Sierra Pacific Industries (SPI) is requesting approval of a modification of an existing use permit for the construction and operation of a larger biomass cogeneration power facility ("Cogen Facility") at its existing lumber manufacturing facility located in Shasta County, near the City of Anderson. This section describes the characteristics of the proposed SPI Cogeneration Power Project (project), including the following information: (1) the location and boundaries of the proposed project on a regional and detail map; (2) a statement of the project's objectives; (3) a general description of the project's technical and environmental characteristics; and (4) a description of the intended uses of the EIR. Figures referenced throughout this section are located at the end of the section.

2.1 PROJECT LOCATION AND ENVIRONMENTAL SETTING

REGIONAL LOCATION

The project site is located in Shasta County, immediately northwest of the Anderson city limit, and southeast of the City of Redding. The project's regional location is depicted in Figure 2-1 and the project's vicinity is depicted in Figure 2-2.

The project is located on a 121.39-acre parcel (APNs: 050-110-023 and 050-110-025) at the end of Riverside Avenue, approximately 0.5 miles west of Interstate 5. The northeastern border of the project site is adjacent to the Sacramento River. The southwestern border of the project site is adjacent to State Route (SR) 273 and a Union Pacific Railroad line. The northwestern border of the project site is adjacent to undeveloped industrial land. The southeastern border of the project site is adjacent to Spring Gulch Creek. The northwest boundary of the site is bordered by Anderson Cottonwood Irrigation District (ACID) Canal Overflow ditch. The project site is accessed from Riverside Avenue. The project site and areas of proposed improvement are shown in Figure 2-3.

SURROUNDING LAND USES

The Siskiyou Forest Products manufacturing facility is located to the southwest of the project site. Lands to the northwest of the project site consist of undeveloped agricultural and vacant lands. The City of Anderson abuts a portion of the southeastern project boundary, as shown in Figure 2-2. Lands to the southeast of the project site include vacant lands and the SPI administrative offices. The Sacramento River is northeast of the property. Properties across the river from the project site are primarily used for recreational vehicle and residential mobile home parks. Properties adjacent to the project site to the north and south along the Sacramento River include vacant lands and commercial and light industrial uses. There are a number of existing residences located within a half-mile of the project site with the closest residences being those located across the Sacramento River and those across SR 273 to the southwest of the project site.

The General Plan land use designations for the project site and parcels in the vicinity of the project site are shown in Figure 2-7.

PROJECT SITE

The project site is owned by SPI. The project site is an active lumber manufacturing facility, which is used to manufacture lumber, wood poles, and metal/machinery components; generate power through an existing biomass cogeneration facility; store and re-distribute manufacturing parts; repair trucks and machinery; and ship wood chips and lumber by truck and rail. The land was converted to a sawmill use following the purchase of the property by US Plywood Company in 1947. The site has supported sawmilling activities by various owners up through the present day. SPI has been operating the mill since 1987.

The project site is designated as Industrial (I) by the Shasta County General Plan Land Use Designation Map. The County zoning designation for the project site is General Industrial (M).

There are numerous existing structures located throughout the project site. These structures are shown on Figures 2-4 and 2-5, and are used to support the existing operations on the site. The project site contains several paved and unpaved service roads and parking areas. The project site is accessed from the southeast via Riverside Avenue.

The portion of the project site where the proposed improvements would be constructed is shown on Figure 2-3. This portion of the site is referred to as the Area of Potential Improvement (API) throughout this EIR. The API is currently used to store lumber, and also includes features associated with the existing biomass cogeneration facility, including the boiler, ash bin, cooling tower and sawdust silo. The API is located in approximately the center of the 121-acre parcel. The API is relatively flat, and is covered by existing structures, gravel, and asphalt cement. The API is located adjacent to two industrial surface ponds which are used to supply water for fire suppression activities (daily watering of logs on site) and firefighting activities, if needed. The surface water ponds are also used to supply process water for the Cogen Facility, as described in greater detail below. These two industrial surface water ponds are fed primarily by natural underground springs and intermittently from ground water from an existing well on site, depending on weather and water demands at the lumber manufacturing facility. The API is void of vegetation and does not provide suitable habitat for any special-status plant or animal species.

The project also includes a new 115kV/12.5kV electric substation, which would be located adjacent to the proposed new boiler building. This area is currently is void of all vegetation. This area is shown on Figure 2-3.

EXISTING ON-SITE OPERATIONS

The existing sawmill is powered by an existing onsite four-megawatt (MW) biomass cogeneration power facility. The fuel consists of the sawdust and woodchips that are byproducts from the sawing of lumber from logs. The fuel is stored in a large pile and covered fuel bin. Conveyors move the fuel to the existing boiler and a stream driven turbine converts mechanical energy into electrical energy. Excess steam is conveyed via above-ground pipeline to the lumber kilns to dry lumber. The existing biomass cogeneration facility also utilizes a two-cell cooling tower and ash bins. The existing wood fired boiler was completed in March 1997. The existing turbine and

electrical generator was operational in December 1997. The existing generator is rated to produce 4 MW of electricity and the boiler is rated to produce 80,000 lbs of steam.

The existing lumber manufacturing facility utilizes several types of heavy equipment during its daily operations, including: log trucks, log loaders, portal cranes, hydraulic lifts, conveyors, debarkers, optical scanners, computers, wood saws, lumber sorters, chip and sawdust conveyors, utility pole manufacturing, fork lifts, dry kilns, lumber planers, lumber stackers, lumber wrappers, lumber trucks, water trucks, and rail cars. Truck and machinery repair equipment is housed in the onsite truck shop. There are also existing gas and diesel refueling stations on the site.

The metal manufacturing facility utilizes computers, plotters, metal saws, lathes, welders, cutting torches, grinders, metal presses, paint and electrical components to construct machinery to be used at SPI manufacturing facilities (both on- and off-site facilities).

The sawmill employs 153 people. Seven administrative staff support the sawmill operations. The fabrication shop has 38 employees. The pole plant has six employees. The warehouse staff includes four employees. Additionally, 31 truck drivers and four mechanics and employed.

Operations at the existing lumber manufacturing facility occur between 16 and 24 hours per day, depending on market conditions and demand.

EXISTING UTILITIES AND SERVICES

The site is accessed via Riverside Avenue along the eastern boundary of the project site. As stated above, the project site contains a network of paved and unpaved service roads. A network of railways also traverses the site. Electricity used at the site is produced by the existing onsite biomass cogeneration power facility. Potable water for the site is produced from two existing on-site wells, which currently pump approximately 645 acre-feet per year to meet existing potable and non-potable water demands at the SPI site. Non-potable water is generated from the surface water ponds, which are fed by natural underground springs, and is supplemented with groundwater pumped from the on-site wells as-needed. Wastewater generated on the site is disposed of through an existing septic system. Water sprinkled on the log decks is captured in the ponds on-site and recycled. Solid waste is trucked by SPI to the Anderson Solid Waste landfill, operated by Waste Management Incorporated.

2.2 PROJECT DESCRIPTION

OVERVIEW

The proposed project consists of the construction and operation of a new Cogen Facility, including a new boiler, fuel shed, boiler building, turbine building, cooling tower, electrostatic precipitator, ash silo and electric substation, on the project site. The boiler associated with the Cogen Facility would burn biomass fuel (i.e., non-treated wood and agricultural crop surpluses, as well as urban wood waste) generated by the lumber manufacturing facility on-site, regional lumber manufacturing facilities, and other biomass fuel sources to produce up to 250,000 pounds of steam per hour. The steam would be used to dry lumber in existing kilns and to power a steam turbine. The steam turbine would drive a generator that would produce up to 31 MW of electricity

for on-site use as well as for sale to the local power grid. Approximately 7 MW will be used to power on-site equipment; the remainder will be sold on the open market. The electricity that is sold would originate from the on-site electric substation and be transferred to the local power grid for distribution to the purchaser.

The project applicant estimates that up to 485 acre-feet per year of groundwater would be required for the operation of the proposed Cogen Facility. A schematic flow diagram for the Cogen Facility is presented in Figure 2-6.

The existing smaller biomass cogeneration facility on-site would be maintained as a backup so that the sawmill operation can be normalized during maintenance operations on the new Cogen Facility. The two on-site cogeneration facilities would not be permitted to operate simultaneously.

REQUESTED ENTITLEMENTS

The project applicant is requesting a use permit from the County to operate the proposed Cogen Facility. If approved, the use permit would modify the existing use permit held by the applicant, and would consolidate all existing and new conditions of approval imposed on the applicant by the County. No other entitlements have been requested.

DESIGN

The final design of the biomass-fired boiler has not been determined. It would have a maximum annual average heat input of approximately 425.4 million British thermal units per hour (MMBtu/hr) and a maximum steam generation rate of 250,000 pounds per hour (lb/hr). Over short-term periods, the boiler may be fired at heat input rates that exceed the annual average rate: an hourly maximum of 468.0 MMBtu/hr (10 percent greater than the annual average), and a maximum 24-hour average of 446.7 MMBtu/hr (5 percent greater than the annual average). The boiler would be equipped with two natural gas burners, each with a maximum rated heat input of 62.5 MMBtu/hr, for start up and flame stabilization. The Cogen Facility design would incorporate a selective non-catalytic reduction (SNCR) system to reduce emissions of oxides of nitrogen (NOx), as well as a multiclone and electrostatic precipitator (ESP) to control emissions of particulate matter (PM). A closed-loop two-cell cooling tower would be used to dispose of waste heat from the steam turbine.

FUEL SUPPLY

Overview

Fuel for the cogeneration unit would come from the existing SPI facilities in California at Arcata, Anderson, Shasta Lake, and Red Bluff, as well as in-forest materials from ~~SPI-owned or controlled~~ private and public timberlands, and various sources of agricultural and urban wood fuel. ~~wastes.~~ An additional 23 truck tips per day are expected to be needed to deliver the additional fuel to the project site.

There will not be a public drop-off for agricultural or urban wood fuels. ~~wastes~~. Agricultural and timber wood fuels ~~wastes~~ would include wood chips from trees, brush and slash from timber harvest operations or wildland fire fuel reduction projects, as well as wood chips from orchard

removals, rice hulls or nut shells. Urban biomass fuel would include chipped pallets and urban wood fuel from commercial and residential source separated material programs. Urban fuels would not include railroad ties or any other treated or painted wood. Construction debris may be used, but only if it is a clean source separated material, such as ground up wood that does not include such things as wallboard and general debris. The only non-biogenic fuel that would be consumed at the Cogen Facility would be natural gas, as necessary for maintenance activities, including starting up and shutting down the Cogen Facility, and for flame stabilization.

~~The available supply from SPI-owned or controlled facilities and timberlands totals 400,000 bone dry tons (BDT) per year. In addition, there are 50,000 BDT of agricultural and urban wood wastes available to SPI annually.~~ The new Cogen Facilty would consume an average of approximately 25 bone dry tons (BDT) of biomass fuel per hour which equates to 219,000 BDT per year since it is expected to operate as near to continuously as is practicable.

~~The Anderson facility currently produces approximately 160,000 BDT of wood wastes per year of which 60,000 BDT are consumed by the existing cogeneration facility, 20,000 BDT are trucked to other biomass power plants, and the balance is trucked to other markets (e.g., wood chips to pulp mills). The new facility would consume 219,000 BDT per year, 80,000 BDT of which would be generated by SPI's Anderson facility, while the balance (139,000 BDT) would transported by truck from other SPI sources. An additional 23 truck trips per day are expected to be needed to deliver the additional fuel to the facility.~~

~~Fuel from the existing onsite sawmill would be transported by conveyor to the proposed fuel shed. Fuel in the shed would be transported to the boiler via conveyor. Fuel from the existing onsite planer and pole yard would be gathered in overhead bins and moved across the yard by truck. Fuel delivered to the site by truck from offsite sources would be dumped at the front of the fuel shed using an electric hydraulic truck dump installed at the front of the fuel shed (see Figure 2-5). Primary fuel storage and fuel mixing would occur in the fuel shed. Moving fuel into the shed would require the use of a front end loader or dozer. If the fuel shed becomes full, excess fuel would be stockpiled at the outdoor fuel pile. The outdoor fuel pile would be maintained by a front end loader or dozer, and would be moved to the fuel shed as necessary to turnover the fuel at least every 30 days.~~

Fuel Sources

The proposed Cogen Facility will have an annual fuel requirement of approximately four hundred twenty thousand (420,000) green tons (equivalent to 219,000 BDT). The SPI Anderson Sawmill facility (SPIA) has the capability to provide sixty-five percent (65%) of the fuel requirements of the proposed Cogen Facility by utilizing one hundred percent (100%) of the available biomass fuel produced in the sawmill. The remaining thirty-five percent (35%) of the annual requirement can be sourced from the SPI Shasta Lake Sawmill facility (SPISL) which is located eighteen (18) miles north of the SPIA Sawmill. Together, SPIA and SPISL have the capability of supplying one hundred percent (100%) of the proposed Cogen Facility fuel requirements.

There are, however, additional and alternative fuel sources available to the proposed Cogen Facility. These available fuels consist of other sawmill residuals and in-woods fuels that are located

close enough to the proposed Cogen Facility to make them economically available, and agricultural fuel and urban wood fuel sources that can be accessed through use of truck backhauls. Within a forty-five (45) air mile radius of the proposed Cogen Facility there are approximately 748,202 acres of industrial timberlands and 1,088,910 acres of public forest (excluding National Parks). To provide an estimate of the amount of biomass that is available from this area, the following assumptions are made:

- Private forests are to be regulated on an acreage basis using an 80 year rotation, and the public lands will use a 300 year rotation. National Parks are excluded from the public timberland totals.

- The tonnage of biomass harvested is 17 tons/acre on private land and 15 tons/acre on Public land (Typically, SPI harvests 30 tons/acre of biomass, excluding saw logs, from its timberland during an even-aged harvest).

- The area to be harvested annually will equal the total acreage divided by (1/rotation age).

- SPI could successfully procure 30% of all biomass fuel from both private industrial and public forests annually.

Using these factors, the 748,202 acres of private industrial forest, including that portion of SPI land within 45 air miles of the proposed Cogen Facility, would yield approximately 118,200 green tons of biomass annually. Approximately 100,717 green tons of this total would come directly from SPI land, which is 24% of the total fuel requirements of the proposed Cogen Facility. If SPI could procure 30% of the remaining 17,483 green tons available, the total in-woods fuel that could be delivered to the proposed Cogen Facility would be approximately 28% of the total fuel requirements. For public lands it was assumed that a rotation would be 300 years, which means that only .0033% of the land would be harvested annually. Using this factor the approximately 1,088,910 acres of public forest would yield approximately 54,391 green tons of biomass/year. Assuming SPI could procure 30% of this biomass annually, the available biomass from public land would equal approximately 16,317 green tons, an additional 4% of the total fuel requirements of the proposed Cogen Facility. The total estimated in-woods fuel available within 45 air miles of the proposed Cogen Facility is 134,517 green tons or 32% of the total fuel requirements.

In-woods fuels consist of timber harvest slash and forest thinning materials, which are defined below.

- Timber harvest slash is comprised on limbs and slash generated as byproducts of timber harvest activities. This material is typically piled and burned roadside, unless a biomass boiler fuel market is located within economic transport distance. Occasionally slash is masticated or spread back in the forest.

- Forest thinning materials consist of small stems with little to no commercial value, which are thinned for fuels reduction or stocking control. Typically this material is felled, lopped, and scattered on site. Occasionally, heavy concentrations are piled and burned in the open or utilized as firewood.

In addition to in-woods fuels, there are other fuel types that could be burned in the proposed Cogen Facility. Two of these fuels that would be used in the proposed Cogen Facility are agricultural fuel and urban wood fuel. By making efficient use of its truck fleet, agricultural fuel and urban wood fuel can be backhauled to SPI's proposed Cogen Facility on trucks that are hauling other products from the SPIA facility to other locations.

Agricultural fuels, or residuals, consist of mature orchards that are removed and replaced with young orchard stock, and orchard thinnings and prunings. Nut shells, such as almonds and walnuts are also available as biomass boiler fuel.

Urban wood fuel is the portion of the urban wood waste stream that can include sawn lumber, pruned branches, stumps, and whole trees from street and park maintenance. The primary constituents of urban wood waste are used lumber, trim, shipping pallets, trees, branches, and other wood debris from construction and demolition clearing and grubbing activities.

All fuels, including sawmill residuals, in-woods, agricultural fuel or urban wood fuel, for the proposed Cogen Facility would be sourced from any location that can provide appropriate fuel at an economically feasible cost.

Seasonal Availability

The availability of some biomass fuels can be constrained by the weather. In-woods fuel sources generated by timber harvesting and fuels reduction/watershed management are generally curtailed during the winter period when soils become saturated. Timber operations on saturated soils can lead to degradation of the soil both through compaction and erosion. Forest operations on private timberland can only occur with an approved Timber Harvest Plan. Timber Harvest Plans that contemplate timber operations during the winter period must comply with 14 CCR 934.7 and PRC 13020, the Porter-Cologne Water Quality Control Act.

Agricultural biomass availability also can be weather constrained where those sources are not supported by all-weather roads or other conditions that would not allow for their procurement in compliance with the Porter-Cologne Water Quality Control Act. Agricultural biomass is also seasonal with pruning of orchards occurring in the fall or winter and conversions of old orchards to newly planted trees occurring mainly in the spring, summer and fall. Urban wood fuel sources of biomass fuel and sawmill residuals are generally not constrained by the weather since these facilities are accessed by paved roads and their operations are generally carried out on a year round basis.

Effect on Timber Management

The construction and operation of the proposed Cogen Facility would not result in any additional harvesting of trees for the sole purpose of providing biomass fuel on any of the timberlands operated by Sierra Pacific Industries. SPI's long-term Maximum Sustained Production (MSP) management plan, certified by the California Board of Forestry, is a one hundred (100) year timber management plan, and through its implementation it is estimated to triple the standing inventory of timber across SPI's ownership, while providing a steady source of available timber for harvest. In order for SPI's long-term MSP timber management plan to achieve the projected gains in timber

volume growth, SPI cannot depart from the approved harvest schedule or intensity dictated by the approved long term MSP timber management plan, since one harvest action or inaction will have a direct effect on maintaining the future volume growth, rate of carbon sequestration and the appropriate mix of available wildlife habitats that result from those management activities. SPI will not depart from its long term MSP management plan as it is the strategy by which those timberlands can maximize the production of raw materials, while protecting other public trust resources derived from forested landscapes including; clean water, terrestrial and aquatic wildlife habitats, recreation opportunities, and visual aesthetics. From an economic perspective, the proposed Cogen Facility would provide SPI additional options to maximize the efficient use of sawmill residuals and in-woods fuel sources that are generated under the SPI's current long range MSP.

Biomass Characteristics

A stated goal of the project applicant is to operate the proposed Cogen Facility as a Renewable Portfolio Standards (RPS) Certified Facility. In order to maintain this certification, the proposed Cogen Facility must meet the eligibility requirements of the California Energy Commission's adopted Guidebook, Renewables Portfolio Standard Eligibility (RPS Eligibility Guidebook).[1] The RPS Eligibility Guidebook summarizes the eligibility requirements for Biomass in Table 2-1 on page 10, which are reproduced below.

TABLE 2-1: SUMMARY OF RENEWABLES PORTFOLIO STANDARD ELIGIBILITY AND ADDITIONAL REQUIRED INFORMATION AND FORMS

RESOURCE	RPS ELIGIBILITY	ADDITIONAL REQUIRED INFORMATION	SUPPLEMENTAL FORM
Biomass	Yes, with fuel restrictions	Yes, refer to Section III	CEC-RPS-1A/B:S1

SOURCE: RPS ELIGIBILITY GUIDEBOOK, TABLE 2-1, CEC, 2008

Supplemental Form CEC-RPS-1A/B:S1, found in Appendix A of the RPS Eligibility Guidebook, requires a certification that all of the fuel to be utilized at the proposed Cogen Facility meet the CEC's Overall Program Guidebook[2] specifications. The Overall Program Guidebook defines biomass in the Glossary on pages 16-17 as follows:

"Biomass — any organic material not derived from fossil fuels, including agricultural crops, agricultural wastes and residues, waste pallets, crates, dunnage, manufacturing, construction wood wastes, landscape and right-of-way tree trimmings, mill residues that result from milling lumber, rangeland maintenance residues, sludge derived from organic matter, and wood and wood waste from timbering operations." Agricultural wastes and residues include, but are not limited to, animal wastes, remains and tallow; food wastes; recycled cooking oils; and pure vegetable oils.[3]

[1] Docket No. CEC-300-2007-006-ED3-CMF (January 2008), available at http://www.energy.ca.gov/2007publications/CEC-300-2007-006/CEC-300-2007-006-ED3-CMF.PDF.
[2] Docket No. CEC-300-2007-003-CMF (March 2007), available at http://www.energy.ca.gov/2007publications/CEC-300-2007-003/CEC-300-2007-003-CMF.PDF.
[3] RPS Eligibility Guidebook, page 11.

The above definition of Biomass includes fuel sources that will **not** be combusted at the proposed Cogen Facility. SPI would not burn wastes and residues such as animal wastes, remains or tallow, food wastes, recycled cooking oils, pure vegetable oils, or sludge derived from organic matter.

The definition above does not include non-biogenic fuels such as tires, railroad ties, or plastic. The proposed Cogen Facility would not burn tires, railroad ties or plastic, and the use permit for this facility will be conditioned accordingly. Natural gas would be the only non-biogenic fuel used as necessary for starting up and shutting down the Cogen Facility and for flame stabilization.

There are several types of sawmill residuals generated in the sawmilling process, including bark, chips, sawdust, shavings and hogfuel. Each of these residuals has a market value either as biomass fuel, as a raw material for another product, or as a finished product. The sawmill residuals market is dynamic and changes month to month. Recognizing that the sawmill residuals may have a higher value as a raw material for another product or as a finished product means that as these residuals are sold at a value higher than that of biomass fuel they must be replaced with another type of biomass fuel. The replacement fuel may be mill residuals from other sawmill locations inside or outside the company, in-woods fuels, agricultural fuel or urban wood fuel. SPI estimates that, on average, the fuel mixture for the proposed Cogen Facility would be approximately 55-100% sawmill residuals, 10-30% in-woods fuels, 5-20% agricultural fuel, and 2-15% urban wood fuel.

Sierra Pacific Industries has indicated that their SPIA and SPISL facilities can reliably fuel the proposed Cogen Facility, regardless of external fuel supply availability that might occur due to inclement weather or market conditions. As stated previously, the market for biomass fuel is dynamic and the availability and pricing of biomass fuel can change month to month. Market conditions will ultimately detemine the fuel mix utilized in the proposed Cogen Facility at any given time. Nevertheless, the proposed Cogen Facility will operate as a "Biomass Conversion" facility and only utilize sawmill residuals, in-woods fuels, agricultural fuel and urban wood fuel, all of which are acceptable fuels as listed under Public Resources Code 40106.

Fuel Acceptance Plan

The Cogen Facility will utilize an Urban Wood Fuel Acceptance Plan, as set forth in Appendix A. The plan proposed for the proposed Cogen Facility is based on the Urban Wood Fuel Acceptance Plan that has been implemented in Placer County at SPI's Lincoln Cogeneration Facility and has been approved by the local Placer County Air Pollution Control District (PCAPCD) as an acceptable means of ensuring the quality of the urban wood fuel. The Urban Wood Fuel Acceptance Plan defines procedures for acceptance of urban wood fuel for use as a fuel for the Cogen Facility. The procedures are intended to ensure that the composition of the urban wood fuel remains consistent with that used during criteria and air toxics compliance source testing demonstrations; and that non-wood waste contaminants (such as plastics, rubber, paint, metals, paper, etc.) in the fuel are minimized to the greatest degree possible, and do not occur in significant quantities.

In addition to implementing the Urban Wood Fuel Acceptance Plan, the fuel contracts with urban wood fuel suppliers will include fuel specifications language, as specified in Appendix A.

Fuel Handling and Storage

Fuel from the existing onsite sawmill would be transported by conveyor to the proposed fuel shed during normal operations, therefore no heavy equipment will be necessary to move this fuel to the fuel shed. Fuel from the existing onsite planer and pole yard would be gathered in overhead bins and moved across the yard by truck.

All fuel trucks delivering fuel to the proposed Cogen Facility, whether sawmill residuals, in-woods fuels, agricultural fuel or urban wood fuel, would be unloaded at a truck dump located adjacent to the fuel shed. The arriving fuels would then be mechanically pushed into the fuel shed with a front-end loader creating a composite mix to be burned in the boiler. Blending of the fuel to ensure a consistent fuel mix to the boiler is a critical component of maintaining optimal combustion within the boiler. All fuel received at the proposed Cogen Facility would be adequately sized for use in the proposed boiler based on specifications given to SPI by the boiler manufacturer and passed on to suppliers of different fuel sources.

Fuel would be managed to reduce degradation, to prevent overheating via rotation of the fuel, and to use the oldest fuel first, thereby maximizing the energy content of the fuel. In order to limit fuel exposure to adverse weather conditions (rain in the winter and heat in the summer), and minimize the generation of dust during fuel mixing, the proposed Cogen Facility would primarily utilize the fuel shed for storage and mixing. The proposed fuel shed would be approximately 100'wide x 180'long x 40'high. The new fuel shed is anticipated to store approximately 3,800 BDT's of fuel, which will be in addition to the 1,000 BDT's of fuel currently stored in the existing fuel shed. The combined fuel sheds, which are the primary storage areas, will have a capacity of approximately eight days of fuel; therefore the fuels will be rotated approximately every eight (8) days.

The proposed Cogen Facility would also have an outdoor fuel stockpile, which would be utilized to store excess fuels that will not fit inside the fuel sheds and would include urban wood fuel, agricultural fuels, in-woods fuels and mill residuals. The outside fuel stockpile would be used to provide additional flexibility for receiving fuel deliveries and to allow for additional storage prior to holidays or extended mill shutdowns. The outside fuel stockpile would be rotated approximately every sixty (60) days.

The amount of hours that mobile equipment (fuel loaders) will operate at the new Cogen Facility would be similar to the work hours necessary for operations at the existing biomass cogeneration facility. Currently fuel handling includes a full-time loader operator for management of the fuel from the sawmill, blending operations, and loading fuel onto the conveyors that feed the boiler. The proposed Cogen Facility will be designed to have reclaimers installed, which is an automated fuel handling system. The reclaimers have continually moving chains which mechanically move the fuel from the fuel house onto conveyors and into the boiler. The reclaimers would be a susbstitute for the duty of the loader operator to manually feed the fuel into the conveyors to the boiler. The hydraulic truck dump, being located closer to the fuel sheds, will similarly result in a reduction of the loader duties by eliminating the need to move delivered fuel as far as it is currently being moved for blending in the fuel house. The automation afforded by the reclaimers and the relocation of the truck dump will allow the loader operator to maintain his current work hours even with the increase in fuel consumption for the larger boiler.

ASH DISPOSAL

Conveyor belts within the boiler would move ash to an enclosed overhead ash bin. Ash from the bin would be gravity fed into a trailer for transport. The ash bin would need to be emptied approximately once every 19 hours.

The existing biomass cogeneration facility generates approximately 4,300 tons/year of ash, which has been utilized on the adjoining agricultural fields as a soil amendment. When ash is added to the adjacent agricultural fields, it is trucked along existing private dirt roads using an SPI truck. The ash is deposited on the fields, spread uniformly, wetted with water and disked into the soil. Under the existing agricultural crop rotation, it has not been necessary for SPI to truck ash to the Anderson Landfill.

The proposed Cogen Facility would generate approximately 11,155 tons/year of ash. Ash from the proposed Cogen Facility would either be disked into the adjacent agricultural fields as a soil amendment, used as an amendment in bagged soil and compost products, as a cement amendment, or it would be sent to the Anderson Landfill.

PROCESS WASTEWATER

The proposed Cogen Facility would essentially have two separate water systems. One is the cooling tower system and the other is the boiler water/steam system. The water systems are separated by the main condenser, boiler water/steam is on the shell side and the tower cooling water is on the tube side of the main condenser.

Cooling Tower System

The proposed Cogen Facility would continue to employ a cooling tower system similar to existing conditions. The cooling tower system is an open loop system used to remove excess heat from and condense the steam that has gone through the steam turbine. The cooling tower water is circulated by pumps through the tube side of a shell and tube heat exchanger (the main condenser) and back to the tower where the circulating water is exposed to the cooling tower air flow. The water is cooled by the evaporation of a portion of the circulating water and the remainder returns to the tower basin. It is then pumped back to the steam condenser to start the heat removal process over again. As a result of this recirculation and heat removal process the water volume is reduced due to evaporation (in the cooling tower). Two things occur as a result of this water loss, (1) the concentration of the dissolved minerals and the suspended solids in the circulating water increases, and (2) water must be added to maintain a constant system volume of water. To counter the effect of increased dissolved mineral and suspended solid concentrations in the circulating tower water, a relatively small portion of the tower water is removed (bleed or blowdown water) from the system and sent to the onsite ponds and make-up water is added. This bleed water/ make-up water cycle creates a constant level of dissolved minerals and suspended solids in the recirculating tower water. This process is called "cycling" up the concentration of the tower water and is the primary method that is used to minimize water use in the tower system. The number of "cycles of concentration" is primarily determined by the makeup water chemistry and the chemical treatment of the cooling tower water.

The cooling tower water is treated for its corrosion/scaling tendencies and for biological fouling potential. At the proposed Cogen facility, SPI will use the same two products that are currently being use at the existing biomass co-generation facility. One product is used to reduce the corrosion and scaling potential and the other is an oxidizing biocide to address potential biological fouling. The compound used to reduce corrosion and scaling is product SPI-402. The cooling tower bleed will contain a concentration of SPI-402 that is approximately 56 to 111 ppm. The concentration of Phosphonate, measured for dosage control, in the cooling tower bleed from SPI-402 will be approximately 4 to 8 ppm. The compound used to limit biological fouling is Sodium Hypochlorite (bleach). The cooling tower bleed will contain a concentration of Sodium Hypochlorite (bleach) that is approximately 2 to 4 ppm as product. The concentration of free chlorine from Sodium Hypochlorite in the cooling tower bleed will be approximately 0.2 to 0.5 ppm.

The cooling tower bleed is not treated after discharge from the tower system and is directed to the onsite ponds in accordance with existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The NPDES permit requires that all stormwater and other potential waste water discharge sources are contained onsite. The cooling tower system bleed water that is sent to the onsite ponds contains the same dissolved minerals as the makeup water that is added to the system during initial fill and operation, only at a higher concentration due to the tower water being "cycled up." These minerals include silica, iron, calcium & magnesium hardness, and alkalinity, as well as increased ph (over makeup water). Also present in the bleed water is a corrosion/scale treatment product and very low level of free chlorine (from biological control product).

Anticipated volume of bleed water from the new cooling tower system is a maximum of 100 to 150 gpm. It will likely be significantly less than this due to the fact that the 100 to 150 gpm bleed rate is based on 100% power operation of the turbine system. With SPI operations supplying steam to the dry kiln operation, 100% turbine output will be a rare condition.

Boiler Water/Steam System

The boiler water/steam system uses pretreated water in a boiler to generate steam that is directed to the turbine to generate electricity and also directed to the dry kiln system to provide heat to dry lumber. After the steam leaves the turbine it is condensed in the main condenser by transferring heat to the cooling tower circulating water. The steam sent to the dry kilns is returned as water (condensate) to the boiler system for reuse. The condensed boiler water is then returned to the boiler to be reheated into steam. There is a small portion of the boiler water that is removed from the system as part of the boiler chemistry control program (continuous blowdown). It is planned to direct this collected water (as well as other system drains) back to the cooling tower system as a water makeup source, thus reducing the amount of raw water needed by the tower system.

In summary, the only water from the boiler and cooling tower operations that will leave the Cogen Facility system by design is the cooling tower bleed. This water is not treated after discharge from the tower system and is directed to the onsite ponds in accordance with existing National Pollutant Discharge Elimination System (NPDES) permits.

ACCESS

Vehicles accessing the site for construction and operation of the project would use the Riverside Avenue entrance.

SITE IMPROVEMENTS

Project improvements include construction of a new fuel shed, boiler building, turbine building, cooling tower, electrostatic precipitator, ash silo and electric substation.

Site preparation and grading will include the over-excavation of incompetent fill material and its replacement with recompacted engineered fill material. The construction of the proposed Cogen Facility would not require the removal of vegetation. The amount of over-excavation necessary to meet the foundation specifications is yet to be determined and will depend on the extent to which the bearing strength of the soil, supporting the building foundations, relies on pilings or engineered fill. The construction of the new fuel shed would require removal of two existing sawdust silos and reconfiguration of the fuel conveyors to the existing boiler. These features are shown on Figure 2-5. An existing fire hydrant and fire suppression shed would need to be relocated within the API to accommodate the new fuel shed. Electric power from the generator would be conveyed to the new electric substation, which would be located within the API. The electric power would then be conveyed by overhead electric utility lines to the existing electric substation located near the southeast corner of the property, as shown in Figures 2-4 and 2-5.

The location of the existing and proposed structures is shown in Figure 2-5. The dimensions of the proposed structures are shown below in Table 2-1.

TABLE 2-2: DIMENSIONS OF PROPOSED STRUCTURES

STRUCTURE	FOOTPRINT DIMENSIONS (IN FEET)	HEIGHT (IN FEET)
Fuel Shed	180'x100'	48'
Boiler Building	135'x65'	115'
Cooling Tower	85'x45'	38'
Turbine Building	100'x50'	38'
Ash Silo	15' Diameter	35'
Electrostatic Precipitator	35'x25'	85'
Electric Substation	75'x60'	35"
Truck Dump	70'x20'	60'

SOURCE: SIERRA PACIFIC INDUSTRIES

LIGHTING

The proposed Cogen Facility would include exterior lighting to allow for safe access to the Cogen Facility in the dark. Since the Cogen Facility would operate 24 hrs a day the lighting would be persistent during hours that the sun is not up. The highest light source would be along the catwalks at the top of the boiler and smoke stack, which provides access to the sensors at those locations. A specific lighting plan has not yet been developed for the proposed Cogen Facility.

EMPLOYMENT

Implementation of the proposed project would generate the need for up to six additional employees at the SPI project site. It is anticipated that these six new employees would be split between two to three rotating shifts per day/night.

CONSTRUCTION STAGING

Materials and equipment for construction of the proposed project would be staged within the API, as identified in Figure 2-3.

2.3 PROJECT GOALS AND OBJECTIVES

Consistent with CEQA Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the project shall be discussed. The project applicant has identified the following goals and objectives for the proposed project:

1. To increase the available supply of biomass-generated electricity produced and used at the project site.

2. To efficiently utilize wood by-products that are generated during the milling of lumber at SPI sawmill facilities in Shasta County.

3. To provide excess sources of biomass energy available for sale to the local power grid.

4. To assist the State of California in reaching its goal of 33% ~~20%~~ of the State's power coming from renewable sources by 2020 ~~2010~~.

5. To operate a Renewable Portfolio Standards (RPS) facility certified by the California Energy Commission (CEC).

2.4 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

Shasta County will be the Lead Agency for the proposed project, pursuant to the State Guidelines for Implementation of the California Environmental Quality Act (CEQA), Section 15050. This EIR may be used for the following direct and indirect actions regarding the proposed project:

SHASTA COUNTY

Actions taken by the Shasta County may include, but are not limited to, the following:

- Certification of the EIR
- Adoption of the Mitigation Monitoring and Reporting Program
- Approval of a Use Permit
- Approval of site and improvement plans
- Issuance of required permits (grading, building, etc.)

OTHER AGENCY APPROVALS

Actions and approvals that may be taken or issued by other agencies include, but are not limited to, the following:

- Central Valley Regional Water Quality Control Board (CVRWQCB) - Storm Water Pollution Prevention Plan (SWPPP) approval prior to construction activities.
- Shasta County Air Quality Management District (SCAQMD) - Approval of construction and operational air quality permits.

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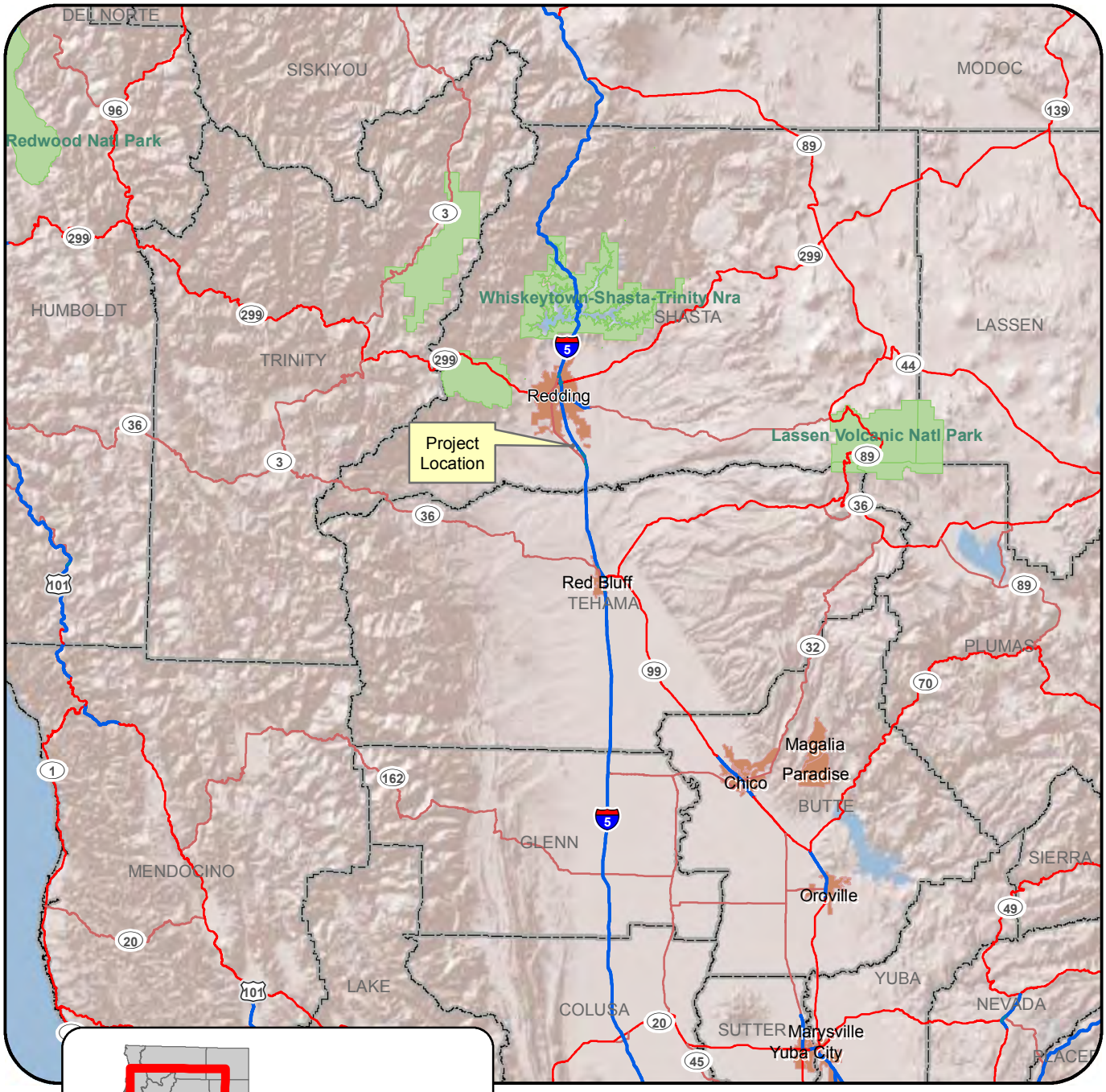

Reference Data Source: ESRI StreetMap North America
Shaded Relief: ArcGIS Online Resource Center

Figure 2-1. Regional Location Map

N
W E
S

0 5 10 20 30 40 50 60 Miles

1:1,500,000

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June 16, 2009

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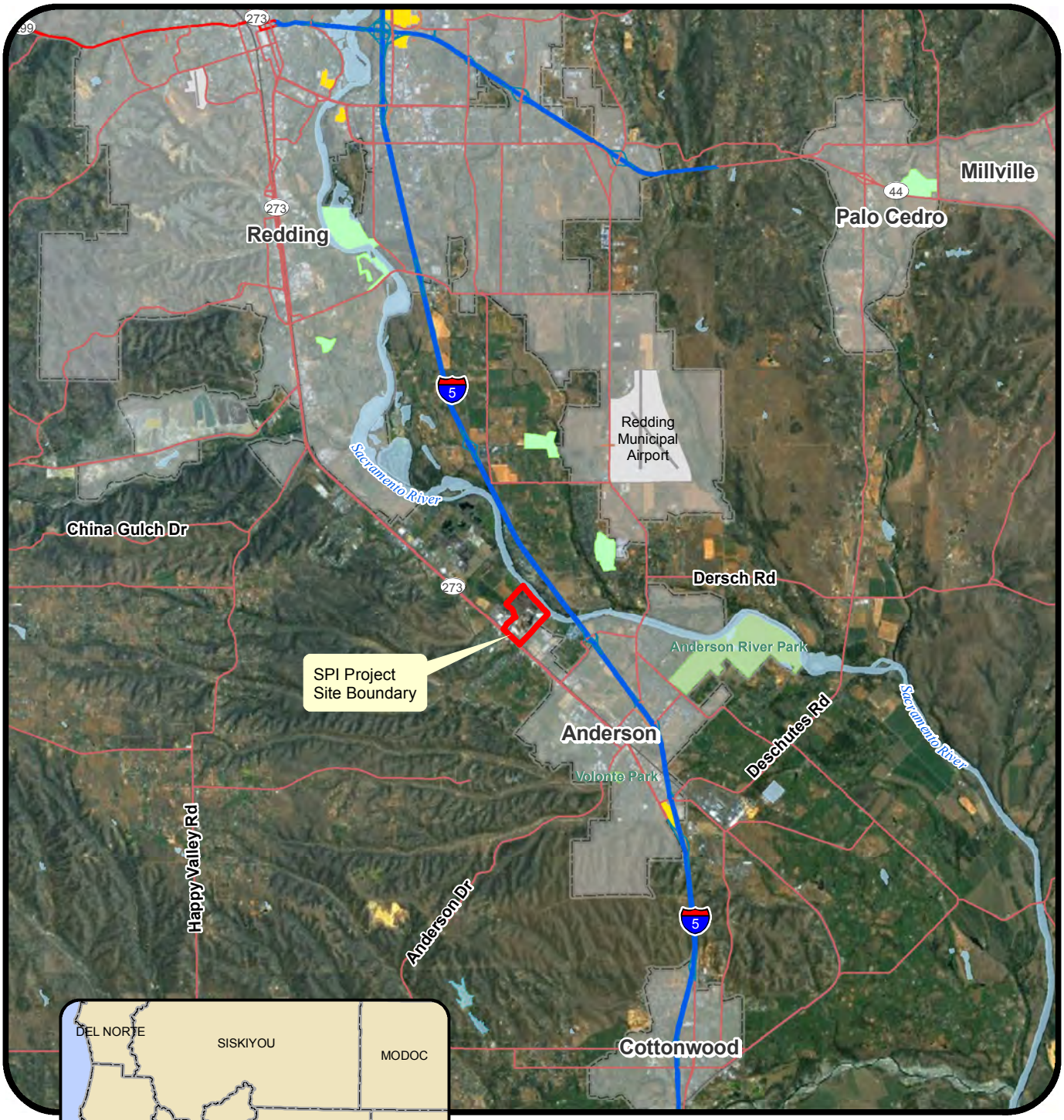

Figure 2-2. Project Vicinity Map

N
W E
S

0 0.5 1 2 3 4 Miles

1:125,000

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Figure 2-3. Project Site Map

SPI Project Site Boundary

Area of Proposed Improvements (API)

N
W E
S

0 250 500 1,000 1,500 Feet

1:7,500

Road Data Source: ESRI StreetMap North America
Aerial Photo Source: ArcGIS Online Resource Center
Parcel Data Source: Shasta County GIS

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Layer Legend

- Building
- Chip Loading Bin
- Chip Loading Facility
- Chip Waste Conveyor
- Chipper
- Dust Bagger
- Electric Transformer
- Fire Hydrant
- Fire Pond
- Gasoline Tank
- Improved Roads
- Interstate 5
- Log Yard
- New Cogeneration Building
- New Overhead 115 KV transmission lines
- Nitrogen Tanks
- Oil / Water Separator
- Overhead Piping
- Parcel Boundary
- Pole Storage
- Portal Crane
- Power Lines
- Railroad
- Sacramento River
- Sawdust Silo
- Septic Disposal
- Spring Gulch
- Trailer Dolly Lift
- Truck Scales
- Unclassified Watercourse
- Wash Rack
- Water Tower

N W E S

05011023

05011025

Sacramento River

Portal Crane

Pole Storage

Scale Shack
Weigh Shack
Generator
Oil Storage
Sawmill
Control Room
Control Room Bathroom
Shop
Steam Pipe
Dry Shed
Dry Kiln
Fan
Office
Planner
Sorter
Stacker/Wrapper
Cogeneration Fuel Shed
New Fuel Shed
Ash Bin
Water Wells
Boiler
New Truck Dump
New Ash Silo
New ESP
Cooling Tower
New Boiler
New Cooling Tower
New Turbine
New 115KV Substation
Cement Bunkers
Cone Drying Shed
Shop
Hazardous Materials
Paint Spray Room
Storage
Fabrication Shop
Hardware & Parts Storage
Infeed
Debarker & Controls
Pole Plant
Office-MSDS/PPE
Substation 115KV/12.5KV
Electric Tower 480V
Diesel Storage
Truck Shop
Fuel Pumps
Chips
Riverside Avenue
Parallel Road
Highway 273
Yoke
Ox
Meister Way
Ox Yoke Rd.
Hirch Ct
A St.

Feet
0 200 400 600 800

Sierra Pacific Industries - Anderson Facility

Site Map

06/29/10

Figure 2-4

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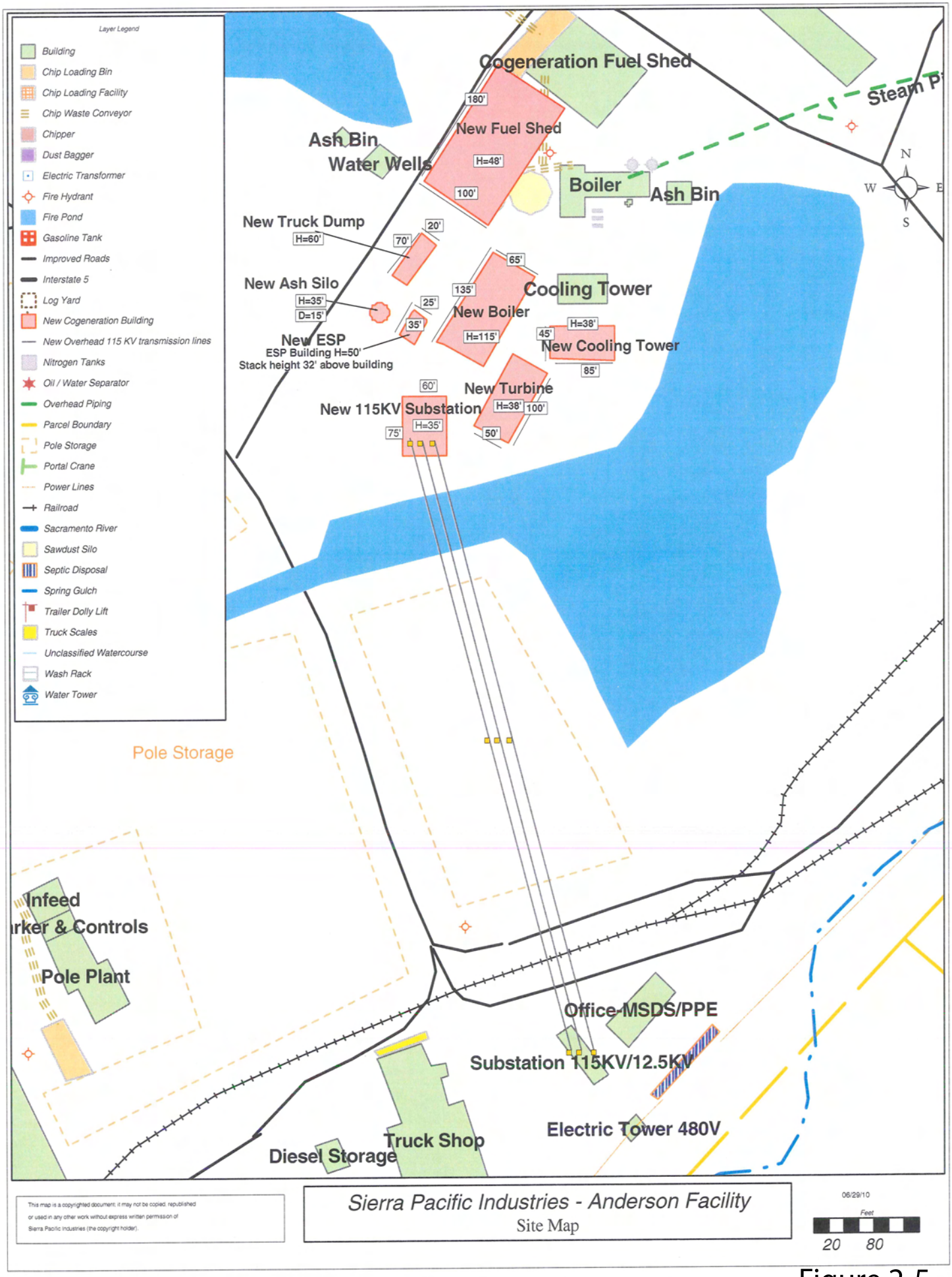
Layer Legend
Building
Chip Loading Bin
Chip Loading Facility
Chip Waste Conveyor
Chipper
Dust Bagger
Electric Transformer
Fire Hydrant
Fire Pond
Gasoline Tank
Improved Roads
Interstate 5
Log Yard
New Cogeneration Building
New Overhead 115 KV transmission lines
Nitrogen Tanks
Oil / Water Separator
Overhead Piping
Parcel Boundary
Pole Storage
Portal Crane
Power Lines
Railroad
Sacramento River
Sawdust Silo
Septic Disposal
Spring Gulch
Trailer Dolly Lift
Truck Scales
Unclassified Watercourse
Wash Rack
Water Tower
Cogeneration Fuel Shed
180'
New Fuel Shed
H=48'
100'
Ash Bin
Water Wells
Boiler
Ash Bin
Steam P
N
W
E
S
New Truck Dump
H=60'
20'
70'
New Ash Silo
H=35'
D=15'
25'
35'
New ESP
ESP Building H=50'
Stack height 32' above building
65'
135'
New Boiler
H=115'
Cooling Tower
H=38'
45'
New Cooling Tower
85'
60'
New 115KV Substation
H=35'
75'
New Turbine
H=38'
100'
50'
Pole Storage
Infeed
rker & Controls
Pole Plant
Office-MSDS/PPE
Substation 115KV/12.5KV
Electric Tower 480V
Truck Shop
Diesel Storage
This map is a copyrighted document; it may not be copied, republished or used in any other work without express written permission of Sierra Pacific Industries (the copyright holder).
Sierra Pacific Industries - Anderson Facility
Site Map
06/29/10
Feet
20
80

Figure 2-5

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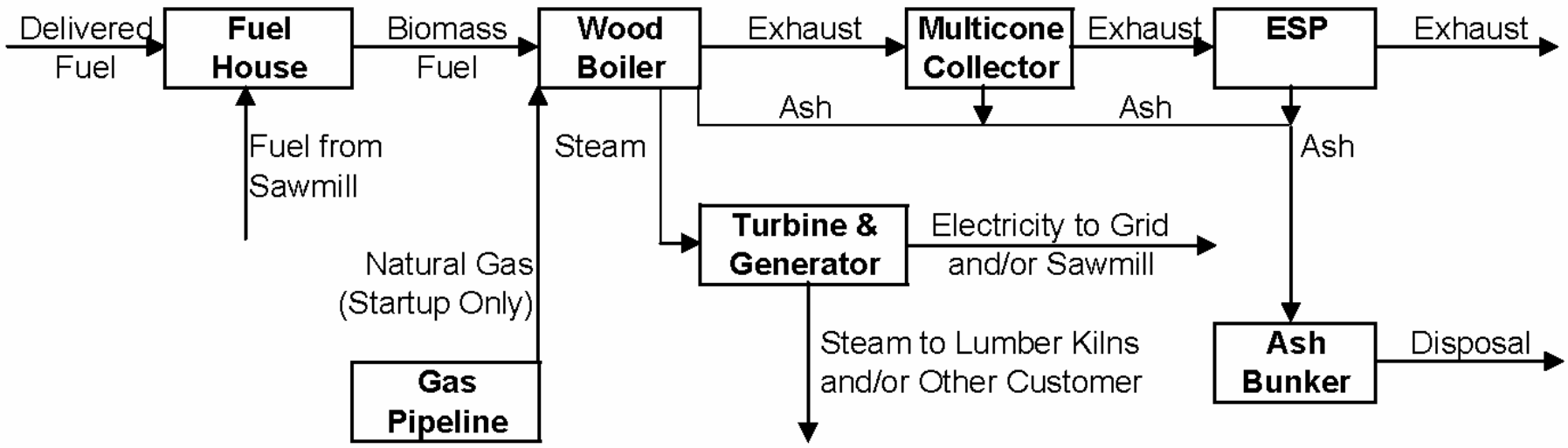

GEOMATRIX

PROJECT SCHEMATIC FLOW DIAGRAM
SPI Lumber Manufacturing Facility Cogeneration Project
Anderson, California

Figure
2-6

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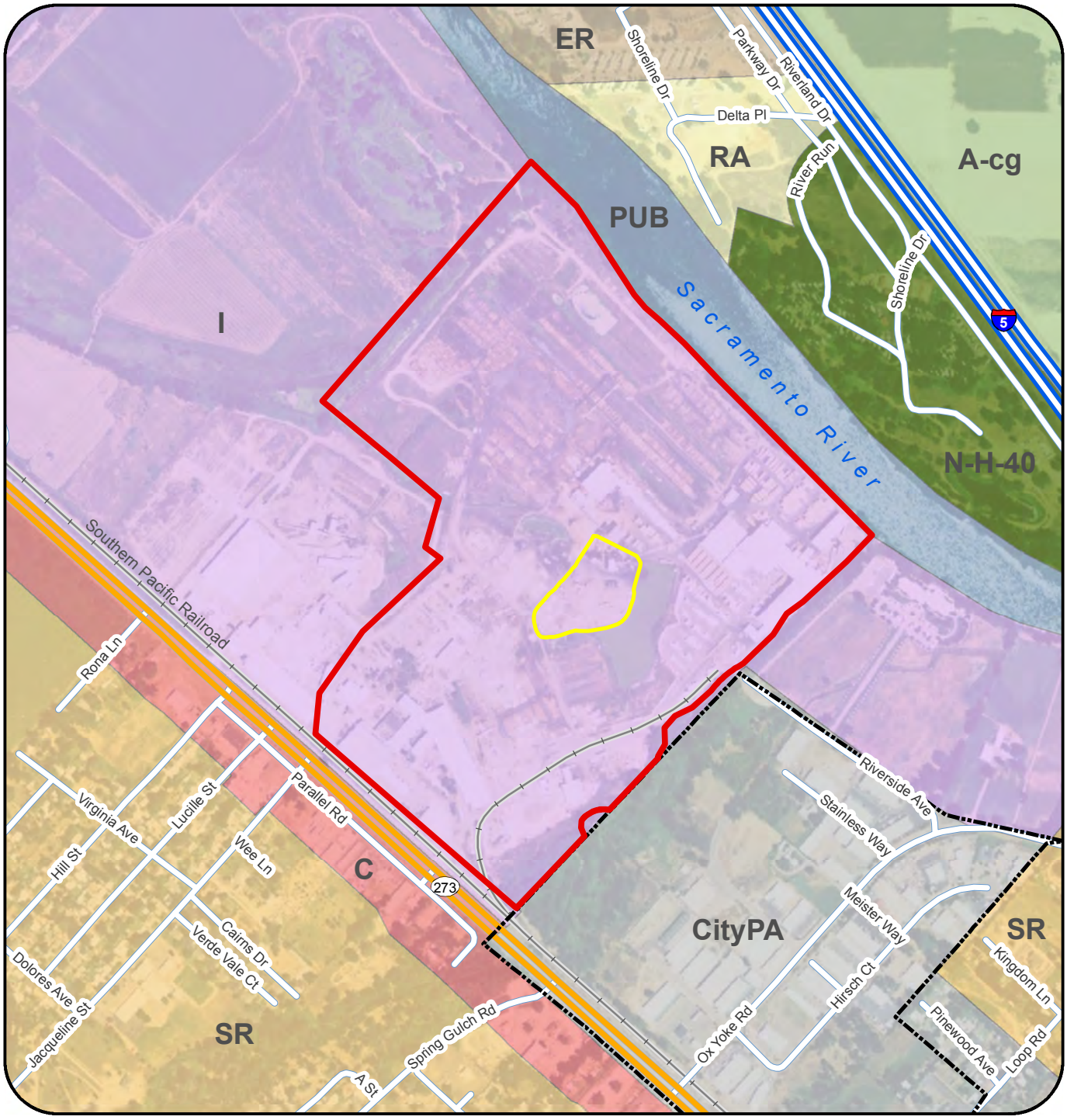

C - Commercial
I - Industrial
PUB - Public Land
ER - ER
CityPA - City Planning Area
RA - Rural Residential A
SR - Suburban Residential
A-cg - Agricultural Small Scale Cropland/Grazing
N-H-40 - Habitat Resource 40 acre density

SPI Project Site Boundary
Area of Proposed Improvement (API)

Figure 2-7. General Plan Land Use Designations

N
W E
S

0 250 500 1,000 Feet

1:10,000

Data Sources: Shasta County GIS, ESRI StreetMap North America, ArcGIS Online Resource Center

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July 22, 2010

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