

8 Project Scenarios

As discussed in previous sections, rural and open space dominate the watershed (>69%; see **Table 3-4**), the sources of salts and nutrients that can be managed have been and are expected to be consistent over time, and no trends in the constituents of concern have been observed in most wells in the SNMP area. As a result, the development of project scenarios for evaluation in the SNMP focused on recycled water projects. The recycled water purveyors in the watershed are in various stages of developing recycled water projects. A number of planned projects have been identified but only the Ventura County Waterworks District 16 - Piru WWTP has advanced to the point of identifying specific project locations. As a result, the description of the planned recycled water projects are primarily from planning documents and conversations with stakeholders and the level of detail presented is reflective of the early planning stages for the planned projects. The planned projects are shown in **Table 8-1**.

While the projects shown in **Table 8-1** are currently planned, the recycled water goals outlined in **Section 1** are higher than the currently planned projects. Most of the stakeholders would like to find ways to recycle all of their current wastewater effluent volume and any additional volume that may be treated in the future, up to the design capacities of the treatment plants. To cover the range of possible recycled water scenarios that may need to be covered by the SNMP, three volumes of recycled water were considered plus one additional scenario:

1. Scenario 1. This scenario represents the *low* estimates of *planned* recycled water project volume as presented in **Table 8-2**.
2. Scenario 2. This scenario represents the *high* estimates of *planned* recycled water project volume as presented in **Table 8-2**.
3. Scenario 3. This scenario represents the maximum amount of recycled water that could be used in the SNMP area (**Table 8-2**). The maximum volume scenario would meet or exceed the recycled water use goals.
4. Scenario 4. This is an additional scenario for the City of Ventura that only considers the use of partially treated recycled water in the Mound basin (**Table 8-2**).

In addition to the recycled water volume and associated water quality, the location of the recycled water use is important. As discussed previously, all of the wastewater discharges, except for the VWRP, either recycle or discharge all of their effluent to the groundwater through percolation ponds. If the recycled water will be used in the same subarea as the current discharge, then any recycled water projects up to the current discharge volume would not be new loads to the groundwater subarea. However, if the recycled water is applied in a different subarea, it may be a new load to that subarea and a reduction in load in the subarea currently receiving the load. Therefore, the location of the recycled water project scenarios is also important. Santa Paula is considering recycled water projects in the same subarea to which they currently discharge and in adjacent subareas. As a result, the SNMP also includes consideration of scenarios for Santa Paula that involve discharges to different subareas and the same subarea. The specific project location for the initial District 16 - Piru WWTP project is included in Figure 8-1. Generalized locations of the remaining planned and potential future recycled water projects are shown in **Figure 8-2** to **Figure 8-6**.

The City of Ventura is considering groundwater recharge projects for indirect potable use and direct potable reuse projects. Development of indirect potable use and direct potable reuse projects will likely require treatment of the effluent prior to use of the water and disposal of brine outside of the planning area. If direct potable reuse is selected as the preferred option, the project would not involve discharge to the groundwater basins. As a result, direct potable reuse is not evaluated in the SNMP, but indirect groundwater recharge is included in the analysis.

The City of Ventura is planning to extend their existing recycled water pipeline to provide recycled water for landscape irrigation and may also provide recycled water for landscape irrigation to other users in the City. In addition, the City of Ventura may provide recycled water to agricultural users. To provide acceptable recycled water quality for agricultural irrigation, the tertiary effluent would likely undergo partial RO treatment. Landscape irrigation and agricultural irrigation are evaluated in the SNMP.

Table 8-1 Planned Recycled Water Projects

| Groundwater Basin | Subarea | Agency | Type of Future Use | Volume of Use | Timing of Use | Reference Source |
|--------------------------|-------------------------------|---|--|--|--|---|
| Piru | Lower Area West of Piru Creek | Ventura County Water Works District 16 – Piru Wastewater Treatment Plant ¹ | Farm land located to the north, east, and south of the treatment plant | Phased implementation from 225 AFY to 560 AFY (0.2 mgd to 0.5 mgd) | Delivery of 225 AFY (0.2 mgd), current treatment plant flows, will begin in 2016 | Personal communication with County staff. |
| Fillmore | Pole Creek Fan Area | City of Fillmore ² – Fillmore Wastewater Reclamation Facility | Heritage Valley Park Development – 20 acre park, 10 acre school sports field | 60 AFY (0.05 mgd) | Unknown – Depends on pipeline construction | Personal communication with City staff and Fillmore Recycled Water Delivery Report 2010 & 2011. Based on 2 AF/acre irrigation rate. |
| | | | Panam Sat Orchard – 20 acres avocado orchard | 147 AFY (0.13 mgd) | Unknown – may depend on developing competitive pricing for recycled water | Personal communication with City staff and Fillmore Recycled Water Delivery Report 2010 & 2011. Based on 2.1 AF/acre irrigation rate. |
| | | | Baldwin Towne Plaza – 5 acre turf | 10 AFY (0.01 mgd) | Unknown – may depend on developing competitive pricing for recycled water | Personal communication with City staff and Fillmore Recycled Water Delivery Report 2010 & 2011. Based on 2 AF/acre irrigation rate. |
| | | | Agricultural area located east of the City limits – No defined acreage | Unknown | Unknown | Personal communication with City staff. |

Table 8-1 Planned Recycled Water Projects

| Groundwater Basin | Subarea | Agency | Type of Future Use | Volume of Use | Timing of Use | Reference Source |
|--------------------|-------------------|--|---|---|--|--|
| Santa Paula | West of Peck Road | City of Santa Paula – Santa Paula Water Recycling Facility | Landscape irrigation | Phase implementation from 400 AFY to 1,622 AFY (0.4 mgd to 1.45 mgd) | Phase implementation from 2015 to 2035 | City of Santa Paula Urban Water Management Plan 2011, City of Santa Paula Recycled Water Facilities Planning Final Report 2010 |
| | West of Peck Road | City of Ventura VWRP | Landscape Irrigation | Possible upper range of 100 AFY | Not permitted and demands not currently well defined | Personal communication with staff |
| | West of Peck Road | Saticoy Wastewater Treatment Plant | None | NA | NA | NA |
| | West of Peck Road | Limoneira and Oliveland's Sewer Farms Todd Road Jail Wastewater Treatment Plant | None None | NA NA | NA NA | NA NA |
| Mound | Mound | Montalvo Community Services District Wastewater Treatment Plant | None | NA | NA | NA |
| | Mound | City of Ventura – Ventura Wastewater Reclamation Facility | Groundwater recharge to Mound basin for indirect potable reuse. Landscape irrigation in the City's Recycled Water Focus Area | 2,200 – 7,100 AFY (2-6.3 mgd). Possible upper range of 9,700 AFY (8.7 mgd) 60 AFY (0.05 mgd) | 2025 Implementation at 9,700 AFY would depend on outcome of additional feasibility studies Already permitted, but timing of implementation unknown – Will be implemented with new development | 2013 RW Facility Plan 2012 RW Market Study |

Table 8-1 Planned Recycled Water Projects

| Groundwater Basin | Subarea | Agency | Type of Future Use | Volume of Use | Timing of Use | Reference Source |
|--------------------------|----------------|---|---|---|--|-----------------------------------|
| Mound (continued) | | City of Ventura – Ventura Wastewater Reclamation Facility | Landscape irrigation | Possible upper range of 1,500 AFY (1.3 mgd) | Not permitted and demands not currently well defined | Personal communication with staff |
| | | | Agricultural irrigation | Possible upper range of 7,300 AFY (6.5 mgd) | Not permitted and demands not currently well defined | Personal communication with staff |
| Oxnard Forebay | Oxnard Forebay | City of Oxnard | Recharge of recycled water (from the Oxnard AWWP, which includes RO) in surface spreading basins and/or direct use for Ag irrigation. | Unknown | Unknown | Personal communication with staff |

¹ The County plans to implement 100% reuse of effluent from the Piru Wastewater Treatment Facility. Upgrades to the treatment facility to produce Title 22 recycled water are currently being designed. It is anticipated that the citrus farm will provide sufficient demands for all of the recycled water from the treatment facility (from current treatment plant flows of 0.2 mgd, up to 0.5 mgd, which is the buildout flow of the treatment facility).

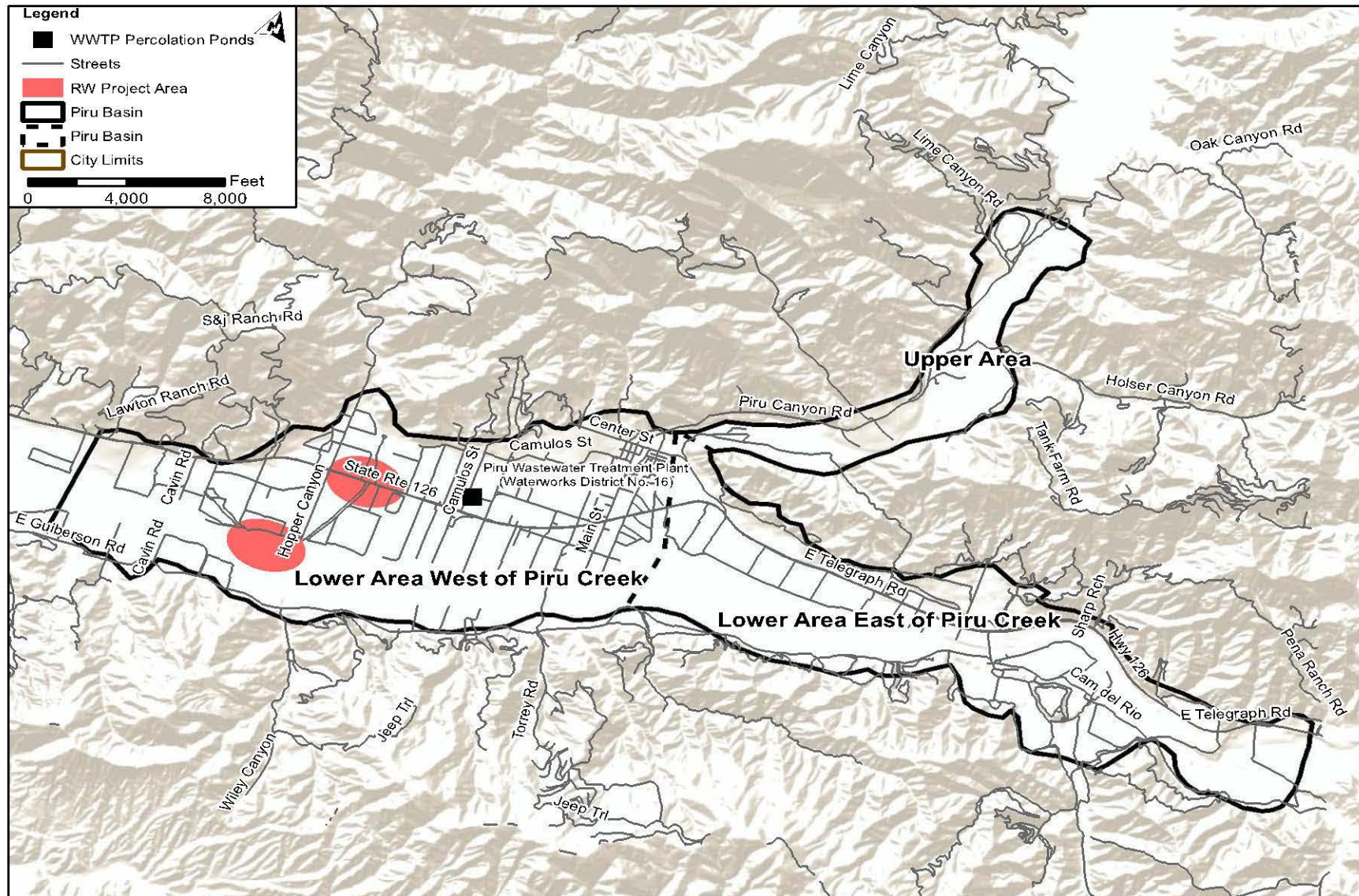
² The City of Fillmore's goal is to implement reuse of 100% of their effluent. Annual average effluent flows are approximately 1 mgd (1,120 AFY). Approximately 25% (0.25 mgd, 280 AFY) of the effluent is currently being recycled. Therefore the City would need to implement 0.75 mgd (840 AFY) of reuse in the future, provided that there is not a significant increase in WWTP effluent flow.

Table 8-2 Project Scenarios

| Discharger | Subarea | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
|--|--|----------------------------------|-------------------------------------|---|--|
| Piru | Lower Area West of Piru Creek | 225 AFY | 560 AFY | 560 AFY | |
| Fillmore | Pole Creek Fan Area | 217 AFY | 1,040 AFY | 2,651 AFY | |
| Santa Paula | West of Peck Road and/or East of Peck Road | 400 AFY | 1,622 AFY | 3,088 AFY | |
| Ventura¹ | Mound | 60 AFY (landscape irrigation) | 1,500 AFY (landscape irrigation) | 1,500 AFY (landscape irrigation) 7,300 AFY (agricultural irrigation) | 7,300 AFY (agricultural irrigation) |
| ¹ Landscape irrigation is assumed to occur at existing discharge quality. Agricultural irrigation would consist of partially reverse osmosis treated effluent with assumed quality of 597 mg/L TDS, 117 mg/L chloride, and 3 mg/L nitrate. If indirect groundwater recharge is implemented, the project would consist of highly treated effluent with low salt and nutrient concentrations that would be well below the existing concentrations in the Mound basin. The use of highly treated wastewater for indirect groundwater recharge is a management measure that would likely reduce salt and nutrient concentrations in the Mound basin and is therefore not considered as an added load for the scenario analysis. | | | | | |



Figure 8-1 District 16-Piru WWTP Planned Project Location in Piru Basin-Lower Area West of Piru Creek



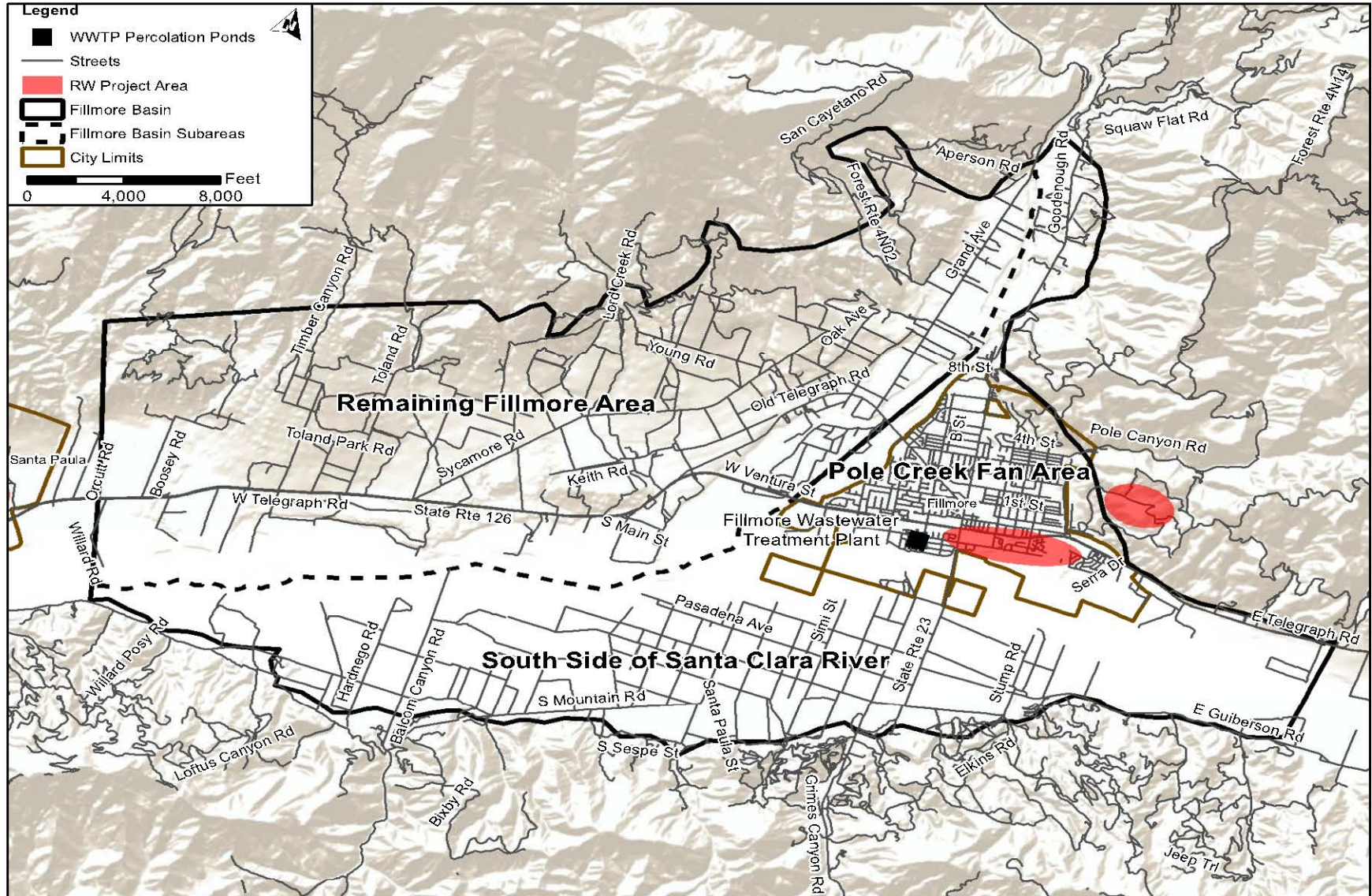


Figure 8-3 Potential Recycled Water Project Areas in Fillmore Basin

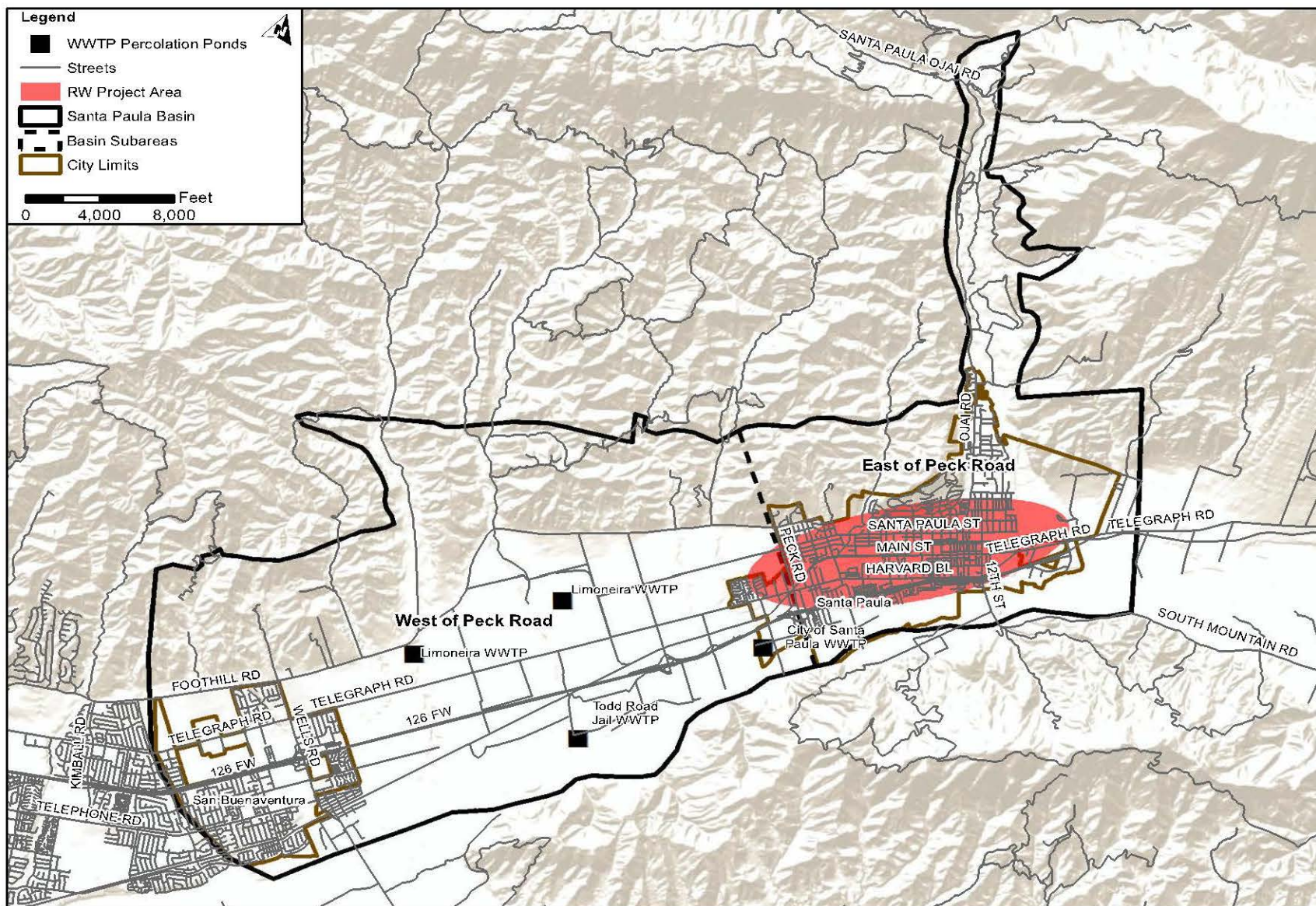


Figure 8-4 Potential Recycled Water Project Areas in Santa Paula Basin

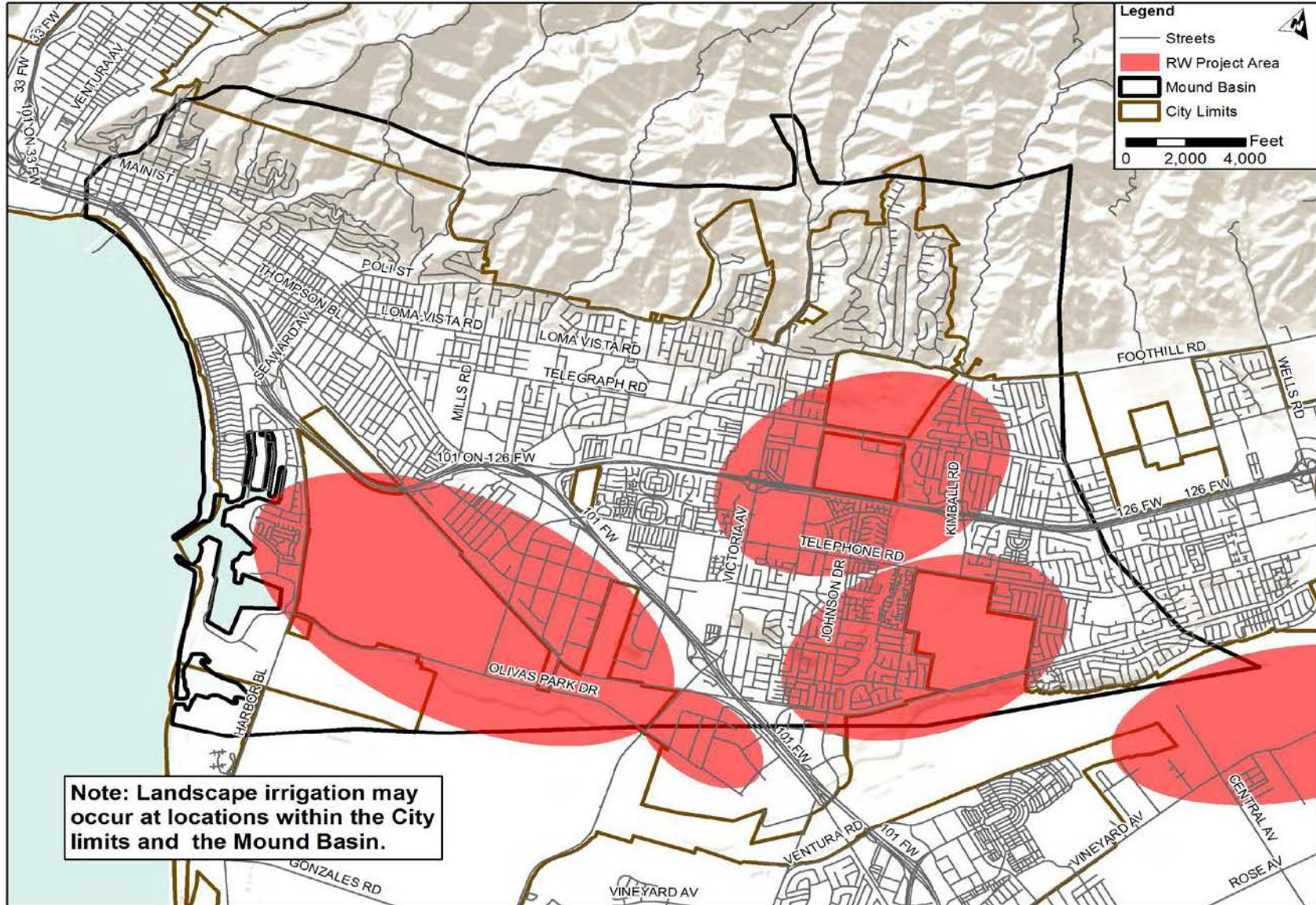


Figure 8-6 Potential Recycled Water Project Areas in Mound Basin