Chapter 2. Proposed Action and Alternatives

The purpose of this chapter is to identify and describe the proposed Lewiston Community Services District Wastewater Collection, Treatment, and Disposal Project, including a detailed description of project design criteria. In addition, this chapter describes the alternatives that were considered but eliminated from detailed analysis. The alternatives examined for this EA adhere to the regulations in 40 CFR 1502.14(a) and requirements of the CEQ in Federal Register (FR) 4646, 18026 (March 23, 1981), as amended.

2.1 Proposed Action

The proposed action consists of the following primary project elements:

- collection system replacement, including replacement of failed laterals in all three existing systems;
- replacement of the existing LPMWC WWTP at its present location with an Aero-Mod activated sludge plant;
- installation of new ancillary process components including an automatic bar screen and washer or modifications to the existing Imhoff tank; filtration using a cloth media or disc filter; disinfection using flow-paced sodium hypochlorite dosing pumps; an aerated chlorine contact basin; a WWTPLS; a control building with emergency generator, lab, and motor control center; and conversion of the existing aeration basin into an aerobic digester (if it is in a salvageable condition);
- maintenance of the existing suspended effluent pipe crossing over the Trinity River via slip lining or possible replacement;
- recoating of the suspended pipeline support structures;
- decommissioning of Lift Station 1 (LS1);
- abandonment and relocation of Lift Station 2 (LS2);
- installation of a new force main (FM) to the existing westernmost LCSD oxidation pond;
- reconstruction of the existing LPMWC percolation beds on the north side of the Trinity River;
- re-routing of septic tank effluent from the existing TDMHP sewage pond to the new Trinity Dam Boulevard Lift Station (TDBLS);
- installation of programmable logic controllers to the upgraded WWTP to control the aeration process; and

- surface restoration of roadways, including driveways (when applicable) following localized pipeline installation.

Following is a detailed discussion the proposed action components. Under the proposed action, the three existing SSAs—LCSD, LPMWC, and TDMHP—would be consolidated into a single SSA operated by LCSD. This consolidated SSA would provide collection, treatment, and disposal for its customers. The proposed action design includes existing LPMWC and LCSD facilities that would be upgraded and integrated into the new system.

2.1.1 System Flow Description

The new WWTP would be located at the site of the existing LPMWC WWTP. Waste from the Lewiston Park subdivision would gravity flow to the headworks of the WWTP. Waste from the LCSD and TDMHP collection systems would gravity flow to the TDBLS. Waste from TDBLS would be pumped to the headworks of the WWTP using a 3-inch FM, where it would pass through the activated sludge filtration process. Final effluent would gravity flow from the WWTP through new and existing gravity sewer lines to leach fields.

If found to be in good condition, the Imhoff tank may be left in place and used at the head works of the new WWTP, otherwise an automatic bar screen and washer would be used at the headworks. FMs would be sized to handle appropriate peak wet weather flows; pump design parameters and capacities are described in Table 1. Wet wells at each LS would occupy an area approximately 20 feet in length by 20 feet in width with entry and exit piping attached.

Table 1. Proposed Action Pump Design Parameters

PUMP[A]	NUMBER OF PUMPS[B]	FLOW (GPM)[C]	TDH[D] (FEET)	WET WELL DEPTH (FEET)
Wastewater Treatment Plant Lift Station (Average Dry Weather Flow)	2	50	40	20
Wastewater Treatment Plant Lift Station (Peak Wet Weather Flow)	2	250	150	20
Trinity Dam Boulevard Lift Station	2	75	100	20

Notes:
[A] Submersible centrifugal solids handling pumps
[B] One active and one standby pump
[C] U.S. gallons per minute
[D] Total dynamic head is the total equivalent height that a fluid is to be pumped, taking into account friction losses in the pipe. Total dynamic head considers static head, headloss due to friction, headloss due to velocity, and discharge pressure.
Percent efficiency will be calculated following final pump selection.

2.1.2 Sewage Collection System

Under the proposed action, the existing failed LPMWC and TDMHP collection systems and laterals would be replaced as well as an approximately 300 linear foot section of the LCSD collection system

and all LCSD laterals. All new sewer lines associated with the proposed action would be aligned within existing roadways at depths ranging from 3-8 feet (LPMWC and LCSD) and from 3-5 feet within the TDMHP system. Currently, many of the existing sewer lines within the Lewiston Park subdivision are aligned across private parcels. Several new manholes and laterals would be added to the LPMWC system to connect all homes that would be served by the project. A double layer of chip seal would be used to overlay project-related work within existing roadways. In addition, the sewer collection system within the TDMHP and all failed laterals on private property would be replaced throughout the SSA.

A new 50-foot section of 30-inch diameter pipe would be installed with open trench excavation directly north of the existing WWTP parcel prior to demolition of the existing chlorination basin. The new 30-inch pipe would act as a temporary chlorine contact pipe to provide adequate contact time for WWTP effluent and would be left in place after the new WWTP is constructed. Beyond the new chlorine contact pipe, a new 8-inch pipe would be installed from the north end of the WWTP downslope to the south side of the river crossing where the suspended pipeline begins. The new pipeline would be installed by either pipe bursting or using open-trench construction within the existing pipeline alignment. If an open trench method is used, the trench would be backfilled upon completion of construction. The existing manholes located adjacent to Goose Ranch Road would be replaced with new manholes.

The existing suspended 6-inch pipeline used to convey effluent across the Trinity River would be retained and would receive maintenance or replacement under the proposed action. Inspection of the pipeline found the interior to have minimal corrosion, thus slip lining may be used to extend the useful service life of the existing pipeline; however, total replacement using existing aerial cables may be necessary. Slip lining is preferred due to cost and ease of installation compared to a new pipe. It is planned to sandblast and recoat the suspended pipeline support structures. Existing paint would be tested for lead prior to any sandblasting actions. If found to contain lead-based paint, sandblasting would not be used; rather, the support structures would be manually primed and repainted. The effluent pipe on the north side of the river leading to the effluent percolation beds would be replaced using pipe burst technology so as to eliminate the need for an open trench. Any excavations associated with pipeline maintenance would be limited to underground pipe connections at the existing headwalls, if necessary. Maintenance and rehabilitation activities on the suspended pipeline and infrastructure would be above the ordinary high water mark of the Trinity River. Similarly, if replacement is used, construction methods preclude the encroachment of equipment below the ordinary high water mark of the Trinity River.

The existing LPMWC WWTP would be replaced at its present location with an Aero-Mod activated sludge plant capable of reducing biological oxygen demand, total suspended solids, and total nitrogen to less than 10 mg/L when the plant is operated at an average dry weather flow (ADWF) rate of 35,000 gallons per day (GPD). New ancillary process components would include an automatic bar screen and washer or modifications to the existing Imhoff tank; filtration using a cloth media or disc filter; disinfection using flow-paced sodium hypochlorite dosing pumps; an aerated chlorine contact basin; a Wastewater Treatment Plant Lift Station (WWTPLS); a control building with emergency generator, lab, and motor control center; and conversion of the existing aeration basin into an aerobic digester if it is in a salvageable condition. The proposed interim chlorine contact basin would consist of a 30-inch by 50-foot long pipe that would be located immediately north of the WWTP, within the

existing pipeline alignment. Open trenching would be used to lay the pipe, which would then be backfilled. The permanent, concrete chlorine contact basin and effluent monitoring weir would be installed at the north end of the new Aero-Mod unit. An area of approximately 20 feet by 20 feet would be excavated to a depth of up to 20 feet to allow for construction of improvements to the WWTPLS. Improvements would require demolition and removal of the existing effluent weir building and removal of two ponderosa pine trees.

2.1.3 Lift Station 1

The septic tank at Lift Station 1 (LS1) would be decommissioned in accordance with Trinity County regulations. Sludge from the existing 50,000-gallon tank would be removed and disposed of by a licensed septic hauler in compliance with all State and Federal regulations, and the tank would be filled with sand and left in place. The source of sewage (i.e., the pipeline leading to LS1) would be permanently disabled.

2.1.4 Lift Station 2

The existing Lift Station 2 (LS2), which is located in the Dack Creek drainage immediately downslope of the LCSD percolation ponds and the TDMHP sewage pond, would be abandoned and relocated to uplands approximately 150 feet to the southwest (Figure 3c). A new LS, TDBLS, would replace the existing LS2, and would consist of a wet well, submersible pumps, and an emergency generator. An approximately 20 foot by 20 foot area would be excavated to accommodate the new TDBLS.

2.1.5 Oxidation Ponds and Percolation Beds

Lewiston Community Service District Ponds (Existing)

The two existing LCSD oxidation ponds, each occupying approximately 0.5 acre, would be left in their current condition. A 6-inch FM would be routed along the existing access road through the industrial park and the LCSD WTP parcel to the west oxidation pond. The existing oxidation ponds would be suitable for the storage of tertiary effluent if and when separation to groundwater at the percolation beds is less than 3 feet. At a 6-foot water depth, the oxidation ponds would contain approximately 6 acre feet, which equates to 25 days of storage at the design ADWF of 35,000 GPD, 12.5 days at maximum monthly flow (MMF), and 5.5 days at peak wet weather flow (PWWF), assuming one previously empty pond.

Lewiston Park Mutual Water Company Percolation Beds (Existing)

The existing LPMWC percolation beds on the north side of the Trinity River (right side) (Figure 3c) would be reconstructed with eight leach field banks. Debris within the beds would be removed, internal berms would be removed, and the side slopes would be reshaped. Granular fill material would be imported and used to add approximately 2 feet to the existing elevation to ensure that there is at least three feet of separation between the leach pipe and groundwater. Pipe replacement from the WWTP to the aerial crossing, and from the aerial crossing to the leach field would either be done by

temporarily creating an approximately 1-foot wide open trench in uplands or by using a pipe burst[2]. Leach fields are a low maintenance disposal system option.

System operators would rotate flow between active banks depending upon the loading rates required during ADWF, MMF, and PWWF. It is anticipated that approximately 35,000 GPD would be distributed across the percolation beds under ADWF. Existing piezometers within the existing percolation beds allow for groundwater depth monitoring; sample ports placed along each leach field leg would also be used to check for ponding. Additional piezometers would be installed to further enhance monitoring. If the required groundwater separation criteria[3] cannot be met, then tertiary effluent would be stored in the emergency retention basins. While leach fields can remove 90-98 percent of influent Biochemical Oxygen Demand, 10-40 percent Total Nitrogen, and 99–99.99% Fecal Coliform (Environmental Protection Agency 2002), only minor additional removal of Biochemical Oxygen Demand, Total Suspended Solids, nitrate, and pathogens would be anticipated with the new leach fields. The biggest benefit of including leach fields in the project design would be the even distribution of effluent across a much larger area compared to current concentrated loading.

Trinity Dam Mobile Home Park Sewage Pond (Existing)

Septic tank effluent would no longer be sent to the existing TDMHP sewage pond. Instead, all sewage would gravity flow to TDBLS and be pumped to the new WWTP for processing. The existing pond would remain on private property and will not be included in this project.

2.1.6 Electrical Improvements

The proposed action would use National Electrical Manufacturers Association Premium motors and generators, thereby optimizing systems and reducing electrical consumption associated with system operation. In addition, programmable logic controllers would be incorporated into the upgraded WWTP to control the aeration process, so when dissolved oxygen levels are met, aeration would either be reduced or disabled to save on power costs.

2.1.7 Site Improvements

It is anticipated that surface restoration of roadways, including driveways (where applicable) would be required following localized pipeline installation.

2.1.8 Construction Criteria and Methods

Contractor Staging Areas/Construction Access Routes

Five potential contractor staging areas were identified for the proposed action (see Figure 3c): 1) the open field in front of the Lewiston Community Church at the intersection of Lewiston Road and Viola Lane; 2) the parking lot at the Lewiston Volunteer Fire Department on Texas Avenue; 3) the open, disturbed area adjacent to the LCSD WWTP; 4) within the existing LPMWC percolation beds

[2] A method used to break apart existing pipe while pulling a new pipe through the same alignment.
[3] Generally, a minimum of 3 feet of separation between groundwater and leach field leg has been the accepted separation distance; however, the exact minimum is to be determined by the NCRWQCB.

and along the graveled access road that leads to the percolation beds; and 5)access and staging at the LPMWC WWTP from Viola Lane. Use of any of these areas would be subject to contractor negotiations with the property owner(s) if not owned by one of the three service providers included in the consolidation. Construction access would make use of existing roads.

Conservation Measures

The following conservation best management practices (BMPs) will be followed during the proposed project construction to minimize potential environmental impacts.

Conservation Measure #1—Water Pollution Prevention

The following water pollution prevention and erosion control measures were incorporated into the proposed action to avoid or minimize the potential for adverse direct and indirect effects to water quality:

- Type D erosion control measures (i.e., hydroseeding) or hand seeding and mulching methods shall be implemented during construction of the project in non-riparian upland areas. Erosion control work shall consist of one application of erosion control materials to embankment slopes, excavation slopes, and other areas with non-riparian uplands designated by the project engineer. These materials shall consist of fiber, seed, mulch, commercial fertilizer, stabilizing emulsion, and water.

- Activities that increase the erosion potential within the project area shall be restricted to the relatively dry summer and early fall period (approximately May 15 to October 15) to the maximum extent practicable to minimize the potential for rainfall events to transport sediment to the Trinity River and other surface water features. If construction activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures must be in place and operational at the end of each construction day and maintained until permanent erosion control measures are in place (e.g., successful revegetation).

- Areas where vegetation needs to be removed shall be identified in advance of ground disturbance and limited to only those areas that have been approved by LCSD and the respective land owner. The limits of ground disturbance will be staked and flagged or fenced in the field.

- Within 10 days of completion of construction, weed-free mulch shall be applied to disturbed areas in order to reduce the potential for short-term erosion. Prior to a rain event or when there is greater than 50 percent possibility of rain forecasted by the National Weather Service during the next 24 hours, weed-free mulch, tarps, or geotextile fabrics shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.

- Suitable BMPs, such as silt fences, non-monofilament straw wattles, or catch basins, shall be placed below all construction activities at the edge of surface water features to intercept

sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.

- If spoil sites are used, they shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.

- Sediment control measures shall be in place prior to the onset of the rainy season (or no later than October 15) and will be monitored and maintained in good working condition until vegetation becomes established within the disturbed areas.

- Fueling construction equipment shall be done at a fixed fueling station to reduce the area exposed to the potential for fuel spills.

- Secondary containment, such as a drain pan or drop cloth, shall be used to catch spills or leaks when removing or changing fluids.

- Spill containment materials shall be kept onsite at all times to contain any accidental spill.

- Absorbent materials shall be used on small spills rather than hosing down or burying the spill. The absorbent material shall be promptly removed and disposed of properly.

- Onsite vehicles and equipment shall be regularly inspected for leaks and repaired immediately.

- If vehicle and equipment maintenance must occur onsite, it shall be done in designated areas, located away from drainage courses, to prevent the run-on of storm water and the run-off of spills.

- Equipment and materials shall be stored at least 50 feet away from surface water features, including the Trinity River.

- LCSD is responsible for compliance with applicable federal, state, or local laws or ordinances and shall obtain authorization from all applicable regulatory agencies.

Conservation Measure #2—Protection of Riparian Habitat

The following measures shall be implemented to reduce potential impacts on riparian habitat in the project area:

- The width of the construction disturbance zone within the riparian habitat shall be minimized through careful pre-construction planning.

- Exclusionary fencing shall be installed along the boundaries of the work area in riparian habitat to ensure that impacts on riparian vegetation outside the construction area are minimized.

Conservation Measure #3—Prevention of Spread of Invasive Species Controls

The following measures shall be implemented to prevent the spread of invasive species in the project area:

- All equipment used for off-road construction activities will be weed-free prior to entering the project site. At the end of each working day, equipment shall be inspected to ensure it is free of plant parts as well as soil, mud, or other debris that may carry weed seeds.
- If project implementation calls for mulches or fill, they will be weed free.
- Any seed mixes or other vegetative material used for re-vegetation of disturbed sites will consist of locally adapted native plant materials to the extent practicable.

Conservation Measure #4—Air Quality/Fugitive Dust and Emission Controls

Air pollution control would conform to all applicable air pollution control rules, regulations, ordinances, and statutes. Dust would be controlled during construction activities and subsequent operation of the project. Dust controls may include, but would not be limited to the following elements, as appropriate:

- Pursuant to California Vehicle Code (Section 23114) (California Legislative Information 2016), all trucks hauling soil and other loose material to and from the construction site shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).
- Any soils that are removed during construction shall be stored onsite in piles not to exceed 4 feet in height. These spoil piles shall be clearly marked and flagged. Spoil piles that will not be immediately returned to use shall be revegetated with a non-persistent erosion control mixture.
- Equipment and manual watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
- LCSD or its contractor shall designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person shall also respond to any citizen complaints.

Conservation Measure #5—Wildfire Potential

LCSD shall include the following measure in the construction bid documents to minimize project-related potential for wildfire ignition:

- Per the requirements of Public Resources Code Section 4442, LCSD shall include a note on all construction plans that internal combustion engines shall be equipped with an operational spark arrester, or the engine must be equipped for the prevention of fire.

Tentative Project Construction Schedule

Construction of the proposed action would begin upon receipt of all necessary preconstruction authorizations, including completion of California Environmental Quality Act (CEQA)/NEPA documentation; consultation with appurtenant agencies (e.g., Reclamation, BLM, State Historic Preservation Officer, National Oceanic and Atmospheric Administration Fisheries /National Marine Fisheries Service [NMFS]); and receipt of regulatory permits, including authorizations from the U.S. Army Corps of Engineers (Corps), NCRWQCB, and the California Department of Fish and Wildlife (CDFW). In addition, funding source requirements will need to be met before and during project construction, as applicable. Construction is anticipated to begin in 2019 with completion in 2020.

2.2 Other Alternatives Evaluated

2.2.1 Action Alternative 2

Under the Action Alternative 2, the sewage collection system would be replaced. Treatment would consist of using an enhanced oxidation pond, filtration, disinfection, flow equalization, and leach fields constructed within the existing percolation beds (as shown in Figure 19-21 in the Preliminary Engineering Report [PACE Engineering 2016]). Action Alternative 2 improvements would include:

- Sewage Collection System – Replace existing failed public sewage collection systems for the LCSD and LPMWC. In addition, if Clean Water State Revolving Fund and/or Community Development Block Grant funding is available, replace the sewer collection system within the TDMHP and all failed laterals on private property throughout the SSA. Replace existing LS2 with two 5,000-gallon septic tanks, submersible pumps and emergency generator. The septic tanks are intended to capture large solids and reduce clogging problems downstream. Rehabilitate or replace existing LS1 with two 5,000-gallon septic tanks to flow into the new LS2.

- Construct an oxidation pond enhanced with the Biolac™ process including secondary clarification, cloth or disc filtration, and disinfection using sodium hypochlorite. The two existing oxidation ponds would be totally renovated by removing existing vegetation; regrading and recompacting slopes and bottom; installation of either a high density polyethylene liner or amend the soils with bentonite to form a 10^{-6} cm/sec percolation rate; shotcrete the side slopes and pave the pond bottoms to protect the impermeable liner. One of the two basins would be converted into a flow equalization basin to dampen peak wet weather flows and/or serve as an emergency retention basin should the need arise, and the other basin would be converted into an aeration basin with the Biolac® system. Final effluent would be pumped by the WWTP Effluent LS to the new leach fields constructed in the existing percolation beds.

- Construct a new sewage LS at the existing LPMWC WWTP immediately downstream of the existing Imhoff tank. Effluent would be pumped to the Biolac® aeration basin for treatment. Imhoff tank solids would be collected on a quarterly basis and sent to the Hayfork WWTP or to the Shasta County seepage ponds.

- In case of emergency, Imhoff tank effluent could be disinfected and sent to the new leach fields as described above in the proposed action (Alternative 1).

PACE Engineering (2016) considered a total of 19 design criteria in selecting the preferred alternative. As compared to Alternative 2, Alternative 1 is more energy efficient, is better able to meet current and future regulations, is easier and less costly to construct, is more secure, is better able to remove nitrogen, has better effluent quality to meet disposal limitations, and conserves more water. Alternative 2 is preferable to Alternative 1 in several ways: it is more simple and safe to operate, it is less costly to operate and maintain the facilities, there are fewer odors generated on-site, and has a greater life-span of the facility. While Alternative 2 has many desirable components, overall Alternative 1 is preferable given it meets the stated needs and objectives, and was selected as the proposed action.

2.2.2 Old School House Lift Station Alternative

A new sewage LS would be constructed near the Old Lewiston School House to pump sewage from existing LCSD connections and TDMHP to the improved WWTP. In an emergency, bypass piping at the School House LS would allow WWTP effluent to be pumped directly to the emergency retention basin, thus bypassing the WWTP. The ability to bypass the WWTP would provide backup redundancy if the activated sludge process needs to be taken offline. When the activated sludge plant needs to be bypassed, waste from the Lewiston Park subdivision would pass through either the Imhoff tank or an automated bar screen to the WWTPLS and from there to the emergency retention basin. An area of approximately 20 feet by 20 feet would be excavated to a depth of up to 20 feet to allow for construction of a new wet well. The new LS and infrastructure would be housed in a small building that would be constructed to be consistent with the Greek revival historic architectural styling of the central Lewiston Historic District.

Horizontal direction drilling would be used to pass the 6-inch sewer/FM beneath the intersection of School House and Trinity Turnpike roads at Hoadley Gulch. The pipe would tie into the new School House LS. The proposed location of the new School House LS would allow for future sewer connections in the central Lewiston area and vicinity.

Although the Old School House Lift Station alternative was the originally selected preferred alternative, it was subsequently determined that the selected action alternative would be more cost efficient and would have less potential for significant environmental impacts as a result of its construction.

2.3 No Action Alternative

In addition to the proposed action alternative, LCSD also considered a no-action alternative in its evaluation of the project, pursuant to NEPA. Under the no-action alternative, LCSD would not proceed with the improvements to the wastewater collection, treatment, and disposal facilities currently serving the residents of Lewiston. No action is not a feasible alternative since failure to address system failures cited in the various Notices of Violation that have been issued for each of the three existing systems would defy the SWRCB and Trinity County Health Department requirements. The ramifications of such a choice are far reaching and would most likely result in a building

moratorium within Lewiston imposed by the SWRCB followed by declining real estate values. In addition, the SWRCB would place all three wastewater treatment systems under close scrutiny, which would most likely result in administrative civil liability fines levied against the wastewater service providers and respective communities. It is anticipated that insurance premiums for area home and business owners would become excessive or insurance could be altogether unavailable for fear of the company being held liable for sanitary sewer overflows onto private property or worse.

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