirm compliance with TROA terms. If no objections are raised by the TROA signatories within 90 days, the documentation is submitted to the TROA Administrator, and the well is presumed to be in compliance when the TROA comes into effect. If such a pre-TROA Notice of Intent is not filed before the TROA becomes effective, for all new wells drilled after May 1, 1996, a Notice of Intent must be filed within thirty (30) days of the date the TROA becomes effective (TROA Section 10.C.1[b]).

Neither the Settlement Agreement nor the TROA, when effective, will limit the project applicant's nor the SVPSD's right to construct wells in Olympic Valley, subject to the conditions for presumptive compliance, or to produce groundwater from the Olympic Valley Basin. All wells proposed to be constructed as part of the proposed project must comply with all criteria for the Olympic Valley Special Zone. The project applicant must obtain a well drilling permit from Placer County prior to commencing construction. Together with its well application, the project applicant will file a Notice of Intent to Construct a Well, in prospective compliance with the TROA.

13.2.2 State

CALIFORNIA PORTER-COLOGNE ACT

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the nine RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Clean Water Act. The applicable RWQCB for the proposed project is the Lahontan RWQCB. The SWRCB and the Lahontan RWQCB have the authority and responsibility to adopt plans and policies, regulate discharges to surface and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The Basin Plans must conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its Basin Plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

Lahontan RWQCB Basin Plan

The Lahontan RWQCB is one of the nine RWQCBs in California. The nine RWQCBs maintain Basin Plans that include comprehensive lists of water bodies in each area, as well as detailed language about the components of applicable water quality objectives (WQOs). The Lahontan RWQCB implements its Basin Plan for the Lahontan Region (referred to in the remainder of this Chapter as the Basin Plan), which recognizes natural water quality, existing and potential beneficial uses, and water quality problems associated with human activities in Placer County (Lahontan RWQCB 1995). The Lahontan RWQCB also has regulatory authority to enforce the requirements of the CWA and the California Water Code. This includes the regulatory authority to enforce the implementation of TMDLs, the adoption of waste discharge requirements (WDRs) to ensure compliance with surface WQOs, and groundwater management. Under the Basin Plan, discharge of material to "lands within the 100-year floodplain" is prohibited, with the intent of protecting floodplain functions such as conveyance and storage, along with other hydrologic, geomorphic, biologic and ecologic processes such as groundwater recharge, floodwater filtration, sediment transport, spawning gravel replenishment, seed dispersal, and riparian vegetation maintenance (Lahontan RWQCB 1995). Exemptions to this prohibition may be granted on a case by case basis, as long as discharges (a) do not reduce or adversely affect the existing floodplain function, or (b) restore and/or improve previously impacted floodplain functions.

NPDES Construction General Permit for Stormwater Discharges Associated with Construction Activity

The SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The state requires that projects disturbing more than one acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non stormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

TMDL FOR SEDIMENT FOR SQUAW CREEK

Squaw Creek is listed as impaired by the Lahontan RWQCB because of sediment (Lahontan RWQCB 2006). The TMDL for sediment recognizes ski-runs and dirt roads as primary controllable sediment sources, with urban runoff and road sand as secondary sources (Table 13-7). The necessary percent load reductions and load allocations have been designated by source category (Table 13-8). Implementation of the TMDL focuses on tracking compliance with existing regulatory actions, and monitoring channel bed conditions in the meadow reach of Squaw Creek (downstream of the trapezoidal channel). Target instream conditions include an increase in perennial flow, relative decrease in fines and sand, increased size of bed material, and higher scores on bioassessments (Table 13-9). The numeric targets (Table 13-10) are reflected in updates of monitoring programs in WDRs issued by the Lahontan RWQCB in the watershed.

Table 13-7 Sediment Delivery Estimates, Squaw Creek Watershed

Sediment Source Category[1]	Annual Sediment Delivery (tons[2]/year)	Percent of Total Annual Sediment Delivery
Dirt Roads (C)	9,300	25%
Dirt Roadcuts (C)	900	2%
Road Traction Sand (C)	300	1%
Residential/Commercial Areas (C)	200	1%
Graded Ski Runs (C)	9,000	24%
Alluvial Channel Erosion (U)	4,300	11%
Undisturbed Areas (U)	14,000	37%
SubTotals		

Table 13-7 Sediment Delivery Estimates, Squaw Creek Watershed

Sediment Source Category[1]	Annual Sediment Delivery (tons[2]/year)	Percent of Total Annual Sediment Delivery
Uncontrollable Sources[3]	16,100	42%
Controllable Sources	21,800	58%
Total Annual Sediment Delivery[4]	37,900	100%

Notes:

[1] C = Controllable Source; U = Uncontrollable Source

[2]Rounded to the nearest 100 ton.

[3]This is considered the best estimate of current naturally occurring sediment delivery. The estimate shown includes 50 percent (rounded to 2,100 tons/year) of the annual channel bank contribution and 100 percent (14,000 tons/year) of sediment delivery from undisturbed areas.

[4]This estimate adds to 37,900 tons/year because the alluvial channel erosion estimate was distributed equally between the "controllable" and "uncontrollable" sediment source categories. The estimate of one- half of 4,300 tons/year (2,150 tons/year) was rounded down to 2,100 tons/year.

Source: Lahontan Regional Water Quality Control Board 2006

Table 13-8 Squaw Creek Sediment TMDL Allocations and Percent Reductions Needed (by Sediment Source Category)

Sediment Source Category	Annual Sediment Delivery (tons/year)	Percent Reduction Required	Load Allocation[1] (tons/year)
Controllable Sources			
Dirt Roads	9,300	60%	3,700
Dirt Road Cuts	900	50%	450
Road Traction Sand	300	25%	200
Residential/Commercial Areas	200	25%	150
Graded Ski Runs	9,000	50%	4,500
Alluvial Channel Erosion (50 percent of the total load from channel bank erosion is assumed to be controllable)	2,100	10%	1,900
Total Controllable Sources	**21,800**	**50%**	**10,900**
Uncontrollable Sources			
Alluvial Channel Erosion (50 percent of the total load from channel bank erosion is assumed to be naturally occurring)	2,100	0%	2,100
Undisturbed Areas	14,000	0%	14,000
Total Uncontrollable Sources	**16,100**	**0%**	**16,100**
Total Existing Sediment Load	37,900	Load Allocation to Existing Sources	27,000
Overall Reduction Needed to Achieve TMDL	25%	Load Allocation to Future Growth	150
TMDL = Load Allocations (existing and future sources) + MOS	28,425	Load Allocation to Margin of Safety (4%)	1,275
		Total Load Allocations	**28,425**

Notes:

[1] Allocations to existing sources rounded to nearest 50 tons.

Source: Lahontan Regional Water Quality Control Board 2006

Table 13-9 Indicators and Targets for Squaw Creek TMDL

Indicator	Target Value	Notes
Biologic Health: Biologic Condition Score, calculated from Index of Biologic Integrity.	Biologic condition score of 25 or more when meadow reach stream flows are continuous. Applies to the meadow reach of Squaw Creek.	Represents desired biologic integrity of stream, protective of aquatic life uses. Target value based on regional reference stream biologic conditions.
Physical Habitat: Median (D-50) Particle Size	Increasing trend in D-50 value approaching 40 millimeters (mm) or greater. Applies to the meadow reach of Squaw Creek.	Represents desired substrate conditions for aquatic life. Target value based on regional reference stream substrate conditions.
Physical Habitat: Percent Fines and Sand	Decreasing trend in percent fines and sand value approaching 25% cover of the stream bottom or less. Applies to the meadow reach of Squaw Creek.	Represents desired substrate conditions for aquatic life. Target value based on regional reference stream substrate conditions.

Source: Lahontan Regional Water Quality Control Board 2006

Table 13-10 Numeric Target Monitoring Plan and Compliance Schedule

Target Values	Monitoring Specifications	Responsible Monitoring Parties	Schedule
Biologic Health Indicator: Biologic condition score, based on bioassessment data. Target Value: Biologic condition score of 25 or greater. Physical Habitat Indicator: D-50 Particle Size. Target Value: Increasing trend approaching 40 mm or greater. Physical Habitat Indicator: Percent fines and sand. Target Value: Decreasing trend approaching 25 percent.	1. Establish 3 sampling sites (upper, middle, and lower) on the meadow reach of Squaw Creek 2. Conduct bioassessment sampling and calculate biologic condition score using Herbst (2002) protocol. 3. Analyze D-50 particle size and percent fines and sand using Herbst protocol. 4. All sampling protocols will be specified in WDRs.	◢ SVSC (existing permit) ◢ Resort at Squaw Creek (existing permit) ◢ Village at Squaw Valley (existing permit) ◢ Placer County (anticipated permit)	1. Water Board to add monitoring requirements to existing WDR Monitoring & reporting programs of permitted dischargers no later than six months after final approval of TMDL. 2. Water Board to issue WDRs/permit for Placer County stormwater discharges no later than six months after final approval of TMDL. 3. Each regulated discharger to conduct sampling individually or as agreed to cooperatively. 4. Numeric target sampling shall be conducted once every two years between the months of July and September when flow in the meadow reach is continuous. 5. Progress toward attainment of the physical habitat targets to be evaluated by trend assessment, beginning after 3 consecutive sampling events have been completed. Trend assessment will be based on all monitoring data for each physical habitat indicator. 6. Attainment of the biologic condition score target will be assessed using 3-(sampling) event rolling average datasets. The biologic condition target will be met when the rolling average for three consecutive 3-event datasets meets or exceeds 25.

Source: Lahontan Regional Water Quality Control Board 2006

TMDL FOR MIDDLE TRUCKEE RIVER

The Truckee River TMDL for sediment establishes sediment load allocations for particular subwatersheds and intervening areas along the Middle Truckee River, from Tahoe City to the California-Nevada state line (Lahontan RWQCB 2008). The total sediment load allocation for the entire Middle Truckee River watershed is set at 40,329 tons per year. The total load allocation for Squaw Creek is 2,228 tons/year. The TMDL consists of a number of indirect indicators and target values for each indicator. The only direct indicator is suspended sediment concentration in the Truckee River, with a target of less than or equal to 25 milligrams per liter (mg/L) as an annual 90th percentile loading, as measured in the Truckee River at Farad (USGS Station 10346000). Additional indirect indicators include successful implementation and maintenance of BMPs for road sand application, BMPs for ski runs, and restoration activities such as decommissioning of dirt roads and repair of legacy sites. It is important to highlight the distinction between the Truckee River and Squaw Creek TMDL requirements. While the Squaw Creek TMDL specifically targets sediment that is deposited on the bed, the Truckee River TMDL targets finer sediment that moves in suspension to downstream areas. Proposed project elements and other watershed management strategies must focus on both suspended sediment as well as the sand-size portion of bedload sediment, which rarely moves in suspension.

CALIFORNIA WATER CODE, WATER SUPPLY WELLS AND GROUNDWATER MANAGEMENT

The California Water Code is enforced by DWR. The mission of the DWR is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments" DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are addressed in the California Water Code: Division 1, Article 2 and Articles 4.300 to 4.311; and Division 7, Articles 1-4. The Water Code also includes provisions for water supply assessments (WSA); these are included in Water Code Section 10910-10915 and CEQA Guidelines Section 15155 and are further discussed in Chapter 14, "Public Services and Utilities," (Section 14.2.2) of this DEIR. Further guidance is provided by bulletins published by DWR, such as bulletins 74-81 and 74-90 related to groundwater well construction and abandonment standards.

Groundwater Management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1-5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and the Sustainable Groundwater Management Act (SB1168, SB 1319, and AB 1739) in 2014. The intent of the Acts are to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act of 2014 (SGMA)[2] became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1).

Pursuant to the SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (Water Code Section 10723). Local agencies have until January 1, 2017 to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the county within which the basin is located will be presumed to be the groundwater sustainability agency for the basin. However, the county may decline to serve in this capacity (Water Code Section 19724).

[2] The SGMA is comprised of three separate bills: Senate Bill 1168, Senate Bill 1319, and Assembly Bill 1739. All three were signed into law by the Governor on September 16, 2014.

It is possible that the SVPSD or Placer County may elect to become the groundwater sustainability agency for the Olympic Valley Groundwater Basin or both agencies may elect to form a joint groundwater sustainability agency. Any groundwater sustainability agency established for the Olympic Valley Groundwater Basin would have additional powers under the SGMA to manage groundwater within the basin, including, for example, the power to: conduct investigations of the basin, to require registration of groundwater extraction facilities and metering of groundwater extractions, regulate groundwater extractions from individual groundwater wells or wells generally, and to assess fees on groundwater extractions (see generally, Water Code Section 10725 et seq.) Under the SGMA, the County retains its authority to permit construction of all new groundwater wells within its jurisdiction, unless the County delegates this authority to a groundwater sustainability agency (Water Code Section 10726.4[b]). In exercising its authority under the SGMA, a groundwater sustainability agency must consider the interests of holders of overlying groundwater rights, among others, and may not make a binding determination of the water rights of any person or entity (Water Code Sections 10723.2, 10726.8). The SGMA also provides local agencies with additional tools and resources designed to ensure that the state's groundwater basins are sustainably managed.

The SGMA also requires DWR to categorize each groundwater basin in the state as high-, medium-, low-, or very low priority (Water Code Sections 10720.7, 10722.4) All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency under a groundwater sustainability plan that complies with Water Code section 10727 et seq. If required to be prepared, groundwater sustainability plans must be prepared by January 31, 2020 for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022 for all other high- and medium-priority basins. In lieu of preparation of a groundwater sustainability plan, a local agency may submit an alternative that complies with the SGMA no later than January 1, 2017 (Water Code Section 10733.6).

On December 15, 2014, DWR announced its official "initial prioritization" of the state's groundwater basins for purposes of complying with the SGMA and this priority list became effective on January 1, 2015 (DWR 2014). DWR has ranked the Olympic Valley Groundwater Basin as "low priority." Groundwater sustainability plans are not required for low and very low priority basins. While the County and/or the SVPSD will still need to take steps to designate and form a groundwater sustainability agency for the Olympic Valley Groundwater Basin, these administrative obligations will not impact the availability of water to serve the proposed project or require revisions to the WSA prepared for the proposed project.

CALIFORNIA NONDEGRADATION POLICY

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

b) Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

CALIFORNIA ADMINISTRATIVE CODE

Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

CALIFORNIA HEALTH AND SAFETY CODE

The California Health and Safety Code Division 104, Environmental Health, Part 9.5, Sections 115700, 115705, 115710, 115715, and 115720 address abandoned excavations (as would pertain to abandoned groundwater wells for this project). DWR is responsible for enforcing this part of the Health and Safety Code.

LOW IMPACT DEVELOPMENT – SUSTAINABLE STORMWATER MANAGEMENT

On January 20, 2005, the SWRCB adopted sustainability as a core value for all California Water Boards' activities and programs, and directed RQWCB staff to consider sustainability in all future policies, guidelines, and regulatory actions. As part of the effort to promote sustainability, the RWQCBs are advancing Low Impact Development (LID) principles in California in various ways. LID is a sustainability promoting practice that benefits water supply and contributes to water quality protection. Unlike traditional stormwater management, LID uses site design and stormwater management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall. LID has been a proven approach in other parts of the country and is seen in California as an alternative to conventional stormwater management.

13.2.3 Local

PLACER COUNTY GENERAL PLAN

The following *Placer County General Plan* (2013) policies pertaining to sewage conveyance, treatment, and disposal; drainage and water quality; flood protection; water resources; and wetland and riparian areas are most relevant for the proposed project.

Sewage Conveyance, Treatment, and Disposal

- **Policy 4.D.10.** The County shall require all public wastewater facilities to be designed and built to the current standards of the agency providing service.

Drainage and Water Quality

- **Policy 4.E.1.** The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.
- **Policy 4.E.3.** The County shall consider using stormwater of adequate quality to replenish local groundwater basins, restore wetlands and riparian habitat, and irrigate agricultural lands.
- **Policy 4.E.4.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.
- **Policy 4.E.5.** The County shall continue to implement and enforce its Grading, Erosion and Sediment Control Ordinance and Flood Damage Prevention Ordinance.
- **Policy 4.E.10.** The County shall strive to improve the quality of runoff from urban and suburban development through use of appropriate site design measures including, but not limited to vegetated swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, rooftop and impervious area disconnection, porous pavement, and other best management practices (BMPs).
- **Policy 4.E.11.** The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining

lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.

- **Policy 4.E.12.** The County shall encourage project designs that minimize drainage concentrations and impervious coverage and maintain, to the extent feasible, natural site drainage conditions.

- **Policy 4.E.13.** The County shall require that new development conforms with the applicable programs, policies, recommendations, and plans of the Placer County Flood Control and Water Conservation District.

- **Policy 4.E.14.** The County shall require projects that have significant impacts on the quantity and quality of surface water runoff to allocate land as necessary for the purpose of detaining post-project flows, evapotranspiring, infiltrating, harvesting/using, and biotreating stormwater, and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.

- **Policy 4.E.15.** The County shall require that new development in primarily urban development areas incorporate low impact development measures to reduce the amount of runoff, to the maximum extent practicable, for which retention and treatment is required.

- **Policy 4.E 16.** The County shall identify and coordinate mitigation measures with responsible agencies for the control of storm drainage systems, monitoring of discharges, and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Environmental Health Division, Placer County Department of Public Works, CDRA Engineering and Surveying Division, Placer County Flood Control and Water Conservation District).

- **Policy 4.E.20.** The County shall continue to implement and enforce its Stormwater Quality Ordinance.

Flood Protection

- **Policy 4.F.1.** The County shall require that arterial roadways and expressways, residences, commercial land industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.

- **Policy 4.F.2.** The County shall recognize floodplains as a potential public resource to be managed and maintained for the public's benefit.

- **Policy 4.F.4.** The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully developed, unmitigated runoff conditions.

- **Policy 4.F.5.** The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances:

  a. Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Wildlife regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers.

- **Policy 4.F.8.** The County shall, where possible, view flood waters as a resource to be used for waterfowl habitat, aquifer recharge, fishery enhancement, agricultural water supply, and other suitable uses.

- **Policy 4.F.10.** The County shall preserve or enhance the aesthetic qualities of natural drainage courses in their natural or improved state compatible with flood control requirements and economic, environmental, and ecological factors.

- **Policy 4.F.13.** The County shall continue to implement and enforce its Grading, Erosion and Sediment Control Ordinance and Flood Damage Prevention Ordinance.

- **Policy 4.F.14.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County's Land Development Manual.

Natural Resources

- **Policy 6.A.1.** The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened or endangered species (see discussion of sensitive habitat buffers in Part I of this Policy Document). Based on more detailed information supplied as a part of the review for a specific project or input from state or federal regulatory agency, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new information provided. The County may, however, allow exceptions, such as in the following cases:

  1. Reasonable use of the property would otherwise be denied;

  2. The location is necessary to avoid or mitigate hazards to the public;

  3. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or,

  4. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.

- **Policy 6.A.2.** The County shall require all development in the 100-year floodplain to comply with the provisions of the Placer County Flood Damage Prevention Ordinance.

- **Policy 6.A.3.** The County shall require development projects proposing to encroach into a stream zone or stream setback to do one or more of the following, in descending order of desirability:

  a. Avoid the disturbance of riparian vegetation;
  b. Replace all functions of the existing riparian vegetation (on-site, in-kind);
  c. Restore another section of stream (in-kind); and/or
  d. Pay a mitigation fee for in-kind restoration elsewhere (e.g., mitigation banks).

- **Policy 6.A.4.** Where stream protection is required or proposed, the County should require public and private development to:

  a. Preserve stream zones and stream setback areas through easements or dedications. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a stream is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within that parcel or easement should be clearly defined and conditioned prior to map or project approval;

  b. Designate such easement or dedication areas (as described in a. above) as open space;

  c. Protect stream zones and their habitat value by actions such as: 1) providing an adequate stream setback, 2) maintaining creek corridors in an essentially natural state, 3) employing stream restoration techniques where restoration is needed to achieve a natural stream zone, 4) utilizing riparian vegetation within stream zones, and where possible, within stream setback areas, 5)

prohibiting the planting of invasive, non-native plants (such as Vinca major and eucalyptus) within stream zones or stream setbacks, and 6) avoiding tree removal within stream zones;

d. Provide recreation and public access near streams consistent with other General Plan policies;

e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas.

f. Provide for long-term stream zone maintenance by providing a guaranteed financial commitment to the County which accounts for all anticipated maintenance activities.

- **Policy 6.A.5.** The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.

- **Policy 6.A.6.** The County shall require development projects to comply with the municipal and construction stormwater permit requirements of the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) Phase I and II programs and the State General Municipal and Construction permits. Municipal requirements affecting project design and construction practices are enacted through the County's Stormwater Quality Ordinance. Separate construction permits may be required by and obtained through the State Water Resources Control Board.

- **Policy 6.A.7.** All new development and redevelopment projects shall be designed so as to minimize the introduction of pollutants into stormwater runoff, to the maximum extent practicable, as well as minimize the amount of runoff through the incorporation of appropriate Best Management Practices.

- **Policy 6.A.8.** The County shall support implementation of Low Impact Development site design and Watershed Process Management requirements for new and redevelopment projects in accordance with the NPDES Phase I and II programs, and applicable NPDES permits.

- **Policy 6.A.9.** The County shall require that natural watercourses be integrated into new development in such a way that they are accessible to the public and provide a positive visual element.

- **Policy 6.A.10.** The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.

- **Policy 6.A.11.** Where the stream zone has previously been modified by channelization, fill, or other human activity, the County shall require project proponents to restore such areas by means of landscaping, revegetation, or similar stabilization techniques as a part of development activities.

- **Policy 6.A.13.** The County shall protect groundwater resources from contamination and further overdraft by pursuing the following efforts:

  a. Identifying and controlling sources of potential contamination;

  b. Protecting important groundwater recharge areas;

  c. Encouraging the use of surface water to supply major municipal and industrial consumptive demands;

d. Encouraging the use of treated wastewater for groundwater recharge; and

e. Supporting major consumptive use of groundwater aquifer(s) in the western part of the County only where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area.

Wetland and Riparian Areas

- **Policy 6.B.1.** The County shall support the "no net loss" policy for wetland areas regulated by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.

- **Policy 6.B.2.** The County shall require new development to mitigate wetland loss in both federal jurisdictional and non-jurisdictional wetlands to achieve "no net loss" through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) compensation, including use of a mitigation and conservation banking program that provides the opportunity to mitigate impacts to special status, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas. Non-jurisdictional wetlands may include riparian areas that are not federal "waters of the United States" as defined by the Clean Water Act.

- **Policy 6.B.3.** The County shall discourage direct runoff of pollutants and siltation into wetland areas from outfalls serving nearby urban development. Development shall be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.

- **Policy 6.B.5.** The County shall require development that may affect a wetland to employ avoidance, minimization, and/or compensatory mitigation techniques. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site, and in-kind mitigation shall be preferred to out-of-kind; (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan; and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied, including compensation for temporal losses. The County shall continue to implement and refine criteria for determining when an alteration to a wetland is considered a less-than-significant impact under CEQA.

PLACER COUNTY NPDES MUNICIPAL STORMWATER PERMIT

Placer County has a Stormwater Management Program in compliance with a NPDES Phase II ("Small MS4") municipal stormwater permit (SWRCB NPDES General Permit No. CAS000004, Board Order 2003-005-DWQ). Project-related stormwater discharges are subject to all applicable requirements of the permit.

PLACER COUNTY TRUCKEE RIVER BASIN STORMWATER MANAGEMENT PLAN

Placer County published the *Stormwater Management Manual* in 1990 (Placer County Flood Control and Water Conservation District 1990) and the *Land Development Manual* in 2006 (Placer County 2006). Building on these past efforts, in 2007 the *Truckee River Basin Stormwater Management Plan* was published (Placer County 2007). This plan provides a comprehensive program to reduce pollution in stormwater runoff located in the Placer County portion of the Middle Truckee River Watershed. The plan is implemented in compliance with NPDES Phase II General Municipal Permit No. CAS000004 and WQCB Order No. 2003-005-DWQ.

SQUAW VALLEY GENERAL PLAN AND LAND USE ORDINANCE

The *Squaw Valley General Plan and Land Use Ordinance* (SVGPLUO) was adopted in 1983 as part of Placer County code.

Section V. Environmental Resources Element, Subsection F. Streams and Waterways establishes goals to restore already disturbed drainage areas and to prevent further disturbance, specifically relating to Sections 115, 118, and 121 of the SVGPLUO listed below.

Section 115 of the SVGPLUO addresses drainage/water quality, including: Section 115.14 requiring drainage systems to prevent water quality degradation; limiting work within the 100-year floodplain aside from actions to restore areas previously modified by channelization, fill, or other human activities (Section 115.20); and Section 115.23 that adds additional beneficial function requirements on restoration.

Section 118 of the SVGPLUO addresses erosion control and requires a sedimentation and erosion control plan (Section 118.12) including both construction and long-term measures (Section 118.14) as part of grading, drainage, or improvement plans reviewed by the County DPW. It does not specify the types of measures to be used but recommends suitable measures and requires revegetation of all disturbed surfaces that will not be part of the approved final impervious surfaces (Section 118.18).

Section 121 of the SVGPLUO, requires that adequate space be provided for storage of snow, and considers that a functional area be 20 percent of the clearable area not including storage along public roads, and that storage may not be within the 100-year floodplain.

Section 139 of the SVGPLUO addresses setbacks for residential structures (Section 139.10) and commercial structures (Section 139.12), setbacks in areas where the floodplain has not been established (Section 139.14), and additional special setbacks (Section 139.10).

13.3 IMPACTS

13.3.1 Significance Criteria

Based on the Placer County CEQA checklist and Appendix G of the State CEQA Guidelines, the proposed project would result in a potentially significant impact on hydrology and water quality if it would:

- violate any federal, state, or county potable water quality standards;
- violate any water quality standards or waste discharge requirements or contaminate a public water supply;
- substantially deplete groundwater supplies, substantially alter the direction or rate of flow or groundwater, or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a long-term lowering of the local groundwater table;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the amount of surface runoff in a manner which would result in flooding on- or off-site;

- create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard area structures which would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or a dam; or
- result in substantial risk of inundation by seiche, tsunami, or mudflow.

13.3.2 Methods and Assumptions

POLICIES PROPOSED IN THE SPECIFIC PLAN THAT COULD AFFECT PROJECT IMPACTS

The following policies from *The Village at Squaw Valley Specific Plan* (Squaw Valley Real Estate, LLC 2015) are applicable to the evaluation of hydrology and water quality effects:

Open Space

- **Policy OS-4**: Protect and improve water quality with site-specific stormwater Best Management Practices (BMPs) that slow the delivery of water to receiving channels and offer treatment through filtration, nutrient uptake, and sediment sequestration. This will include incorporation of stormwater drainage into landscaped and open space areas, using measures such as vegetated bioswales, rain gardens, naturalized channels, and floodplain systems, in addition to traditional stormwater treatment structures.
- **Policy OS-6**: Protect Squaw Creek by providing an appropriate open space corridor, and limiting activities to those that do not degrade water quality or the stream and riparian habitat within the corridor. Appropriate activities within the Squaw Creek corridor may include sediment collection and/or sediment removal facilities and equipment, minor streambed alterations to improve flood control, and habitat or water quality, trail construction, fishing, and signage and other interpretive elements.

Squaw Creek Corridor

- **Policy SC-1**: Squaw Creek and the adjacent riparian area shall be designated Village-Conservation Preserve. Activities within the corridor shall be limited to those that improve the creek and/or recreational amenities for celebration and public enjoyment of the restoration effort. In addition to measures designed to protect and enhance the creek and riparian corridor, minor improvements that have minimal impact, such as trails, shall be allowed within the corridor.
- **Policy SC-2**: No buildings or structures over 400 square feet shall be constructed within the Squaw Creek riparian corridor, other than linear park and trail related facilities such as interpretive panels or kiosks, observation decks, restrooms, and picnic areas.
- **Policy SC-3**: Roads, bridges, paths and other related facilities located within the riparian corridor shall not encroach on the creek channel, and shall be designed to minimize impacts on the creek habitat and stormwater capacity.

Wetlands

- **Policy WE-1**: Development shall avoid wetlands located within the 100-year floodplain to the extent feasible.

- **Policy WE-2**: To the extent feasible, wetlands shall be avoided, unless relocation and/or modification of the wetland would increase the functional value of the wetland and/or receiving waters.
- **Policy WE-3**: When wetlands cannot be avoided, a mitigation plan shall be developed before site disturbance.
- **Policy WE-4**: Relocation, reconstruction and other changes in wetlands shall be designed in consultation with the Lahontan Regional Water Quality Control Board and the Army Corps of Engineers, and shall meet all applicable state and federal regulations.
- **Policy WE-5**: The drainage system shall be designed to enhance the habitat value and water quality along the southern and eastern edges of the Plan Area.
- **Policy WE-6**: BMPs, LIDs, and other measures shall be employed to ensure that water quality is not degraded in Squaw Creek or preserved wetlands.

IMPACT ANALYSIS METHODOLOGY

Evaluation of hydrologic and water quality impacts was based on a review of previous studies and project-specific studies that document water resource and stream corridor conditions and address possible effects of the project. The information obtained from these sources was reviewed and summarized to establish existing conditions and to independently identify potential environmental impacts, based on the standards of significance presented above. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations.

This section addresses effects on hydrology and water quality from the proposed project alone. The groundwater modelling and WSA developed for this project address the effects of combined groundwater withdrawals from the proposed project and foreseeable future development in Olympic Valley; however, the effects of this cumulative development within the Olympic Valley are addressed in Section 18.1, “Cumulative Impacts.”

13.3.3 Issues or Potential Impacts Not Discussed Further

As stated in the Initial Study prepared for the project (included as Appendix A), some potential hydrology and water quality issues will not be addressed in the DEIR. The proposed project would not place any structures, including housing, within a 100-year flood hazard area. The project is not within a watershed that could experience flooding from levee or dam failure. The project is not located near any large water body that could result in inundation by seiche or tsunami. Therefore, these impacts are not evaluated further in this DEIR. Impacts from landslides and mudflows are evaluated in Chapter 12, “Soils, Geology, and Seismicity.”

13.3.4 Impact Analysis

Impact 13-1: Well and sewer line construction and abandonment risks to groundwater and surface water quality.

Implementation of the proposed project would result in the construction new water supply wells and destruction of some existing wells, and abandonment of some existing sewer lines. If wells are not properly sited, constructed, or destroyed, or if sewer lines are not properly abandoned, contamination of groundwater and/or discharge of contaminated groundwater to surface water could result. Various codes and regulations address the protection of water quality during these activities. If these codes and regulations are not properly adhered to, this impact would be **potentially significant**.

To satisfy water demands for the proposed project, new groundwater wells will need to be constructed, and some wells may need to be destroyed (Farr West Engineering et al. 2014). If a well is not correctly constructed or if the proper procedures are not followed during well destruction, the potential for contaminants to enter and/or move through the groundwater system is increased. However, new well construction and existing well destruction would be performed in compliance with various codes and regulations that require the protection of water quality during these activities, including Division 1 and 7 of the California Water Code, Division 104 of the California Health and Safety Code and the Placer County Water Well Construction Ordinance and Placer County Code, Chapter 13 Public Services.

The physical proximity of wells relative to certain element of utility infrastructure can lead to groundwater contamination if nearby infrastructure element were to leak. Potential sources of contamination would include underground and aboveground petroleum storage tanks, petroleum pipelines, sewer lines, and stormwater pipelines. DWR provides criteria in guidance bulletins for separation of wells from potential contamination sources to minimize the potential for contamination (available at http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/well_standards_content.html). The following is a summary of applicable elements of the criteria:

1. All water wells shall be located an adequate horizontal distance from known or potential sources of pollution and contamination, including above and below ground tanks and pipeline for storage and conveyance of petroleum products or other chemicals.

2. Above ground and underground storage tanks must maintain a minimum horizontal separation of 100 feet from water wells.

3. Sewer and storm drainage pipelines and features must maintain a minimum horizontal separation of 50 feet from water wells.

4. Sewer and storm drainage pipelines in public right of ways must maintain a minimum horizontal separation of 10 feet from water lines.

If these separation criteria cannot be met when new wells are installed, or when applicable utility infrastructure is installed in the vicinity of existing wells, then a substantial risk of groundwater contamination could occur.

To meet sewer system collection and transmission needs for the proposed project, some of the existing system would be retained, but six segments would need to be upsized at about the 30 percent build out level and another 22 segments would be upsized at the 60 percent build out level (MacKay & Somps 2014b, 2014d). If sewer transmission systems were to leak, the released effluent could adversely affect water quality. However, as interim sewer improvements are needed, they are required to be designed to meet SVPSD standards and California DHS regulations, and be constructed in compliance with Placer County DPW General Specifications Section 71 (Placer County 2005) and all other applicable law at the time, leading to sewer systems meeting set standards for sound construction and prevention of leaks. The proposed infrastructure phasing plan (MacKay & Somps 2014c) indicates that several segments of existing sewer line would be abandoned as the upgraded, upsized segments are installed. If sewer line segments are not properly abandoned, or if abandoned sewer line segments within the stream restoration corridor could be vulnerable to erosion, degradation of groundwater or surface water could result. However, sewer line abandonment or removal associated with proposed sewer system construction shall be in conformance with Section 71 of the Placer County Department of Public Works General Specifications (Placer County 2005) and all other relevant laws at the time that address proper abandonment practices that are protective of groundwater and surface water quality.

Because of the various existing codes and regulations that require measures to protect water quality during the design, installation, and destruction of wells and sewer lines, there is a very low risk that water quality would be adversely affected or that any water quality standards would be violated by these activities. Nonetheless, this impact would be **potentially significant** if these measures are not properly implemented.

Mitigation Measure 13-1: Implement water and sewer infrastructure water quality protection measures.

The project applicant shall implement the following actions, including standard mitigation measures as required by the County, to protect water quality during the design, installation, and destruction/abandonment of wells and sewer lines:

- Prior to providing final authorization for drilling of a well (e.g., initiating an applicant directed test well, providing access to property for a well drilled by another entity, final agreement to fund a well drilled by another entity), the project applicant shall confirm that required fees are paid and a drilling permit is obtained from Environmental Health Services for each well and that the location of the well meets applicable DWR criteria for distances from utility infrastructure (e.g., stormwater, sewer, and petroleum pipelines and petroleum storage tanks).

- Prior to approval of a Final Subdivision Map, the applicant shall provide to Placer County Environmental Health Services final design drawings indicating that separation between any planned or existing wells in the map area and any planned or existing stormwater, sewer, and petroleum pipelines and petroleum storage tanks is sufficient to meet applicable DWR separation requirements.

- Prior to approval of a Final Small-Lot Subdivision Map, complete or provide for the proper destruction under permit and inspection, of existing wells and abandonment of sewer lines located within the project site.

- Prior to approval of an Improvement Plan that includes the need for well destruction or sewer line abandonment, well destruction and/or sewer line abandonment shall be shown on the Improvement Plans; the actions shall be included in the engineers' estimate of costs for subdivision improvements; and the Improvement Plan will include a Plan Note indicating proper destruction, under permit and inspection, of the existing wells and abandonment of sewer lines located within the Improvement Plan area.

Significance after Mitigation

Implementation of Mitigation Measure 13-1 would reduce this impact to a **less-than-significant** level because new wells, well destruction, and sewer line abandonment would be conducted under the review and approval of Placer County, helping ensure that existing codes and regulations that require measures to protect water quality are properly implemented during these activities.

Impact 13-2: Construction phase degradation of surface and groundwater water quality.

Implementation of the proposed project will require multiple phases and several seasons of construction activities that involve grading, earth moving, excavation, underground infrastructure installation, building construction, and crossings of the stream corridor; much of this construction activity will occur in locations overlying the unconfined aquifer. During each episode of project construction, portions of the plan area would be exposed to wind and water erosion, including stormwater and snowmelt runoff, and excavations may unearth subsurface materials, existing infrastructure, or groundwater that poses a risk of contamination to surface or groundwater water quality. This impact would be **potentially significant**.

Implementation of the Specific Plan will require multiple phases and several seasons of construction activities that involve grading, earth moving, excavation, infrastructure installation, and building construction. During each episode of project construction, portions of the plan area would be subject to wind, rainfall, stormwater runoff, and snowmelt, and excavations may expose or disturb subsurface materials or groundwater that pose a risk of contamination to surface or groundwater water quality.

Construction activities could result in soil erosion, siltation, or local flooding related to surface runoff. Specifically, construction activities such as grading could result in disturbance of soils and sediments that could be carried into drainage conveyances or directly to natural water bodies (including Squaw Creek, already impaired by excessive sedimentation) during storm events. Further, accidental spills of construction-

related fuels, oils, hydraulic fluid, and other hazardous substances could contaminate stormwater flows, resulting in a reduction in stormwater quality on or downstream of the site.

Improvement Plans provided to the County prior to authorization for construction will conform to provisions of the County Grading Ordinance (Article 15.48, Placer County Code) and the Stormwater Quality Ordinance (Article 8.38, Placer County Code) that are in effect at the time of submittal. The preparation of and compliance with a SWPPP will be part of the project's NPDES construction stormwater quality permit, issued by the LRQWCB. Before Improvement Plan approval, Placer County Engineering and Surveying Department will require evidence of the state-issued Waste Discharge Identification number or filing of the Notice of Intent and fees. The SWPPP includes strategies to manage stormwater from the construction site and treat it before being discharged from the site. The SWPPP is a live document that has customized BMPs for each construction site and project. Some of the infrastructure, recreation, and the creek restoration elements of the proposed project would be in, or immediately adjacent to, surface water bodies, increasing their vulnerability to inadequate or improper BMPs. However, each construction phase of the proposed project would have discrete permits and stormwater management requirements consistent with all federal, state, and local laws applicable at the time. The site-specific SWPPPs developed for each implementation phase and construction site will have protocols to be followed and monitored during construction, including effective response actions if necessary. These requirements would substantially minimize the risk of residual construction phase stormwater quality impacts and if implemented properly these construction activities are not anticipated to result in any violations of water quality standards or waste discharge requirements or contaminate a public water supply.

Implementation of components of infrastructure and buildings during various phases of the proposed project could require excavation in the vicinity of contaminated groundwater and/or soil. Although all known contaminated sites have been remediated as necessary and site closure has been completed and no restrictions were posed under the closure conditions (Kennedy/Jenks 2013), it is possible that currently undocumented contaminant locations could be encountered). Construction could disturb contaminated materials that are unsuitable for reuse, directly pump (during dewatering) contaminated groundwater, or change the rate and direction of flow of contaminated groundwater (during dewatering). If contaminated materials and water are not properly identified and disposed of, contamination of surface water or new areas of groundwater contamination could result. Although compliance with all applicable laws would help minimize the potential risks, the historical on-site contamination and vulnerability of existing and future water supply wells increases the need for prevention and protection. Therefore, there is the potential to violate a water quality standard or waste discharge requirement or contaminate a public water supply.

Construction to relocate, remove, or replace sewer lines, including the crossings under Squaw Creek at Squaw Valley Road, Village East Road, and Far East Road (sewer segments 'K', 'P' and 'R') could involve traditional open trenching and in-situ pipe bursting/relining techniques (MacKay & Somps 2014e). According to the Infrastructure Phasing Plan (MacKay & Somps 2014c), Squaw Valley Road and Village East Road crossings would be implemented at the same build out phase as the creek corridor restoration and would not have existing sewer pipes to remove or abandon. Therefore, standard construction practices and County review and approval measures for both the sewer line installation and creek restoration would be adequate to prevent residual impacts (i.e., sewer lines installed appropriately and creek restoration coordinated with sewer line work to ensure restoration activities do not damage sewer lines). However, the lowering and replacement of the existing sewer crossing downstream of the Far East bridge would not occur until recordation of the Final Map that creates the 900th bedroom, after the creek restoration has been constructed and in place for an unknown period of time (restoration of the Trapezoidal Channel and the Olympic Channel would be complete upon recordation of the Final Map that creates the 600th bedroom). This situation poses potential water quality risks during or following the creek restoration construction as the existing active sewer pipeline would still be in place at this creek crossing during restoration and the pipe has little earthen cover and a degraded concrete encasement exposed in the bed of the active stream channel. The existing sewer pipe could be damaged during restoration excavation and grading over the buried pipe sections or during installation of boulders intended to add protection to the exposed section. If damage to the existing line resulted in a leak, this could violate water quality standards for Squaw Creek.

Because encountering existing hazardous materials during construction and potential damage to the existing sewer line during creek restoration could result in violations of water quality standards or waste discharge requirements, this impact would be **potentially significant**.

Mitigation Measure 13-2a: Implement standard construction water quality protection measures.

The project applicant shall implement the following standard mitigation measures as required by the County to help ensure that water quality protection measures are implemented properly and to generally protect water quality during construction and over the project life:

- The project applicant shall prepare and submit Improvement Plans, specifications, and cost estimates (per the requirements of Section II of the Land Development Manual [LDM] that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval. The plans shall show all physical improvements as required by the conditions for the project as well as pertinent topographical features both on and off site. All existing and proposed utilities and easements, on site and adjacent to the project, which may be affected by planned construction, shall be shown on the plans. All landscaping and irrigation facilities within the public right-of-way (or public easements), or landscaping within sight distance areas at intersections, shall be included in the Improvement Plans. It is the project applicant's responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the Design/Site Review process and/or Development Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed prior to submittal of Improvement Plans. Record drawings shall be prepared and signed by a California Registered Civil Engineer at the applicant's expense and shall be submitted to the ESD in both hard copy and electronic versions in a format to be approved by the ESD prior to acceptance by the County of site improvements.

- The Improvement Plans shall show all proposed grading, drainage improvements, vegetation and tree removal and all work shall conform to provisions of the County Grading Ordinance (Ref. Article 15.48, Placer County Code) and Stormwater Quality Ordinance (Ref. Article 8.28, Placer County Code) that are in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the Development Review Committee (DRC). All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the ESD concurs with said recommendation. Fill slopes shall not exceed 1.5:1 (horizontal: vertical).

- The project applicant shall revegetate all temporarily disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization before, during, and after project construction. Soil stockpiling or borrow areas, shall have proper erosion control measures applied for the duration of the construction as specified in the Improvement Plans. Provide for erosion control where roadside drainage is off of the pavement, to the satisfaction of the ESD.

- The project applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate for winterization and permanent erosion control work prior to Improvement Plan approval to guarantee protection against erosion and improper grading practices. Upon the County's acceptance of improvements, and satisfactory completion of a one-year maintenance period, unused portions of said deposit shall be refunded to the project applicant or authorized agent.

- If, at any time during construction, a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC/ESD for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the DRC/ESD to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body.

- The project applicant shall prepare and submit a final drainage report in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Storm Water Management Manual that are in effect at the time of submittal, to the Engineering and Surveying Division for review and approval. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: a written text addressing existing conditions, the effects of the improvements, all appropriate calculations, a watershed map, increases in downstream flows, proposed on- and off-site improvements and drainage easements to accommodate flows from this project. The report shall identify water quality protection features and methods to be used both during construction and for long-term post-construction water quality protection. Best Management Practice measures shall be provided to reduce erosion, water quality degradation, and prevent the discharge of pollutants to stormwater to the maximum extent practicable.

- The Subsequent Conformity Review Process and the Improvement Plans shall show that water quality treatment facilities/BMPs shall be designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development/Redevelopment, and for Industrial and Commercial (or other similar source as approved by the ESD such as the guidance of the Erosion & Sediment Control Guidelines for Developing Areas of the Sierra Foothills and Mountains (or other similar source as approved by the ESD). Construction (Temporary) BMPs for the project include, but are not limited to: straw mulch, fiber rolls, silt fence, sedimentation basins, drain inlet protection, stabilized construction accesses and material management.

- There shall be no grading or other disturbance of ground between October 15 of any year and May 1 of the following year, unless a Variance has been granted by the Lahontan RWQCB and the ESD.

Mitigation Measure 13-2b: Implement additional construction water quality protection measures.

Prepare a Hazardous Materials Contingency Plan

Prior to issuance of the first grading permit, provide to EHS a hazardous materials contingency plan. The plan will describe the necessary actions that would be taken if evidence of contaminated soil or groundwater is encountered during construction. The contingency plan shall identify conditions that could indicate potential hazardous materials contamination, including soil discoloration, petroleum or chemical odors, presence of USTs, or buried building material. Compliance with the plan will be included as a requirement within all construction bid specifications.

If at any time during the course of constructing the proposed project evidence of soil and/or groundwater contamination with hazardous material is encountered, the project applicant shall immediately stop the project and contact Placer County EHS Hazardous Materials Section. The project shall remain stopped until there is resolution of the contamination problem (through such mechanisms as soil or groundwater sampling and remediation if potentially hazardous materials are detected above threshold levels) to the satisfaction of Placer County EHS and to the Lahontan RWQCB.

The plan, and obligations to abide by and implement the plan, shall be incorporated into the construction and contract specifications of the project.

Sample Excavated Site Soils Intended for Reuse in Restoration of Squaw Creek

Final design plans and specifications for creek restoration activities shall require sampling of any excavated soils taken from outside the Squaw Creek or Olympic Channel corridors that would be reapplied within the Squaw Creek or Olympic Channel corridors, or any other surface water. Only soils that do not have potentially hazardous materials in excess of regulatory thresholds will be used for creek restoration. If any contaminated materials are found, they will be separated and properly transported and disposed of at legally permitted, off-site disposal facilities.

Prepare a Construction Dewatering and Discharge Plan

A dewatering and discharge plan shall be developed and submitted to the Lahontan RWQCB for approval prior to initiating any excavation activities. The plan will be implemented during project construction to address protection of groundwater resources and surface water quality in the event that groundwater is intercepted during project activities. The dewatering and discharge plan shall provide methods to protect groundwater during excavations from potential contaminant releases during equipment use and refueling, such as specific spill control and clean up and response measures in the vicinity of excavations.

Dewatering operations and creek and river diversions are authorized under the NPDES California General permit as long as activities conform to the following requirements:

- Construction site dewatering waste must not be discharged to surface waters or tributaries thereto, including municipal separate storm sewer systems.
- Before conducting dewatering or clear water diversion activities, the Discharger must prepare a dewatering/diversion plan as part of the SWPPP for review and approval by the Lahontan RWQCB.
- The Dewatering/Diversion plan must have the following minimum elements:
  - location of the discharge area or outfall and name of receiving water;
  - a description of the discharge or diversion method and plan drawings;
  - the frequency and estimated volume and rate of discharge;
  - expected pollutants and concentration in discharge, and control measures to be applied and maintained for pollutant control; and
  - planned effluent and/or receiving water monitoring (visual and other).

Protect Vulnerable Far East Bridge Sewer Pipeline Crossing During Squaw Creek Restoration

Final design, specifications, and methods for the physical relocation and lowering of the existing Far East Bridge sewer pipeline crossing shall be coordinated with and implemented prior to, or concurrently with, the Squaw Creek Restoration Plan to avoid the increased potential for damage to the existing pipe during restoration implementation.

Or,

Improvement plans and specifications for the Squaw Creek Restoration Plan shall include special provisions to ensure that pre-construction verification of the existing Far East Bridge sewer crossing location, depth below ground surface, and condition across the entire proposed excavation area is performed; appropriate vertical and lateral buffers to avoid travel of heavy equipment over the pipe are specified and adhered to; specific rock placement techniques to reduce potential impact forces on the pipe are required and monitored; and, temporary limits on raw sewage conveyance and/or emergency shut off systems are in place and functional while excavations for creek restoration are underway in the vicinity of the pipe.

Significance after Mitigation

Implementation of Mitigation Measures 13-2a and 13-2b would reduce this impact to a **less-than-significant** level because it would ensure that construction phase, site-specific risks to water quality that might result from improper implementation of water quality protection measures, discovery and disturbance of contaminated soil or water, and ground disturbance in the vicinity of the existing Far East bridge sewer line crossing would be fully addressed and avoided.

Impact 13-3: Temporary surface water diversions and dewatering of streams.

Implementation of some of the storm drainage and sewer line improvements and the creek restoration elements of the Specific Plan may require temporary diversions of surface water within Squaw Creek and/or the Olympic Channel for short periods of time during construction. These activities would temporarily dewater portions of the stream channel(s). This hydrologic impact would be **less than significant**.

Installation of new storm drainage outfalls along the Squaw Creek corridor, installation or modifications of sewer line undercrossings of the creek, and construction of the Squaw Creek Restoration Plan all require construction within the active channel(s) on the site. The duration of specific construction activity within the active channel(s) would be relatively limited, on the order of hours to days for the storm drainage and sewer features and days to weeks for the creek restoration. Additionally, the intermittent hydrology reduces typical streamflow during normal summer and fall construction periods to near zero. Therefore, it is likely that only a small amount of surface water, if any, would need to be diverted around or pumped out of surface water work areas, and the total duration of dewatering would be limited for any particular construction event.

Standard NPDES permit conditions and typical requirements of the CDFW streambed alteration agreement would include measures to bypass diverted streamflow around the work area and discharge safely back to the channel downstream of any construction activities, limiting dewatered streambed reaches to the construction work area.

Although bypass diversions will eliminate surface water within the active construction area(s), these diversions will be of limited duration, occur during the low flow season, and encompass areas of the streambed that could be dry under existing conditions. The diverted flow will be released downstream of the work area and there would not be a net reduction in flow downstream, or any substantial alteration in the existing drainage pattern of the waterway. The potential impacts of dewatering and diversions on aquatic life are further addressed in Chapter 6, "Biological Resources'" (see Impact 6-12). The potential water quality effects of project construction, including construction in stream corridors and wetlands, are addressed in Impact 13-2, above.

Because instream construction work would be completed in a manner so as not to result in a substantial alteration in the existing drainage pattern of a waterway or surface water body, this impact would be **less than significant**

Mitigation Measures

No mitigation is required.

Impact 13-4: Long-term land cover changes and increased groundwater production effects on groundwater patterns, recharge, and aquifer storage in the Olympic Valley Groundwater Basin.

Implementation of the proposed project would result in a net increase in the area of impervious surfaces (e.g., paved surfaces and buildings) by 0.27 acre in the main Village area, but shift impervious surface within different elevation zones, with a net 3.16 acre increase for the zone below 6,200 feet elevation, a 2.89 acre decrease in the 6,200 to 6,300 feet zone, and zero increase above 6,300 feet. This minor total increase in impervious surface and the net reduction in the intermediate elevation zone would have a **less-than-significant** impact on potential groundwater recharge. Excavation of sub-grade facilities and infrastructure into the groundwater aquifer and/or groundwater recharge areas could result in a net reduction of aquifer storage capacity and/or an obstruction to groundwater recharge. However, geotechnical studies indicate proposed sub-grade facilities would not be large enough, deep enough, or in a location that would generate this effect. Implementation of the proposed project would rely on groundwater as its primary water source, and is estimated to require 234 acre feet per year at buildout, a 28 percent increase over the existing average annual production volume of 842 acre feet within the Olympic Valley. While the project would increase demand and groundwater pumping and could result in changes in groundwater flow paths and

cause local draw-downs of varied durations, available studies indicate that it would not substantially reduce the aquifer storage relative to capacity or result in a long-term lowering of the local groundwater table. However, this conclusion is based on evaluation and modelling of a particular wellfield configuration with certain operating parameters as identified in the WSA. The ultimate configuration and/or operating procedures could differ from those evaluated in the WSA. Thus, there is a potential for the project to adversely affect groundwater availability and well operations. This would be a **potentially significant** impact.

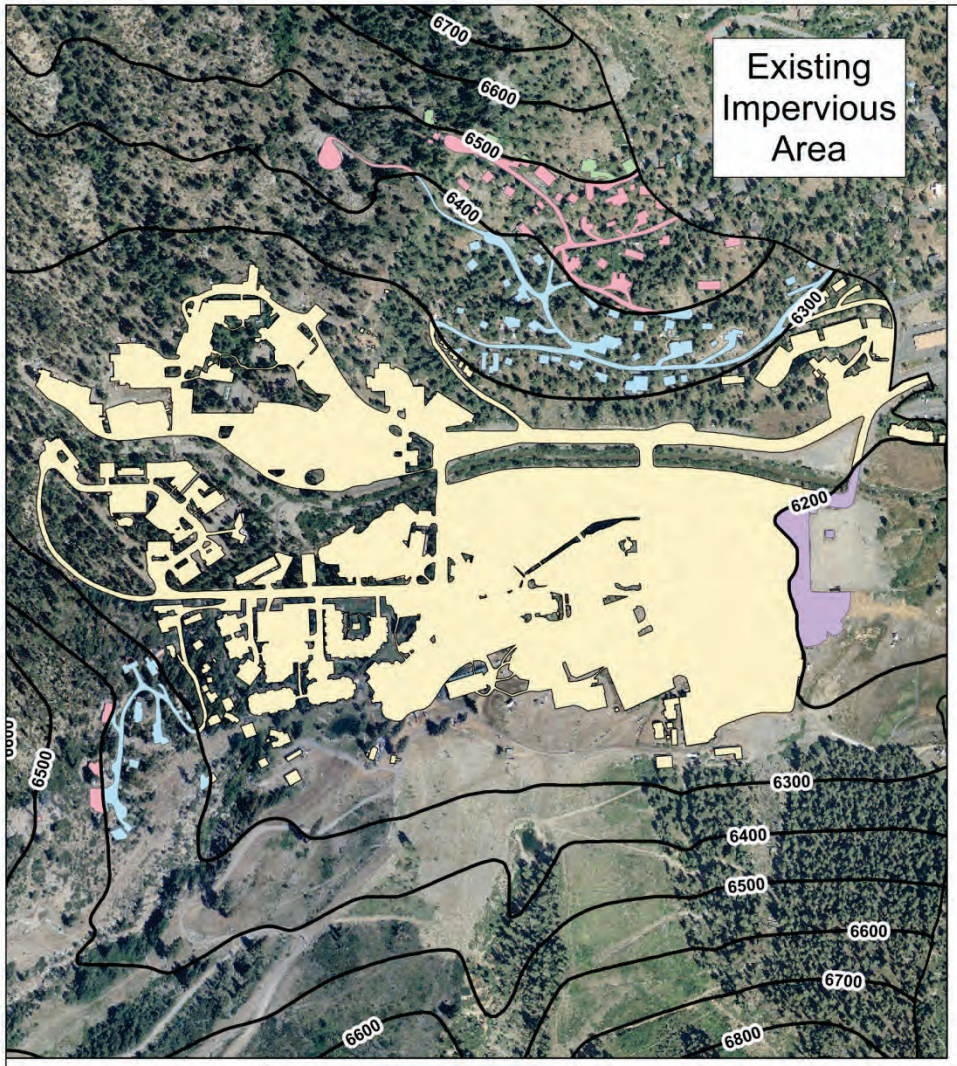
GROUNDWATER RECHARGE AND STORAGE

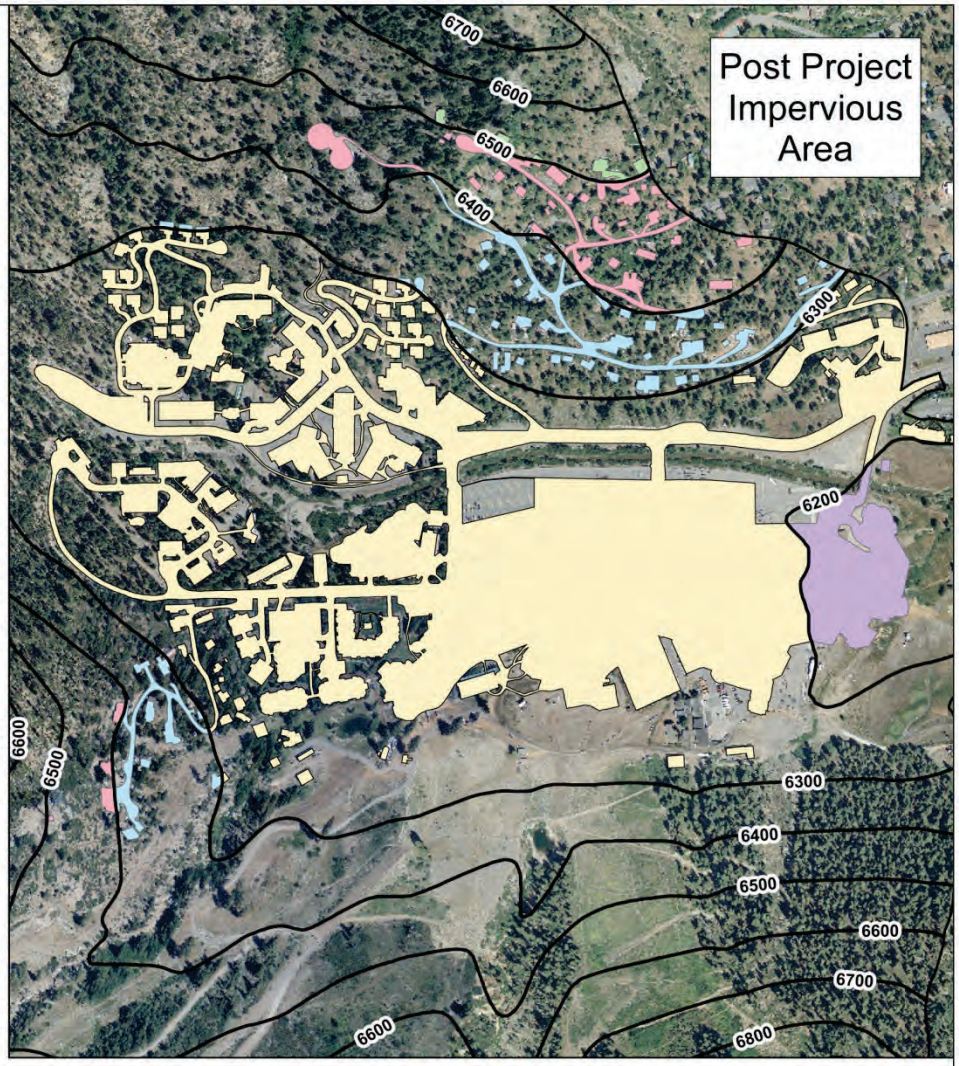
The proposed project would increase the total area of impervious surfaces by 0.25 acres and modify the elevation range of the footprint of impervious surfaces within the main Village area and adjacent lower slopes (Taylor, pers. comm., 2014) (Exhibit 13-16). An increase of 3.16 acres of impervious surfaces is proposed below 6,200 feet elevation, located at the east end of the existing parking lots. This is the largest change in impervious area, but this elevation zone includes areas that already have disturbed and compacted soils, so the effect on infiltration and percolation would be moderated. A decrease of 2.91 acres of impervious surfaces would occur in the zone between 6,200 and 6,300 feet elevation, primarily from relocation of existing maintenance buildings away from the toe of the mountain slope and development of the snow beach in this location. No increase in impervious surfaces would occur above 6,300 feet, so mid-elevation and lower mountain slope recharge areas identified by Moran (2013) would not be affected.

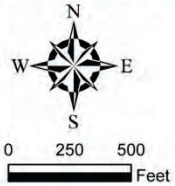
The proposed project would create impervious surfaces on the existing undeveloped East Parcel, adding approximately 4.24 acres of impervious surfaces. While this is a large relative increase looking strictly within the boundaries of this currently undeveloped site, it is not in a groundwater recharge zone of importance to the OVGB.

The current development proposal includes sub-grade (i.e., underground) parking associated with buildings in Lots 13 and 14 (Lot numbers are shown in the Concept Plan provided in Exhibit 3-5). Portions of Lots 13 and 14 occur in currently undeveloped areas that overlap with identified groundwater recharge zones. Excavation of sub-grade facilities and infrastructure into the groundwater aquifer and/or groundwater recharge areas could result in a net reduction of aquifer storage capacity and/or an obstruction to groundwater movement or recharge. However, geotechnical studies (Todd Groundwater 2015) indicate proposed sub-grade facilities are not of appropriate size, depth, or location to generate this effect. Groundwater in this area has been found at a depth of approximately 14.2 feet below ground surface, which is the shallowest recorded depth to water. The deepest excavation for sub-grade parking would be 16 feet, resulting in a maximum displacement of 1.8 feet of groundwater. Assuming a high storativity of 15 percent, this maximum displacement equates to approximately 2.8 acre feet of groundwater. The total previously-estimated aquifer storage capacity is 3,600 to 4,600 acre feet, which makes this maximum potential displacement 0.061 to 0.078 percent of the total aquifer volume (Todd Groundwater 2015). Therefore, these structures would not intersect the groundwater table and would not affect groundwater storage capacity or groundwater movement. These parking areas would be almost entirely underneath the buildings proposed for Lots 13 and 14; therefore, the evaluation of increases in impervious surface identified above would not be altered and these sub-grade structures would not affect groundwater recharge.

For the above reasons, impacts on aquifer storage and groundwater recharge would be **less than significant**.







Legend

- 100 ft Elevation Contours
- Impervious Area Below 6,200 ft
- Impervious Area Between 6,200 and 6,300 ft
- Impervious Area Between 6,300 and 6,400 ft
- Impervious Area Between 6,400 and 6,500 ft
- Impervious Area Between 6,500 and 6,600 ft

Pre and Post Project Impervious Area Estimate by Elevation Band

Area	Total Area in Elevation Band (acres)	Existing (acres)	(%)	With Proposed Project (acres)	(%)
Impervious Area Below 6,200 ft	14.01	1.95	13.9%	4.90	35.0%
Impervious Area Between 6,200 and 6,300 ft	154.74	66.22	42.8%	63.62	41.1%
Impervious Area Between 6,300 and 6,400 ft	82.03	4.33	5.3%	4.51	5.5%
Impervious Area Between 6,400 and 6,500 ft	99.16	2.81	2.8%	3.05	3.1%
Impervious Area Between 6,500 and 6,600 ft	97.04	0.33	0.3%	0.33	0.3%
Total Impervious Area	**446.98**	**75.64**		**76.41**	

MacKay & Somps
ENGINEERS PLANNERS SURVEYORS
1552 Eureka Road, Suite100, Roseville CA. 95661
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Source: Provided by MacKay & Somps in 2014

Exhibit 13-16

Comparison of Impervious Areas in the Main Village Area

ASCENT ENVIRONMENTAL

GROUNDWATER PUMPING

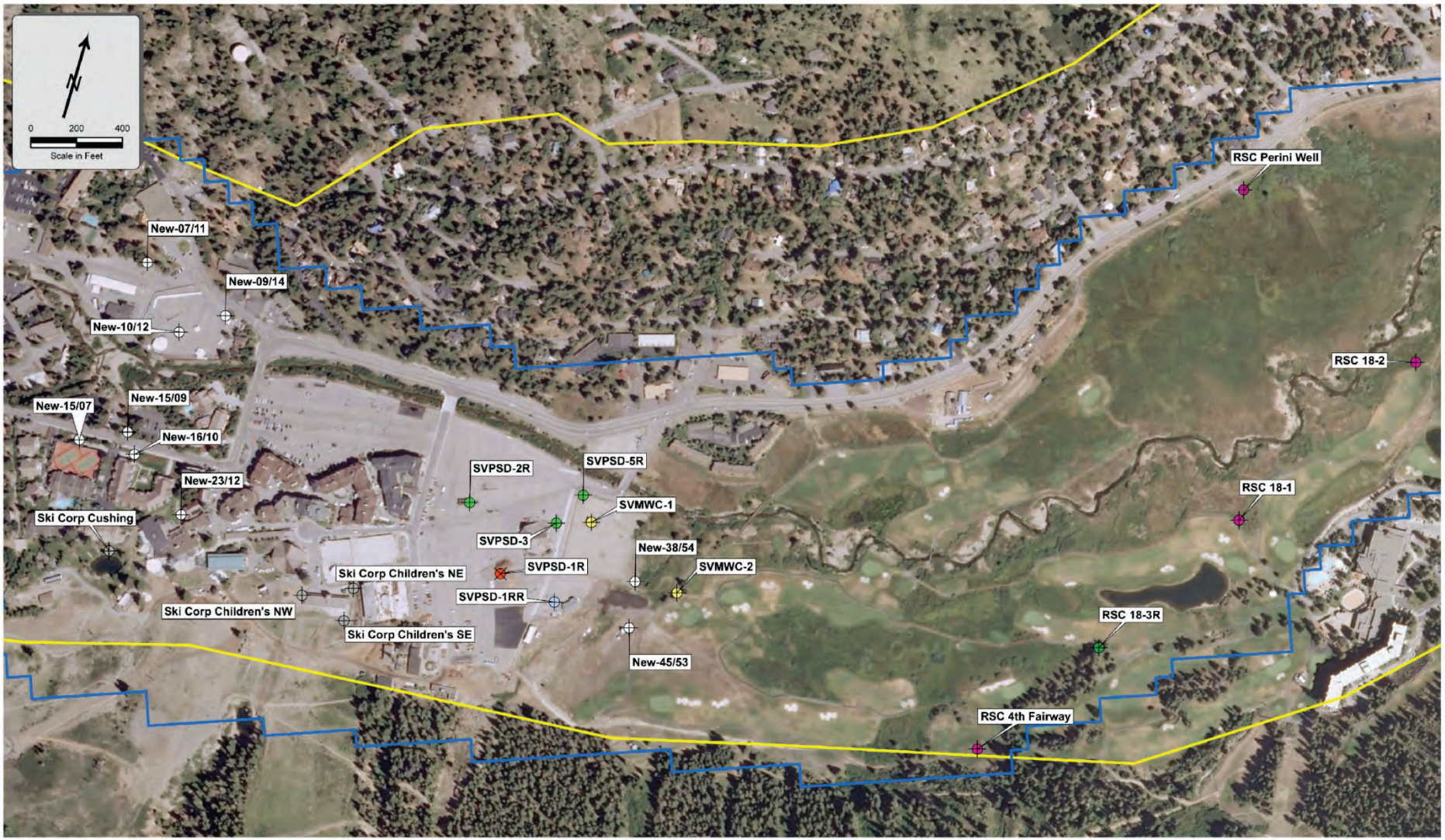
The plan area is located within the SVPSD service boundaries and the Specific Plan development will be provided water by groundwater obtained through the SVPSD or through creation of a mutual water company that would be established as part of the project. The SVPSD currently uses a MODFLOW computer model to simulate groundwater conditions in the OVGMB. The model was developed in 2001 and has been updated and calibrated to existing conditions. This model was used to simulate the operation of existing and all proposed new well locations (Exhibit 13-17) to meet project water supply demands in the year 2040.

The WSA (Farr West Engineering et al. 2014) estimates that a total of six new wells are required to meet both project and new non-project demands (i.e., other anticipated new development that would be constructed over the next 25 years in Olympic Valley; also see the discussion of Water Supply in Chapter 14, "Public Services and Utilities") in 2040. Nine potential new well locations were simulated to better show how the basin as a whole would function with increased demands. The nine locations were chosen based on geology, geometry, hydrostratigraphy, aquifer capacity and planned development in the western part of the OVGWB.

The calibrated groundwater model was used to simulate the difference between baseline and with-project conditions, including the percent saturation (Exhibits 13-18 and 13-19) and groundwater elevations (Exhibits 13-20 and 13-21) for the existing and proposed new wells. Although modelling shows that groundwater elevations could drop by as much as 3 to 4 feet (Table 13-11) as a result of groundwater withdrawals for the proposed project, the drops in percent saturation of the aquifer (i.e. the amount of water the aquifer holds relative to maximum capacity) are small and the average percent saturation remains high (Table 13-12).

Saturated thickness, which is used as an indicator of groundwater abundance, is the difference between the groundwater elevation and the bottom of the groundwater aquifer. The percent saturated thickness is the saturated thickness at the time of measurement divided by the maximum saturated thickness (i.e., the difference between the highest possible groundwater elevation and the bottom of the groundwater aquifer). Thus, "65 percent saturated thickness" means that, at that particular location, the aquifer is at 65 percent of its maximum capacity. A threshold of 65 percent saturated thickness was developed for assessing supply sufficiency based on operational considerations in existing SVPSD and SVMWC wells (hence the calling out of the 65% saturation thickness line in Exhibits 13-18 and 13-19). The WSA uses the criteria that average saturated thickness in the western municipal wellfield wells (existing and proposed new wells) may not fall below 65 percent for more than three consecutive months or more than four times total over the entire simulation period used in the water supply modelling. The use of 65 percent saturation is more conservative (protective) than the literature suggests is necessary; some reports indicate that no operational problems will arise if minimum saturation of the groundwater aquifer is 33 to 50 percent.

The WSA concludes that the increase in groundwater pumping to meet project demand would not cause any of the wells to drop below 65 percent saturation thickness for more than three consecutive months or more than four times during the study period. Therefore, groundwater withdrawals to support the proposed project would not substantially deplete groundwater supplies if the wellfield is operated as assumed. As identified above in the discussion of methods and assumptions, the groundwater modelling and WSA also address the effects of combined groundwater withdrawals from the proposed project and foreseeable future development in Olympic Valley. The effects of this cumulative development within the Olympic Valley on overall hydrology and water quality are addressed in Section 18.1, "Cumulative Impacts," and effects specific to domestic water supply are addressed in Chapter 14, "Public Services and Utilities."



Proposed New Well
PSD Replacement Well
Existing PSD Well to Remain
Existing MWC Well to Remain
Squaw Valley Resort Well
Resort at Squaw Creek 18-3R
Resort at Squaw Creek Irrigation/Snowmaking Well
Well To Be Destroyed
Active Model Area
Olympic Valley Groundwater Basin

Data Source: TODD Groundwater, July 2014

Cardno ENTRIX
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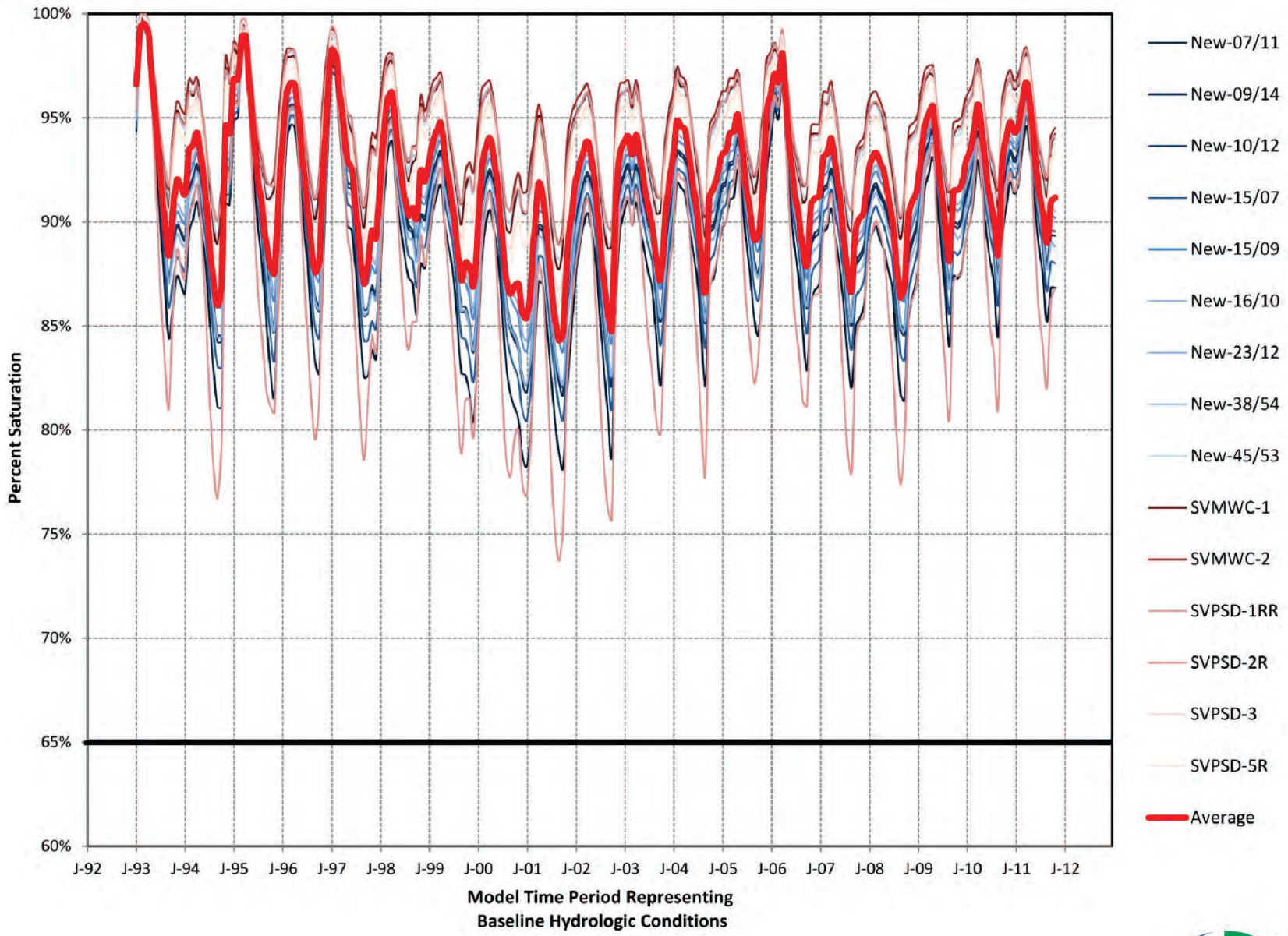
Exhibit 13-17 **Existing and Proposed Well Locations in the Model Area of the Olympic Valley Groundwater Basin**

ASCENT ENVIRONMENTAL



Data Source: Cardno Entrix Email Correspondence with TODD Groundwater, October 2014

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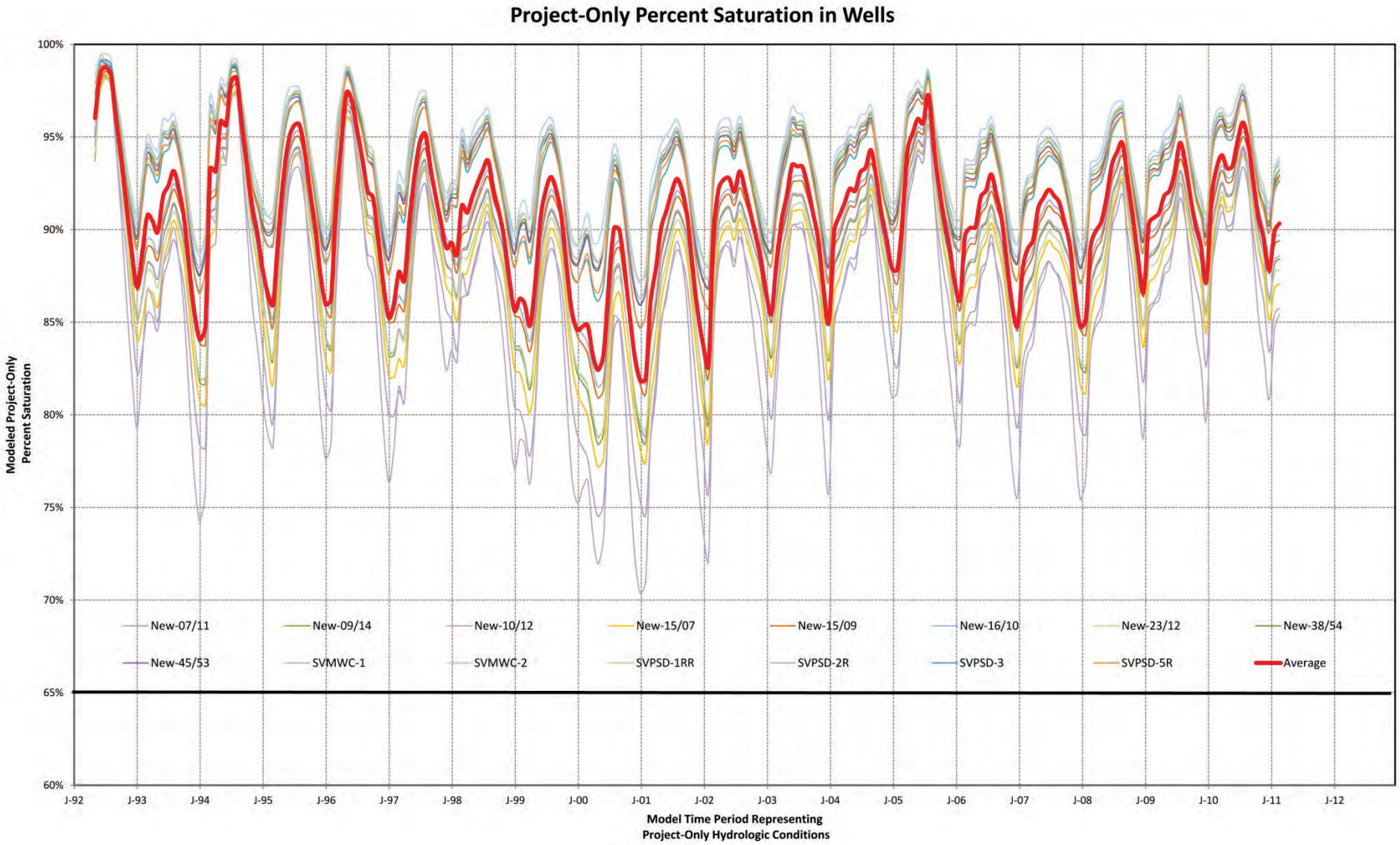
Exhibit 13-18 **Percent Saturation of Existing and Proposed Groundwater Wells: Simulated Baseline Conditions**

ASCENT ENVIRONMENTAL



Data Source: TODD Groundwater, October 2014

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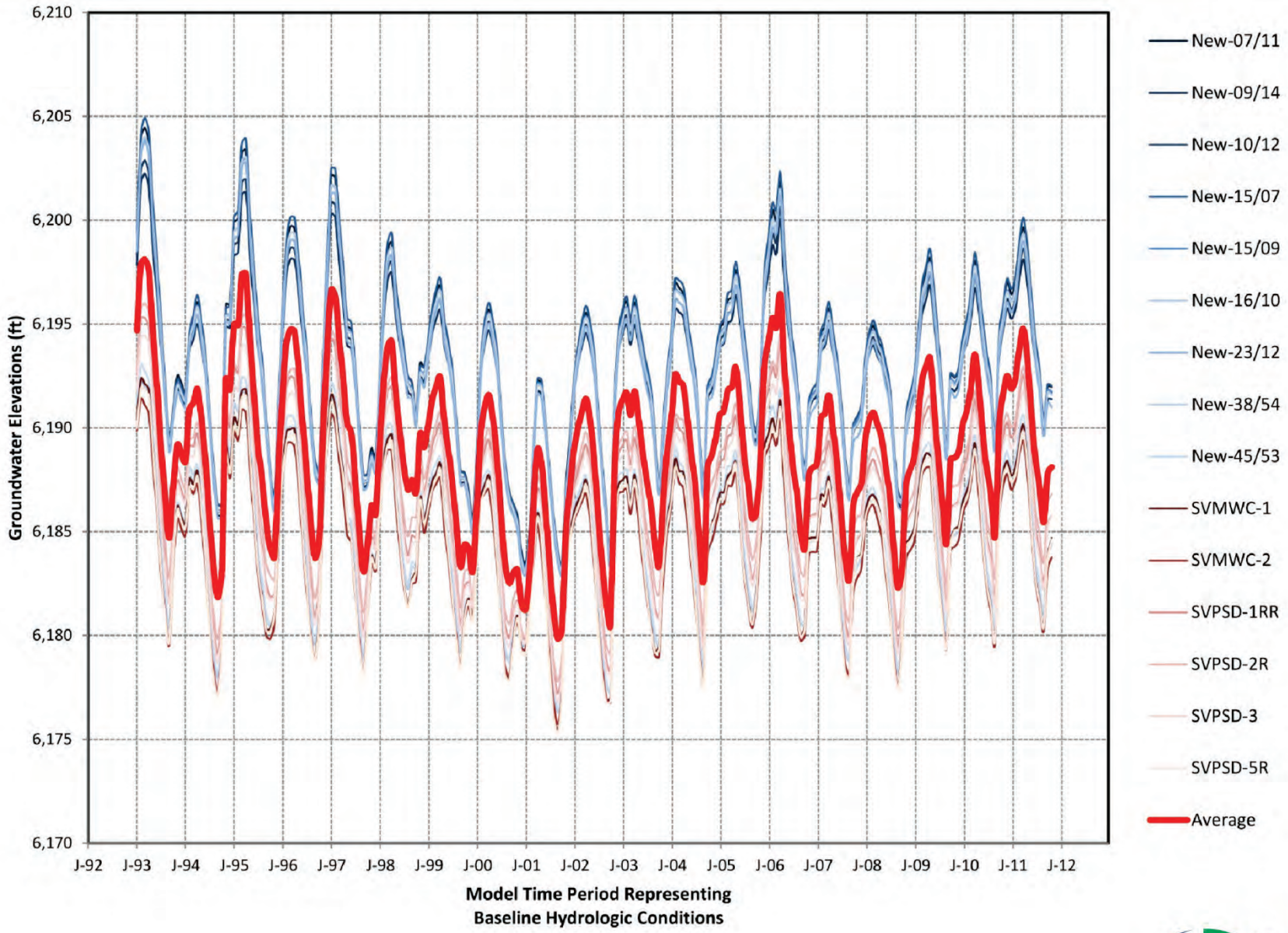
Exhibit 13-19 **Percent Saturation of Existing and Proposed Groundwater Wells: Simulated Project-Only Conditions**



Data Source: Cardno Entrix Email Correspondence with TODD Groundwater, October 2014

Cardno ENTRIX

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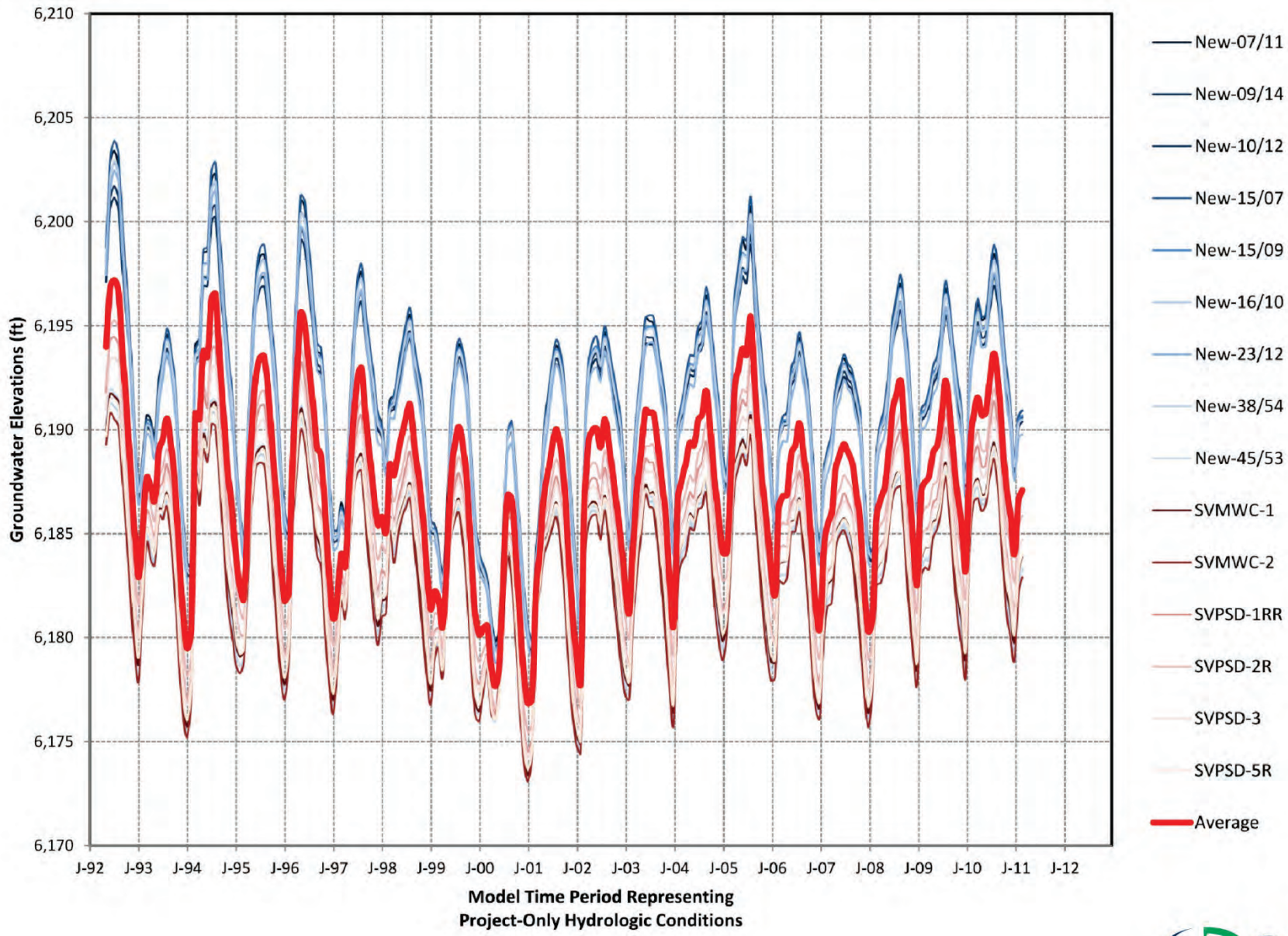
Exhibit 13-20 **Groundwater Elevation of Existing and Proposed Groundwater Wells: Simulated Baseline Conditions**

ASCENT ENVIRONMENTAL



Data Source: Cardno Entrix Email Correspondence with TODD Groundwater, October 2014

Cardno ENTRIX

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Exhibit 13-21 **Groundwater Elevation of Existing and Proposed Groundwater Wells: Simulated Project-Only Conditions**

ASCENT ENVIRONMENTAL

Table 13-11 Difference in Groundwater Elevation between Baseline and Project-Only Condition

Well Name	Type of Value[1]	Groundwater Elevation (feet)		
		Baseline	Project-Only	Decline
New-07/11	Avg	6193.3	6191.6	1.68
	Max	6204.4	6203.4	1.05
	Min	6183.5	6179.8	3.65
New-09/14	Avg	6192.4	6190.8	1.66
	Max	6202.2	6201.1	1.09
	Min	6183.0	6179.4	3.63
New-10/12	Avg	6192.8	6191.0	1.82
	Max	6202.9	6201.7	1.17
	Min	6183.2	6179.3	3.83
New-15/07	Avg	6193.5	6191.8	1.72
	Max	6204.9	6203.9	1.05
	Min	6183.3	6179.6	3.79
New-15/09	Avg	6193.1	6191.3	1.72
	Max	6203.9	6202.9	1.07
	Min	6183.2	6179.4	3.83
New-16/10	Avg	6193.0	6191.2	1.75
	Max	6204.0	6202.9	1.11
	Min	6183.2	6179.3	3.87
New-23/12	Avg	6192.5	6190.5	2.00
	Max	6203.8	6202.4	1.34
	Min	6182.9	6178.8	4.13
New-38/54	Avg	6184.8	6183.2	1.64
	Max	6192.2	6191.2	0.99
	Min	6176.3	6173.3	2.97
New-45/53	Avg	6185.1	6183.3	1.80
	Max	6193.0	6191.9	1.09
	Min	6176.5	6173.3	3.18
SVMWC-1	Avg	6184.6	6183.5	1.04
	Max	6192.4	6191.7	0.66
	Min	6175.4	6173.4	2.06
SVMWC-2	Avg	6184.2	6182.8	1.35
	Max	6191.4	6190.8	0.63
	Min	6175.7	6173.1	2.65
SVPSD-1RR	Avg	6186.5	6184.9	1.55
	Max	6195.3	6194.5	0.84
	Min	6177.2	6174.5	2.71
SVPSD-2R	Avg	6187.1	6185.9	1.20
	Max	6196.0	6195.3	0.71
	Min	6177.8	6175.4	2.33
SVPSD-3	Avg	6186.1	6184.6	1.50
	Max	6194.4	6193.5	0.93
	Min	6176.8	6174.2	2.60
SVPSD-5R	Avg	6184.4	6183.6	0.78
	Max	6191.9	6191.5	0.48
	Min	6175.3	6173.7	1.65

Notes: [1] Minimum, maximum, and average valued provided by the model outputs.

Source: Taylor, pers. comm., 2014

Table 13-12 Difference in Percent Saturation between Baseline and Project-Only Condition

Well Name	Type of Value[1]	Percent Saturation (%)		
		Baseline	Project-Only	Decrease
New-07/11	Avg	88%	86%	2%
	Max	99%	98%	1%
	Min	78%	74%	4%
New-09/14	Avg	90%	89%	2%
	Max	99%	98%	1%
	Min	82%	78%	3%
New-10/12	Avg	90%	89%	2%
	Max	99%	98%	1%
	Min	82%	79%	3%
New-15/07	Avg	89%	88%	2%
	Max	99%	98%	1%
	Min	80%	77%	3%
New-15/09	Avg	91%	90%	1%
	Max	99%	99%	1%
	Min	84%	81%	3%
New-16/10	Avg	92%	90%	1%
	Max	100%	99%	1%
	Min	84%	81%	3%
New-23/12	Avg	90%	88%	2%
	Max	99%	98%	1%
	Min	82%	79%	3%
New-38/54	Avg	94%	93%	1%
	Max	100%	99%	1%
	Min	88%	86%	2%
New-45/53	Avg	94%	93%	1%
	Max	100%	99%	1%
	Min	88%	86%	2%
SVMWC-1	Avg	94%	93%	1%
	Max	100%	99%	0%
	Min	88%	86%	1%
SVMWC-2	Avg	95%	94%	1%
	Max	100%	99%	0%
	Min	89%	87%	2%
SVPSD-1RR	Avg	95%	94%	1%
	Max	100%	99%	1%
	Min	89%	87%	2%
SVPSD-2R	Avg	87%	85%	2%
	Max	100%	99%	1%
	Min	74%	70%	3%
SVPSD-3	Avg	94%	92%	1%
	Max	100%	99%	1%
	Min	87%	85%	2%
SVPSD-5R	Avg	93%	93%	1%
	Max	99%	99%	0%
	Min	86%	85%	1%

Notes: [1] Minimum, maximum, and average valued provided by the model outputs.

Source: Taylor, pers. comm., 2014

There are spatial variations in the groundwater elevation impacts of importance to surface and groundwater relations (discussed further under Impact 13-5). However, at the basin-wide scale the decreases in projected percent saturation and groundwater elevation as modelled in the WSA would not have a significant adverse effect on the amount, location, and seasonality of groundwater recharge, groundwater storage, groundwater flow patterns, and total groundwater available for public supplies throughout the Olympic Valley. However, this conclusion is based on evaluation and modelling in the WSA of a particular wellfield configuration with certain operating parameters. If different wellfield construction or operations are ultimately implemented, groundwater availability and wellfied operations could be adversely affected, which could result in well performance issues. Therefore, this would be a **potentially significant** impact.

Mitigation Measure 13-4: Verify performance of groundwater pumping system.

The following mitigation measure would ensure that water supply provided to the proposed project is managed in a manner that is consistent with the system analyzed in the WSA. The WSA scenario was shown to be able to provide enough water to supply the existing, VSVSP and cumulative development within the operational parameters set by the SVPSD and without substantial adverse effects on water quality, Squaw Creek and/or biological habitat. Therefore, this measure focuses on ensuring that any changes to the scenario analyzed in the WSA are shown to have similar effects. In addition, the measure provides for coordination with the planning processes for groundwater in Olympic Valley. This measure mitigates the potential impacts addressed above, as well as other potential impacts addressed in Impact 13-5 (groundwater pumping changes to groundwater and surface water interactions), Impact 13-6 (reconfiguration of Squaw Creek and the Olympic Channel), Impact 6-1 (removal or degradation of sensitive habitats), Impact 6-3 (disturbances to nesting raptors and special-status birds), Impact 6-13 (long term impacts to fish and aquatic resources), and Impact 14-1 (increased demand for potable and irrigation water). This measure is written under the assumption that SVPSD would be the water provider to the proposed project; however, if a Mutual Water Company or other water provider is established that draws groundwater from the Olympic Valley aquifer, this mitigation measure would be applied to that entity.

The SVPSD is the agency that would operate wells providing groundwater to the VSVSP. The SVPSD is responsible for groundwater planning and management for most of the Olympic Valley, including the project area. The SVPSD currently implements a monitoring plan that includes collection and analysis of groundwater elevation and use data from monitoring and production wells throughout the western portion of the Groundwater Basin. In addition, the SVPSD is among the group of stakeholders that develops and implements the Groundwater Management Plan (GMP) for the Groundwater Basin. The existing GMP includes goals and objectives for groundwater management in the Basin. The SVPSD will include the proposed new wells in the existing monitoring plan and assess future groundwater use and conditions against the goals and objectives in the GMP. The SVPSD has also stated that it will prepare and implement a Pumping Management Plan, and may also elect to prepare a Groundwater Sustainability Plan (GSP) in accordance with the recent Sustainable Groundwater Management Act of 2014 (SGMA). Any SVPSD Pumping Management Plan will be included as a component of future updates to the GMP or new GSP for the Groundwater Basin. These plans would address, at a minimum, the following topics that relate to the adequacy of supply and the minimization of impacts due to groundwater pumping:

- Standard operating procedures for well operation;
- Criteria for new well siting and well destruction that seek to manage water supply throughout the year and in low- and high-water years;
- Criteria that prioritize expansion of the well field in the west side of the valley in areas that have less effect on surface water and streamflow;
- A monitoring and reporting program that documents the effects of groundwater pumping on Squaw Creek; and
- Use of data from the existing SVPSD monitoring program and any future monitoring.

Further, it is anticipated that, consistent with SVPSD's existing practice, the groundwater plans would be reviewed and updated on a periodic basis as new wells are installed, monitoring data is evaluated, and when assessments of groundwater plan effectiveness, groundwater model refinement, and additional groundwater assessment reports are completed.

Future groundwater plans, whether a Pumping Management Plan, GMP update, or GSP, will guide installation and operation of groundwater wells needed to supply the proposed project. Therefore, any changes to the well field analyzed in the WSA must be consistent with and incorporated into these groundwater plans.

The project applicant will enter into a Development Agreement with the SVPSD (or other water provider), which will specify the terms of service, including the roles and responsibilities of both parties.

In order to ensure that the use of groundwater for the proposed project is consistent with applicable groundwater plans and that withdrawals are managed in a manner that maintains adequate water supply and protects water quality, Squaw Creek, and biological habitat that is affected by groundwater levels, the following measures shall be implemented.

A. If the SVPSD (or other water provider) and/or applicant propose an individual well and/or all or a portion of a well-field to meet water demand associated with the project that would differ from the well field analyzed in the WSA, the new well(s) shall not be installed until the applicant provides additional modeling demonstrating that the following thresholds, or their functional equivalent, would be met. SVPSD shall be consulted during preparation of the analysis:

    i. Average saturated thickness in the western well-field wells does not fall below 65 percent for more than three consecutive months or more than four times total for the entire study period;

    ii. Drawdown from wells in proximity to the upper meadow (modelling Cells A through E) does not cause substantially more refugia pool drying than shown in the 2014 *Potential Impacts of Increased Groundwater Pumping on Fisheries*;

    iii. The well placement and well-field operation would meet all applicable criteria identified in the applicable groundwater plans; and

    iv. Any additional measures requested by the SVPSD (or other water provider) or the County to address operational concerns and protection of water quality.

    The SVPSD (or other water provider) and the County may alter the criteria in (i) through (iii) if it can be demonstrated that the revised criteria would maintain adequate water supply and would not result in degradation of water quality and/or loss of riparian vegetation and/or aquatic habitat substantially greater than described in Impacts 6-1, 6-3 and 6-13.

    The findings of the modeling shall be incorporated into the applicable groundwater plan(s).

B. At a minimum, the Development Agreement between the SVPSD (or other water provider) and the applicant shall identify the roles and responsibilities for the testing, construction, verification of operational readiness and monitoring of new wells. In addition, the Development Agreement shall reflect the requirements of Item A above, and shall specify the process and funding responsibility for updating existing or future groundwater plans as needed to address new wells and/or changes to the proposed well field.

C. Standard County procedures require the project applicant to provide a "will-serve" letter or "letter of availability" from the SVPSD (or other water provider) to Environmental Health Services prior to approval of an Improvement Plan. With the will-serve letter/letter of availability provided with each Improvement Plan, the applicant shall also provide the following:

I. With the first Improvement Plan containing facilities that require domestic water service, the applicant shall provide verification from the SVPSD (or other water provider) that the water demands associated with the Improvement Plan can be met with existing or planned infrastructure and that operation of that infrastructure complies with the Development Agreement and applicable groundwater plan(s).

II. With all subsequent Improvement Plans the applicant shall provide a determination from the SVPSD (or other water provider) whether the water demand associated with the proposed development would require installation of a new well or wells to ensure that the overall groundwater system can be operated consistent with the assumptions of the WSA and the criteria of the applicable groundwater plan(s).

Significance after Mitigation

Because implementation of Mitigation Measure 13-4 would ensure that the well system design and operation would manage groundwater pumping to ensure that water supply is adequate, and that pumping effects on groundwater levels and associated resources are not substantial, the potential impact to due to increased groundwater pumping would be **less than significant**.

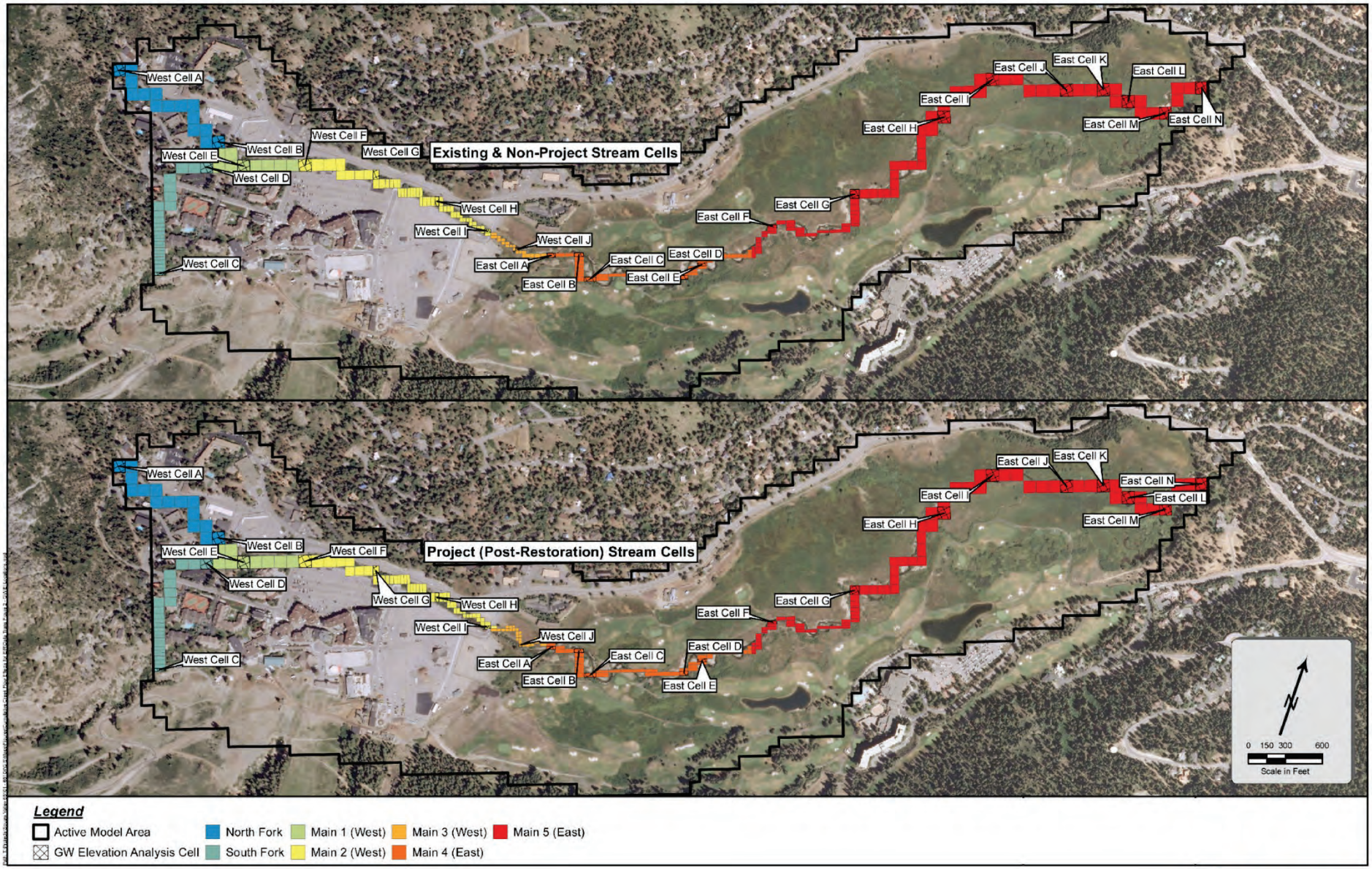
Impact 13-5: Groundwater pumping changes to groundwater and surface water interactions and water quality within and downstream of the plan area.

The Specific Plan development will rely on groundwater as its primary water source, and the increase in total extraction, along with continued and increased pumping in existing and new wells, particularly near the stream corridor, could reduce groundwater support to streamflow and surface water elevations and/or expand the spatial extent of dry streambed and/or the duration of zero flow within and downstream of the main Village area. Although flow changes may occur, they would be minor in the specific context of hydrology and would have little effect on water quality. However, if the wellfield is not configured or operated in a manner consistent with the WSA and applicable groundwater plans, vegetation loss could occur in the Squaw Creek corridor, leading to potential erosion. This impact would be **potentially significant**.

As described above under Impact 13-4, the Specific Plan development will rely on groundwater as the primary water source and will increase total extraction from the OVGB using a combination of existing and proposed new wells. Groundwater modelling indicates that the groundwater withdrawals will cause a lowering of average and minimum groundwater elevations relative to baseline conditions (see Exhibits 13-20 and 13-21 and Tables 13-12 and 13-13).

Long-term impacts of the proposed project on groundwater/surface water interactions are dependent on the final locations of the groundwater wells and their actual operations. For example, pumping of wells close to the creek may have a negligible effect on surface water conditions during spring and early summer when streamflow is high and pumping removes a very small portion of water from the creek (HydroMetrics WRI 2013). Pumping of wells close to the creek during the late summer and fall may also have a negligible effect on surface water because the creek may already be dry. The groundwater elevation is below the creek bed at these times so no groundwater/stream interaction is occurring. Conversely, pumping of wells close to the creek during mid-summer could substantially affect surface water, as streamflow is naturally receding; the streambed is naturally losing water to groundwater recharge, and pumping draws from the creek. As a result, increased groundwater pumping has the potential to lower surface water levels in Squaw Creek, such that the extent and/or duration of the creek drying may be more extensive than would be the case absent such pumping.

This conceptual understanding of potential impacts has been quantified by computer simulations of baseline and with-project surface water conditions (streamflow) and groundwater elevations underlying Squaw Creek (Todd Groundwater 2014) using the calibrated groundwater model (HydroMetrics WRI 2013). Selected cells within the model were extracted to analyze the potential effects of pumping on Squaw Creek, subdivided into west and east groups (Exhibit 13-22), and the cells were selected to focus on streambed sections under both existing conditions and streambed conditions after the proposed stream restoration is implemented.



Data Source: TODD Groundwater, October 2014

Cardno ENTRIX

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Exhibit 13-22

Stream Corridor Groundwater Elevation Evaluation Locations

ASCENT ENVIRONMENTAL

The simulated streamflow in Squaw Creek is calculated for all cells in the model, but is calibrated at the larger reach scale, because streamflow has only been measured at two upstream and one downstream location. Therefore, the analysis of streamflow is comparative, rather than focused on absolute values. The difference between simulated baseline and with project streamflow is small and varies seasonally (Todd Groundwater 2014). The average streamflow reduction is less than 0.2 cfs and the largest reductions are near or under 1.0 cfs; with maximum reductions during the winter and spring when the reductions comprise a very small percentage of total flow. Also, comparisons of simulated flows for the low-flow months (August, September, October) show few differences, because the channel is often dry even under baseline conditions (GANDA 2014).

Simulated groundwater elevations under the baseline and project scenarios, and comparison to streambed elevation in the same model cells, is displayed for eight cells in the west segment (the main Village area) and for three cells in the east segment (the most upstream portion of the meadow) in Exhibits 13-23 through 13-27. Note that these exhibits show conditions for the "2040 WSA," which is the cumulative groundwater withdrawal condition (evaluated in Section 18.1, "Cumulative Impacts") and includes the "Project-Only" and the "Non-Project Only" conditions. The "Non-Project Only" condition represents groundwater withdrawals to support existing and foreseeable future development in the Olympic Valley without implementation of the VSVSP. These data lines could not be extracted from the exhibits, which were provided with the WSA, and are therefore presented here along with this analysis of the "project only" condition.

Key observations from these data (modified from Todd Groundwater 2014 and GANDA 2014) include:

- There are strong seasonal ranges in groundwater elevations under both the baseline and project scenarios, which reflect the variable seasonal runoff, recharge, and pumping patterns. There is also year-to-year variation in groundwater elevations, depending on the volume and timing of precipitation and run-off in that year. The year-to-year variation is slightly less than the seasonal range in any given year.

- The project lowers groundwater elevations relative to baseline throughout the west channel and most of the meadow (east cells A through I), but the magnitude of decrease lessens downstream of east cell E (GANDA 2014).

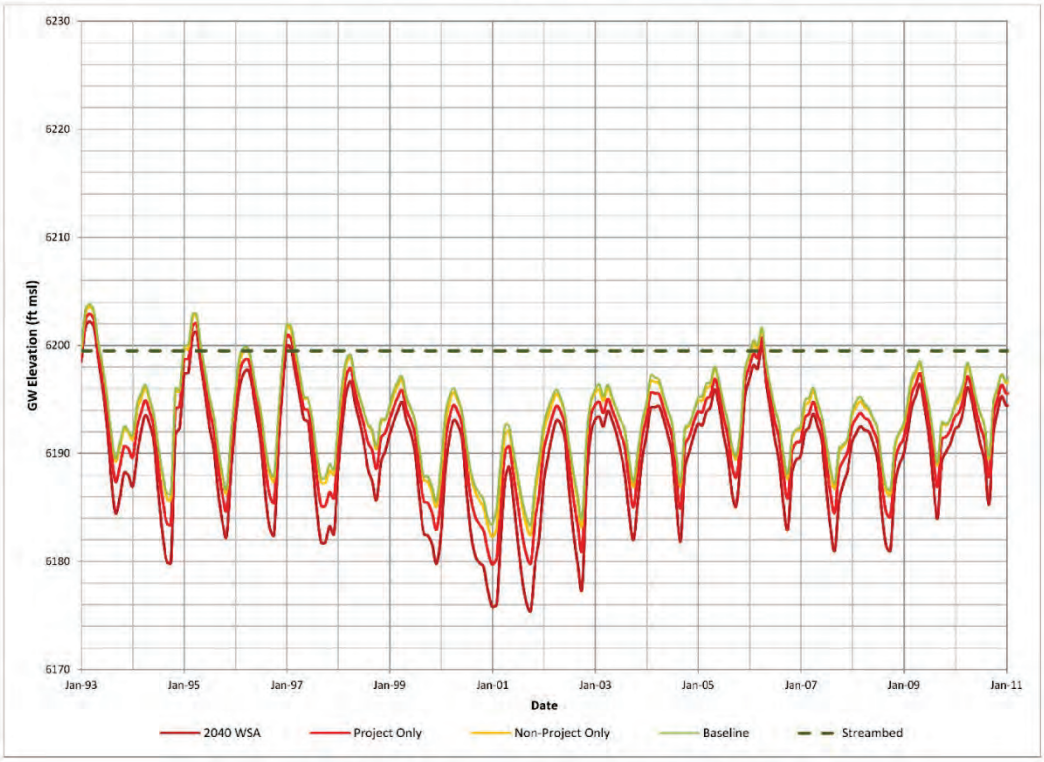
- The greatest reductions relative to baseline are in west cells B, D, and E, which is the area where the most new wells are planned.

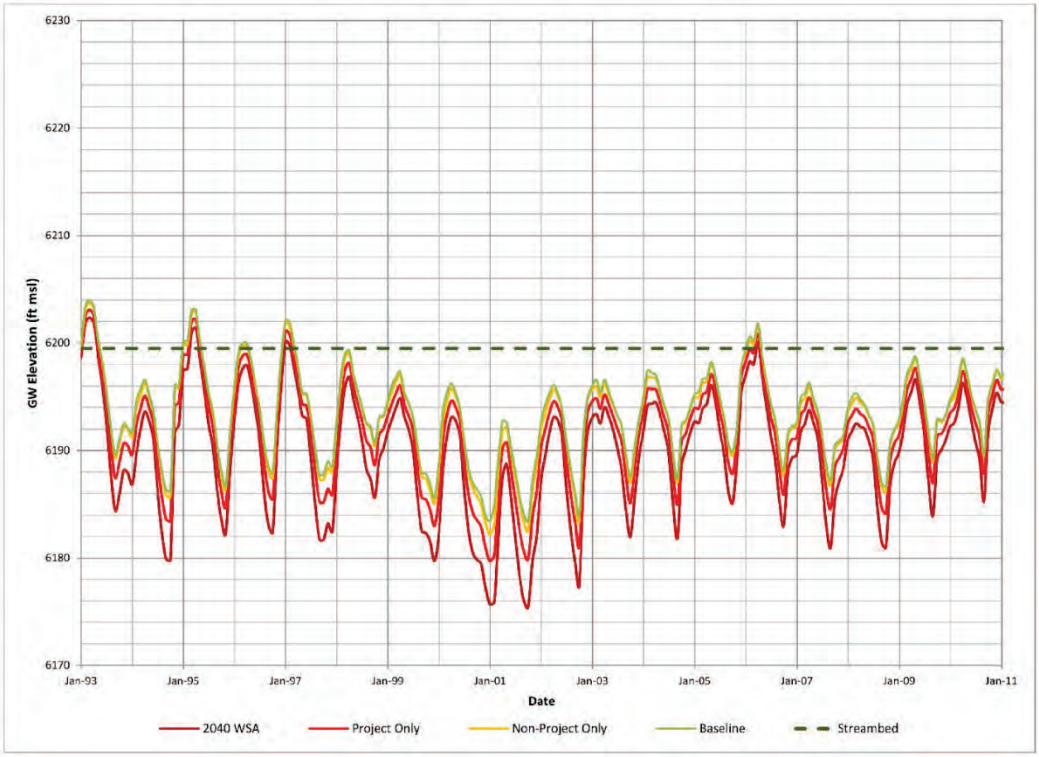
- The project-induced decrease in groundwater elevation is larger during the low flow season than during the winter or spring throughout the main Village area and downstream meadow reach.

- In the vicinity of the headwaters' confluence (west cells B, D, E), groundwater is generally below the streambed elevation year-round, even in the baseline conditions, but groundwater levels may rise above the ground surface briefly in some years (Exhibits 13-23 and 13-24).

- In the main Village area (west cells F, G, H), groundwater remains above the streambed for a considerable portion of each year except for a few of the driest years of the record, and seasonally falls below the streambed by a few feet in all years, even under baseline. However, the project lowers the minimum elevations of those seasonal lows by several feet relative to baseline, particularly in the drier years (Exhibits 13-24 and 13-25).

- The conditions near the Far East Bridge (west cell I) and the mouth of the Olympic Channel (west cell J) are somewhat different; in these areas the pumping influences are lessened and the proposed finished grade elevations would affect the relationship of groundwater levels to channel bed. (Exhibit 13-26).





Data Source: TODD Groundwater, October 2014

Cardno ENTRIX
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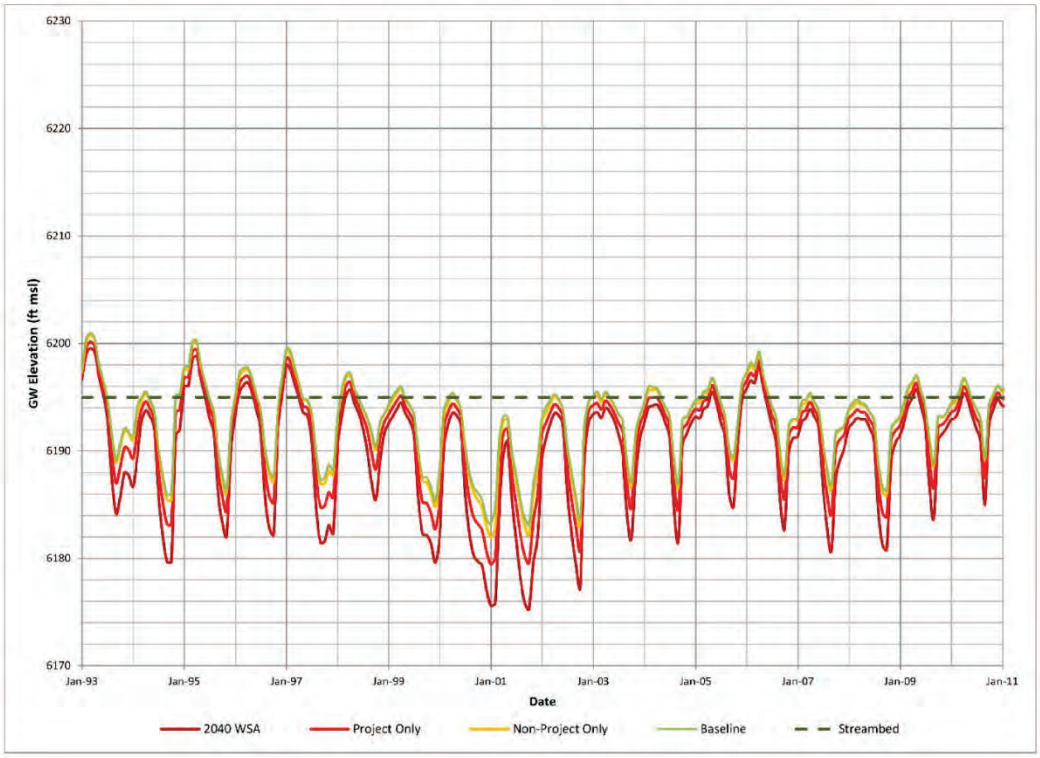
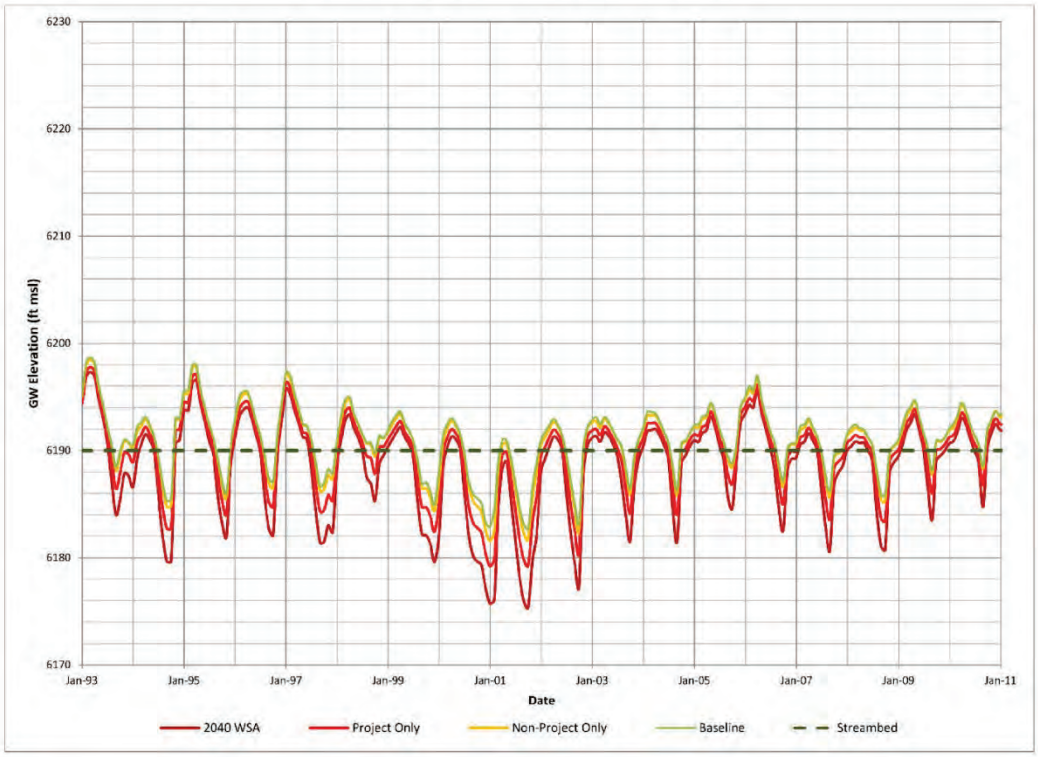
Exhibit 13-23 **Stream Corridor Groundwater Simulation: West Cells B and D**

ASCENT ENVIRONMENTAL





Data Source: TODD Groundwater, October 2014

Cardno ENTRIX
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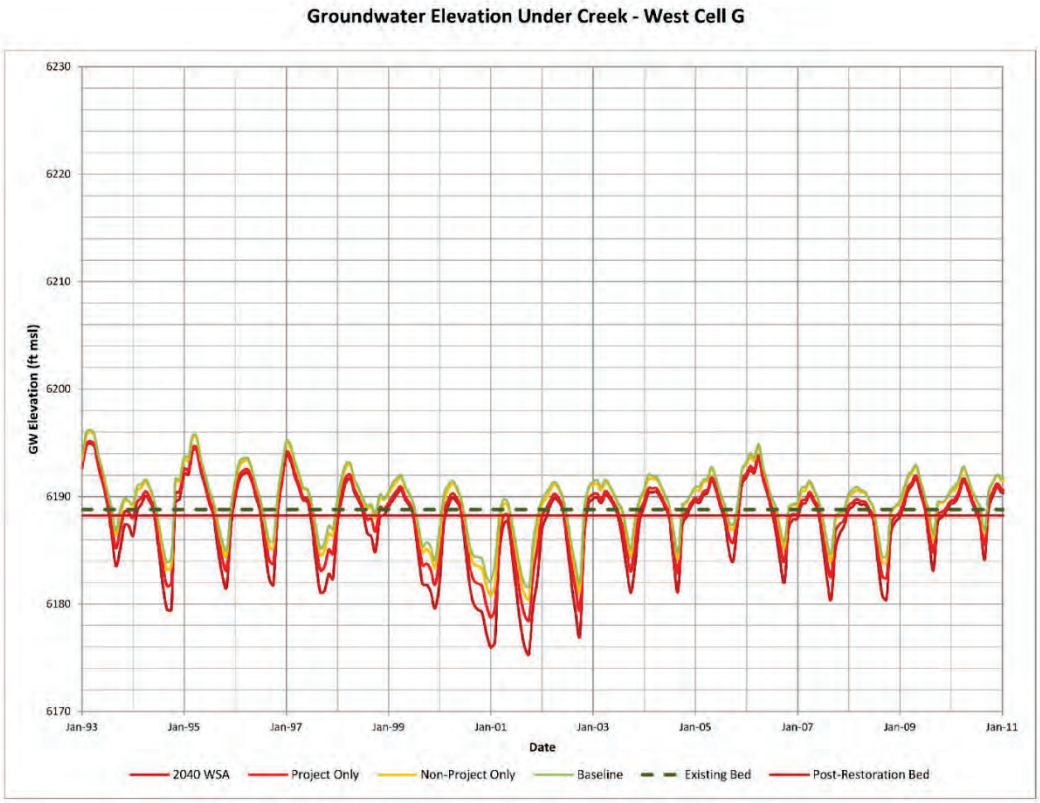
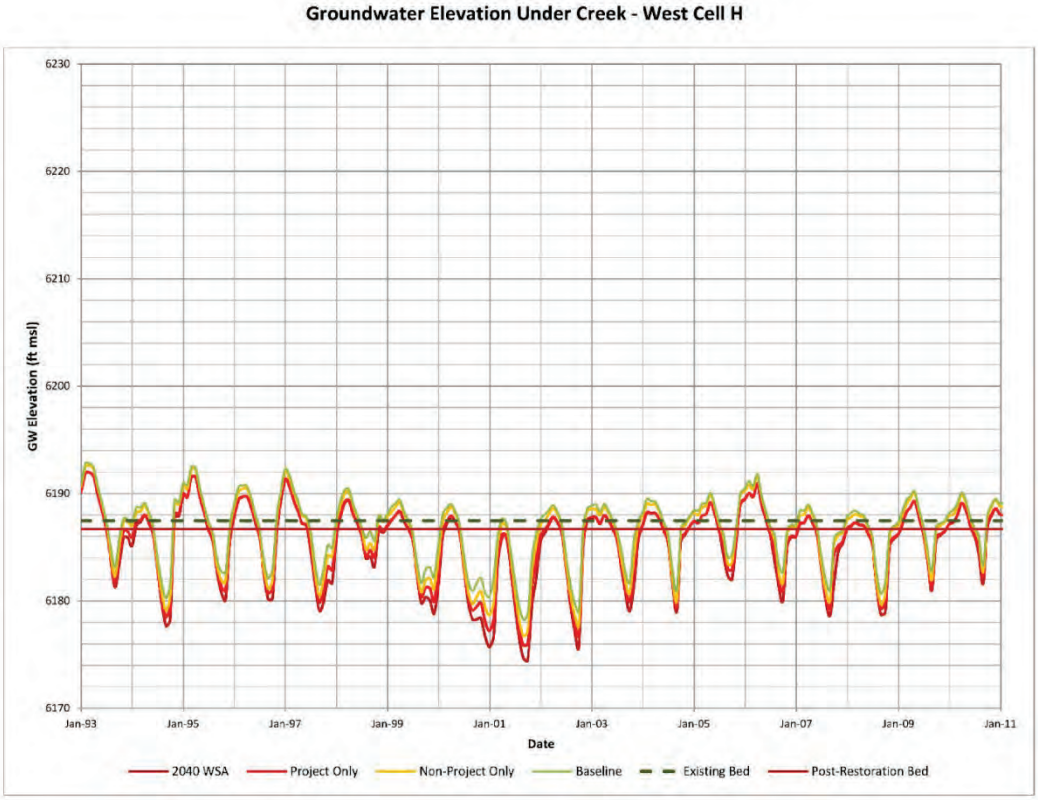
Exhibit 13-24 **Stream Corridor Groundwater Simulation: West Cells E and F**

ASCENT ENVIRONMENTAL





Data Source: TODD Groundwater, October 2014

Cardno ENTRIX
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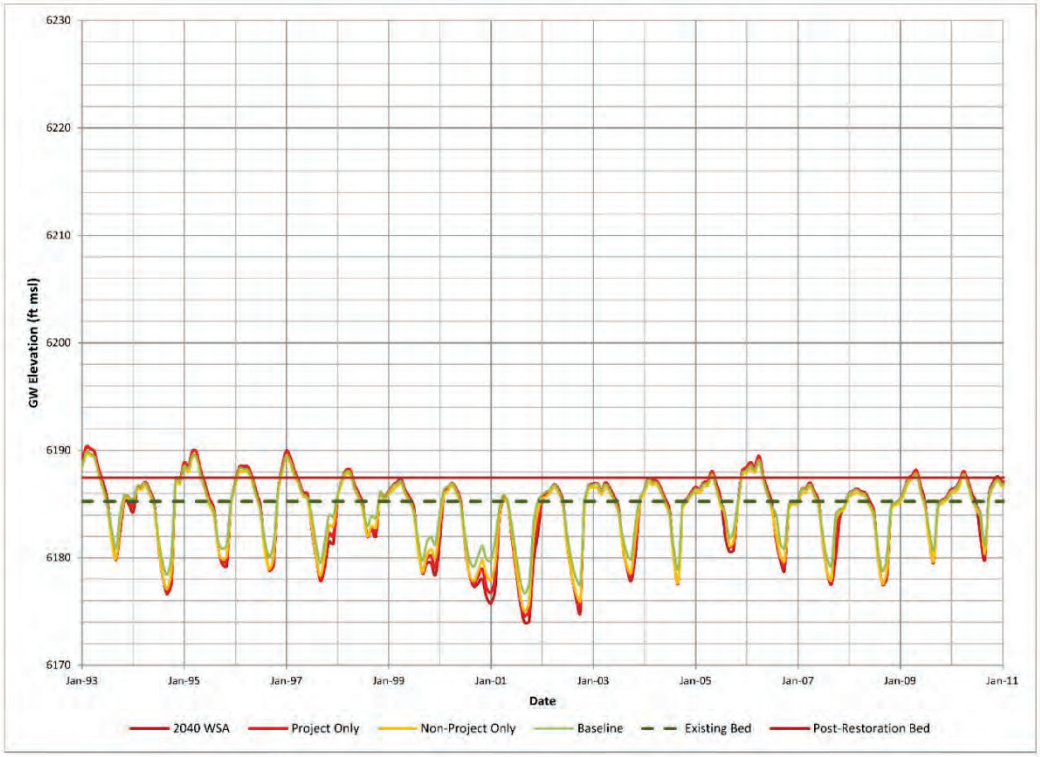
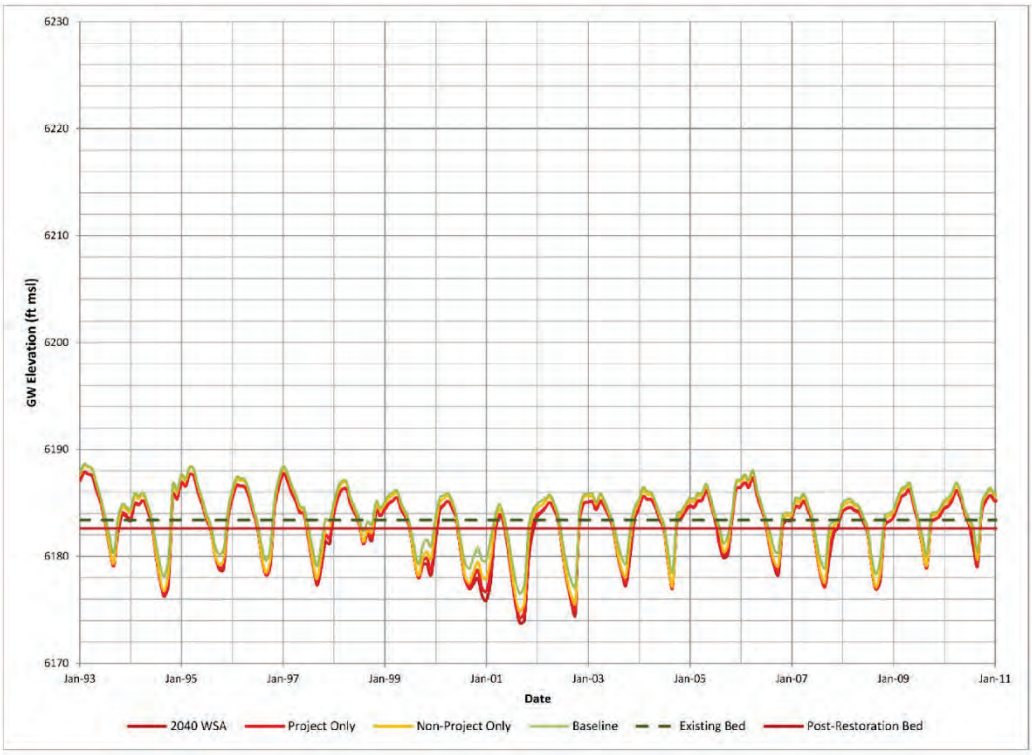
Exhibit 13-25 **Stream Corridor Groundwater Simulation: West Cells G and H**

ASCENT ENVIRONMENTAL





Data Source: TODD Groundwater, October 2014

Cardno ENTRIX
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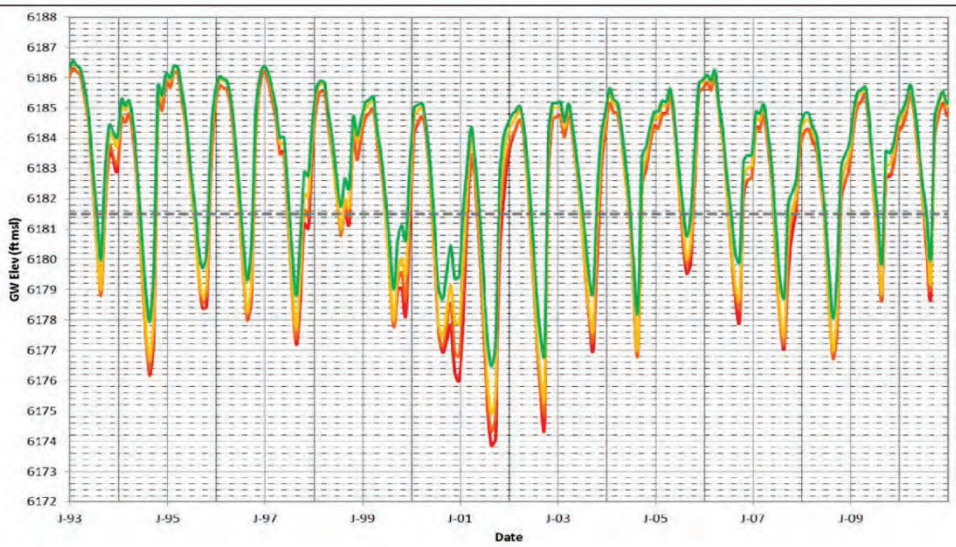
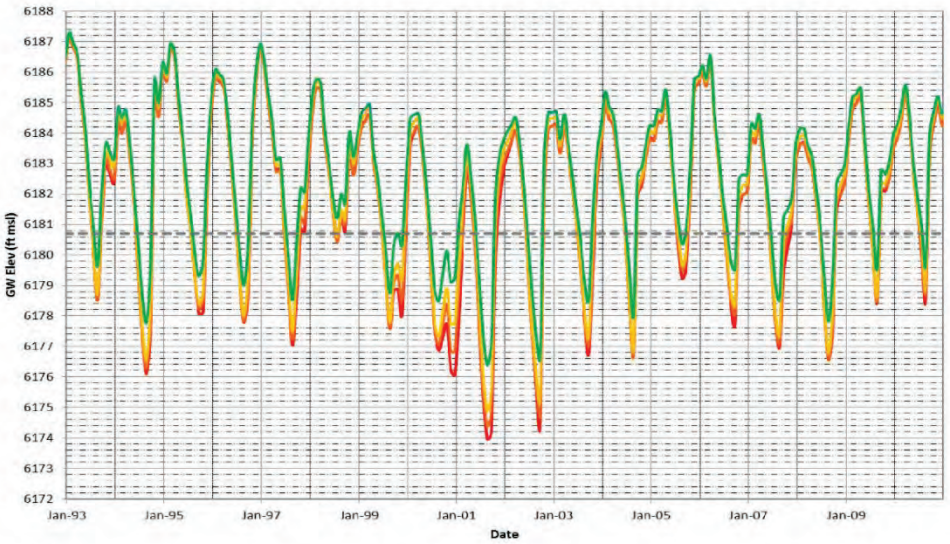
Exhibit 13-26 **Stream Corridor Groundwater Simulation: West Cells I and J**

ASCENT ENVIRONMENTAL

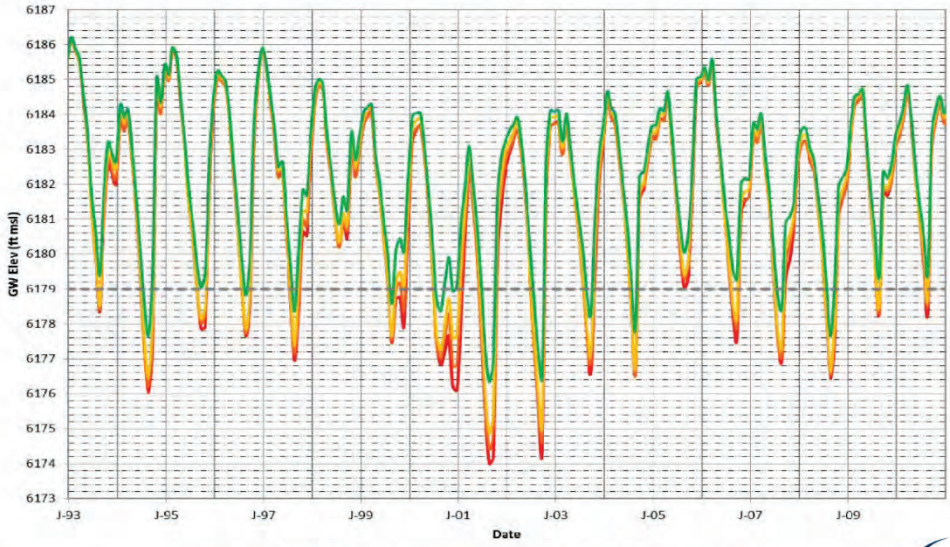
East Cell A



East Cell B



East Cell C



2040 WSA | Project Only | Non-Project | Baseline | Bottom

Data Source: TODD Groundwater, October 2014

X11010091 03 059

Exhibit 13-27 **Stream Corridor Groundwater Simulation: East Cells A, B, and C**

- In the meadow reach downstream of the site, increased groundwater supply for the project also lowers groundwater elevations relative to baseline; but the amount of time that groundwater elevations stay above the streambed is longer than in the west channel under both the baseline and project conditions. The magnitude of minimum elevation lowering is one to three feet in east cells A, B, and C (Exhibit 13-27) and lessens downstream of east cell F. In east cells D, E, and F the project impact would lower the groundwater below the streambed in several years that do not lose to groundwater under baseline conditions.

This comparison of simulated baseline and project groundwater elevations along Squaw Creek demonstrates a measureable effect on groundwater elevations beneath the creek throughout the main Village reach as well as in the upstream portion of the meadow reach. Although these stream reaches experience some seasonal drying under existing conditions, the duration and spatial extent of drying would likely increase. One expression of this consequence is analysis of change in residual low-water refugia pools within the meadow reach performed for the fish impact analysis (GANDA 2014) (see Chapter 6, "Biological Resources"), which indicates the number of additional months during which pools would dry (Table 13-13). While these data relate to particular biologic criteria (change in residual pool depth), they demonstrate that the most severe streambed drying occurs in east cells A and B, which is generally consistent with the overall spatial pattern of groundwater elevation change shown in Exhibits 13-23 through 13-27.

Specific to changes in surface hydrology, this impact would be **less than significant** because the project would not substantially alter the existing drainage pattern or surface water body of a site or area. There is some uncertainty about the ability of the model to accurately represent minimum water levels, as the model calibrations to-date have not emphasized matching observed minimums. As a result, the model may underestimate extreme lows. Also, because 'all wells were modeled' the actual number of future wells could be fewer and the effect more locally severe in the vicinity of some wells than modeled. However, construction and operation of the well system would be implemented by the SVPSD (or other water provider) who would site wells and operate the system in a manner that minimizes groundwater effects and achieves results consistent with the groundwater modelling and WSA. Therefore, if the system is constructed and operated as planned, minimum water level conditions where there is uncertainty in the model accuracy would not occur, and well system development would match WSA performance expectations.

The potential for the simulated decreases in groundwater levels and streamflow due to pumping to adversely impact riparian vegetation has been evaluated (see Chapter 6, "Biological Resources"). In the event that the hydrologic changes resulted in loss of riparian vegetation that currently supports streambank stability, the impact could contribute to increased erosion and sedimentation that could degrade water quality. Decreased groundwater support to the stream during low flow conditions, along with the possible decreased riparian vegetation vigor and cover could contribute to water temperature increases. A potential sedimentation increase would be in conflict with the Squaw Creek TMDL. However, analysis of the hydrologic change effects on riparian vegetation (see Impact 6-1 in Chapter 6, "Biological Resources") concludes that the project would not significantly affect streamside vegetation with implementation of recommendations and operating parameters provided in the WSA. However, without adequate management of the wellfield (i.e., management consistent with the WSA), changes to streambank stability, erosion, and sedimentation, or water temperature could occur if streamside riparian vegetation were lost due to changes in groundwater elevation. This is a **potentially significant** impact.

MODEL YEAR	EAST CELL A				EAST CELL B				EAST CELL C			
	Baseline	2040 WSA	Project-Only	Non-Project	Baseline	2040 WSA	Project-Only	Non-Project	Baseline	2040 WSA	Project-Only	Non-Project
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	2	3	3	3	1	3	2	2	0	0	0	0
1995	0	2	0	0	0	0	0	0	0	0	0	0
1996	0	1	1	1	0	0	0	0	0	0	0	0
1997	1	1	1	1	0	1	1	1	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	2	1	1	0	1	1	0	0	0	0	0
2000	1	5	4	4	0	4	3	1	0	0	0	0
2001	3	6	5	4	3	4	4	3	1	3	3	3
2002	2	3	3	3	2	3	3	2	1	2	2	1
2003	1	2	2	2	0	1	1	1	0	0	0	0
2004	1	1	1	1	1	1	1	1	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	1	1	0	0	0	0	0	0	0	0	0
2007	1	2	2	2	0	1	1	1	0	0	0	0
2008	1	2	2	2	1	2	1	1	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL months	**13**	**31**	**26**	**24**	**8**	**21**	**18**	**13**	**2**	**5**	**5**	**4**
TOTAL years	**9**	**13**	**12**	**11**	**5**	**10**	**10**	**9**	**2**	**2**	**2**	**2**

Note: The numbers represent modeled additional months of drying at specified locations in the creek bed.

Data Source: TODD Groundwater, October 2014

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Table 13-13 **Comparison of the Number of Months with Low-Water Refugia Pool Drying: East Cells A, B, and C**

ASCENT ENVIRONMENTAL

Mitigation Measure 13-5: Implement Mitigation Measure 13-4.

The project applicant shall implement Mitigation Measure 13-4, which directs the construction and operation of a well system that is consistent with the parameters of the WSA and applicable groundwater plans. By confirming that groundwater management is implemented in a manner that is consistent with the operational parameters described in the WSA, Mitigation Measure 13-4 would also result in confirmation that groundwater pumping does not result in losses of riparian vegetation in the west channel or upper east channel of Squaw Creek. Furthermore, Mitigation Measure 6-1c requires monitoring of riparian vegetation in the portions of the creek that would be most affected by reduction in groundwater levels, and replacement of such vegetation if it is lost. The applicant and SVPSD (or other water provider) are responsible for implementation of Mitigation Measure 13-4, but mechanisms are also included in Mitigation Measure 13-4 that require secondary approval by Placer County.

Significance after Mitigation

Because implementation of Mitigation Measure 13-4 would require management and monitoring of wellfield operations and Squaw Creek streamflow maintenance, this mitigation measure would reduce to a **less-than-significant** level, the potential loss of streamside riparian vegetation and resultant effects to streambed stability, erosion, sedimentation, and water temperature.

Impact 13-6: Reconfiguration of Squaw Creek and the Olympic Channel.

As part of proposed Squaw Creek Restoration, implementation of the proposed project would reconfigure the flow lines, channel shapes, sizes, and overbank areas along the segments of Squaw Creek and the Olympic Channel within the main Village area. This modification of the existing surface water features and drainage will help correct and compensate for past direct disturbances to these channels and restore more natural geomorphic conditions and channel and floodplain functions. While successful implementation would be a beneficial impact, without monitoring, adaptive management, and assurances of ongoing funding to support these activities, creek restoration efforts might not provide the anticipated benefits and could result in greater disturbance to hydrologic conditions and water quality than benefit. This impact would be **potentially significant**.

The proposed project incorporates a Squaw Creek Restoration Plan (Balance Hydrologics 2014), designed to meet the following goals:

- compliance with regulatory guidance and requirements related to wetland mitigation;
- offsetting of current and historical impacts to the channel through improvement of aquatic, riparian, and wetland habitat; and
- enhancement of the human experience through improved aesthetics and recreational, educational, and interpretive opportunities.

The preliminary design objectives are summarized as:

- reduce fine sediment transported and deposited in downstream reaches,
- reduce fine sediment carried to the Truckee River,
- maintain or increase flood conveyance,
- increase the area and quality of wetland/riparian/aquatic habitat,
- increase channel-floodplain connectivity, and
- establish opportunities or public access points.

The preliminary creek restoration design would return the Squaw Creek trapezoidal channel to a wider corridor with a meandering alignment (also termed “planform”) (see Exhibits 3-18 and 3-19 in Chapter 3, “Project Description”). Overall conveyance would be increased and an inset floodplain would allow sediment deposition upstream of the meadow and detain water in the alluvial fan reach. Installation of riffle material

in the bed and buried logs with rootwads intact in the banks would stabilize the channel and prevent excess erosion; bioengineered step outfalls would be installed at stormwater outfall locations to dissipate bank-eroding velocities. The existing bridges would be maintained and protected.

The area downstream of the Far East Bridge would be modified to reconstruct a dynamic floodplain at the confluence with the Olympic Channel, restoring a multi-thread section at the transition between the steeper slope in the main Village area and the meadow (see Exhibit 3-20 in Chapter 3, "Project Description").

The Olympic Channel system would be restored to address a range of historical hydrologic and physical disturbances. The Searchlight Pond overflow (also called the Olympic Drain) would be rerouted, but would not receive any untreated runoff before discharging to the Olympic Channel. The concentrated mountain runoff flow pattern that drains to the Olympic Channel would be re-contoured to effectively extend the channel upstream of its current origin. The new portion of the channel would contain several grade control structures and depressions to slow channel velocities and allow for the settling of sediment as well as increase water retention. Increased detention of runoff will promote water infiltration into the aquifer, especially during summer rain events. The expansion of wetlands along the Olympic Channel would enhance the functionality of the wetland system and provide mitigation for Specific Plan impacts to existing wetlands or waters of the United States and State of California.

The proposed restoration of the main Village reach of Squaw Creek and the Olympic Channel is supportive of the Placer County General Plan Water Resource Goals and Policies, is consistent with sections 115 and 118 of the SVGPLUO and will contribute to achieving TMDL goals of reduced sediment delivery to the downstream meadow and the Truckee River. While successful implementation of the creek restoration would be a beneficial impact overall, without monitoring, adaptive management, and assurances of ongoing funding to support these activities, creek restoration efforts might not provide the anticipated benefits, and could ultimately result in greater disturbance to hydrologic conditions and degradation of water quality than benefit. Therefore, this impact would be **potentially significant**.

Mitigation Measure 13-6: Implement Mitigation Measures 6-1a and 6-1b.

The project applicant shall implement Mitigation Measures 6-1a and 6-1b, which assure the development of performance criteria for creek restoration, monitoring and adaptive management for the restoration, and ongoing funding to support these activities,

Significance after Mitigation

Implementation of Mitigation Measure 13-6 would reduce this impact to a **less-than-significant** level because it would reduce the uncertainty regarding the potential effectiveness of the stream restoration actions, and provide a funded means to perform necessary maintenance or adaptive response.

Impact 13-7: Long-term management of runoff volumes, peak flows, and snow storage, and risks of potential degradation to water quality.

Implementation of the proposed project would enlarge the total area of impervious surfaces, upgrade the stormwater drainage system, improve the separation of mountain runoff from urban runoff, install additional traditional and Low Impact Development (LID) stormwater quality protection measures, and modify snow storage locations and practices. The restoration of Squaw Creek would include armoring of channel bed and banks to accommodate the 100-year peak flow through existing bridges without increased erosion. The Specific Plan would improve protection of the sewer undercrossing of Squaw Creek and as a separate action the SVPSD will replace the off-site sewer siphon under the Truckee River before initiation of the VSVSP. This impact in the main Village area would be **less than significant** and the impact to the East Parcel would be **potentially significant**.

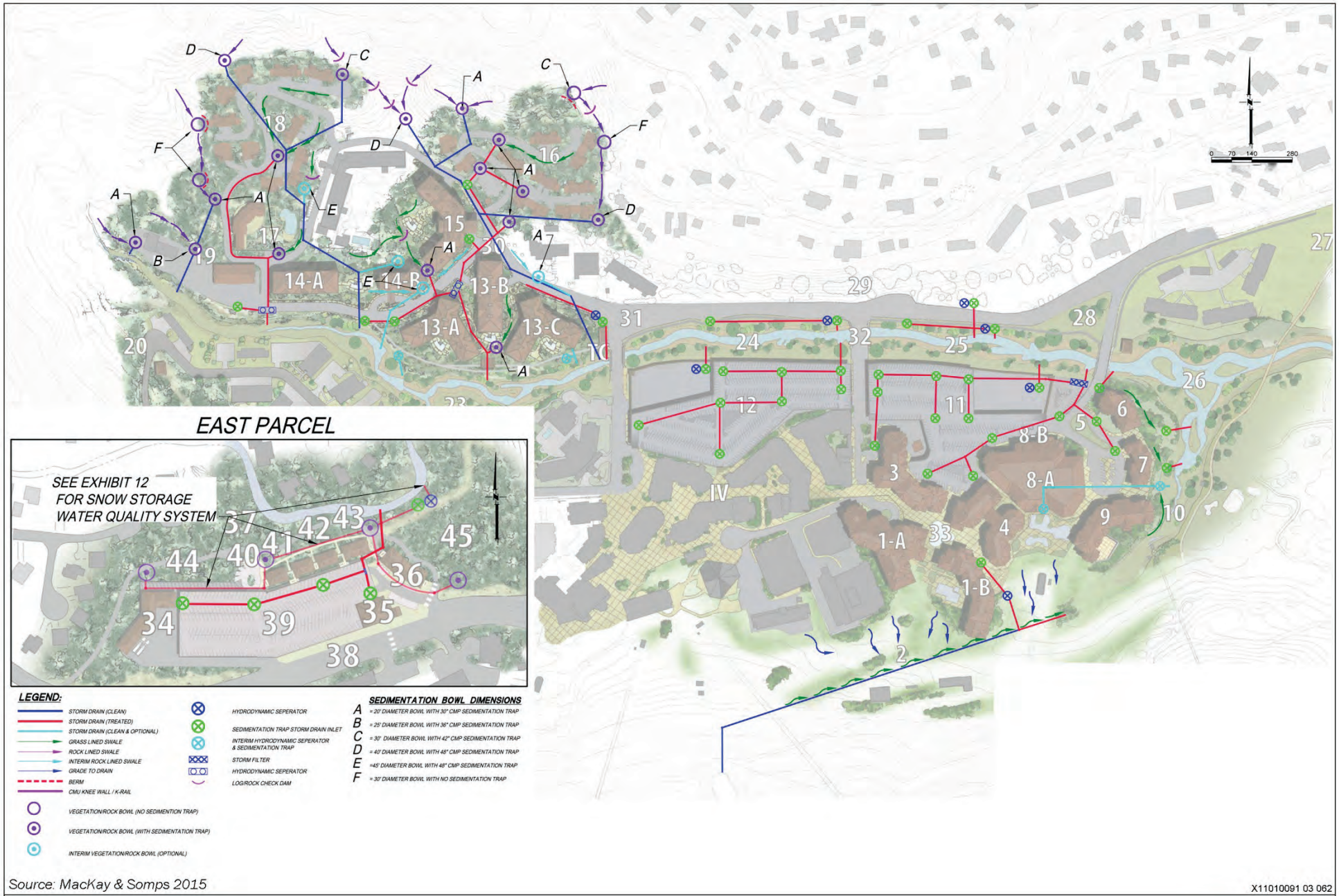
The proposed project would increase impervious acreage of the project site by approximately 4.5 acres, with very small overall net changes in the main Village area (estimated 0.25 acre increase) and the greatest

increases in the East Parcel (estimated 4.24 acre increase) (Exhibit 13-28). The proposed storm drainage improvements in the main Village area, routing of flows, and timing of peak flows from the low elevation developed area ('Intervening Area') versus the surrounding slopes results in very small changes in peak velocity and flow at the downstream end of the project boundary discharged to the meadow (Table 13-14). The planned development in the main Village area would result in a mix of slight increases and reductions in peak and total storm volumes generated in the main Village area for the 2-, 5-, 10-, and 100-year events. The changes associated with the project would result from full buildout of both the impervious surfaces and drainage improvements. Incremental changes would be anticipated during the implementation phases, but development would follow an infrastructure phasing plan that would provide sufficient stormwater management systems for each element of project construction to address runoff generated by interim phases of Village development. These changes to runoff peak flows and volumes indicate that the existing drainage pattern of the site would not be substantially altered and the proposed project would not contribute runoff which would exceed the capacity of the existing or planned stormwater drainage systems. Therefore, for the main Village area, this impact would be less than significant.

The overall concept of the proposed drainage system improvements is to separate runoff depending on the source of the runoff. "Clean" mountain runoff entering the main Village area from the existing mountain drainage system will be routed through or around the specific plan site, discharging directly to Squaw Creek without treatment. This Mountain Interception and Conveyance System (Mountain System) will not allow any contributing flows from on-site runoff (runoff generated in the specific plan project area), unless it has been treated by a LID feature. The Mountain System that passes through the Specific Plan area will be designed to convey 100-year design flows. The On-site Collection and Treatment System (On-site System) will capture runoff generated from within the project site (or off-site runoff that surface flows onto the project site), and treated with various LID features before discharging to Squaw Creek. The on-site system will be designed to convey 10-year design flows.

The west parking lot drainage system currently does not include any pretreatment facilities before discharging to Squaw Creek. This system is to be completely replaced, and will consist of both Mountain Systems and On-site Systems. During construction, the transition from existing to proposed drainage infrastructure in this area will include the installation of interim vegetative/rock bowl (with sedimentation trap) and interim sedimentation traps/hydrodynamic separators to provide temporary BMP treatment. In the final design, in the Mountain Systems, mountain runoff is captured by vegetative rock bowls with sedimentation traps and conveyed directly to discharge at Squaw Creek. On-site Systems capture runoff with sedimentation trap storm drain inlets and, in most cases treat the runoff with a hydrodynamic separator before discharging to Squaw Creek. The proposed improvements to storm drainage in the eastern parking lot are:

- The existing Cushing Pond Drain will not be altered and will continue to convey only "clean" mountain runoff to Squaw Creek.
- The existing Searchlight Pond Drain will be altered to outfall at the head of the reconfigured Olympic Channel. The line will be considered a Mountain System but will receive some treated water from the Southeast Condo Hotel area (buildings 1 and 4). This system will include overflow swales to convey water in excess of the 100-year event overland to ultimately discharge into Squaw Creek.
- The existing Intrawest Drain System will be modified as an on-site network and continue to be treated by water quality filtration systems before discharging to Squaw Creek.
- The Eastern Parking Lot System will be completely modified as an on-site network and incorporate sedimentation trap storm drain inlets, a hydrodynamic separator, and a storm filter before discharging to Squaw Creek.



Source: MacKay & Somps 2015

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Source: MacKay & Somps 2014c

Exhibit 13-28

Developed Condition Storm Drain Infrastructure

Table 13-14 Peak Flow and Runoff Volume Comparison for Existing versus Post Project Conditions

Location/Measurement[1]	2-Year Event	5-Year Event	10-Year Event	100-Year Event
Total Volume from Main Village Area				
Existing Conditions	180	225	253	352
Post Project Conditions	176	225	258	359
Peak Flow from Main Village Area				
Existing Conditions	178	240	280	415
Post Project Conditions	175	236	277	426
Total Volume to Meadow				
Existing Conditions	2,438	3,119	3,498	5,028
Post Project Conditions	2,264	3,005	3,516	5,050
Peak Flow to Meadow				
Existing Conditions	2,254	3,072	3,586	5,418
Post Project Conditions	2,180	3,015	3,563	5,445

Notes:

[1] Reported total volume in acre-feet; reported peak flow in cubic feet per second.

Source: Balance Hydrologics 2013

The separation of proposed Mountain Systems' "clean" runoff from the on-site runoff from developed surfaces will reduce the volume that on-site systems must treat. This will increase detention time in the on-site sedimentation traps, allowing more sediment to be removed before discharge to Squaw Creek. Addtionally, decreased flows in existing and proposed filter vaults lengthen the maintenance interval for filters and extend the lifetime.

The East Parcel (parking and employee housing) does not currently contain any drainage improvements. In the proposed condition, parking lot runoff will be captured and treated by hydrodynamic separators, sedimentation trap storm drain inlets, and a storm filter before discharging into Squaw Creek.

Water quality modeling of the combined effect of the project hydrology and proposed stormwater system by Balance Hydrologics (2013) indicate that the project will have no negative impact on water quality for Squaw Creek flows entering the meadow and on loadings of TSS, nitrates, and phosphorus (compare Tables 13-7 and Table 13-15) delivered by Squaw Creek to the meadow. The model primarily reflects the benefits of improved flow management, and did not reflect the additional treatment benefits of water quality features or the stream restoration and floodplain enhancement. Considering these other factors, the actual impact on Squaw Creek water quality would likely be positive.

As stated above, the overall stormwater management system would be installed over time as project development proceeds, following the requirements of an infrastructure phasing plan. The phasing plan would ensure that a sufficient stormwater management system is provided for each element of project construction to address runoff generated by the particular facilities being built. Therefore, any benefits from the upgraded stormwater management system would occur incrementally over time as the upgraded systems are installed during build out phases.

The Squaw Creek Restoration Plan will widen the top width of the stream corridor and improve the containment of the 100-year peak flows within the overall channel, but will need to prevent erosion of the bed and banks at the three existing bridge crossings by hardening of the channel margins (MacKay & Somps 2014e). This impact would be **less than significant**.

Table 13-15 Summary of Predicted Main Village Area Water Quality Constituent Loadings with Proposed Project

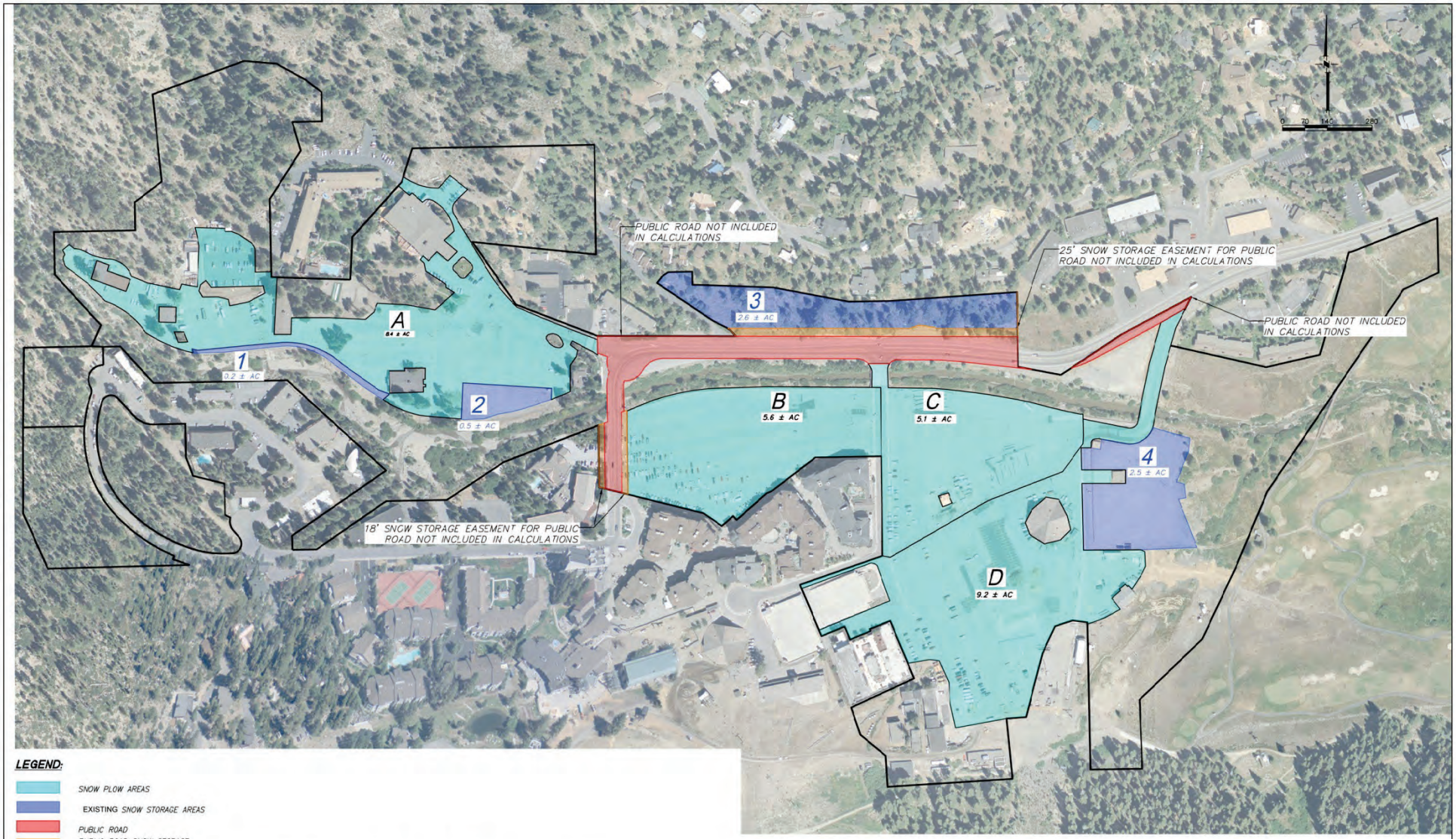
Location/Measurement[1]	2-Year Event	5-Year Event	10-Year Event	100-Year Event
Confluence				
Total Suspended Solids	63	120	170	390
Nitrate-N	188	250	292	421
Total Phosphorous	116	166	203	323
Main Village Area				
Total Suspended Solids	25	53	78	203
Nitrate-N	7	4	3	0
Total Phosphorous	0	0	0	0
Olympic Channel				
Total Suspended Solids	13	49	88	296
Nitrate-N	27	36	43	64
Total Phosphorous	6	8	9	11
Total to Meadow				
Total Suspended Solids	101	222	336	889
Nitrate-N	222	290	338	485
Total Phosphorous	122	174	212	334

Notes: [1] Reported Phosphorous and Nitrate loading numbers are in pounds; Total Suspended Solids loading numbers are in tons.

Source: Balance Hydrologics 2013

The VSVSP snow storage plan (MacKay & Somps 2014f) identifies areas to remain accessible for public safety and vehicular and pedestrian uses, including: streets, uncovered parking, commercial and residential areas, pedestrian bikeways, and emergency access. A combination of in-situ storage, on-site storage, snowmelt, and off-haul are proposed. In early phases of implementation, the initial conditions scenario (Exhibit 13-29) will use four snow storage sites totaling 5.8 acres, that will be retrofitted to have runoff capture and water quality treatment features. However, the snow storage areas still include a large area adjacent to the confluence of Squaw Creek and the Olympic Channel. The infrastructure phasing plan (MacKay & Somps 2014c) indicates that the interim snow storage plan features will be implemented prior to recordation of the Final Map that creates the 150th bedroom. Under the developed conditions scenario (Exhibit 13-30), the snow storage locations and sizes will have been adjusted, and will include five snow storage locations totaling 6.7 acres. The required snow storage area according to the SVGPLUO formula is calculated to decrease from 5.6 to 3.6 acres because the plowed (cleared) area will decrease from 28.3 to 17.8 acres and in-situ storage will increase. This would be a **less-than-significant** impact.

Proposed snow storage for the East Parcel (Exhibit 13-31) includes four sites not associated with public road storage that are adjacent to the buildings and parking structure; however, two of the largest areas are adjacent to and along the top of the bank draining directly to Squaw Creek. Snow storage is also shown in proximity to wetlands on the East Parcel. The VSVSP snow storage plan (MacKay & Somps 2014f) indicates that the areas will be constructed with appropriate snowmelt water quality treatment facilities, but it is uncertain whether suggested special treatment (MacKay & Somps 2014f, Figure 5) would be provided for snow storage areas adjacent to the creek or wetlands. While improvements to snow storage practices and water quality treatment are anticipated relative to the existing conditions at the main Village area, the location of new snow storage adjacent to the creek and wetlands at the East Parcel, without a commitment to special water quality protection measures could result in violations of water quality standards and would be a **potentially significant** impact.



LEGEND:

- SNOW PLOW AREAS
- EXISTING SNOW STORAGE AREAS
- PUBLIC ROAD
- PUBLIC ROAD SNOW STORAGE EASEMENT

SNOW STORAGE AREAS & DISTRIBUTION

	SNOW PLOW AREA	REQUIRED SNOW STORAGE (20% OF SNOW PLOW AREA)	SNOW STORAGE SITE 1	SNOW STORAGE SITE 2	SNOW STORAGE SITE 3	SNOW STORAGE SITE 4	TOTAL SNOW STORAGE REQUIRED	TOTAL SNOW STORAGE PROVIDED
A	8.4 ACRES	1.7 ACRES	0.2 ACRES	0.5 ACRES	1.0 ACRES		1.7 ACRES	1.7 ACRES
B	5.6 ACRES	1.1 ACRES			1.1 ACRES		1.1 ACRES	1.2 ACRES
C	5.1 ACRES	1.0 ACRES			0.3 ACRES	0.7 ACRES	1.0 ACRES	1.1 ACRES
D	9.2 ACRES	1.8 ACRES				1.8 ACRES	1.8 ACRES	1.8 ACRES
TOTAL	28.3 ACRES	5.6 ACRES	0.2 ACRES	0.5 ACRES	2.4 ACRES	2.5 ACRES	5.6 ACRES	5.8 ACRES

Source: MacKay & Somps 2015

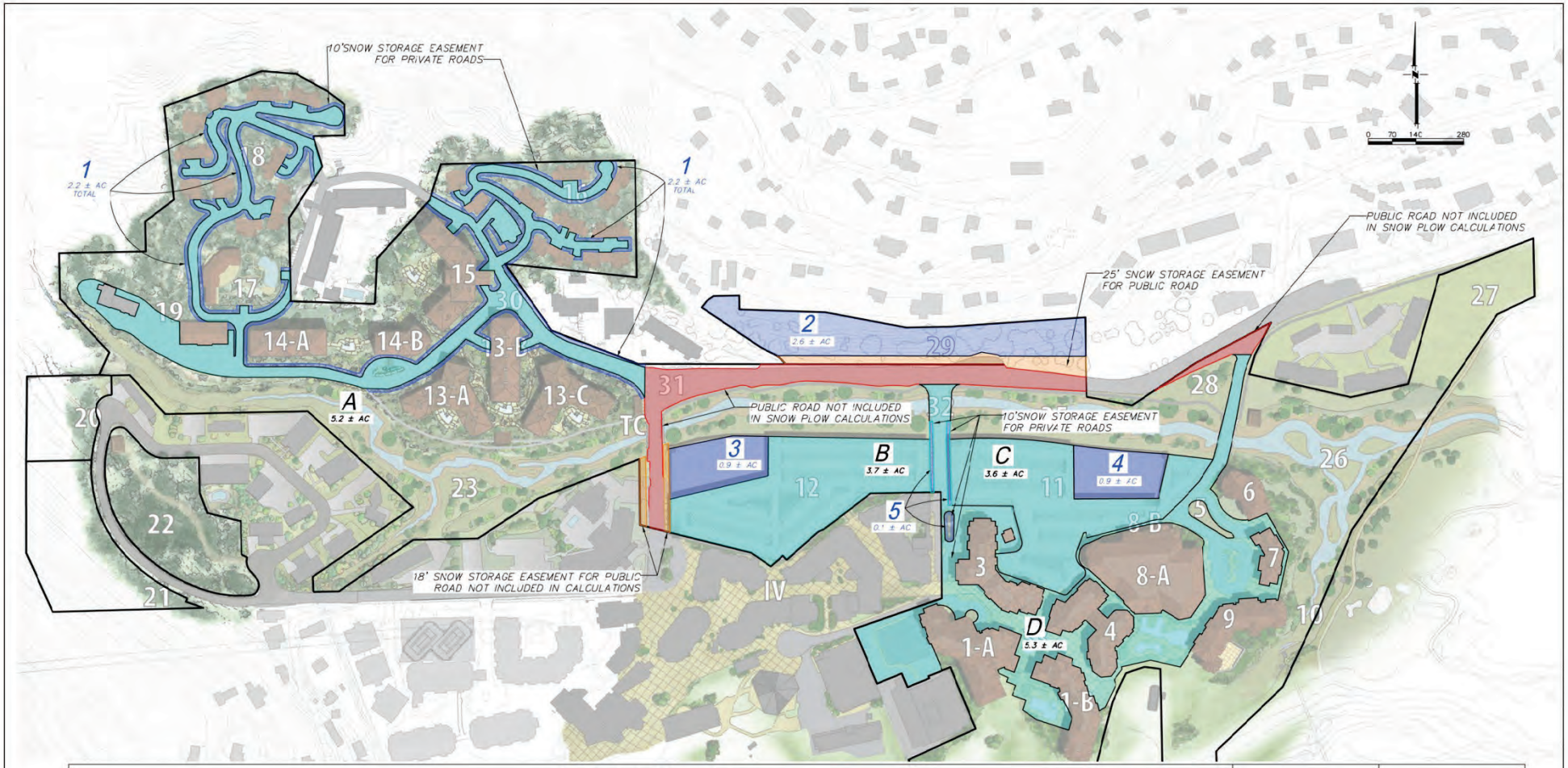
X11010091 03 063

Source: MacKay & Somps 2014f

Exhibit 13-29

Interim Conditions Snow Storage Stormwater Quality and Treatment Concepts

ASCENT ENVIRONMENTAL



SNOW STORAGE AREAS & DISTRIBUTION									
SNOW PLOW AREA		REQUIRED SNOW STORAGE (20% OF SNOW PLOWED AREA)	SNOW STORAGE SITES					TOTAL SNOW STORAGE REQUIRED	TOTAL SNOW STORAGE PROVIDED
			1	2	3	4	5		
A	5.2 ACRES	1.0 ACRES	1.0 ACRES					1.0 ACRES	2.2 ACRES
B	3.7 ACRES	0.8 ACRES			0.8 ACRES			0.8 ACRES	0.9 ACRES
C	3.6 ACRES	0.7 ACRES				0.7 ACRES		0.7 ACRES	0.9 ACRES
D	5.3 ACRES	1.1 ACRES		1.0 ACRES			0.1 ACRES	1.1 ACRES	2.7 ACRES
TOTAL	17.8 ACRES	3.6 ACRES	1.0 ACRES	1.0 ACRES	0.8 ACRES	0.7 ACRES	0.1 ACRES	3.6 ACRES	6.7 ACRES

LEGEND:

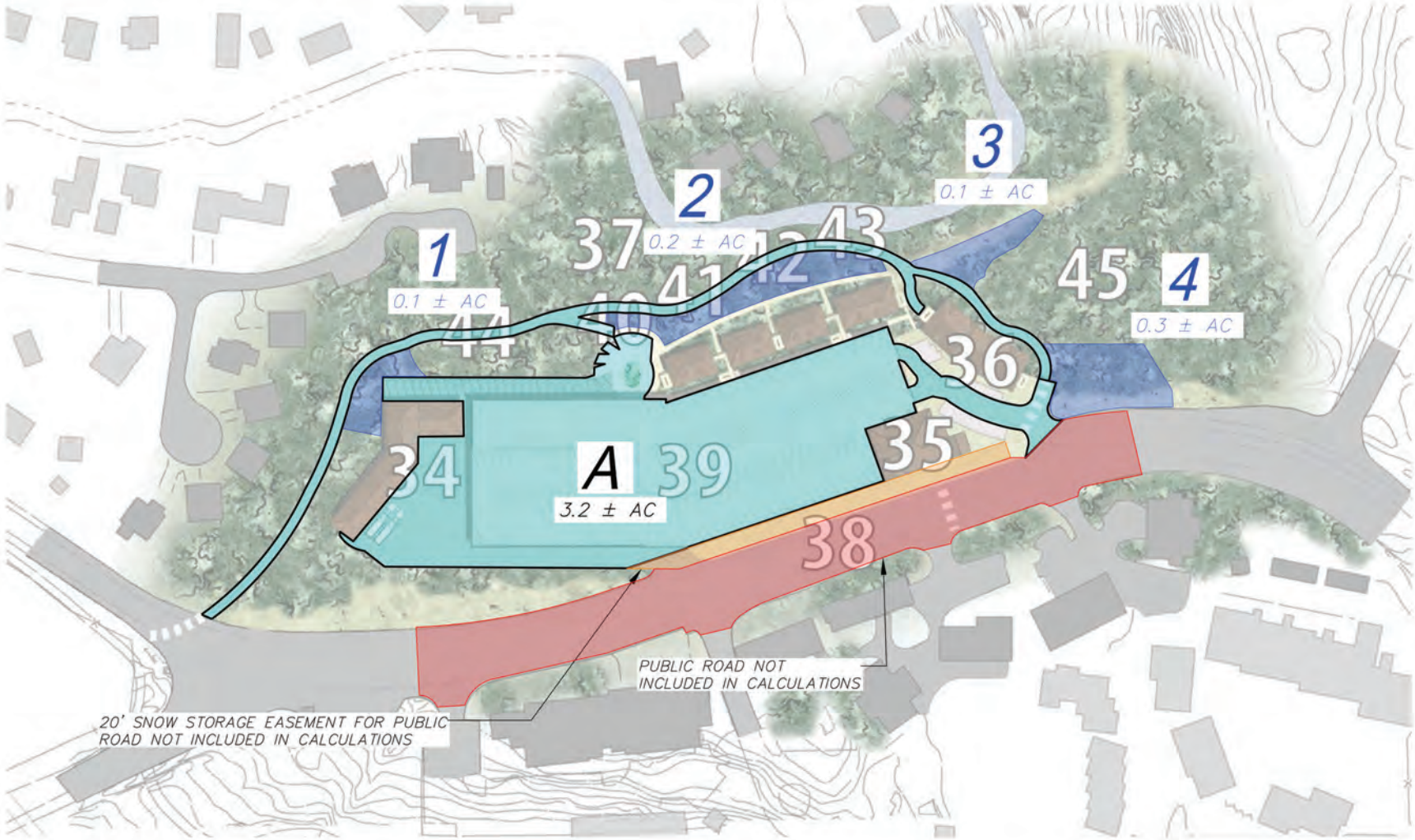
- SNOW PLOW AREAS
- PROPOSED SNOW STORAGE AREAS
- PUBLIC ROADS
- PUBLIC ROAD SNOW STORAGE EASEMENT

Souce: MacKay & Somps 2015

X11010091 03 064

Source: MacKay & Somps 2015f

Exhibit 13-30 **Developed Conditions Snow Storage Stormwater Quality and Treatment Concepts**



LEGEND:

SNOW PLOW AREAS

PROPOSED SNOW STORAGE AREAS

PUBLIC ROAD SNOW STORAGE

SNOW STORAGE AREA & DISTRIBUTION								
SNOW PLOW AREA		REQUIRED SNOW PLOW AREA (20% OF SNOW PLOW AREA)	SNOW STORAGE SITES				TOTAL SNOW STORAGE REQUIRED	TOTAL SNOW STORAGE PROVIDED
			1	2	3	4		
A	3.2 ACRES	0.7 ACRES	0.1 ACRES	0.2 ACRES	0.1 ACRES	0.3 ACRES	0.7 ACRES	0.7 ACRES

0 30 60 120

Source: MacKay & Somps 2015

X11010091 03 065

Source: MacKay & Somps 2015f

Exhibit 13-31

East Parcel Snow Storage Concepts

Mitigation Measure 13-7: Reduction of long-term water quality degradation from snow and runoff management.

To minimize the potential for snow storage and snowmelt runoff to degrade the quality of runoff discharged overland or through the storm drainage to Squaw Creek adjacent to the East Parcel, the project applicant shall submit with the first Subsequent Conformity Review Process for the East Parcel, a final snow storage plan for the parcel that either:

- relocates snow storage away from margin of the stream and wetland to an area within the core developed area (e.g., parallel to the road along the margin of the parking area); and/or
- provides specific containment and treatment features that would prevent discharge of sediment and/or urban pollutants to Squaw Creek and nearby wetland areas.

Significance after Mitigation

Implementation of Mitigation Measure 13-7 would prevent improper or ineffective snow storage BMPs adjacent to Squaw Creek and wetlands, reducing the potential water quality impacts to a **less-than-significant** level.

Impact 13-8: Exposure of people to flood hazards.

Completion of the Squaw Creek corridor restoration plan, including consideration of the build out hydrology, will modify the 100-year floodplain boundaries and water surface elevations. The existing parking areas prone to flooding during the 100-year event would continue to be vulnerable to inundation until completion of the creek restoration element. After the creek restoration is complete and the Specific Plan trails are constructed, future trail users could be exposed to flood hazards on the trail segments along Squaw Creek. This would be a **potentially significant** impact.

The mountain systems components of the drainage network will convey the 100-year flows, while the on-site drainage components will be designed for 10-year flows, and some existing segments of the drainage network have uncertain capacity. As incremental modifications to the stormwater drainage network are designed and implemented, the design and implementation must consider and eliminate the potential for stormwater flows exceeding the system capacity to create injury hazards during large peak flows. This would be a **potentially significant** impact.

Under existing conditions the 100-year floodplain boundary and associated flood hazards encompass a portion of the east parking lots, upstream of the Far East Bridge (Exhibits 13-12 and 13-13). Persons that may be using or crossing portions of parking lots within the designated 100-year flood hazard could be exposed to flooding. The existing exposure of persons to flood hazards in this location would persist until the creek corridor is reconfigured. However, the portion of the parking lot subject to flooding is small and persons can be easily warned of and excluded from the inundation area with flagging, barricades, and signage. In addition, the depth of inundation is shallow (1-2 feet) and flows are slow in the inundation area. Therefore, continued extension of the 100-year floodplain into the parking lot (until corrected by creek restoration activities) would not expose people or structures to a significant risk of loss, injury or death and the flood hazard impact would be less than significant.

Once the stream corridor restoration is constructed, the 100-year flood hazard area would intersect some of the proposed VSVSP recreational amenities along the creek corridor, including sections of bike trails, hiking trails, and/or interpretive and lookout features. As a result, these recreation features would be inundated during infrequent, but large flood events. This could pose a threat to recreation facility users. The late fall through late spring period during which major floods are likely are not expected to have heavy use of the bike and hiking trails. Nevertheless, despite the low probability of flood hazards to persons, the consequences could be serious and this impact would be **potentially significant**.

The storm drainage network includes a mountain systems portion designed to convey the 100-year flow, but the existing and proposed on-site elements are designed for the 10-year flow (and the capacity and condition of some existing segments is uncertain). Depending upon the sequence and exact segment connections for interim and final storm drainage network, it is possible that during an interim phase of project development a large flood peak could result in stormwater flows exceeding the capacity of the combined old and new systems. While the risk of flooding that could damage structures or cause erosion would be low (primarily because it would be within developed/paved areas), risk of injury to persons could result. Although the incremental storm drainage improvements would be designed using updated hydrologic models of the actual existing and proposed build out conditions for each phase to verify that designs would meet Placer County Drainage Design Manual and DPW General Specifications; given some uncertainty about existing systems and the potential for routing of flows exceeding the design capacity through existing or proposed on-site storm drainage segments, this impact would be **potentially significant**.

Mitigation Measure 13-8: Provide flood hazard prevention and signage.

The following measure shall be implemented to avoid the possibility of localized flooding within the on-site portion of the existing, interim, or developed drainage system:

- During the Subsequent Conformity Review Process, the final Drainage Master Plan shall require, and all interim and final storm drainage improvements shall comply with refined, iterative modelling to properly size conveyance facilities including consideration and avoidance of potential connections of mountain system drainage segments with 100-year conveyance capacity to any existing or proposed on-site system drainage segments of 10-year conveyance capacity.

The following measure shall be implemented to avoid or minimize the risk of flood hazards to recreational trail users:

- Improvement Plans submitted to the County that include recreational facilities within the Squaw Creek 100-year flood hazard area (as identified by FEMA at the time of submittal) shall include identification of locations for installation of informational flood hazard warning signs. The signs shall including emergency response contact (e.g., 9-1-1) and shall be installed and maintained at key locations along trail segments within the 100-year floodplain boundary. The content and design of the signs shall be approved by the Placer County Office of Emergency Services.

Significance after Mitigation

Implementation of Mitigation Measure 13-8 would reduce the potential for manhole surcharge as the various existing, proposed interim and developed storm drainage infrastructure are activated, reducing the possibility of injury to persons and property; as well as reduce the potential for users of the recreational trails along the restored creek corridor to be affected by flood hazards. Implementation of this mitigation measure would reduce Impact 13-8 to a **less-than-significant** level.

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