

8 PUBLIC INFRASTRUCTURE

PURPOSE

This chapter provides general information regarding the design and development of public infrastructure in the Railyard Master Plan Area; topics covered include snow storage, stormwater infrastructure, public restroom facilities, and utilities (water, sewer, power, telephone and cable). This section is intended to provide general guidance; more detailed specifications are available in the Town's Development Code and the Town's Public Improvement and Engineering Standards.

Many communities look at downtown infrastructure improvements as an investment in the long-term viability of mixed-use downtowns. While this chapter assumes the Public Works Department will be responsible for maintaining standard infrastructure improvements (excluding utilities). The creation of a separate entity, such as a maintenance district, funded by tax increment or a similar source, to operate and maintain non-standard site improvements is also anticipated. This concept is especially applicable to parking, snow removal and landscaping features.

8.1 SNOW STORAGE

Living in a community that receives over 200-inches of snow annually creates the need to address snow removal and storage in a comprehensive manner. Snow removal on Truckee's public streets is conducted by the Public Works Department, and this Master Plan assumes that development within the Railyard Master Plan Area will require Public Works snow removal services. Efficient snow removal in the Downtown Core is important to the success of the community for a number of reasons, including:

- Maintaining passable routes for emergency equipment, school buses and other essential government services;
- Providing residents and visitors access to local commerce centers when outlying routes such as Interstate-80 to Reno or Sacramento may not be passable;
- Providing visitors a "safe-haven" during large storm events that may limit travel in outlying neighborhoods, especially during peak visitor periods; and
- Minimizing impact to downtown businesses, offices and residents during peak winter storm events.



Example of Winter Snow Storage at Church Street

a. Snow Storage Concept

The Master Plan Area Snow Storage Concept Plan highlights strategically located snow storage areas, as shown in Figure 8-1. Snow removal is a three step process within the denser areas of downtown involving: plowing of the travel lane and public parking areas; stockpiling the plowed snow; and, as necessary, hauling the stockpiled snow to permanent disposal areas. As such, four types of areas will facilitate snow storage in the Railyard Master Plan Area: (1) track buffer storage will occur along the railroad tracks and buffer parking areas along Donner Pass Road Extension; (2) linear storage will occur along streets within adjacent landscape areas; (3) T-intersections provide snow

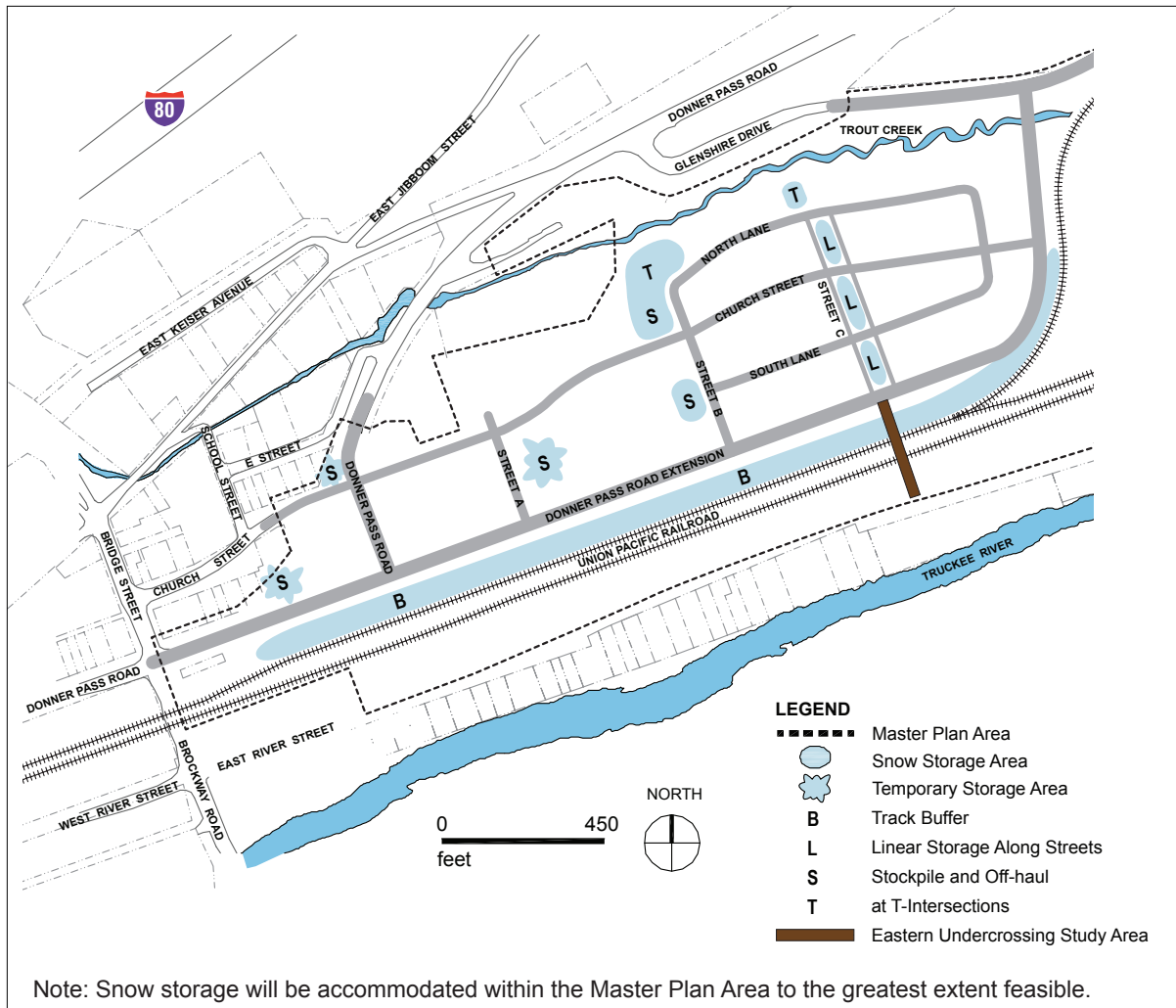


Figure 8-1: Snow Storage Concept Plan

storage areas along park or landscaped areas; and (4) stockpile and off-haul sites will serve as the transfer point for removal of snow from the area. Identification of the ultimate snow storage locations will be required when off-hauling is proposed and the snow removal program is more fully developed.

The stockpiling and hauling steps of the snow removal process are very time consuming and expensive since the snow is handled at least twice and in some cases three times. Currently, the Town stockpiles snow in intersections and parking areas until time allows off-hauling to be scheduled; however, this can result in reduced vehicle sight distances and loss of parking spaces. While the temporary loss of spaces in the Downtown Core may be acceptable for 48 to 72 hours, redevelopment of the Railyard presents the opportunity to establish both temporary and permanent snow storage spaces that eliminate intersection encroachments and minimize lost parking. Properly sited and designed snow storage areas can function in the summer as passive recreation areas and serve as neighborhood pedestrian trail linkages.

b. Snow Storage Standards and Guidelines

Standards and design guidelines for snow storage should be considered in the development of snow storage areas. General Design Guidelines, including applicable guidelines from Development Code Section 18.24.040.B.2.m, are provided below.

Standards

The location and design of these areas should conform to the following criteria:

- MAXIMUM DISTANCE BETWEEN STORAGE AREAS SHOULD BE 300-FEET. (S44)
- PRIVATE PROPERTIES SHALL PROVIDE ON-SITE SNOW STORAGE CONSISTENT WITH DEVELOPMENT CODE SECTION 18.30.130 TO SATISFY THEIR RESPECTIVE REQUIREMENTS (50 PERCENT OF THE PAVED AREA) UNLESS THEY ARE INCLUDED IN THE MAINTENANCE DISTRICT, OR PROVIDE AN ALTERNATE SNOW STORAGE LOCATION APPROVED BY THE TOWN. (S45)
- SNOW STORAGE SHALL NOT BE PERMITTED ACROSS PUBLIC SIDEWALKS. (S46)
- TEMPORARY STORAGE AREAS SHALL BE ACCESSIBLE TO LARGE EQUIPMENT FROM AT LEAST TWO SIDES TO ALLOW EFFICIENT LOADING DURING OFF-HAUL PERIODS. (S47)
- STORAGE AREAS SHALL BE AVAILABLE DURING THE ENTIRE WINTER. SURFACE IMPROVEMENTS (TABLES, BENCHES, ETC) WITHIN THE AREAS SHOULD BE REMOVABLE OR STRATEGICALLY PLACED TO ALLOW MAXIMUM SNOW STORAGE ON THE SITE. (S48)
- STORAGE AREAS SHALL BE CONNECTED TO THE STORMWATER SYSTEM TO PREVENT FLOODING AS THE SNOW MELTS. DESIGNATED STORAGE AREAS SHALL INCORPORATE MEASURES TO REMOVE DEBRIS, SAND AND CHEMICALS PRIOR TO DISCHARGE TO THE STORMDRAIN SYSTEM OR INFILTRATION INTO THE GROUND. (S49)
- STORAGE AREAS MUST NOT BLOCK CORNER SIGHT DISTANCE AT DRIVEWAYS OR STREET INTERSECTIONS. (S50)
- LANDSCAPE PLACEMENT AND SPECIES SELECTION WITHIN STORAGE AREAS SHALL BE REVIEWED FOR FEASIBILITY AND SURVIVABILITY. TREES SHOULD NOT OVERHANG THE STORAGE AREAS TO PRECLUDE DAMAGE TO BRANCHES AND FACILITATE SUN EXPOSURE. (S51)
- THE MINIMUM DIMENSIONS OF A LINEAR STORAGE AREA SHALL BE 10-FEET DEEP BY 75-FEET LONG. NON-LINEAR AREAS SHALL BE AT LEAST 40-FEET IN ANY DIRECTION TO PROMOTE EFFICIENCY AND ALLOW SUFFICIENT STORAGE CAPACITY FOR LARGE STORMS. (S52)
- SNOW STORAGE SHALL BE ACCOMMODATED WITHIN THE MASTER PLAN BOUNDARIES TO THE GREATEST EXTENT FEASIBLE UNLESS OFF HAULING IS APPROVED BY THE TOWN ENGINEER. (S53)

Guidelines

- Storage areas should be located at the end of a “straight” push from removal areas such as parking lots, and at T-intersections, where possible. (G25)
- Residential and commercial streets without on-street parking should have a flush edge treatment (curbs level with roadway) to allow snow removal and window storage without damaging infrastructure such as raised curbs and similar features. (G26)
- Designated snow storage areas should be designed in a way that does not block visibility for motorists. (G27)
- Snow storage areas should consider vegetation as well as solar access; do not locate snow storage in predominantly shady areas. (G28)
- Areas designated for snow storage should use suitable plant materials including vigorous ground covers, perennials, willows, and planters with low edges to facilitate plow access. (G29)
- The placement of infrastructure such as signage, street lamps and similar surface improvements should be offset from the storage area to prevent damage or limit pedestrian access. (G30)

Action Items:

- 8.1 Establish a snow removal program for the entire Master Plan Area and each interim phase of development within the Master Plan. On-street parking areas in the Downtown Extension shall be included in the program. Important sidewalks throughout the Master Plan Area shall be included in the program sufficient to maintain pedestrian circulation through the area during winter months (DTSP, Chapter 4, Pedestrian Circulation Policy 1). The snow removal program shall be developed in combination with the parking plan.

8.2 STORMWATER

The Stormwater Management Concept for the Railyard Master Plan Area identifies areas for stormwater infiltration and treatment in the open space/park areas and landscaped parking areas in the plan area, as shown in Figure 8-2. These areas will be designed to function together with on-site stormwater management plans on individual properties to manage stormwater quality and quantity consistent with Town of Truckee and Lahontan Regional Water Quality Control Board (RWQCB) standards.

In compliance with federal Clean Water Act legislation, municipalities are developing alternative stormwater treatment and drainage methods. Unlike pervious stormwater processing, which expedited flow from the site into channelized storm drains and directly flowed into water bodies, new stormwater systems, consistent with National Pollution Discharge Elimination System (NPDES) regulations, attempt to mimic natural processes by retaining water on site, filtering out particles and contaminants, and releasing water more slowly to downstream water bodies.

Low Impact Development (LID) achieves these water quality and management objectives through urban design concepts, which mimic natural (pre-development) hydrologic processes through reducing the amount and/or contiguity of impervious coverage, maintaining site infiltration and disconnecting impervious areas. The Stormwater Management Concept for this Master Plan emphasizes LID and utilizes landscaped areas to control stormwater at its source through small scale localized features, in contrast to traditional stormwater control methods which require rapid conveyance off-site and costly end-system treatment. These landscape features, referred to as Integrated Management Practices (IMPs), typically result in multi-functional landscaped areas, reduced drainage infrastructure requirements, improved water quality and reduced peak flows.

a. Stormwater Standards

The Town of Truckee and Lahontan Regional Water Quality Control Board (RWQCB) have established standards for addressing both the quantity and quality of stormwater originating from development in Truckee. Development within the Railyard Master Plan Area shall be subject to the Truckee Development Code standards for Drainage and Stormwater Runoff (Section 18.30.050) including: drainage and erosion control plan requirements for construction-period activities; treatment of stormwater runoff (described below); erosion control measures for the operation period activities; and maintenance requirements.

The Town standards require on-site retention of runoff from the 20-year, 1-hour storm, and the quantity or rate of runoff for such a storm should not increase above the pre-development condition. Furthermore, the storm drain system must be sized to convey a 10-year storm (10 percent chance of occurrence in any one year) without system surcharge and a 100-year event (1 percent return interval) without damage. Additionally, storm drains should be stenciled to inform the public that the water drains to the river.

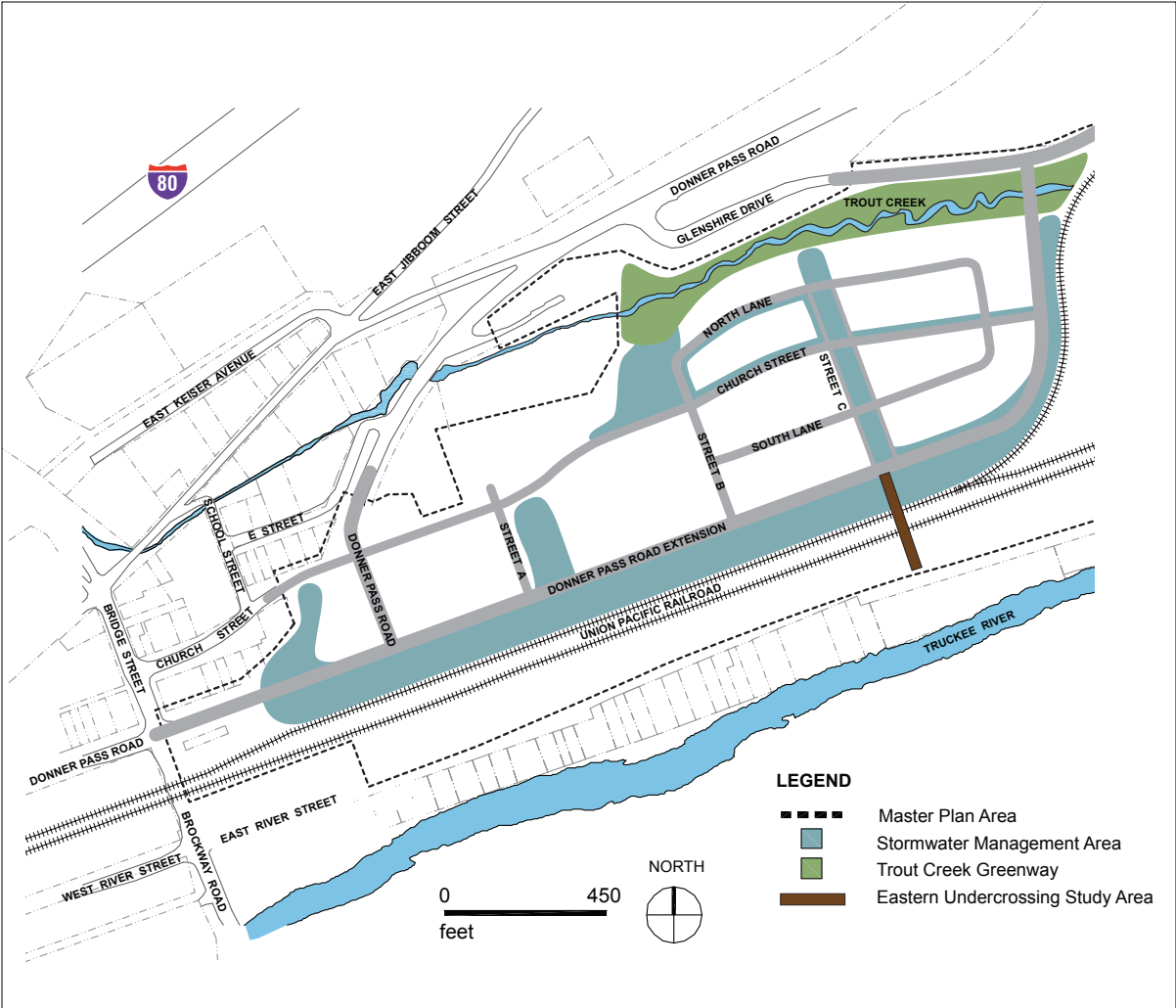


Figure 8-2: Stormwater Concept Plan

The Lahontan RWQCB has set similar criteria concerning the “design storm” that must be addressed with regard to treatment. Generally, the Lahontan Basin Plan mandates treatment of the 20-year, 1-hour storm, but does not regulate the storm drain infrastructure. Redevelopment of the Railyard Master Plan Area will likely result in the issuance of a project specific National Pollutant Discharge Elimination System (NPDES) permit by Lahontan RWQCB. The NPDES permit program requires all point sources discharging pollutants into waters of the United States to obtain a permit.

b. Stormwater Design Guidelines

The following LID concepts are proposed to guide the redevelopment of the Railyard Master Plan Area. While the density and types of uses proposed in each District within the Railyard may limit the feasibility and effectiveness of specific recommendations below, these Design Guidelines should be applied where practical in order for development to achieve the Town’s stormwater standards. Special consideration should be given to sources that flow into Trout Creek and the Truckee River, including properties along the creek and outfall from storm drains to the creek.

Guidelines

The following general project site design considerations should be applied to projects.

- Reduce the amount of impervious surface where practical. Use pervious concrete or similar products in pedestrian areas not subject to sand or salt applications. (G31)
- Separate runoff sources where feasible by creating discontinuity between impervious surfaces. When roof and sidewalk discharges are separated from parking and road runoff the result will be lower flow rates and more options for downstream treatment. (G32)
- Reduce peak flows and quantity of runoff by increasing the length of flow paths, increasing surface roughness, decreasing surface slope and using broader/wider channel shapes (i.e. increasing the Time of Concentration). (G33)

Areas creating runoff should be divided into micro-watersheds for treatment near the source. Once runoff from this micro-watershed is quantified, the appropriate treatment system can be selected. Possible types of IMPs for treatment and infiltration of runoff adjacent to the source include:

- Bioretention Systems in parks and other public landscaped spaces to contain local runoff from parking lots, buildings and walkways. Use of these sites will require analysis to identify areas where inundation is acceptable during periods of runoff;
- Infiltration galleries under low traffic (parking areas and walkways) areas for parking lots, building and walkway runoff;
- Drywells and dripline trenches for building roofs. Provisions must be incorporated in the design to protect foundations from settlement and saturation; and
- Vegetated swales in street median strips to collect street runoff. Strips may also be used for snow storage. Swales subject to combined use must consider peak flow rates and the effectiveness of the swale during the winter due to the tendency of plowed snow to condense and potentially reduce the swale's flow capacity. Damage to the swale may also occur due to the encroachment of snow removal equipment into the swale. (G34)

While peak flows will be reduced by utilizing LID methodology, the storm drain infrastructure should meet all Town of Truckee requirements and incorporate the following provisions:

- All IMPs should include overflow provisions, be connected to the collection system and delineated "release point(s)" should be identified to prevent flooding during large events. (G35)
- Combined snow storage and runoff collection areas may be designed with sufficient capacity to serve both functions including allowance for frozen surfaces, provided underground infiltration galleries or the like are identified. The Town PIES currently do not allow this combined use; however Lahontan's Basin Plan does not contain this prohibition. Consideration should be given to modification of this Town requirement for development within the Master Plan Area. Perforated pipe, underdrains, or similar devices should be considered to discharge runoff at reduced rates and maintain the capacity of the swale. (G36)
- Large basins may be acceptable in some cases (especially as an interim solution during early phases of project build-out or within the railroad properties) and their locations should be limited to non-residential areas to reduce hazards to public and minimize aesthetic issues. Basins should be landscaped, the depth of water in the impoundment should not exceed 2-feet, the depth to groundwater should be at least 4-feet, and provisions incorporated in the design to ensure infiltration and prevent standing water for an extended period of time. (G37)

- The IMP systems must be maintainable, not require specialized equipment and function effectively under the various climatic conditions experienced in Truckee. (G38)

8.3 UTILITIES AND INFRASTRUCTURE

Utilities and infrastructure currently only serve a small portion of the Master Plan Area. New connections will be established to serve the Railyard Area. A Railyard Servicing Preliminary Report was prepared to determine the feasibility of extending infrastructure and utilities into the Railyard Master Plan Area.¹

Very little infrastructure exists in the Railyard Master Plan Area, with the exception of Church Street and Trout Creek Road, as shown on Figure 8-3, and the utilities that are present are of insufficient capacity to meet the utility demands anticipated under the Master Plan. However, the existing utility systems surrounding the property are generally of adequate size, condition and proximity to be extended to and serve redevelopment of the Railyard without extensive off-site improvements or modifications.

This subsection also briefly outlines the potential connections for utilities within the Railyard Master Plan Area. Preliminary capacity assessments have been completed based on an ultimate build-out of the Railyard Area. Utility providers generally have sufficient capacity to support redevelopment of the Railyard Area; however, infrastructure and utility provider assessments will be updated as required for the implementation of this Master Plan.

a. Water

(1) Existing. Water is distributed at three locations in the Railyard Area from the Truckee Donner Public Utility District (TDPUD) Northside Tank. A 10-inch TDPUD pipeline serves the Church Street properties and terminates in the vicinity of the Truckee Tahoe Lumber Company buildings. A 6-inch main on the north side of Trout Creek serves the residences along Trout Creek Road, while an 8-inch diameter water main serves properties along East River Street.

(2) Proposed. A new water distribution system will be necessary to meet both domestic and fire protection needs for development with the Railyard Master Plan Area. The layout and size of the pipe network will be determined by fire flow demands, which are a function of type of use/occupancy, building size and building construction materials. To meet the fire flow requirements, the distribution system will likely be constructed of a 12-inch diameter main in the core of the Railyard. The installation of 8- or 10-inch pipe may be possible in areas of lesser demand. The Railyard will be served by the Northside Tank feeding the “Downtown Pressure Zone.” Because of limited capacity of the reservoir, a connection to the 6170 zone through a pressure reducing valve station will be required to provide extended free-flows.

While a hydraulic model has not been created for the Railyard, it is assumed that the distribution system will connect to the Truckee Donner Public Utility District’s system at two locations (Church Street and East River Street) in order to “loop” the system. In order to meet expected fire flow storage demands, a connection to a 24-inch pipeline feeding the PPUD’s “6170” zone will likely be required. While connection to the Church Street pipeline will be relatively straightforward as the pipeline is accessible from the site, the condition of the existing pipeline must be confirmed. The East River Street connection will require tunneling or boring under the Union Pacific tracks.

¹ Acumen Engineering Company, 2004. *Preliminary Report, Railyard Servicing Study*. September 28.

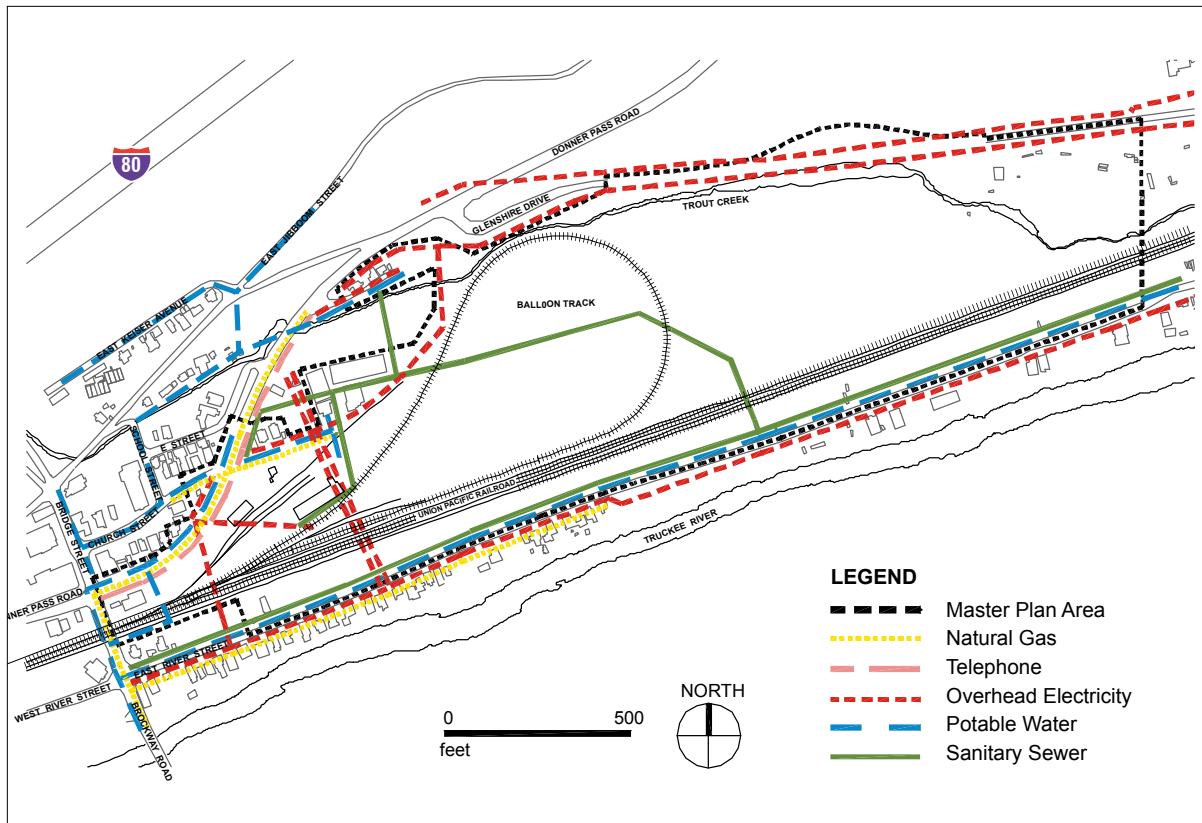


Figure 8-3: Existing Utilities Plan

b. Sewer

(1) Existing. Within the Railyard Master Plan Area, Truckee Sanitary District provides waste water collection services to properties on Church Street and residences on Trout Creek Road, which are served by a small sewage pump station that discharges to the gravity main in the vicinity of the lumber yard. The gravity main flows east under the balloon tracks and connects to the East River Street main under the railroad tracks. The East River Street line crosses over the Truckee River under the pedestrian bridge and discharges to the Tahoe Truckee Sanitation Agency 36-inch interceptor.

(2) Proposed. The lack of a usable on-site sanitary sewer system necessitates the construction of a new collection system for uses within the Railyard Master Plan Area. The Railyard Master Plan Area will function as a “tributary area” within the Truckee Sanitary District’s (TSD) service area. Portions of the Church Street area west of Donner Pass Road and the pump station serving the homes north of Trout Creek must be connected to the new collection system.

Discharge of the sewage into the TSD system on East River Street will likely include the installation of a sewage lift station at the east end of the project where the TSD system crosses the Truckee River, to handle peak flows. As with the water connection, the project will require a new pipeline under the railroad tracks. Wastewater will flow to the Tahoe Truckee Sanitation Agency’s 36-inch interceptor on the south side of the Truckee River, which has sufficient capacity for the Railyard Master Plan Area redevelopment.

c. Gas and Electrical Power

(1) **Existing.** Overhead power lines serve the western portion of the Railyard Master Plan Area along Church Street, connecting through the lumber yard. Lines from the Truckee Donner Public Utility District “Truckee Substation” on East Jibboom Street serve properties on Trout Creek Road. An underground feed is also present along Church Street from Donner Pass Road to the lumber yard. Off-site power lines serve East River Street.

Southwest Gas provides natural gas service to the Railyard Master Plan Area. A 2-inch mainline exists on Church Street. Off-site mains include the western section of East River Street and the area of East Jibboom and Keiser Avenue. There is a 4-inch main on Glenshire Drive which terminates approximately 400-feet west of the Highway 267 Bypass Bridge.

(2) **Proposed.** Electrical utility service connections are required for new development in the Railyard Master Plan Area. The on-site power system will likely connect from the existing aerial line on Glenshire Drive and “loop” through the underground system on Church Street. The Truckee Development Code requires new development be served by an underground system and it is very likely that the existing aerial system will be removed as a part of development of the Railyard Master Plan Area. The TDPUD electric distribution system consists of four substations within the service area with enough redundant capacity to serve the area if any one of the stations went out of service. The “Truckee Substation” was significantly upgraded five years ago with the installation of new transformers and regulators and will serve the Railyard Master Plan Area.

Natural gas will be distributed through an on-site pipe system designed by Southwest Gas. The point(s)-of-connection are likely to include the existing pipeline on Church Street and a mainline extension and connection from either Keiser Avenue or Glenshire Drive to the site. The Southwest Gas distribution system in Truckee is described as “strong” by the SW Gas Engineering Department. Sufficient capacity exists within the system to supply the project with adequate connections to the distribution system.

d. Telephone and Cable Service

(1) **Existing.** SBC Communications provides telephone service along Church Street and on the aerial j-pole systems serving Glenshire Drive and East River Street. Sudden Link Communications television service is currently available on Church Street, at the western-most portion of the Railyard Master Plan Area.

(2) **Proposed.** Telephone and cable television on-site distribution systems are required for development with the Railyard Master Plan Area. Telephone will be served by a trunk line in Donner Pass Road and cable television service will be provided via a connect from Glenshire Drive or Church Street.

e. Public Restroom Facilities

Public restroom facilities are an important component of the public infrastructure system and should be incorporated into public parks and civic buildings. This chapter does not provide detailed guidance, but instead refers the reader to the Downtown Specific Plan (DTSP), Chapter 6.C Public Restroom Facilities. As required by the DTSP, public restroom facilities will be incorporated into the Master Plan Area as described in Chapter 6, Public Places, of this Master Plan.

Action Items

- 8.2 Prior to implementation of each phase of development, the project developer shall work with the appropriate utility agencies and the Town Engineer for approval of a detailed Infrastructure Master Plan for water, sewer, stormwater, electrical, gas, and telecommunication services and roadway extensions and improvements to allow the anticipated mix of land uses within each phase of development.

Also see Action Item 6.1 which requires the establishment of a maintenance district.