REVISED DRAFT INITIAL STUDY and ENVIRONMENTAL CHECKLIST

FOR

CITY OF WILLITS GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT

December 2020 ~ *Revised September 2021*

Lead Agency:
City of Willits

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LACO Project No.: 8509.08

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I. PROJECT SUMMARY

Date: December 2020 ~ **Revised September 2021**

Project Title: City of Willits Groundwater Resiliency Improvements Project

Lead Agency: City of Willits

Contact: Andrea Trincado, Project Manager
City of Willits
Engineering Department
380 E. Commercial Street, Willits, California 95490

Location: The proposed project is located northeast of the City of Willits (City) center on City-owned parcels identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05 (Site) (see Figure 1). The Site is currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and groundwater treatment plant, and is located adjacent to the City's sewer plant (see Figure 2).

Coastal Zone: No

Affected Parcel(s): Assessor's Parcel Number(s) 007-010-01, 108-030-06, and 108-020-05

APN 007-010-01 City of Willits Land Use Designation: Industrial-General (M-G) (see Figure 3)
APN 007-010-01 City of Willits Zoning Designation: Heavy Industrial (MH) (see Figure 4)

APNs 108-030-06 and 108-020-05 County of Mendocino Land Use Designation: Agricultural Lands (AG) (see Figure 5)
APNs 108-030-06 and 108-020-05 County of Mendocino Zoning Designation: Agricultural Lands (AG) (see Figure 6)

Anticipated Permits and Approvals:

1) Adoption of Mitigated Negative Declaration (MND) by the City of Willits
2) Section 401 Water Quality Certification (WQC) through the North Coast Regional Water Quality Control Board (NCRWQCB)
3) Section 404 Nationwide Permit (NWP) through the U.S. Army Corps of Engineers (USACE)

Tribal Cultural Resources: Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

On March 12, 2020, in compliance with Assembly Bill (AB) 52, the City of Willits (City), sent consultation letters to the Middletown Rancheria Band of Pomo Indians and the Torres Martinez Desert Cahuilla Indians, two (2) Native American tribes that are traditionally and culturally affiliated to the project area and whom had previously requested notification of projects in the tribes' area of traditional and cultural affiliation pursuant to AB 52. No responses were received. On June 23, 2020, the City sent additional AB 52 consultation letters

to each of the 13 Tribal representatives provided to the City of Willits on the Native American Heritage Commission (NAHC) Native American Contacts List dated October 28, 2019, including the EPA Director and Chairperson of the Cahto Tribe; the Chairpersons of the Coyote Valley Band of Pomo Indians, Guidiville Band of Pomo Indians, Hopland Band of Pomo Indians, Kashia Band of Pomo Indians of the Stewards Point Rancheria, Manchester Band of Pomo Indians, Noyo River Indian Community, Pinoleville Pomo Nation, Potter Valley Tribe, Redwood Valley or Little River Band of Pomo Indians, Sherwood Valley Band of Pomo Indians; and the President of the Round Valley Reservation/Covelo Indian Community. No requests for consultation were received from any of the 18 Native American tribes that were sent formal notification of the project in compliance with AB 52, as noted above. As no requests for consultation were received within the 30 day deadline specified by Public Resources Code Section 21082.3 (d), the City, as Lead Agency, has deemed the Tribal consultation process complete. A copy of the NAHC Native American Contacts List is included in Appendix B.

CEQA Requirement:
The proposed project is subject to the requirements of the California Environmental Quality Act (CEQA). The Lead Agency is the City of Willits. The purpose of this Initial Study (IS) is to provide a basis for determining whether to prepare an Environmental Impact Report (EIR) or a Negative Declaration. This IS is intended to satisfy the requirements of the CEQA (Public Resources Code, Div. 13, Sec. 21000-21177) and the State CEQA Guidelines (California Code of Regulations, Title 14, Sec 15000-15387).

CEQA encourages lead agencies and applicants to modify their projects to avoid significant adverse impacts (CEQA Section 20180(c) (2) and State CEQA Guidelines Section 15070(b) (2)).

Section 15063(d) of the State CEQA Guidelines states that an IS shall contain the following information in brief form:

1) A description of the project including the project location
2) Identification of the environmental setting
3) Identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to provide evidence to support the entries
4) Discussion of means to mitigate significant effects identified, if any
5) Examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls
6) The name of the person or persons who prepared and/or participated in the Initial Study

CEQA Discussion:
In December 2020 the City of Willits (City) prepared and circulated a Draft Initial Study/Mitigated Negative Declaration (Draft IS/MND) for the proposed project. The Draft IS/MND was submitted to the State Clearinghouse (SCH No. 2020120527) and circulated for public review and comment for a period of 30 days, beginning on December 29, 2020 and ending on January 28, 2021. Following circulation of the Draft IS/MND and the receipt of comments, the City revised the Draft IS/MND to include additional detail on the proposed improvements, the City's water use, the City's existing wells and monitoring practices, and the conditions of the Little Lake Valley groundwater basin. As the new information added to the Draft IS/MND clarifies, amplifies, and makes insignificant modifications to the Draft IS/MND, in accordance with State CEQA Guidelines Section 15073.5(c)(4), recirculation of the Draft IS/MND is not required; however, the City, as Lead Agency, has decided to recirculate a Revised Draft IS/MND, in accordance with State CEQA Guidelines Sections 15072 and 15073.

II. PROJECT DESCRIPTION

The City of Willits (City) proposes improvements to the existing Willits Groundwater System in order to increase the City's conjunctive use capabilities and provide the City with a reliable water supply sufficient to meet community needs in the event surface water becomes untenable. The proposed project would provide the City with the flexibility to manage water sources adaptively, considering factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health. The proposed project is located northeast of the City center on City-owned parcels identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05 (Site). The Site is currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and groundwater treatment plant, and is located adjacent to the City's sewer plant.

Project Background

The majority of water utilized in the City water supply system is currently supplied from surface water reservoirs on the Davis Creek watershed: Morris Reservoir and the upstream Centennial Reservoir. Water from these sources is treated at the surface water treatment plant near Morris Reservoir and piped to the City and surrounding regions approximately 2.5 miles via a single 16-inch transmission line. The surface water treatment plant produced approximately 260.5 million gallons (799.5 acre-feet), for an average of 0.714 million gallons per day (MGD), in 2020, and approximately 269.4 million gallons (826.7 acre-feet), for an average of 0.738 MGD, in 2019. A 5-year average from 2016 to 2020 demonstrated that the surface water treatment plant produced approximately 19.8 gallons per month (or 781.4 gallons per minute) given an average operation time of 19.2 hours per day.

The City's groundwater infrastructure includes the Elias replacement well, the Long 20 well, the groundwater treatment plant, and the Park well. Currently, the Elias replacement well is the only well connected to the City's groundwater treatment plant and water supply system. The groundwater treatment plant produced 13 million gallons (41.7 acre-feet) in 2019, for an average of 0.036 MGD, primarily used during the flushing of the distribution system. The City did not treat and/or distribute any groundwater at the groundwater treatment plant in 2020. The Long 20 well currently serves as a monitoring well and is not currently connected to the groundwater treatment plant or water supply system. Water from the Park well is used by the City for irrigation, sold to private water truck owners, and used for construction, fire suppression and other miscellaneous uses. The Park well generated 8 million gallons (24.5 acre-feet), for an average of 0.022 MGD and 1.1 million gallons (3.4 acre-feet), for an average of 0.003 MGD, in 2020 and 2019, respectively. Currently, the City does not have a policy nor the resources to monitor where and how the bulk, untreated water from the Park well is used. The City actively monitors groundwater levels in multiple locations and plans to create a more robust monitoring plan in coming years. In August 2021, the City installed two new monitoring wells near the Park well to gather data on the effects of Park well pumping on the surrounding groundwater levels. The City will continue to look for wells near its groundwater infrastructure that can be accessed and measured in order to gather important data as part of the aforementioned groundwater monitoring plan.

Project Need

The dependence of the City's water supply system on a single surface source has made it vulnerable to water supply and/or water quality issues due to catastrophic failures and/or to severe or protracted drought. In 2014, the continuing drought led to a severe water shortage during which the City was forced to call for mandatory restrictions on water use and the need for alternative water supplies became evident. The drought not only placed a strain on the quantity of water available, but also impacted the water quality as well. Reduced levels in the reservoirs led to increased temperatures and biological growth, including algae

blooms. Such organics overwhelmed the system, leading to violations for total trihalomethanes (TTHM) over two periods in 2015. In response to the extreme drought conditions in 2014, the City developed the Willits Groundwater System as an emergency project to supply and treat supplementary groundwater during the drought. The Willits Groundwater System included construction of a new groundwater treatment plant and the installation of over 8,000 feet of new water line to connect the Elias replacement well to the distribution system. In 2017, non-emergency use of this groundwater supply was approved by the State Water Resources Control Board (SWRCB) Division of Drinking Water, providing the City with the ability to supplement the surface water supply with groundwater and increase water supply reliability throughout the year.

Peak water demand in the City occurs in summer months. Water use exceeds 1.0 MGD on the days with highest use, which typically occurs for approximately two weeks during the month of August. Thus, the water system must be able to deliver peak summer flows of 1.0 MGD to be considered minimally reliable, given current population and demand. Currently, the Willits Groundwater System can produce an absolute maximum of 0.49 MGD, a fraction of the peak demand in summer, during which time of year the effects of a drought would most impact the City's water supply system (LACO, 2019). In the event that the surface water supply is compromised as it was in 2014, the City does not currently have the infrastructure necessary to fulfill the demand with groundwater.

In 2019, the City applied for and was awarded Department of Water Resources (DWR) funds through the North Coast Resource Partnership (NCRP) Proposition 1 Integrated Regional Water Management (IRWM) grant program for Phase 1 of this project, described below.

Proposed Improvements

Improvements would include the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and supervisory control and data acquisition (SCADA) facility to manage the Long 20 well, establishment of power to the Long 20 well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well (chlorine contact tank) adjacent to the west of the groundwater treatment plant. The proposed improvements would be completed in three (3) phases, as described below. Once installed, these improvements would be maintained by existing City staff as part of ongoing maintenance and operation of the Willits Groundwater System.

Phase 1 – Water Line Replacement and Installation

In Phase 1 of the project, a 3,600-foot section of 6-inch Schedule 40 PVC pipe connecting the Elias replacement well to the Willits Groundwater System would be upgraded to a 10-inch high density polyethylene (HDPE) pipe to accommodate increased flows and increase transfer capacity from the well to the groundwater treatment plant. In addition, approximately 150 feet of 10-inch HDPE pipe would be installed to connect the Long 20 well to the Willits Groundwater System. Groundwater pumped from the Long 20 well would not be incorporated into the City water supply system until such time as it is certified to meet all relevant California Drinking Water Standards.

The new water line would be placed within, or in close proximity to, the footprint of the existing water line, to be abandoned-in-place, which is located within the driveway utilized by City staff for ongoing maintenance and operation of the Willits Groundwater System. The new pipe would be installed in three stages using horizontal directional drilling technology. The first stage would require the excavation of access holes approximately 400 square feet in area. The drill rig would be positioned at each of the access holes and pivoted at an angle to drill down to approximately 7 feet deep. During the first stage, a small diameter pilot hole would be drilled along the designed drill path or pipeline alignment. The second stage would enlarge

the pilot hole to accommodate the 10-inch pipe installation. The third and last stage would pull the 10-inch pipe back through the hole. Fittings would then be fused onto the pipe and connections would be established between sections of new pipe and between sections of new pipe and the existing 8-inch C900 pipe on either end of the project. Up to nine (9) access holes would be excavated approximately 500 feet apart, with the potential for a slight deviation in spacing of the access holes anticipated during construction.

Phase 2 – Well Pump Upgrade, Arsenic Pilot Testing

Phase 2 of the project includes the installation of a 20 horsepower (hp) pump in the Long 20 well and a SCADA facility, the establishment of power to the pump and SCADA facility, and the completion of arsenic pilot tests on the Long 20 well. For the Long 20 well pump operation, a SCADA facility will be installed on an elevated platform to be located within the footprint of the Long 20 well and well access area. The elevated platform will be constructed so that the electrical controls are a minimum of one-foot above the 100-year floodplain elevation. Following well pump and SCADA installation, arsenic pilot testing would be performed on the Long 20 well to determine if the existing groundwater treatment plant would be able to reduce arsenic levels in the raw water to a level that meets California Drinking Water Standards. The pilot testing would initially be conducted on raw water samples from the Long 20 well, and if the plant proves to be able to effectively treat that level of arsenic, the pilot testing would be complete. If the plant is unable to effectively treat the Long 20 well raw water, water from the Elias replacement well and the Long 20 well would be mixed at different proportions for treatment, as the Elias replacement well has a negligible arsenic concentration.

Phase 3 – Clear Well Installation

Finally, in Phase 3, a 250,000-gallon bolted or welded steel clear well (chlorine contact tank) would be installed to enhance the treatment and operability of the groundwater treatment system. The clear well is proposed to be installed adjacent to the west of the groundwater treatment plant on a compacted dirt surface within the footprint of existing development.

The clear well would store the treated and potable water prior to sending it to the water supply system. The existing groundwater treatment system is limited in its ability to pump water to the highest storage tank and customers in the water supply system because the pressure filters have a maximum pressure of 80 pounds per square inch (psi) (186 feet). As such, additional pumping would be necessary in the event that the groundwater treatment system would need to function as an alternative to the surface water treatment system. Adding a clear well tank after filtration will allow for installation of additional system pumps that can overcome the system head and not carry the risk of cavitation from inline booster pump installation. Additionally, installation of a clear well tank will allow operators to make adjustments to chemical dosages and treatment, as needed, and better monitor the water quality of finished water prior to its delivery to the water supply system.

III. PROJECT SETTING AND LOCATION

The City of Willits (City) is a rural incorporated community of 5,128 people, according to the City of Willits 2019 Housing Element (City of Willits, 2019a), located near the center of Mendocino County, California, along Highway 101 (see Figure 1). The City owns and operates the public water system, which supplies potable water to an estimated 5,500 to 6,500 people in the City and surrounding communities. The project is located northeast of the City center on City-owned parcels, identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05 (Site). The Site is currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and groundwater treatment plant, and is located adjacent to the City's sewer plant (see Figure 2). While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits, and the parcels identified by APN 108-030-06 and 108-020-05 are located within the unincorporated area surrounding the City. Uses surrounding the project areas

described in Phases 1 and 2 of the project include vacant fields utilized for cattle grazing during the dry season, typically May to October. Uses surrounding the area proposed for improvements in Phase 3 include the City groundwater treatment system and sewer plant.

A *Habitat Assessment* was prepared by Wildlife Research Associates (WRA) and Jane Valerius Environmental Consulting (Jane Valerius) on December 3, 2020 (see Appendix C). The survey encompassed the northern portion of the Site, with a focus on the alignment of the water line replacement and installation proposed in Phase I. A broad biological review and wetland delineation survey were conducted within an approximately 2.6-acre limit of disturbance area and a 15.34-acre study area, with focused plant surveys conducted within the limit of disturbance area. Protocol level surveys for all special status plants with the potential to occur within the study area were conducted by Jane Valerius and Geri Hulse-Stephens from April to June 2020. On May 12, 2020, Trish Tatarian of WRA conducted a reconnaissance-level site visit intended as an evaluation of on-site and adjacent habitat types and included an evaluation of the Site for small mammal burrows and suitable potential habitat for nesting birds and roosting bats. In addition, on May 12, 2020, Jane Valerius conducted a formal wetland delineation in accordance with the 1987 *Wetlands Delineation Manual* and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coastal Region* of the U.S. Army Corps of Engineers (USACE).

The assessment found that two vegetation communities (upland non-native grassland and seasonal wetlands) and three wildlife habitats (annual grasslands, valley foothill riparian, and fresh emergent wetland) occur within the study area. The majority of the Site, 14.02 acres, qualifies as a seasonal wetland, with approximately 1.32-acres of upland non-native grassland on the Site. Oregon ash trees occur along the fence lines and in small groves within the larger grassland areas, and are considered to provide a continuation of the valley foothill riparian habitat that exists along Outlet Creek.

Of the 21 special status plant species that have been reported in the Willits and Burbeck 7.5-minute topographic quadrangles, two special status plants, Baker's meadowfoam, a California Rare (CR) and California Native Plant Society (CNPS) Rank 1B (rare, threatened, or endangered in California and elsewhere) plant, and Davy's semaphore grass, a CNPS Rank 4 (plants of limited distribution) species, were observed in a portion of the seasonal wetlands. A total of 0.59 acres of Baker's meadowfoam was mapped on-site, primarily in areas where vehicles or other disturbance have created ruts or depressions in the grasslands. Based on the habitats present, a total of ten (10) sensitive wildlife species were assessed for potential occurrence at the Site. The assessment determined that nesting passerines and raptors with non-sensitive status, but protected under the Migratory Bird Treaty Act (MBTA), and roosting bats, including the Western red bat (a CDFW Species of Special Concern), have the potential to occur within various habitats on-site. Several passerine species may nest in the grasslands, blackberry bushes, or trees on-site, depending on the species, while nesting raptors and roosting bats may occur in the trees.

Elevations at the Site range between approximately 1,323 feet and 1,353 feet above mean sea level. The majority of the Site is located within the 100-year flood zone (Zone A) of Outlet Creek, as shown on Federal Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) panel number 06045C1112F, effective June 2, 2011, with the clear well proposed to be located in an area designated as Zone AE, an area inundated by the one-percent annual chance flooding, for which Base Flood Elevations (BFEs) have been determined. The clear well will be located adjacent to the existing groundwater treatment plant which is currently located in the Regulatory Floodway, as shown on FIRM panel number 06045C1112F, effective June 2, 2011. The Site is located east of Outlet Creek and west of Davis Creek, both of which flow from south to north. Soils are mapped by Natural Resources Conservation Services (NRCS) as Fluvaquents soils, very deep,

very poorly drained soils on flood plains, originating from recent alluvium derived from sedimentary rock (NRCS, 1997).

IV. ENVIRONMENTAL EFFECTS

An environmental checklist follows this section, and addresses all potential adverse effects resulting from the proposed project. No significant adverse effects are expected from any of the proposed activities.

V. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a **"Potentially Significant Impact"** or "**Potentially Significant Unless Mitigation Incorporated**" as indicated by the checklists on the following pages.

	Aesthetics		Agriculture and Forestry Resources		Air Quality
X	Biological Resources	X	Cultural Resources		Energy
X	Geology and Soils		Greenhouse Gas Emissions		Hazards and Hazardous Materials
X	Hydrology and Water Quality		Land Use and Planning		Mineral Resources
	Noise		Population and Housing		Public Services
	Recreation		Transportation	X	Tribal Cultural Resources
	Utilities and Service Systems		Wildfire	X	Mandatory Findings of Significance

An explanation for all checklist responses is included, and all answers take into account the whole action involved and the following types of impacts: off-site and on-site; cumulative and project-level; indirect and direct; and construction and operational. The explanation of each issue identifies (a) the threshold of significance, if any, used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance. The mitigation measures recommended for the project are included in Appendix A.

In the checklist the following definitions are used:

"**Potentially Significant Impact**" means there is substantial evidence that an effect may be significant.

"**Less than Significant Impact with Mitigation Incorporated**" means the incorporation of one or more mitigation measures can reduce the effect from potentially significant to a less than significant level.

"**Less Than Significant Impact"** means that the effect is less than significant and no mitigation is necessary to reduce the impact to a lesser level.

"**No Impact"** means that the effect does not apply to the proposed project, or clearly will not impact nor be impacted by the proposed project.

DETERMINATION: (To be completed by the Lead Agency on the basis of this initial evaluation)

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

09.09.21
Date

Brian Bender, City Manager
Name and Title

I. **AESTHETICS**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Thresholds of Significance: The project would have a significant effect on aesthetics if it would have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway; substantially degrade the existing visual character or quality of public views of the site and its surroundings (if the project is in a non-urbanized area) or conflict with applicable zoning and other regulations governing scenic quality (if the project is in an urbanized area); or create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

DISCUSSION

The project involves improvements to the existing Willits Groundwater System in order to increase the City's conjunctive use capabilities and provide the City with a reliable water supply sufficient to meet community needs in the event surface water becomes untenable. Improvements would include the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and SCADA system to manage the Long 20 well, establishment of power to the Long 20 well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well (chlorine contact tank) adjacent to the west of the groundwater treatment plant on a compacted dirt surface. Upon project completion, the only above-ground improvements that would remain visible would be the SCADA facility and the clear well. Access to the proposed improvements well would be limited to normal business hours (7:00 am to 7:00 pm Monday through Saturday), or as required for the ongoing maintenance of the City sewer plant and Willits Groundwater System. No lighting is proposed.

I.a-b) The Site is comprised of vacant agricultural land utilized for cattle grazing during the dry season in the north and the groundwater treatment plant in the south and there are no designated scenic vistas in the vicinity of the Site. Furthermore, upon project completion, the only above-ground improvements that would remain visible would be the SCADA facility and clear well. As noted above, the SCADA facility would be installed on an elevated platform within the footprint of the Long 20 well and well access area, while the clear well would be located west of the existing groundwater treatment plant in close proximity to the City sewer plant. Per Chapter 4 of the 2009 Mendocino County General Plan (pg. 4-31), there are no officially designated State Scenic Highways in Mendocino County, although there are two designated State Scenic Byways through forests, which include the North Central Coast Heritage Corridor on State Route 1 and the Tahoe-Pacific Heritage Corridor encompassing sections of State Route 20 and Highway 101. While not officially designated as State Scenic Highways, Highway 20 through Mendocino County is eligible for

designation and Highway 128, which passes through Yolo, Napa, Sonoma, and Mendocino Counties and is 140 miles long, was recently made eligible for designation under Assembly Bill (998) signed by Governor Gavin Newsom in July 2019. However, Highways 20 and 128 are not in the vicinity of the Site.

Since the Site is not a designated scenic vista, is not located in the vicinity of a designated scenic visit or state scenic highway, and visual changes would only be anticipated in the area of the existing groundwater treatment plant and sewer plant, the project would not impact a scenic vista, nor damage scenic resources or views along a state scenic highway. No impact would occur.

I.c) The proposed project has no physical elements that would block or impact views or substantially degrade the existing visual character or quality of public views of the Site and its surroundings as the project would be constructed within the footprint of existing development and would not modify views of the Site or surrounding area. The northern portion of the Site, which is currently surrounded by vacant agricultural land utilized for cattle grazing during the dry season, is not visible from public vantage points and the installation proposed improvements would not modify the existing visual character of the Site and its surroundings. The clear well structure, proposed in the southern portion of the Site, may be visible from a public vantage point; however, it would be located in an urbanized area that is developed with similar uses, including the City's groundwater treatment plant and sewer plant. A less than significant impact would occur.

I.d) No new lighting is proposed as part of this project and no aspects of the project involve materials that would produce glare. Access to the site would be limited to normal business hours (7:00 am to 7:00 pm Monday through Saturday), or as required for the ongoing maintenance of the City sewer plant and Willits Groundwater System. Therefore, the project would have no impact on day or nighttime views due to light and glare. No impact would occur.

MITIGATION MEASURES
No mitigation required.

FINDINGS
The proposed project would have a **Less than Significant Impact** on Aesthetics.

II. **AGRICULTURE AND FORESTRY RESOURCES**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒

Thresholds of Significance: The project would have a significant effect on agriculture and forestry resources if it would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (hereafter "farmland"), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses; conflict with existing zoning for agricultural use or a Williamson Act contract; conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)); Result in the loss of forest land or conversion of forest land to non-forest use; or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use.

DISCUSSION

The Site is located northeast of the City center on City-owned parcels currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, groundwater treatment plant, and is located adjacent to the City's sewer plant. While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits, while the parcels identified by APN 108-030-06 and 108-020-05 are located within the unincorporated area surrounding the City. Uses surrounding the project areas described in Phases 1 and 2 of the project include vacant fields utilized for cattle grazing during the dry season, typically May to October. Uses surrounding the area proposed for improvements in Phase 3 include the City groundwater treatment plant and sewer plant.

The parcels identified by APNs 108-030-06 and 108-020-05 have a Mendocino County General Plan (2009) land use designation of Agricultural Lands (AG) and are zoned as Agricultural Lands (AG) under the Mendocino County Inland Zoning Code (County Zoning Code), adopted in 1987 (see Figures 5 and 6, respectively). These parcels are designated as "Grazing Land" under the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (DOC), Division of Land Resource Protection (2016) and are not currently under a Williamson Act Agricultural Preserve contract (Mendocino County Maps - Timber Production & Williamson Act Lands, 2014). These parcels would be impacted by Phases 1 and 2 of

the project, which include the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and supervisory control and data acquisition (SCADA) on the Long 20 well, establishment of power to the Long 20 well pump and SCADA facility, and arsenic pilot testing on the Long 20 well.

The parcel identified by APN 007-010-01 has a City of Willits General Plan (1992) land use designation of Industrial-General (M-G) and is zoned as Heavy Industrial (MH) under the City of Willits Zoning Code (2018) (see Figures 3 and 4, respectively). This parcel is designated as "Urban and Built-Up Land" under the FMMP of the DOC, Division of Land Resource Protection (2016). This parcel would be impacted by Phase 3 of the project which proposes to install a 250,000-gallon clear well adjacent to the west of existing groundwater treatment plant.

II.a) The proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. As noted above, the parcels identified by APNs 108-030-06 and 108-020-05 are designated as "Grazing Land" and the parcel identified by APN 007-010-01 is designated as "Urban and Built-Up Land" under the FMMP of the DOC. No impact would occur.

II.b) The northern portion of the Site (proposed for improvements during Phases 1 and 2) is currently zoned as Agricultural Lands (AG) under the Mendocino County Zoning Code (see Figure 6) and is not currently under a Williamson Act contract. The City maintains and operates the Willits Groundwater System, including the Elias replacement well, Long 20 well, and underground water lines in this portion of the Site and proposes no improvements that would conflict with the existing zoning designation. The proposed SCADA facility would be constructed within the footprint of the existing Long 20 well and well access area and would not impede existing agricultural uses of the Site. Additionally, the southern portion of the Site (proposed for improvements during Phase 3) is currently zoned as Heavy Industrial (MH) under the City of Willits Zoning Code (see Figure 4) and proposes no changes to this zoning designation. Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. A less than significant impact would occur.

II.c) The Site is neither designated nor zoned as forest land or timberland. No impact would occur.

II.d) The affected parcels do not include forest land and the project would not result in the loss of forest land or the conversion of forest land to non-forest use. Therefore, no impact would occur.

II.e) There are no components of the project that would involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use. As described above, Phases 1 and 2 of the project would include improvements to the existing groundwater wells and distribution system and would have no impact on the existing agricultural use and Phase 3 of the project would be implemented on an industrial-zoned parcel. No impact would occur.

MITIGATION MEASURES
No mitigation required.

FINDINGS
The proposed project would have a **Less than Significant Impact** on Agricultural and Forestry Resources.

III. **AIR QUALITY**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Thresholds of Significance: The project would have a significant effect on air quality if it would conflict with or obstruct implementation of applicable air quality plans; result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; expose sensitive receptors to substantial pollutant concentrations; or result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

DISCUSSION: Air pollution control in the State of California is based on federal, state, and local laws and regulations. According to the 2005 Mendocino County Air Quality Management District (MCAQMD) Particulate Matter Attainment Plan (PM Attainment Plan) (pg. 5), the United States Environmental Protection Agency (EPA), California Air Resources Board (CARB), and regional clean air agencies all regulate air quality. The EPA and the CARB have set thresholds for each of the criteria pollutants, which include: ozone (O_3), carbon monoxide (CO), oxides of nitrogen (NO_x), lead (Lb), sulfur dioxide (SO_2), particulate matter less than 10 microns in size (PM_{10}), and particulate matter less than 2.5 microns in size ($PM_{2.5}$). The standards set by the CARB are generally more stringent than those set by the EPA and the CARB has set additional standards for visibility-reducing particles (of any size), sulfates, and hydrogen sulfide (H_2S). These standards are based on observable short-term (acute) health effects (MCAQMD, 2005).

The Site is located within the North Coast Air Basin (NCAB) and is subject to the requirements of the MCAQMD. The MCAQMD is responsible for monitoring and enforcing the state and federal Clean Air Acts as well as local air quality protection regulations in Mendocino County. The entire NCAB is currently designated as "non-attainment," or in excess of allowable limits, for the state 24-hour allowable limits for breathable particulate matter of 10 microns or less (PM_{10}), and as "attainment," or within allowable limits, with respect to the balance of the criteria pollutants. The MCAQMD has been determined to be in "attainment", or within allowable limits, for all federal and state ambient air quality standards, except for the state annual average PM_{10} standard and the 24-hour PM_{10} standard. The California Clean Air Act does not require attainment plans or transportation conformity for Districts that exceed the PM_{10} standard, but only requires that the Districts make reasonable efforts toward coming into attainment, defined as a five percent reduction in emissions per year, until the standard is attained. Although not required for coming into attainment for the state standard, the MCAQMD adopted the PM Attainment Plan in 2005. The PM Attainment Plan includes a description of local air quality, the sources of local particulate matter (PM) emissions, and recommended control measures to reduce future PM_{10} levels. While PM_{10} levels have dropped over the last 20 years, due to changing industrial base, enhanced regulations, and increased enforcement by the MCAQMD, the MCAQMD still exceeds the state PM_{10} level several times a year. The majority of these exceedances result from wildfires, residential wood burning, unpaved roads, and construction activities (MCAQMD, 2005).

Improvements proposed during Phase 1 of the project include replacing a 3,600-foot section of 6-inch Schedule 40 PVC pipe connecting the Elias replacement well to the Willits Groundwater System with a 10-inch high density polyethylene (HDPE) pipe to accommodate increased flows and increase transfer capacity from the well to the groundwater treatment plant, and the installation of approximately 150 feet of 10-inch HDPE pipe to connect the Long 20 well to the Willits Groundwater System. This work would be completed using horizontal directional drilling technology. Phase 2 would include the installation of a 20 horsepower (hp) pump in the Long 20 well and a SCADA facility, the establishment of power to the Long 20 well pump and SCADA facility, and arsenic pilot testing on the Long 20 well. Finally, in Phase 3, a 250,000-gallon clear well would be installed adjacent to the west of the existing groundwater treatment plant, within the footprint of existing development. The improvements proposed would require the use of construction equipment such as an excavator, drill rig, dump truck, vibratory plate/jumping jack, water truck, backhoe, and roller. Construction equipment would be maintained in good condition throughout project construction.

Emissions from the project would be comprised of temporary and permanent direct and indirect emissions, with the majority of potential emissions anticipated to be temporary, during construction. Direct emissions during construction, including exhaust and fugitive dust, would result from operation of construction equipment and would be temporary in nature. On-site operational emission sources at the Site would include stationary, mobile, and fugitive sources, the majority of which currently exist as part of the ongoing operation of the Willits Groundwater System. The proposed improvements would largely serve to enhance treatment and operability of the groundwater treatment system and would lead to negligible changes in existing direct emissions from the Site. As no additional employees would be required to operate the Willits Groundwater System after construction of the proposed project, no increase in indirect emissions from the Site would be anticipated.

III.a-b) The project would not conflict with or obstruct implementation of any air quality plan or result in a cumulatively considerable net increase of PM_{10}, the only criteria pollutant for which the project region is in non-attainment. As noted above, the MCAQMD is in "non-attainment" for PM_{10} (MCAQMD, 2005). Therefore, any use or activity that generates unnecessary airborne particulate matter may be of concern to MCAQMD and has the potential to create significant project-specific and cumulative effects to air quality. MCAQMD has advised that generally an activity that individually complies with the state and local standards for air quality emissions will not result in a cumulatively considerable net increase in the countywide PM_{10} emissions. While project construction would generate temporary emissions from use of construction equipment, the project would not include any source of visible emissions, including intentional fire/burning or manufacturing and would control exhaust emissions from construction equipment by minimizing idling, in accordance with California Code of Regulations, Title 13, Section 2485: *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling* (adopted 2005), which limits idling from both on-road and off-road diesel-powered equipment and is enforced by the California Air Resources Board (ARB). In addition, the contractor would suppress fugitive dust during construction and operation, pursuant to Rule-1-430 (Fugitive Dust Emissions) of Chapter IV (Prohibitions) of Regulation 1 (Air Pollution Control Rules) of the MCAQMD's *Rules and Regulations* (February 2011), and would maintain all construction equipment in good working order such that exhaust and fugitive dust emissions are minimized. The project would be subject to current and future regulations adopted by MCAQMD, including the PM Attainment Plan (2005), and compliance with these regulations would ensure the project would not result in a substantial increase of PM_{10} within the vicinity of the Site. A less than significant impact would occur.

III.c-d) The project would not expose sensitive receptors to substantial pollutant concentrations, nor create objectionable odors affecting a substantial number of people. Sensitive receptors are defined as people

that have an increased sensitivity to air pollution or environmental contaminants, and include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling unit(s). The nearest location of potential sensitive receptors to the Site is the Community Ball Fields, located approximately 0.28 miles south of the Site. The project component nearest to the Community Ball Fields would be the clear well. Uses surrounding the project areas described in Phases 1 and 2 of the project, to be implemented in the northern portion of the Site, include vacant fields utilized for cattle grazing during the dry season, typically May to October. Uses surrounding the area proposed for improvements in Phase 3, to be implemented in the southern portion of the Site, include the City groundwater treatment plant and sewer plant.

The proposed project would be anticipated to create exhaust and fugitive dust during construction of the project. However, given the distance to the nearest sensitive receptors and with suppression of fugitive dust during construction and operation, pursuant to Rule-1-430 (Fugitive Dust Emissions) of Chapter IV (Prohibitions) of Regulation 1 (Air Pollution Control Rules) of the MCAQMD's *Rules and Regulations* (February 2011), and maintaining all equipment in good working condition, fugitive dust and exhaust emissions would be minimized. Additionally, there is no proposed use that would be anticipated to result in a significant increase in pollutant concentrations or other emissions, as the only significant above-ground component of the project includes the installation of a clear well that will have a negligible impact on operational emissions from the groundwater treatment system. A less than significant impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Air Quality.

IV. BIOLOGICAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Thresholds of Significance: The project would have a significant effect on biological resources if it would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service; have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service; have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

DISCUSSION

The Site is located northeast of the City center on City-owned parcels currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and groundwater treatment plant, and is located adjacent to the City's sewer plant (see Figure 2). While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits, while the parcels identified by APNs 108-030-06 and 108-020-05 are located within the unincorporated area to the north of the City. Uses

surrounding the project areas described in Phases 1 and 2 of the project include vacant fields utilized for cattle grazing during the dry season, typically May to October. Uses surrounding the area proposed for improvements in Phase 3 include the City groundwater treatment plant and sewer plant. The Site is located within the Mill Creek-Outlet Creek Hydrologic Unit of the Little Lake Valley. The Site is located east of Outlet Creek and west of Davis Creek, both of which flow from south to north. Outlet Creek receives flows from drainages on the west side of Little Lake Valley and Davis Creek receives flows from drainages on the east side of the valley.

A *Habitat Assessment* was prepared by Wildlife Research Associates (WRA) and Jane Valerius Environmental Consulting (Jane Valerius) on December 3, 2020 (see Appendix C). The survey encompassed the northern portion of the Site, with a focus on the alignment of the water line replacement and installation proposed in Phase I. Information on special status plant and wildlife species was compiled through a review of the California Natural Diversity Database (CNDDB, 2020) for the Willits and Burbeck 7.5-minute topographic quadrangles, California Department of Fish and Wildlife (CDFW) Special Animals List (CDFW, 2020), State and Federally Listed Endangered and Threatened Animals of California (CDFW, 2020), the California Native Plant Society (CNPS) Electronic Inventory records (CNPS, 2020), and the U.S. Fish and Wildlife Service (USFWS) Information on Planning and Conservation (IPaC) list (USFWS, 2020).

A broad biological review and wetland delineation survey were conducted within an approximately 2.6-acre limit of disturbance area and a 15.34-acre study area, with focused plant surveys conducted within the limit of disturbance area. Protocol level surveys for all special status plants with the potential to occur within the study area based on the USFWS, CNDDB, and CNPS database searches noted above, were conducted by Jane Valerius and Geri Hulse-Stephens from April to June 2020. On May 12, 2020, Trish Tatarian of WRA conducted a reconnaissance-level site visit intended as an evaluation of on-site and adjacent habitat types and included an evaluation of the Site for small mammal burrows and suitable potential habitat for nesting birds and roosting bats. In addition, on May 12, 2020, Jane Valerius conducted a formal wetland delineation in accordance with the 1987 *Wetlands Delineation Manual* and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coastal Region* of the U.S. Army Corps of Engineers (USACE). The 2020 delineation updated the original 2003 verified delineation that was conducted for the wastewater treatment plant. The USACE approved the delineation in a letter dated September 24, 2020. The majority of the project areas described in Phases 1 and 2 of the project are located within seasonal wetlands based on the delineations conducted in 2003 and updated in 2020. It should be noted that Phase 3 of the project is proposed adjacent to the west of the groundwater treatment plant on a compacted dirt surface within the footprint of existing development.

The assessment included an evaluation of the potential for occurrence of 21 special status plant species and 27 special status wildlife species, including bats, California red-legged frog, and western pond turtle, on the Site; however, no focused surveys for any special status wildlife species were conducted. The *Habitat Assessment* (WRA & Jane Valerius, 2020) notes that two vegetation communities (upland non-native grassland and seasonal wetlands) and three wildlife habitats (annual grasslands, valley foothill riparian, and fresh emergent wetland) occur within the study area. The majority of the 15.34-acre study area (14.02 acres) qualifies as a seasonal wetland, with approximately 1.32-acres of upland non-native grassland on the Site. Oregon ash trees occur along the fence lines and in small groves within the larger grassland areas, and are considered to provide a continuation of the valley foothill riparian habitat that exists along Outlet Creek. Of the 21 special status plant species that have been reported in the Willits and Burbeck 7.5-minute topographic quadrangles, two special status plants, Baker's meadowfoam, a California Rare (CR) and CNPS Rank 1B (rare, threatened, or endangered in California and elsewhere) plant, and Davy's semaphore grass, a CNPS Rank 4 (plants of limited distribution) species, were observed in a portion of the seasonal wetlands. A total of

0.59 acres of Baker's meadowfoam was mapped on-site, primarily in areas where vehicles or other disturbance have created ruts or depressions in the grasslands. Based on the habitats present, a total of ten (10) sensitive wildlife species were assessed for potential occurrence at the Site. The assessment determined that nesting passerines and raptors with non-sensitive status, but protected under the Migratory Bird Treaty Act (MBTA), and roosting bats, including the Western red bat (a CDFW Species of Special Concern), have the potential to occur within various habitats on-site. Several passerine species may nest in the grasslands, blackberry bushes, or trees on-site, depending on the species, while nesting raptors and roosting bats may occur in the trees.

The *Habitat Assessment* (WRA & Jane Valerius, 2020) provides several avoidance, minimization, and mitigation measures for minimizing potential impacts to the sensitive biotic resources observed on-site. These recommendations are described in detail below, in the applicable sections.

IV.a) Although 0.59 acres of Baker's meadowfoam and populations of Davy's semaphore grass were observed on-site, as shown on the project impact maps (see Project Impact maps provided in Appendix C) and as noted in the *Habitat Assessment* (WRA & Jane Valerius, 2020), all areas occupied by Baker's meadowfoam and Davy's semaphore grass are outside the proposed construction area. Furthermore, horizontal drilling technology would facilitate the installation of the new water line without impacts to the surface area outside the noted access holes. To ensure potential impacts to Baker's meadowfoam are avoided, the *Habitat Assessment* provides several recommendations, including designating Environmentally Sensitive Areas (ESAs) and installing temporary fencing around areas of known Baker's meadowfoam during construction to prevent disturbance from construction equipment and to prevent the placement of side cast soil material on the Baker's meadowfoam during excavation of the access holes. These measures would be implemented as Mitigation Measures BIO-1 and BIO-2, respectively. Implementation of Mitigation Measure BIO-1 would ensure areas to be avoided by construction activities would be designated as ESAs and fenced, or otherwise marked, in the field, while Mitigation Measure BIO-2 would ensure Baker's meadowfoam areas would be avoided when constructing access holes and placing side cast soil material from excavation activities.

As discussed above, based on the habitats observed on-site, there is the potential for nesting passerines and raptors and roosting bats to be present on-site. The MBTA generally prohibits the take of migratory birds and their nests and roosting bats are protected under CDFW regulations. To reduce the potential for the take of nesting passerines and raptors and roosting bats, the *Habitat Assessment* recommends that noise and ground disturbance associated with construction occur September 1 through October 15, outside the nesting season for passerines and raptors and the maternity roosting season for bats. If the seasonal work restrictions are infeasible, pre-construction surveys shall be conducted in accordance with Mitigation Measure BIO-3. In addition, as the Oregon ash trees located along the west side of the Site are considered to be part of the Valley Foothill Riparian wildlife habitat and potentially present habitat for nesting passerines and raptors and roosting bats, potential disturbance to the trees and/or their root systems shall be limited through the placement of ground protection in accordance with Mitigation Measure BIO-4, below.

To ensure the aforementioned avoidance, minimization, and mitigation measures are implemented prior to, during, and upon completion of construction, an education program for all construction personnel shall be conducted by a qualified biologist before construction begins, in accordance with Mitigation Measure BIO-5. With the incorporation of Mitigation Measures BIO-1 through BIO-5, a less than significant impact would occur.

IV.b) As discussed above and as presented in the *Habitat Assessment*, no special status vegetation communities have been reported in the CNDDB for the two topographic quadrangles, Willits and Burbeck, which contain the project area (CNDDB 2020). However, the seasonal wetlands are considered to be sensitive natural communities because of their wetland status, and because they support Baker's meadowfoam, a California Rare (CR) and CNPS Rank 1B plant, and Davy's semaphore grass, a CNPS Rank 4 species.

Additionally, as described in Section X (Hydrology and Water Quality), below, construction projects that would disturb more than one acre of land, such as the proposed project, would be subject to the requirements of General Construction Activity Stormwater Permit (Construction General Permit Order 2009-0009-DWQ, also known as the CGP), Mendocino County Code Chapter 16.30, and the City of Willits Design and Construction Standards, which require the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that specifies erosion and sediment control construction Best Management Practices (BMPs) to reduce or eliminate construction-related impacts to the water quality of receiving water bodies and nearby habitats. Implementation of the SWPPP would ensure proper stormwater controls are developed for the minimization of erosion resulting from construction and to avoid runoff into sensitive habitat areas (including Baker's meadowfoam populations and the on-site tress), limit ground disturbance to the minimum necessary, and stabilize disturbed soil areas as soon as feasible after construction is completed. In addition, as discussed below under Impact IV.c, implementation of Mitigation Measure BIO-6 would minimize impacts to the existing wetlands.

Implementation of Mitigation Measures BIO-1 through BIO-6 would facilitate the protection of the existing sensitive natural communities identified on-site. With mitigation incorporated, a less than significant impact would occur.

IV.c) As discussed above, the majority of the area studied in the *Habitat Assessment* is designated as seasonal wetlands, with only 1.32 acres of the 15.34-acre study area designated as upland non-native grassland. As the water line would be installed within and/or adjacent to the footprint of the existing water line and access road, the limits of disturbance for construction of the project and related vehicle access would be limited to designated areas of the Site. The proposed project would temporarily impact approximately 3,200 square feet (0.07 acres) of seasonal wetlands. To minimize potential impacts to the seasonal wetlands identified on-site, a Section 404 permit through the USACE and a Section 401 Water Quality Certification through the North Coast Regional Water Quality Control Board (NCRWQCB) shall be obtained prior to implementation of the project, if required. Additionally, the project shall be designed to result in no net loss of functions and values of the existing wetlands by incorporating the impact minimization measures detailed in Mitigation Measure BIO-6. With the incorporation of mitigation, a less than significant impact would occur.

IV.d) The proposed project has no elements that would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. As noted in the *Habitat Assessment* (WRA & Jane Valerius, 2020), the open grasslands at the Site allow for unimpeded movement, which would be maintained following construction of the proposed project. Phase 1 of the proposed project, replacement and installation of the water line, includes no noticeable above-ground improvements in the northern portion of the Site, which is currently surrounded by open grasslands utilized during the dry season for cattle grazing. The clear well structure proposed in the southern portion of the Site during Phase 3 of the project would be located in an urbanized area that is developed with similar uses, including the City's groundwater treatment system and sewer plant. However, as discussed previously, Phase 1 of the proposed project includes horizontal directional drilling for the installation of new water line from up to nine (9) access holes. To ensure wildlife passing through the Site is

not negatively impacted during project construction, Mitigation Measure BIO-7 would be implemented to avoid the entrapment of wildlife.

In addition, as noted above, based on the habitat present on-site, there is a potential for nesting passerines and raptors and roosting bats to be present on-site. Construction during the nesting season for passerines and raptors (February 1 through August 31) and/or the maternity roosting season for bats (April 15 through August 31) may impede the use of native wildlife nursery sites. To avoid potential impacts to nesting passerines and raptors and roosting bats, construction would be limited to September 1 through October 15. If seasonal work restrictions cannot be adhered to, Mitigation Measure BIO-3 would be implemented to mitigate for potential impacts to nesting passerines and raptors and roosting bats. With mitigation incorporated, a less than significant impact would occur.

IV.e) The proposed project would not conflict with any local policies or ordinances protecting biological resources. As discussed above, vegetation removal associated with the proposed project would be limited to the temporary removal of soil during excavation, which would be replaced, recompacted, and reseeded upon completion of construction. All potential impacts to the sensitive species and natural communities on-site would be temporary in nature and would be avoided and minimized to the extent feasible. A less than significant impact would occur.

IV.f) There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that apply to the Site. No impact would occur.

MITIGATION MEASURES

BIO-1: Prior to the start of construction, specific project locations that are associated with listed species and sensitive habitats will be identified and designated as Environmentally Sensitive Areas (ESAs) using high-visibility orange fencing, flagging and signage, or silt fencing. This applies specifically to areas with Baker's meadowfoam and to the Oregon ash, valley oak, and other native trees within the project study area. ESAs shall be shown on project design plans or maps to be provided to construction personnel. The ESA fencing shall remain in place throughout the duration of the project related construction activities to prevent the encroachment of construction equipment/personnel into sensitive areas. Only the minimum area needed for vehicle access and the placement of side cast material shall be allowed; areas that are to be avoided shall be identified as ESAs. To the extent feasible, construction access, staging, storage, and parking areas shall be located in upland areas and outside of any designated ESA.

The bid package special provisions shall clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. The final project plans shall depict all locations where ESA fencing or flagging and signage would be installed and how it would be installed.

BIO-2: Areas containing Baker's meadowfoam shall be protected with temporary fencing during construction, and these areas shall be avoided during construction. There shall be no side cast soil material placed in areas fenced for Baker's meadowfoam protection.

BIO-3: To reduce the potential for the take of migratory birds, including passerines and raptors, and roosting bats, ground and noise disturbance within 100 feet of the on-site trees shall be timed to occur during the non-nesting/roosting season, from September 1 to October 15. If these seasonal work restrictions cannot be adhered to, the following measures shall be performed in order to avoid or minimize impacts to passerines and raptors that may potentially nest, and bats that may potentially roost, in the project area:

- A pre-construction nesting bird (both passerine and raptor) survey of the grasslands and adjacent trees shall be performed by a qualified biologist within seven (7) days of ground breaking. If no nesting birds are observed, no further action is required and grading shall occur within one (1) week of the survey to prevent "take" of individual birds that could begin nesting after the survey. Inactive bird nests, other than those of eagles and threatened or endangered species, may be removed.
- A bat habitat assessment of the adjacent trees for both foliage and cavity roosting bats shall be conducted by a qualified bat biologist within 14 days of the start of construction.
- If active bird nests (either passerine and/or raptor) or bat roosts are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest/roost tree(s) until the young have fledged or the roosting has ceased, as determined by a qualified biologist.
- The radius of the required buffer zone can vary depending on the species (i.e., 75-100 feet for passerines and bats, and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFW.
- To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude. After the fencing is in place, there will be no restrictions on grading or construction activities outside the prescribed buffer zones.
- Work buffers or construction delays shall be implemented until all birds have fledged.

BIO-4: Prior to the start of construction, specific project locations where native trees and/or their root systems cannot be avoided by vehicle traffic and construction equipment, and/or would be utilized for the placement of side cast material shall have rubber mats or other ground protection placed to minimize soil and root disturbance by vehicle traffic and construction equipment. The bid package special provisions shall clearly describe acceptable ground protection material and the final project plans shall clearly depict how and where the ground protection measures shall be installed. After construction is complete, the ground protection measures shall be removed and the areas reseeded, as needed.

BIO-5: Before construction activities begin, a qualified biologist shall conduct an education program for all construction personnel. The training shall include a description of special status species, including state listed species and associated habitats with potential to occur in the project study area; an explanation of the status of these species and their protection under the California Endangered Species Act (CESA); the measures to conserve listed species and their habitats as they relate to the work being done; proper soil excavation and replacement techniques; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews. Upon completion of the program, personnel shall sign a form stating that they attended the program and understand all of the project mitigation measures and implications of subject regulations.

BIO-6: A Section 404 permit from the U.S. Army Corps of Engineers (USACE) and a Section 401 Water Quality Certification from the North Coast Regional Water Quality Control Board (NCRWQCB) shall be obtained for impacts to wetlands, if required by the respective agencies. If required, these permits shall be obtained prior to implementation of the project. The project shall be designed to result in no net loss of functions and values of the existing wetlands by incorporating the following impact minimization measures:

- Vehicles and construction equipment shall be rubber tired, to the extent feasible.
- Ground-protection measures, as described in Mitigation Measure BIO-4, shall be placed in turn-around areas for vehicles and construction equipment to prevent the removal of vegetation and soil disturbance.
- Where excavation occurs, soil shall be removed in lifts with the top 8 to 12 inches of topsoil removed and cast to one side and the remaining subsoil placed separately such that when the access hole

is refilled the topsoil, along with all the seeds, will be in the same position in the soil profile, thus allowing for quick reestablishment of existing species and reestablishment of the wetland functions and values.

- Following construction, the approximate and original contours of the disturbed areas shall be restored to pre-project conditions, to the extent feasible, and any areas of bare soil shall be seeded with a native grass seed mixture comprised of species known to occur in the area.

BIO-7: To prevent the inadvertent entrapment of animals during construction, all excavated, steep-walled access holes more than 1-foot deep shall be covered at the close of each working day with plywood or other suitable material(s) or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes are filled, they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored overnight will be inspected before they are subsequently moved, capped, and/or buried. If at any time a listed species is discovered, the contractor and qualified biologist shall be immediately informed. The animal shall be allowed to move out of the area on its own volition or until the qualified biologist notifies the contractor to resume work in the area.

FINDINGS

The proposed project would have a **Less Than Significant Impact with Mitigation Incorporated** on Biological Resources.

V. **CULTURAL RESOURCES**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Thresholds of Significance: The project would have a significant effect on cultural resources if it would cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5; cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; or disturb any human remains, including those interred outside of formal cemeteries.

DISCUSSION

According to Chapter 3 (Development Element) of the Mendocino County General Plan (2009), ten (10) Native American tribes historically had territory in what is now Mendocino County. Native American tribes known to inhabit Mendocino County concentrated mainly along the coast and along major rivers and streams, while mountainous areas and redwood groves were occupied seasonally by some tribes. The first permanent non-native settlers came to Mendocino County in the middle of the 16th century, exploring and establishing small outposts. It was almost 300 years before the first permanent non-Spanish settlements in Mendocino County were established in April of 1852 on the coast north of Big River. As European-American settlement expanded in Mendocino County, most of the tribes known to inhabit the land were restricted to reservations and rancherias. During the 19th century, other tribes from the interior of California were forced to settle on the Round Valley Reservation in the northeastern portion of Mendocino County (County of Mendocino, 2009). Settlement in the vicinity of the City began in the mid-1880s (City of Willits, 1992, pg. III-27).

Various County and City policies exist related to the protection and preservation of cultural and historical resources, including but not limited to: Chapter 3 of the Mendocino County General Plan (2009), pages 3-94 through 3-95; Chapter 22.12 of the Mendocino County Code (1987); the City of Willits General Plan Revision EIR (1992), page III-27; and Chapter 17.48 of the City Code (1982). In an effort to protect archaeological and cultural resources, in particular Native American sites, from potential development impacts, the County has adopted an Archaeological Ordinance, Chapter 22.12 of the Mendocino County Code (1987). The ordinance establishes a County Archaeological Commission that evaluates the potential impacts of proposed projects on archaeological resources and recommends measures to reduce or eliminate impacts on these resources. Both Policy DE-115 of Chapter 3 of the Mendocino County General Plan (2009) and Mendocino County Code Sections 22.12.050 through 22.12.100 (1987) include provisions for archaeological sensitivity review, field evaluations, impact mitigations, archaeological discovery, and human remain discovery protocols. In addition, mitigation measures 4.931 and 4.932 of the City of Willits General Plan Revision EIR (1992) and Chapter 17.48 (Historical Resources) of the City of Willits Code (1982) include provisions for the protection, enhancement, perpetuation or use of places, buildings, structures, and other objects having a special character or special historical or aesthetic interest or value to the City. Several historical resources have been identified in the County and within, or in close proximity to, the City, many of which have been placed on various federal and state historic registries; however, no historical sites or buildings have been designated by the County or the City and none are within the vicinity of the Site.

On June 22, 2020, LACO Associates (LACO), on behalf of the City, contacted the Northwest Information Center (NWIC) located on the Sonoma State University campus to request a Records Search. On July 23, 2020, LACO received a letter response from the NWIC (File No. 19-2317), which presented the results of the records search conducted by NWIC that entailed reviewing pertinent NWIC base maps that reference cultural resource records and reports, historic-period maps, and literature for Mendocino County. As described in the letter from NWIC, there have been two (2) cultural resource studies covering portions of the Site and no archaeological resources have been recorded at the Site. Study 23633 (Bass 2000) included the entire project area within its study area and included field survey for approximately 90 percent of the southern portion of the Site, while Study 14121 (Rondeau 1992) may have included approximately 10 percent of the northern portion of the Site.

According to the NWIC letter, ethnographic literature references Native American villages in the Little Lake Valley area in or adjacent to the Site. Based on an evaluation of the environmental setting and features associated within known sites, Native American resources in the part of Mendocino County that includes the Site have been found in valleys, at the hill to valley interface, near creeks and near ecotones. Given the similarity of one or more of the Site-specific environmental factors to the environmental setting and feature associated with known Native American sites and the ethnographic sensitivity of the area, the NWIC deems that there is a moderate to high potential for unrecorded Native American resources at the Site. In addition, the NWIC letter indicates that there is a moderate to high potential for unrecorded historic-period archaeological resources to be at the Site, based on review of historical literature and maps that indicated several lumber mills within the immediate or surrounding area of the Site. Due to the passage of time since the previous surveys, and the lack of coverage of the entire Site, the NWIC recommends a qualified archaeologist conduct further archival and field study for the entire Site to identify archaeological and cultural resources and that the local Native American tribes be contacted regarding traditional, cultural, and religious heritage values.

On March 12, 2020, in compliance with Assembly Bill (AB) 52, the City of Willits (City), sent consultation letters to the Middletown Rancheria Band of Pomo Indians and the Torres Martinez Desert Cahuilla Indians, two (2) Native American tribes that are traditionally and culturally affiliated to the project area and that had previously requested notification of projects in the tribes' area of traditional and cultural affiliation pursuant to AB 52. No responses were received within the 30 day deadline specified by Public Resources Code section 21082.3 (d). On June 23, 2020, the City sent additional AB 52 consultation letters to each of the 13 Tribal representatives listed on the Native American Heritage Commission (NAHC) Native American Contacts List dated October 28, 2019, which the City had previously requested from the NAHC, including the EPA Director and Chairperson of the Cahto Tribe; the Chairpersons of the Coyote Valley Band of Pomo Indians, Guidiville Band of Pomo Indians, Hopland Band of Pomo Indians, Kashia Band of Pomo Indians of the Stewards Point Rancheria, Manchester Band of Pomo Indians, Noyo River Indian Community, Pinoleville Pomo Nation, Potter Valley Tribe, Redwood Valley or Little River Band of Pomo Indians, and Sherwood Valley Band of Pomo Indians; and the President of the Round Valley Reservation/Covelo Indian Community. No requests for consultation were received from any of the 18 Native American tribes that were sent formal notification of the project in compliance with AB 52, as noted above. As no requests for consultation were received within the 30 day deadline specified by Public Resources Code section 21082.3 (d), the City, as Lead Agency, has deemed the Tribal consultation process complete. Copies of the NWIC response letter and the NAHC Native American Contacts List are included in Appendix B.

V.a) The project, as presently designed, is not anticipated to have an adverse effect on historical resources. No structures are being demolished or altered as a result of the project and no historical resources are

identified at or near the Site, per Figure 10-1 of the City of Willits General Plan Revision (City of Willits, 1992). As a result, no impact would occur.

V.b-c) The project is not anticipated to cause a substantial adverse change in the significance of an archaeological resource or disturb any human remains. No further field study was initiated because the Site is proposed within the general footprint of historic ground disturbance for construction of the exiting Willits Groundwater System, is not identified as an area of high archaeological sensitivity in the City of Willits General Plan Revision EIR (1992), and further study was not requested by the Native American tribes contacted. However, there is the possibility that an archaeological resource or human remains could be inadvertently discovered due to the ground-disturbing activities required during project construction. In addition, as noted in the letter from the NWIC, there is a moderate to high potential for unrecorded Native American resources and historic-period archaeological resources to be at the Site. The incorporation of Mitigation Measure CUL-1, which requires that the contractor implement standard protocol similar to Mendocino County's "Discovery Clause" during project construction, and Mitigation Measure CUL-2, which requires that the City inform a cultural monitor prior to beginning excavation for the purposes of installing the proposed water line and invite the monitor to oversee excavation activities, would ensure that archaeological and cultural resources, including human remains, are not adversely impacted by the project, and that implementation of the proposed project will be consistent with Mendocino County policies for protection of archaeological and cultural resources, including human remains. With mitigation incorporated, a less than significant impact would occur.

MITIGATION MEASURES

CUL-1: In the event archaeological resources or cultural resources, including human remains, are inadvertently unearthed or discovered during construction, the contractor shall immediately halt all grading/land-clearing activities and contact the City of Willits Community Development Department (CDD). All activity in the vicinity of the resources shall cease until it can be evaluated by a qualified archaeologist and a Native American representative. If the archaeologist and Native American representative determine that the resources may be significant, they shall notify the CDD and develop an appropriate treatment plan for the resources. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. In considering any suggested mitigation proposed by the archaeologist and Native American representative, the CDD will determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) will be instituted. Work may proceed in other parts of the project area while mitigation for cultural resources is being carried out.

CUL-2: A note shall be placed on all grading plans that the project contractor and/or the City shall notify a qualified cultural monitor with general knowledge of the project area prior to any excavation for the purposes of installing the proposed water line, and agree to open the Site to the cultural monitor to oversee the subsurface construction activities in order to ensure appropriate treatment of any artifacts uncovered.

FINDINGS

The proposed project would have a **Less Than Significant Impact with Mitigation Incorporated** on Cultural Resources.

VI. ENERGY. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Thresholds of Significance: The project would have a significant effect on energy if it would result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation.

DISCUSSION

On October 7, 2015, Governor Edmund G. Brown, Jr. signed into law Senate Bill (SB) 350, known as the Clean Energy and Pollution Reduction Act of 2015, which sets ambitious annual targets for energy efficiency and renewable electricity aimed at reducing greenhouse gas (GHG) emissions. According to the Final Commission Report of the California Energy Commission (CEC), dated October 2017, SB 350 requires the CEC to establish annual energy efficiency targets that will achieve a cumulative doubling of statewide energy efficiency savings and demand reductions in electricity and natural gas final end uses by January 1, 2030. This mandate is one of the primary measures to help the state achieve its long-term climate goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. The proposed SB 350 doubling target for electricity increases from 7,286 gigawatt hours (GWh) in 2015 up to 82,870 GWh in 2029. For natural gas, the proposed SB 350 doubling target increases from 42 million of therms (MM) in 2015 up to 1,174 MM in 2029 (CEC, 2017).

Site improvements proposed under the project include the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and supervisory control and data acquisition (SCADA) facility to manage the Long 20 well, supplying the Long 20 well pump and SCADA facility with power, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well. The 250,000-gallon clear well is the only permanent structure proposed to be installed as part of the project and this tank would not be subject to Part 6 (California Energy Code) of Title 24 of the California Code of Regulations, which contains energy conservation standards applicable to residential and non-residential buildings throughout California (CEC, 2020).

VI.a) The proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation. The consumption of energy would occur during construction through the use of fossil fuels and electricity for construction equipment and vehicles. Construction would occur during normal business hours, typically 7:00 am to 7:00 pm, Monday through Saturday, or as approved by the City, and would be temporary in nature. Equipment will include an excavator, drill rig, dump truck, vibratory plate/jumping jack, water truck, backhoe, and roller. The contractor would keep all construction equipment in good working order and would limit idling of vehicles and equipment during construction, in accordance with California Code of Regulations, Title 13, Section 2485: *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling* (adopted 2005), which limits idling from both on-road and off-road diesel-powered equipment and is enforced by the California Air Resources Board (ARB). Therefore, it is anticipated that the construction phase of the project would not result in wasteful, inefficient, and unnecessary consumption of energy.

Operation of the project would require a minimal increase in energy above the current usage for operation of the Willits Groundwater System. Although the well pump and SCADA facility proposed to be installed during Phase 2 of the project would require an upgraded power supply, the upgraded system would facilitate an increase in the pumping capacity of the Long 20 well, allowing for more efficient use of the well when it is needed. In addition, as compared to the surface water treatment plant, the groundwater treatment plant requires less energy to operate, as less treatment is required for the groundwater and less energy is consumed by the transport of groundwater, as the groundwater treatment system is in close proximity to the water supply distribution system. Implementation of the project would allow the City to efficiently supplement the surface water supply with groundwater, when needed, and use less energy system-wide in the process. A less than significant impact would occur.

VI.b) The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Part 6 (California Energy Code) of Title 24 of the California Code of Regulations (Title 24) contains energy conservation standards applicable to residential and non-residential buildings throughout California and are regarded as the most advanced energy efficiency standards (CEC, 2020). As noted above, the 250,000-gallon clear well is the only structure proposed to be installed as part of the project; however, Title 24 is not be applicable to operation of the clear well. No impact would occur.

MITIGATION MEASURES
No mitigation required.

FINDINGS
The proposed project would have a **Less Than Significant Impact** on Energy.

VII. GEOLOGY AND SOILS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☒	☐	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Thresholds of Significance: The project would have a significant effect on geology and soils if it would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides; result in substantial soil erosion or the loss of topsoil; be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property; have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

DISCUSSION

A *Soils Report* was prepared by LACO on June 30, 2020 (see Appendix D), in order to explore the surface and subsurface conditions and develop recommendations at the site of the proposed clear well (clear well site) regarding the following: recommended foundation type(s) for the proposed clear well and design criteria for the recommended foundation type(s), consistent with the current edition of the California Building Code (CBC); estimates of foundation settlement; assessment of potential earthquake-related hazards in

accordance with CBC requirements including surface fault rupture, quantitative liquefaction analysis, quantitative statis and dynamic differential settlement analysis, and slope instability; recommendations regarding earthwork including site and subgrade preparation, fill material quality, placement and compaction requirements, and subdrains; and construction considerations.

As noted in the Public Review Draft *2019 Safety Element* of the City of Willits General Plan (2019), seismic and geologic hazards in and around the City include surface fault rupture, seismic shaking, seismically induced landslides, liquefaction, and landslides (pp. 7 through 11). The City is located within a seismically active region and in close proximity to numerous active faults. According to the Public Review Draft Safety Element (2019), these faults include the Maacama fault, considered an active fault by the California Geological Survey (CGS), which runs through the center of the City, and the San Andreas Fault Zone and the Bartlett Springs Fault, which run through the surrounding Mendocino County region to the east of the City. As shown on the Faulting and Seismicity map, Figure S-1, there are no fault lines or zones located at the Site; however, the Site is located within an area of very high earthquake shaking potential (City of Willits, 2019b). According to the *Soils Report* (LACO, 2020), the Site is located in the California Coast Ranges Geomorphic Province, a seismically active and geologically complex province due to historic and ongoing tectonic deformation that is characterized by northwest trending faults and topographic and geologic features. The seismicity of the area is dominated by the presence of the San Andreas Fault system, with the nearest potentially active faults within the northern section of Maacama fault zone, located approximately 0.75 miles west of the Site. However, the Site is not mapped as a special study zone per the Alquist-Priolo Earthquake Fault Zoning Act and the likelihood of surface rupture at the Site from a potentially active fault is considered to be low (LACO, 2020).

The Site is relatively flat, with elevations from north to south ranging from approximately 1,323 feet to 1,353 feet above mean sea level, respectively. According to the Natural Resources Conservation Service (NRCS, 1997), the specific soil type underlying the Site is Fluvaquents soils, which are very deep, very poorly drained soils on flood plains, originating from recent alluvium derived from sedimentary rock. This soil type is primarily found on flood plains and supports native vegetation such as annual and perennial grasses and forbs. Fluvaquents have a moderately slow to moderately rapid permeability with a generally high available water capacity, very slow to ponded runoff, and a slight hazard of water erosion. These soils are generally found where a seasonal high water table fluctuates between the surface and a depth of 18 inches from November to March (NRCS, 1997). As noted in the *Soils Report*, on April 15, 2020, LACO explored subsurface conditions at the clear well site by drilling three (3) borings (B1 through B3) to depths of 41.5 feet, 2.5 feet, and 16.5 feet below ground surface (bgs), respectively. Laboratory tests were performed on select soil samples by LACO's materials testing laboratory to evaluate and characterize the soils. The clear well site is underlain by approximately 7 feet of undocumented fill overlying alluvial deposits to the maximum depth explored of 41.5 feet bgs. Undocumented fill consists of heterogeneous deposits of brown clayey sand with gravel and grayish brown clay. Alluvial deposits consist of approximately 3 to 8 feet of brown sandy lean clay, overlying approximately 27 feet of lean clay with sand interbedded with 6-inch thick beds of sandy lean clay. Groundwater was encountered in boring B1 at a depth of 8.5 bgs (LACO, 2020).

Based on the exploration program, the *Soils Report* (LACO, 2020) concludes that from a geotechnical standpoint, the proposed clear well installation is feasible. LACO found a low potential for slope instability, surface rupture from a potentially active fault, and lurching. The primary geotechnical concerns at the clear well site are the presence of up to 7 feet of potentially liquefiable undocumented fill and the potential for flooding, as the clear well site is located in an area designated as Zone AE, an area inundated by the one-percent annual chance flooding, for which Base Flood Elevations (BFEs) have been determined, and

adjacent to the west of the existing groundwater treatment plant, which is currently located in the Regulatory Floodway, as shown on FIRM panel number 06045C1112F, effective June 2, 2011.

VII.a.i) The Site is situated within a seismically active area proximal to multiple seismic sources capable of generating moderate to large ground motions. Given the proximity of the proposed project to active seismic sources (the Maacama Fault Zone and San Andreas Fault), there is a high probability that the Site will experience strong ground shaking during the economic lifespan (50 years) of the project. However, as the Site is not mapped as a special studies zone per the Alquist-Priolo Earthquake Fault Zoning Act and based on the distance between the Site and the closest active fault, the Maacama fault zone, the potential for surface rupture at the Site is considered low. Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to the rupture of a known earthquake fault and a less than significant impact would occur.

VII.a.ii) As noted above, there are no mapped faults or Alquist-Priolo special studies zones traversing the Site. However, since the project area is situated within a seismically active region and given the proximity of significant active faults to the Site, the Site will likely experience strong ground shaking during the economic life span of any development on the Site and the risk of ground shaking at the Site is high. However, the only above-ground improvement proposed includes the 250,000-gallon clear well to be installed adjacent to the west of the existing groundwater treatment system. The proposed clear well and associated infrastructure would be subject to the recommendations contained in the *Soils Report* (LACO, 2020) and the American Water Works Association (AWWA) tank standards for steel tanks and to the American Society of Civil Engineers (ASCE) standards for seismic anchoring of tanks. Furthermore, the *Soils Report* (LACO, 2020) provides several recommendations pertaining to Site development, including site preparation and grading, foundation, seismic design parameters, construction considerations, and future geotechnical services. These recommendations are included as Mitigation Measure GEO-1, below, in order to reduce potential seismic risks.

In addition, prior to construction of Phase 3, the tank manufacturer would design the tank and foundation and would conduct seismic analysis of the proposed design. The clear well would additionally include a tank volume monitoring device which would provide an indication of if leakage is occurring and if maintenance is needed. With incorporation of Mitigation Measure GEO-1, which requires compliance with the design recommendations provided in the *Soils Report* (LACO, 2020) and adherence to the requirements of the AWWA and ASCE standards for seismic anchoring of tanks, the proposed project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, and a less than impact would occur.

VII.a.iii) According to the City of Willits Public Review Draft *2019 Safety Element*, liquefaction occurs when intense vibrations from an earthquake cause saturated soil to lose stability and act more like a liquid than a solid. Areas near the City where groundwater is shallower than 50 feet may be prone to liquefaction; however, no historic impacts associated with liquefaction have occurred within the City (City of Willits, 2019b). According to the *Soils Report* (LACO, 2020), liquefaction has three potential consequences: liquefaction-induced settlement, bearing capacity failure, and lateral spreading toward a free face.

As noted in the *Soils Report* (LACO, 2020), the underlying soil layers encountered during the exploration are not susceptible to liquefaction; however, the clear well site is blanketed by up to 7 feet of potential liquefiable undocumented fill. Recommendations related to site grading and preparation were provided in the *Soils Report* and included as Mitigation Measure GEO-1, below, in order to reduce the potential for liquefaction of the near surface undocumented fill material. In addition, the proposed clear well and associated

infrastructure would be designed to the AWWA tank standards for steel tanks and to the ASCE standards for seismic anchoring of tanks. As such, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to seismic-related ground failure, including liquefaction. With mitigation incorporated, a less than significant impact would occur.

VII.a.iv) As shown on the Landslide Susceptibility Classes figure, Figure S-3a of the City of Willits Draft *2019 Safety Element*, landslides present some risk to the City of Willits, mainly along the southern and western portion of the City. However, the Site is relatively flat and is located at an elevation between 1,323 and 1,353 feet above mean sea level in an area characterized as "Low Landslide Susceptibility Class." Given the relatively low slopes, both on and adjacent to the Site, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to landslides and no impact would occur.

VII.b) The proposed project involves excavation of up to nine (9) access holes for horizontal directional drilling required to install the new water lines and excavation for installation of the clear well. While the proposed excavation would have the potential to temporarily create erosion and loss of topsoil, the project is proposed in an area that has been previously disturbed for the construction and ongoing maintenance of the Willits Groundwater System and during project construction, standard Best Management Practices (BMPs), such as straw bales, fiber rolls, and/or silt fences, would be employed to limit the potential for erosion resulting from construction and to avoid runoff into sensitive habitat areas. In addition, construction would occur during the dry season (dry season is typically May 30 through October 15, and construction would be further limited to the non-nesting and roosting season from September 1 to October 15) when rainfall and runoff potential would be low. Upon completion of construction, all disturbed soils would be stabilized and bare soil vegetated, as needed, with native vegetation and/or native seed mixes for soil stabilization as soon as feasible. As a result, the proposed project would not result in substantial soil erosion or the loss of topsoil and a less than significant impact would occur.

VII.c) As discussed above, based on the exploration program provided in the *Soils Report* (LACO, 2020) the project is feasible from a geotechnical standpoint. LACO found a low potential for slope instability, surface rupture from a potentially active fault, and lurching. The primary geotechnical concerns at the clear well site are the presence of up to 7 feet of potentially liquefiable undocumented fill and the potential for flooding, as the clear well site is located in an area designated as Zone AE, an area inundated by the one-percent annual chance flooding, for which BFEs have been determined. The clear well will be located adjacent to the west of the existing groundwater treatment plant, which is currently located in the Regulatory Floodway, as shown on FIRM panel number 06045C1112F, effective June 2, 2011. As such, there is the potential for liquefaction, settlement, and soil swelling or shrinkage. Additionally, although the Site is not located within a mapped Alquist-Priolo special study zone, the Site is located within a seismically active region and would likely experience ground shaking during the economic lifespan of the project. Several recommendations were provided in the *Soils Report* (LACO, 2020) in order to minimize and reduce the potential for such risks, which have been included under Mitigation Measure GEO-1. With mitigation incorporated, potential geological risks would be minimized and a less than significant impact would occur.

VII.d) Expansive soils generally consist of cohesive fine-grained clay soils and represent a significant structural hazard to buildings founded on them as they have a tendency to undergo volume changes (shrink or swell) with changes in moisture content. As previously discussed, the clear well site contains approximately 7 feet of undocumented fill that consists of heterogeneous deposits of brown clayey sand with gravel and greyish brown clay, overlying alluvial deposits to the maximum depth explored of 41.5 feet bgs (LACO, 2020). Provided the undocumented fill is removed and replaced as a pad of engineered fill in accordance with

the site preparation and grading recommendations provided in the *Soils Report* (LACO, 2020) and included under Mitigation Measure GEO-1, a less than significant impact would occur.

VII.e) The proposed project would not require the use of septic systems or other alternative wastewater disposal system, as the project proposed improvements to the existing Willits Groundwater System, including the replacement of existing and installation of new water line, well pump and SCADA facility installation, arsenic pilot testing, and the installation of a clear well. As such, no impact would occur.

VII.f) The potential exists for unique paleontological resources or site or unique geological features to be encountered within the project area during ground-disturbing construction activities, including excavation for installation of the water lines and clear well; however, the potential is low as the Site was previously disturbed for installation of the existing water line and the groundwater treatment plant. In the event that any archaeological or paleontological resources are discovered during site preparation or other earth-disturbing construction activities, the contractor would immediately halt all work and contact the City of Willits Community Development Department, in accordance with City policies. As such, a less than significant impact would occur.

MITIGATION MEASURES

GEO-1: The proposed clear well installation shall comply with the recommendations pertaining to site preparation and grading, foundation, seismic design parameters, construction considerations, and future geotechnical services provided in the *Soils Report*, prepared by LACO Associates and dated June 30, 2020 (see Appendix D). Prior to construction of the project, the City of Willits Engineering Department shall review and approve of the site development plans, which must demonstrate project compliance with the recommendations of the *Soils Report* (LACO, 2020), in addition to any seismic requirements of the latest adopted edition of the CBC. All on-site geotechnical engineering activities shall be conducted under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.

FINDINGS

The proposed project would have a **Less Than Significant Impact with Mitigation Incorporated** on Geology and Soils.

VIII. **GREENHOUSE GAS EMISSIONS**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions (GHG), either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Thresholds of Significance: The project would have a significant effect on greenhouse gas emissions if it would generate greenhouse gas emissions (GHG), either directly or indirectly, that may have a significant impact on the environment; or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

DISCUSSION

The Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32, is a State law that establishes a comprehensive program to reduce greenhouse gas (GHG) emissions from all sources throughout the State. AB 32 requires the State to reduce its total GHG emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario. Pursuant to the AB 32 Scoping Plan (last reviewed in 2018), the California Air Resources Board (ARB) must adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. The following major GHGs and groups of GHGs being emitted into the atmosphere are included under AB 32: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). The 2020 GHG emissions statewide limit set by AB 32, equal to the 1990 level, is 431 million metric tonnes of carbon dioxide equivalent ($MMTCO_2e$). In addition, in 2016, Senate Bill (SB) 32 was signed into law to codify the reduction target to reduce GHG emissions to 40 percent below the 1990 levels by 2030 (ARB, 2018).

The California Air Resources Board (ARB), in its *California Greenhouse Gas Emissions for 2000 to 2017* (California GHG Emission Inventory), 2019 edition, states that GHG emissions within the State of California have followed a declining trend since 2007. In 2017, statewide GHG emissions were 424 million metric tons of CO_2 equivalent ($MMTCO_2e$), 5 $MMTCO_2e$ lower than 2016 levels and lower than the 2020 statewide GHG limit of 431 $MMTCO_2e$. The transportation sector remains the largest source of GHG emissions in the State, accounting for 41 percent of the State's GHG emissions in 2017 (ARB, 2019).

The Site is located within the North Coast Air Basin (NCAB) and is subject to the requirements of the Mendocino County Air Quality Management District (MCAQMD). The MCAQMD is responsible for monitoring and enforcing federal, state, and local air quality standards in the Mendocino County. As noted in Chapter 4 (Resource Management Element) of the Mendocino County General Plan (2009), page 4-19, due to the rural nature of Mendocino County, the amount of GHG generated by human activities (primarily the burning of fossil fuels for vehicles, heating, and other uses) is small as compared to other, more urban counties and miniscule in statewide or global terms. However, GHG emissions in Mendocino County are higher per capita due to the distances involved in traveling around the county.

VIII.a) The project would not generate GHG emissions either directly or indirectly, that may have a significant impact on the environment, as neither construction nor operation of the project would generate significant amounts of GHG emissions above the baseline conditions. A limited amount of GHG emissions would be anticipated to occur during construction activities; however, it is anticipated that the construction phase of

the project would not result in wasteful, inefficient, and unnecessary consumption of energy. To reduce the potential for GHG emissions, the contractor would keep all construction equipment in good working order and would limit idling of vehicles and equipment during construction, in accordance with California Code of Regulations, Title 13, Section 2485: *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling* (adopted 2005), which limits idling from both on-road and off-road diesel-powered equipment and is enforced by the California Air Resources Board (ARB). In addition, the clear well would be constructed by off-site water tank builders. Therefore, the construction of the clear well would not be considered in the impacts to GHG emissions at the Site.

Once construction is complete, the project would generate a negligible increase in operational GHG emissions from the Site, beyond the current emissions from operation of the groundwater treatment system. Vehicle trips to the Site would not be anticipated to increase, as current City staff would maintain the project components as part of general ongoing maintenance and operation of the Willits Groundwater System. Given the relatively small scale of the project, neither construction nor operation of the proposed project would have a measurable or considerable contribution to the cumulative GHG impact at the local, regional, or state level. A less than significant impact would occur.

VIII.b) The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Action Item RM-50.2 in Chapter 4 of the Mendocino County General Plan (2009) requires the County to "create a greenhouse gas reduction plan for the unincorporated areas of the county that sets specific reduction strategies and targets to meet." Although the County has not yet prepared and adopted this plan, a significant amount of GHG emissions is not anticipated under the project, as described above. In addition, the proposed project would not conflict with local, MCAQMD, State, or federal regulations pertaining to GHG emissions, since the proposed project would have a negligible impact on the current GHG emissions from the Site. A less than significant impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Greenhouse Gas Emissions.

IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Thresholds of Significance: The project would have a significant effect on hazards and hazardous materials if it were to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; result in a safety hazard or excessive noise for people residing or working in the project area if located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport; or impair the implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan; or expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

DISCUSSION

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or has characteristics defined as hazardous by a federal, state, or local agency. Chemical and physical properties such as toxicity, ignitability, corrosiveness, and reactivity cause a substance to be considered hazardous. These properties are defined in the California Code of Regulations, Title 22, Article 3: *Characteristics of Hazardous Waste* (effective July 1, 1991). A "hazardous waste" includes any hazardous material that is discarded, abandoned, or will be recycled. The criteria that render a material hazardous also

cause a waste to be classified as hazardous, per California Health and Safety Code, Chapter 6.5, Section 25117 (effective January 1, 1997).

Mendocino County has adopted numerous plans related to hazard management and mitigation including, but not limited to: Community Wildfire Protection Plan, Hazardous Waste Management Plan, Operational Area Emergency Plan, and Multi-Jurisdictional Hazard Mitigation Plan, in which the City of Willits (City) is a participant. In addition, in October 2019, the City released a Public Review Draft of the *2019 Safety Element* of the City of Willits General Plan to identify safety risks the City faces and develop goals, policies, and implementation programs to better address the issues.

The Site does not include any known hazardous waste sites, as mapped by the State Water Resources Control Board (SWRCB) or the California Department of Toxic Substances Control (DTSC) on the GeoTracker (2020) and EnviroStor (2020) databases, respectively, nor are there any listed sites within the vicinity of the Site. The project would require the transport, use, storage, and disposal of small quantities of hazardous materials common for equipment and site maintenance and operation, such as gasoline, diesel fuel, hydraulic fluids, oils, lubricants, and cleaning solvents and supplies. However, all hazardous materials would be utilized and disposed of in accordance with all applicable federal and state regulations.

IX.a-b) The proposed project would not transport, use, emit, or dispose of significant amounts of hazardous materials, or create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. During the construction phase, small quantities of hazardous materials common to equipment maintenance and operation, such as gasoline, diesel fuel, hydraulic fluids, oils, and lubricants may be required. Once constructed, the project would be anticipated to utilize fuels, lubricants, solvents, and chemicals used for routine groundwater treatment operations. However, the types and quantities of materials to be used are not expected to pose a significant risk to the public and/or environment and would be managed in accordance with federal, state, and local regulations. Since the transport, use, and storage of any hazardous materials at the Site would be required to be conducted in accordance with all federal, state, and local regulations, a less than significant impact would occur.

IX.c) No existing or proposed schools are located within one-quarter mile of the Site. The Site is located within the Willits Unified School District (Mendocino County Maps - School Districts, 2014), with the nearest school, Willits High School, located approximately 0.47 miles west of the Site at its closest point. It is not anticipated that hazardous materials would be used at the Site in any quantity or application that could impact any schools in the area. Therefore, no impact would occur.

IX.d) Review of the SWRCB's GeoTracker (2020) and DTSC's EnviroStor (2020) databases indicates the Site is not included on a list of sites that impact or have the potential to impact water quality in California (GeoTracker), or hazardous waste facilities and sites with known or suspected contamination issues (EnviroStor). As discussed above, any hazardous materials to be used on-site would be utilized, stored, transported, and disposed of in accordance with federal, state, and local regulations. No impact would occur.

IX.e) The Site is not located within an airport land use plan and the nearest airport, Ells Field (Willits Municipal Airport), is located approximately 1.68 miles northwest of the Site in Brooktrails, at its closest point. As project implementation would be temporary in nature and any ongoing maintenance of the project would be infrequent, workers in the project area would not be exposed to a safety hazard or excessive noise levels. A less than significant impact would occur.

IX.f) There are no components of the project that would impair or interfere with emergency response or evacuation. The proposed clear well, the only project component located within a developed area, would be required to be constructed and installed in accordance with state and local standards, including safety and emergency access requirements. The remaining project improvements would occur within a vacant agricultural area that is utilized for cattle grazing and would have no impact on emergency response or evaluation plans. As such, the clear well would have no impact on emergency response or evacuation in the project area and there are no components of the project that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. A less than significant impact would occur.

IX.g) The proposed project would not expose people or structures, either directly or indirectly to a significant risk of loss, injury, or death involving wildland fires. As described above, the Site is located northeast of the City center on City-owned parcels currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and groundwater treatment plant, and is located adjacent to the City's sewer plant. The Site is located within the Local Responsibility Area (LRA) and is served by the Little Lake Fire District (Mendocino County Maps – Little Lake Valley – Fire Responsibility Areas, 2019). The Site is mapped as located within a "Moderate" fire hazard severity zone per Figure S-7a of the Public Review Draft *2019 Safety Element* of the City of Willits General Plan. The parcels identified by APNs 108-030-06 and 108-020-05 are vacant agricultural field utilized for cattle grazing during the dry season, while the parcel identified by APN 007-010-01 is comprised of the City groundwater treatment plant and sewer plant. Replacement of the existing and installation of the new water line, well pump and SCADA facility installation, establishment of power to the well pump and SCADA, and arsenic pilot testing would improve existing structures and the clear well installation within a developed area would not increase the risk of wildfires. The proposed project components would not cause increased exposure of people or structures to a significant risk of loss, injury or death involving wildland fires. As such, a less than significant impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Hazards or Hazardous Materials.

X. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☒	☐	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Thresholds of Significance: The project would have a significant effect on hydrology and water quality if it would violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality; substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin; substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would result in substantial erosion or siltation on- or off-site, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flows; in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

DISCUSSION

The National Pollutant Discharge Elimination System (NPDES) permit program of the U.S. Environmental Protection Agency (EPA) addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. Created in 1972 by the Clean Water Act, the NPDES permit program grants authority to state governments to perform many permitting, administrative, and enforcement aspects of the program. Within California, the NPDES permit program is administered by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards. Construction projects that would disturb more than one acre of land, such as the proposed project, would be subject to the requirements of General

Construction Activity Stormwater Permit (Construction General Permit Order 2009-0009-DWQ, also known as the CGP), which requires operators of such construction sites to implement stormwater controls and develop a SWPPP identifying specific Best Management Practices (BMPs) to be implemented to minimize the amount of sediment and other pollutants associated with construction sites from being discharged in stormwater runoff.

According to Section 4-3 of the Resource Management Element (Chapter 4) of the Mendocino County General Plan (2009), the most critical surface water quality problem in Mendocino County is sedimentation. Major sources of sediment include erosion from barren or poorly vegetated soils, erosion from the toes of slides along stream channels, and sediments from roads. Policies RM-1 through RM-23 of the Resource Management Element (Chapter 4) of the Mendocino County General Plan (2009) are related to protection of environmentally sensitive habitat areas and maintaining water quality by minimizing adverse effects of wastewater dischargers, controlling runoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams. Mendocino County Ordinance No. 4313, Stormwater Runoff Pollution Prevent Procedure (Mendocino County Code Chapter 16.30 et.seq.), requires any person performing construction and grading work anywhere in the unincorporated areas of the County to implement appropriate BMPs to prevent the discharge of construction waste, debris or contaminants from construction materials, tools, and equipment from entering the storm drainage system (off-site). BMPs that must be implemented during construction activities are listed in Section 16.30.070 of the County Code. Construction within the City is subject to the 100% Draft City of Willits Design and Construction Standards (City Standards), updated November 12, 2011. The City Standards requires that contractors prepare and implement a program to control water pollution on construction projects that result in 1 acre (ac) or more of soil disturbance, in accordance with the CGP of the SWRCB, as described above. The City requires that construction projects which submit a Notice of Intent (NOI) provide a copy of the SWPPP to the City, as part of the application for an Erosion Control Permit through the City. Section IV of Part A.2 (Erosion Control Specifications) of the City Standards (2011) details BMPs that must be implemented whenever construction is occurring.

The Site is located within the Mill Creek-Outlet Creek Hydrologic Unit of the Little Lake Valley. The Site is located east of Outlet Creek and west of Davis Creek, both of which flow from south to north. Baechtel Creek splits the northern and southern portions of the Site, with an existing crossing of Baechtel Creek utilized to access to the northern portion of the Site and for the ongoing maintenance and operation of the Willits Groundwater System and wastewater treatment ponds (see Figure 2). Per Section 4.600 (Hydrology) of Volume 3 (Environmental Impact Report) of the Willits General Plan Revision: Vision 2020 (City of Willits, 1992), the confluence of Baechtel Creek and Outlet Creek, a tributary of the Eel River, is located approximately four (4) miles north of the City and receives and controls storm runoff throughout the Little Lake Valley. Due to the localized geologic formations at the confluence, backwaters can occur, leading to flooding in the Little Lake Valley during moderate to heavy storm conditions (City of Willits, 1992). Additionally, the reduced velocities of the runoff at the Baechtel-Outlet confluence encourages stream siltation in the valley's drainage network, aggravating flooding problems. The majority of the Site is located within the 100-year flood zone (Zone A) of Outlet Creek, as shown on Federal Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) panel number 06045C1112F, effective June 2, 2011, with the clear well proposed to be located in an area designated as Zone AE, an area inundated by the one-percent annual chance flooding, for which Base Flood Elevations (BFEs) have been determined. The clear well will be located adjacent to the west of the existing groundwater treatment plant, which is currently located in the Regulatory Floodway, as shown on FIRM panel number 06045C1112F, effective June 2, 2011. As previously discussed, the Site is currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, and

groundwater treatment plant, and is located adjacent to the City's sewer plant. Uses surrounding the northern portion of the Site include vacant fields utilized for cattle grazing during the dry season, typically May to October. Uses surrounding the southern portion of the Site include the City groundwater treatment plant and sewer plant. As a result, drainage primarily occurs through sheet flow and percolation, with the potential for concentrated flow across the impervious surfaces located in the southern portion of the Site.

The proposed project includes the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System to increase transfer capacity from the Elias replacement well and the Long 20 well to the groundwater treatment system, the installation of a pump to increase the pumping capacity of the well, the installation of a SCADA facility to manage the Long 20 well, the establishment of power to the Long 20 well pump and SCADA facility, and arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well to enhance treatment and operability of the Willits Groundwater System. The project provides benefits to water resource management in the City, including increasing the resiliency and conjunctive use capabilities and improving the quality of the City water system.

X.a) As described above, construction of the project would be subject to the CGP, Mendocino County Code Chapter 16.30, and the City of Willits Design and Construction Standards, which require the preparation and implementation of a SWPPP that specifies erosion and sediment control construction BMPs to reduce or eliminate construction-related impacts to the water quality of receiving water bodies. Areas of disturbance would be regraded to mimic existing conditions, to the extent feasible. Post-construction, any disturbed areas would be revegetated and the majority of the Site would remain undeveloped such that the majority of stormwater runoff from the Site would continue to follow natural drainage patterns and infiltrate into the soil.

The *Soils Report* prepared by LACO on June 30, 2020, notes that shallow groundwater levels were encountered between 8.5 and 14 feet below ground surface (bgs) during on-site exploration and that the local minimum depth to groundwater level of 1.07 feet bgs was recorded approximately 2,400 feet southeast of the Site, but provided construction is performed during the dry months of summer or early fall, it may not be a concern. Should groundwater be encountered during foundation excavation, construction shall be performed in accordance with Mitigation Measure HYDRO-1, below, in order to reduce potential impacts to groundwater quality.

Per the Technical Memorandum dated May 30, 2019 prepared by LACO, in support of the NCRP's Outreach and Involvement: Economic Opportunity for Disadvantaged Communities Program, until recently, all water for the City water supply system was supplied from surface water reservoirs on the Davis Creek watershed: Morris Reservoir and the upstream Centennial Reservoir. Water from these sources is treated at the surface water treatment plant near Morris Reservoir and piped to the City and surrounding regions approximately 2.5 miles via a single 16-inch transmission line. The dependence of the City water supply system on a single surface source has made it vulnerable to water supply and/or water quality issues due to catastrophic failures and/or to severe or protracted drought, as was demonstrated during the water crisis the City experienced in 2014. The drought not only placed a strain on the quantity of water available, reduced levels in the reservoirs led to increased temperatures and biological growth, including algae blooms (LACO, 2019). The proposed project would provide the City with increased conjunctive use capabilities, allowing the City flexibility to manage water sources adaptively, considering factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health, and would help to ensure a reliable water supply in the City, sufficient to meet community needs if surface water again becomes untenable.

During Phase 2 of the proposed project, following the installation of a pump, SCADA facility, and supporting power to the Long 20 well, arsenic pilot testing would be performed on the Long 20 well to determine if the existing groundwater treatment plant would be able to reduce arsenic levels in the raw water to a level that meets California Drinking Water Standards. Testing conducted on the Long 20 well in 2019 found that the Long 20 well contained elevated arsenic measured at 28 micrograms per liter (µg/L) [compared to the California maximum contaminant level (CA MCL) of 10 µg/L], iron measured at 540 µg/L (compared to the CA MCL of 300 µg/L), manganese measured at 960 µg/L (compared to the CA MCL of 50 µg/L), and odor measured at 4.5 Threshold Odor Number (T.O.N.) (compared to the CA MCL of 3.0 T.O.N.) (LACO, 2019). However, groundwater pumped from the Long 20 well would not be incorporated into the City water supply system until such time as it is certified to meet all relevant California Drinking Water Standards. The groundwater treatment plant is effective at removing iron and manganese, but additional testing will be required to determine the treatment plant's removal efficiency of arsenic. The pilot testing would initially be conducted on raw water samples from the Long 20 well, and if the plant proves to be able to effectively treat that level of arsenic, the pilot testing would be complete. If the plant is unable to effectively treat the Long 20 well raw water, water from the Elias replacement well and the Long 20 well would be mixed at different proportions for treatment, as the Elias replacement well has only non-trivial levels of manganese and iron and a negligible arsenic concentration (LACO, 2019).

As noted above, the proposed project would not only comply with the relevant water quality standards and waste discharge requirements during construction, but would also allow the City the flexibility to improve the quality its water supply system and prevent future water quality violations in its surface water supply. Through proper implementation of appropriate BMPs, compliance with the aforementioned regulations, and the incorporation of Mitigation Measure HYDRO-1 to limit the potential for impacts to groundwater during foundation excavation, the proposed project would not violate any water quality standards or waste discharge requirements, and a less than significant impact would occur.

X.b) Data indicate that groundwater levels in the Little Lake Valley groundwater basin (Basin) fluctuate principally in response to pumping and precipitation, with seasonal fluctuations resulting from seasonal variations in rainfall and pumping (Farrar, 1986; DWR, 2004). According to hydrographs presented by Farrar (1986) that include water-level records for four (4) wells spanning 10 years or more prior to 1986, groundwater levels in the Basin fluctuate approximately 10 to 15 feet seasonally. Johnson (2008) found that first encountered groundwater in the Basin in the spring fluctuates approximately between ground surface (0 feet bgs) and 5 feet bgs, while during the fall, groundwater fluctuates at approximately 15 to 30 feet bgs.

Long-term groundwater-level trends in the Basin have been observed to be relatively flat to slowly recovering from heavy well pumpage and drought (Farrar, 1986; North Coast Hydrologic Region, 2004; Johnson, 2008). Groundwater levels observed in 2008 were as high as or higher than the earliest recorded data (Johnson, 2008). Additional data show that groundwater levels in the Basin recover relatively quickly from declines in groundwater levels due to heavy pumping and years of drought. Johnson (2008) observed that groundwater levels quickly recovered in a well east of the City following declines in groundwater levels attributed to heavy pumping followed by an extended drought. These groundwater levels were recorded between 1966 and 1978 with the drought occurring between 1975 and 1977.

As noted previously, the City's groundwater infrastructure includes the Elias replacement well, the Long 20 well, the groundwater treatment plant, and the Park well. The City actively monitors groundwater levels in multiple locations and plans to create a more robust monitoring plan in coming years. The City will continue

to look for wells near its groundwater infrastructure that can be accessed and measured in order to gather important data as part of the aforementioned groundwater monitoring plan.

The Elias replacement well is currently the only well connected to the City's groundwater treatment plant and water supply system. An aquifer test conducted by GHD on the Ellias replacement well in 2015 recommended a production rate of 600 to 800 gallons per minute (gpm), considering a 20-to-40-percent safety factor. The aquifer test on which this recommendation was based was performed by continuously pumping the Elias replacement well at 400 gpm and monitoring surrounding wells. The wells connected to the same confined aquifer as the Elias replacement well experienced drawdown during the aquifer test. The wells accessing groundwater from the confined aquifer are generally described as those developed with screening deeper than 60 feet bgs. However, the test determined that shallow wells were not affected by the pumping of the Elias replacement well at a rate of 400 gpm.

The Long 20 well currently serves as a monitoring well and is not currently connected to the groundwater treatment plant or water supply system. The Long 20 well is expected to penetrate a confined aquifer screened in the Quaternary alluvium formation based on soils samples obtained during the installation of the well and analyzed in an accredited laboratory (LACO 2018). This confined aquifer determination is also based on similar sampling and analysis completed by GHD for the Elias replacement well. An aquifer test at the Long 20 well was completed in 2018 at a continuous pumping rate of 600 gpm for 36 hours. This aquifer test demonstrated that groundwater pumped out of the confined aquifer did not affect the groundwater level in a shallow monitoring well within 500 feet of the Long 20 well (LACO, 2018). The test also demonstrated that neighboring wells within a distance of 1,000 feet of the Long 20 well experienced a temporary drawdown of up to 4 feet from operation of the Long 20 well at a flow rate of 600 gpm. The drawdown is not expected to affect neighboring well supply based on adequate groundwater storage reported in historical basin studies.

Water from the Park well is used by the City for irrigation, sold to private water truck owners, and used for construction, fire suppression and other miscellaneous uses. In 1988, DWR conducted an aquifer test on the Park well. The test found that wells tapping into the same aquifer and within one-half mile of the Park well experienced a drawdown of approximately 10 feet after 30 days of continuous pumping at a rate of 450 gpm. The test report noted that changes in water level can be mitigated by pumping part-time since water levels were observed to immediately increase when pumping stopped. Data collected from four (4) shallow monitoring wells indicated that that there was no response to the pumping of the Park well. In August 2021, the City installed two new monitoring wells near the Park well to gather additional data on the effects of Park well pumping on the surrounding groundwater levels.

In 1965, Cardwell estimated the groundwater storage capacity for the Basin to be 50,000 acre-feet between 10 and 100 feet bgs. In 1986, Farrar estimated the quantity for the same range of depth to be 35,000 acre-feet. In 1965, DWR estimated the groundwater storage capacity for the Basin to be between 10 and 200 feet bgs to be 91,600 acre-feet. One (1) acre-foot is equal to 325,851 gallons and the City used approximately 799.5 acre-feet of treated surface water and no treated groundwater in 2020; and approximately 826.7 acre-feet of treated surface water and 41.7 acre-feet of treated groundwater in 2019. Additionally, approximately 24.5 acre-feet and 3.4 acre-feet of untreated groundwater was drawn from the Park well for bulk water sales in 2020 and 2019, respectively. The total water usage by the City (from surface water and groundwater sources) was 824 acre-feet in 2020 and 871.8 acre-feet in 2019. This calculation does not account for the water used to irrigate the Recreation Grove or the little league and soccer fields. Currently, there are no meters in place to measure this quantity and the amount is considered to be nominal

and not necessary to this evaluation. To provide further context, the City's total water usage is shown as a percentage of the storage capacity estimates in the following table, which demonstrates that the total water usage by the City is a small percentage of the estimated groundwater storage capacity in the Basin:

Table 1. City water usage as a percentage of estimated storage capacity.

Year	City Usage (acre-feet)	Estimated Storage Capacity 35,000 acre-feet (Farrar 1986)	Estimated Storage Capacity 50,000 acre-feet (Cardwell 1965)	Estimated Storage Capacity 91,600 acre-feet (DWR 1965)
2020	824	2.4%	1.6%	0.9%
2019	871.8	2.5%	1.7%	1.0%

Given historical groundwater level data and the purpose of the proposed project to increase the City's ability for conjunctive use, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Although the project would result in increased functionality and capacity of the Willits Groundwater System, the project is intended to improve the City's ability to use groundwater to supplement surface water and, at the same time, provide a reliable secondary source in the case of an emergency. Increased conjunctive use capabilities would provide the City with the ability to manage both surface water and groundwater sources adaptively, in consideration of factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health. In addition, the City would operate and maintain the improved Willits Groundwater System in accordance with the goals and policies of the groundwater management plan currently adopted by the City.

Additionally, as the proposed clear well is the only proposed impervious improvement and would be installed adjacent to the west of the existing groundwater treatment plant, in an existing disturbed area, the majority of the Site would remain undeveloped and stormwater would continue to infiltrate and recharge the groundwater basin. As a result, a less than significant impact would occur.

X.c.i) The project would not alter the existing drainage pattern of the Site in a manner which would result in substantial erosion or siltation on- or off-site. The proposed clear well is the only proposed impervious improvement and would be installed adjacent to the west of the existing groundwater treatment system, on an existing fill pad. Through implementation of the project, existing drainage patterns of the Site would remain largely unaltered. In addition, as described above, the project would be subject to the CGP, which requires the preparation and implementation of a SWPPP that specifies erosion and sediment control construction BMPs to reduce or eliminate construction-related impacts on receiving water quality. BMPs to be employed during construction may include fiber rolls, silt fencing structures, gravel bag barriers, a stabilized construction entrance, and concrete waste management. Upon completion of construction-related activities, all disturbed areas would be stabilized to limit the exposed surfaces and prevent the potential for erosion. As a result, implementation of the proposed project would not result in substantial erosion or siltation, and a less than significant would occur.

X.c.ii-iii) The project would not substantially increase the rate or amount of surface runoff in a matter which would result in flooding on- or off-site, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. The clear well installation would be installed on an existing fill pad located between the groundwater treatment plant and an agricultural field owned by the City. The majority of the Site would remain undeveloped such that the majority of stormwater runoff from the Site would continue to follow natural

drainage patterns and infiltrate into the soil. Through implementation of the project, existing drainage patterns of the Site would remain largely unaltered and a less than significant impact would occur.

X.c.iv) As discussed above, the majority of the project site is located within the 100-year flood zone (Zone A) of Outlet Creek, as shown on FEMA's FIRM panel number 06045C1112F, effective June 2, 2011, with the clear well proposed to be located in an area designated as Zone AE, an area inundated by the one-percent annual chance flooding, for which BFEs have been determined. The clear well would be located adjacent to the west of the existing groundwater treatment plant, which is currently located in the Regulatory Floodway, as shown on FIRM panel number 06045C1112F, effective June 2, 2011. Recommendations related to the consideration of surface drainage during construction were provided in the *Soils Report* and included as Mitigation Measure GEO-1, above, in order to reduce the potential for impacts related to flooding of the proposed clear well. In addition, the proposed clear well and associated infrastructure would be designed to the AWWA tank standards for steel tanks and to the ASCE standards for flood resistant design and the clear well would not be anticipated to significantly alter the drainage patterns of the Site. As a result, with mitigation incorporated, the project would not substantially alter the existing drainage pattern of the Site in a manner which would impede or redirect flood flows and a less than significant impact would occur.

X.d) While the Site is located in a flood hazard zone, as described above, it is not located in a tsunami or seiche zone, as it is not located near any large inland bodies of water and is more than 25 miles east of the Pacific Ocean, and does not risk the release of pollutants due to project inundation. The project improvements proposed to be located within the 100-year flood zone (Zone A), as defined by FEMA, include the replacement of existing and installation of new water lines, installation of a pump on the Long 20 well and SCADA facility, and arsenic pilot testing. The elevated SCADA platform would be constructed so that the electrical controls are a minimum of one-foot above the 100-year floodplain elevation and the remainder of improvements proposed in the northern portion of the Site would have nominal above-ground impacts. In addition, the clear well is proposed to be located in an area inundated by the one-percent annual chance flooding, for which Base Flood Elevations (BFEs) have been determined (Zone AE); however, the clear well would be a bolted or welded steel tank and would not release pollutants in the event of inundation. A less than significant impact would occur.

X.e) As discussed above, the project would be required to comply with the Statewide CGP, Mendocino County Code Chapter 16.30, and the City of Willits Design and Construction Standards (City Standards), updated November 12, 2011, which would require preparation of a SWPPP, including identification and implementation of BMPs to be utilized to minimize the amount of sediments and other pollutants from being discharged in stormwater runoff. Compliance with these regulations would facilitate the implementation of water quality control efforts at the local and state levels. There is currently no sustainable groundwater management plan for the Little Lake Valley groundwater basin; however, the *Little Lake Valley Groundwater Management Plan* (GWMP) was adopted by the City of Willits on August 26, 2020. The proposed project aligns with a goal of the GWMP to "optimize conjunctive use of surface water and groundwater." As implementation of the proposed project would provide the City with increased conjunctive use capabilities, allowing the City flexibility to manage water sources adaptively, considering factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health, the project would not be anticipated to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. A less than significant impact would occur.

MITIGATION MEASURES

HYDRO-1: In the event groundwater is encountered during foundation excavation activities, the contractor shall dewater the excavation area prior to placing concrete. Extracted groundwater shall be discharged in

a manner that does not cause erosion at the discharge point. Any dewatering activities on-site shall be conducted under the supervision of a Qualified Stormwater Practitioner (QSP).

FINDINGS

The proposed project would have a **Less Than Significant Impact with Mitigation Incorporated** on Hydrology and Water Quality.

XI. **LAND USE AND PLANNING**. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on land use and planning if it would physically divide an established community or cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

DISCUSSION

The Site, identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05, is located northeast of City center on City-owned properties currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, groundwater treatment plant, and is located adjacent to the City's sewer plant. While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits and has a City of Willits land use designation of Industrial-General (M-G) (1992) and zoning designation of Heavy Industrial (MH) (2010), while the parcels identified by APN 108-030-06 and 108-020-05 are located within the unincorporated area surrounding the City and have County of Mendocino land use (2009) and zoning designations (2013) of Agricultural Lands (AG). See Figures 3 through 6, respectively for a visual depiction of the land use and zoning designations of the Site. No changes to the Site's current land use or zoning designations are proposed.

Improvements would include installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and SCADA facility to manage the Long 20 well, the establishment of power to the Long 20 well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well. The project proposes improvements to an existing public facility, with no changes proposed to the existing and principally permitted uses.

XI.a) The proposed project would not physically divide an established community as all project improvements are proposed within the existing Willits Groundwater System. The only noticeable above-ground improvements would include the SCADA facility on an elevated platform and the clear well. These improvements would not physically divide an established community as the SCADA facility would be installed within the footprint of the Long 20 well and well access area in a vacant agricultural field and the clear well would be sited adjacent to the west of existing City infrastructure, between the groundwater treatment plant and an existing agricultural field owned and utilized by the City. As a result, no impact would occur.

XI.b) The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the project proposes modifications to the existing Willits Groundwater System, a permitted use on the Site, the proposed project would be consistent and compatible with surrounding and existing on-site uses. While implementation of the project may lead to an increased use of groundwater, as noted above, the project is intended to increase the City's conjunctive use capabilities by improving the existing groundwater treatment system. Increased conjunctive use capabilities would provide the City with the ability to manage

both surface water and groundwater sources adaptively, in consideration of factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health. In addition, the City would operate and maintain the improved Willits Groundwater System in accordance with the goals and policies of the *Little Lake Valley Groundwater Management Plan* (GWMP) adopted by the City of Willits on August 26, 2020, and any other future sustainable groundwater management plans applicable to the City. As such, a less than significant impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Land Use and Planning.

XII. MINERAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on mineral resources if it would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

DISCUSSION

The proposed project is not located in an area of known rock, aggregate, sand, or other mineral resource deposits of local, regional, or state residents. There are no known mineral resources of significance on the Site that would be made unavailable by the proposed project. Furthermore, the project Site is not utilized for Surface Mining and Reclamation Act (SMARA) activities.

XII.a-b) The proposed project area does not contain mineral resources that are of value locally, to the region, or to residents of the City, County, or state. According to the Mineral Land Classification Studies Index of the California Department of Conservation (DOC, 2015), the proposed project is not located in an area with known mineral resources. The proposed project area is not identified as a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Therefore, the proposed project would not interfere with materials extraction or otherwise cause a short-term or long-term decrease in the availability of mineral resources. No impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have **No Impact** on Mineral Resources.

XIII. NOISE. Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on noise if it would result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or generation of excessive groundborne vibration or groundborne noise levels; or expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport or an airport land use plan, or where such as plan has not been adopted, within two miles of a public airport or public use airport).

DISCUSSION

Noise is typically defined as unwanted sound. In any one location, the noise level will vary over time, from the lowest background or ambient noise level to temporary increases caused by traffic or other sources. State and federal standards have been established as guidelines for determining the compatibility of a particular use with its noise environment. The City of Willits relies principally on standards in its Noise Element of the City of Willits General Plan (1992), its Zoning Ordinance (1982), the County of Mendocino Noise Element of the County of Mendocino General Plan (2009), the County of Mendocino Zoning Ordinance (1987), other County ordinances, and the Mendocino County Airport Comprehensive Land Use Plan (ACLUP) to evaluate noise-related impacts of development, depending on the location of proposed development.

Acceptable levels of noise vary depending on the land use. Generally speaking, land uses considered noise-sensitive are those in which noise can adversely affect what people are doing on the land. For example, a residential land use where people live, sleep, and study is generally considered sensitive to noise because noise can disrupt these activities. Churches, schools, and certain kinds of outdoor recreation are also usually considered noise-sensitive. The Site is currently utilized for the Willits Groundwater System, including the Elias replacement well and Long 20 well, and is located adjacent to the City's sewer plant (see Figure 2). Surrounding uses include vacant fields utilized for cattle grazing during the dry season to the north and the City groundwater treatment plant and sewer plant to the south, with no noise-sensitive uses within close vicinity of the Site. The proposed improvements would include the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and SCADA facility to manage the Long 20 well, establishment of power to the Long 20 well pump and SCADA facility , arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well; improvements to and uses that are similar to, and compatible with, the uses that exist in the area.

Construction of the proposed project would generate short-term noise corresponding to the phase of construction and the noise generating equipment used during those phases. Construction activities would involve excavation, horizontal directional drilling, grading, drilling, earth movement, and vehicle travel to and from the Site. Throughout all phases of construction, work would be limited to normal business hours, typically 7:00 am to 7:00 pm, Monday through Saturday, or as approved by the City. In addition, the equipment used during construction would include an excavator, drill rig, dump truck, vibratory plate/jumping jack, water truck, a backhoe, and roller, and would not be of such a scale that it would create a significant amount of noise or vibration. Upon completion of construction, the proposed improvements would be located within the area of the existing groundwater treatment system and operation of the proposed improvements would not require any additional equipment that would increase permanent noise levels at the Site.

XIII.a-b) Implementation of the proposed project would not be expected to generate noise in excess of what is common for such improvements, nor result would the project result in excessive ground borne vibration or ground borne noise levels. The Site is located within the area currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, groundwater treatment plant, and is located adjacent to the City's sewer plant (see Figure 2). In addition, aside from the clear well installation, all proposed improvements would be located within a vacant agricultural area utilized for cattle grazing during the dry season and the clear well would be sited west of the existing groundwater treatment plant, between the groundwater treatment plant and an existing agricultural field owned by the City.

During construction, temporary noise would be anticipated as a result of utilizing standard heavy equipment, which may include, but is not limited to the following: excavator, drill rig, dump truck, vibratory plate/jumping jack, water truck, backhoe, and roller. However, these noise impacts would be temporary in nature and standard conditions would be incorporated on the proposed development plans and implemented throughout construction, such as limiting construction hours to the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday, or as approved by the City, using quiet models of air compressors and other stationary noise sources where technology exists, and use of mufflers on all internal combustion engine-driven equipment. In addition, with the exception of minor nearby vibrations created from standard heavy equipment, there are no elements of the proposed project that would create either temporary or permanent ground borne vibrations or noise levels.

Once construction is complete, operational noise would be associated with the general operational noises of the existing Willits Groundwater System and nearby City sewer plant. No periodic or permanent increase in ambient or ground borne noise levels nor ground borne vibrations would be anticipated. Therefore, a less than significant impact would occur.

XIII.c) As previously discussed, the Site is not located within an airport land use plan and the nearest airport, Ells Field (Willits Municipal Airport), is located approximately 1.68 miles northwest of the Site in Brooktrails, at its closest point. As project implementation would be temporary in nature and any ongoing maintenance of the project would be infrequent, workers in the project area would not be exposed to excessive noise levels. A less than significant impact would occur.

MITIGATION MEASURES
No mitigation required.

FINDINGS
The proposed project would have a **Less Than Significant Impact** on Noise.

XIV. POPULATION AND HOUSING. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and/or businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on population and housing if it would induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and/or businesses) or indirectly (e.g., through extension of roads or other infrastructure); or displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

DISCUSSION

According to the City of Willits 2019 Housing Element (City of Willits, 2019a), the population of Willits increased by more than 4 percent from 2010 to 2018, from 4,888 to 5,128 persons; however, the population growth is expected to slow over the next five years, decreasing to 2 percent county-wide. In 2016, Willits had 2,120 total housing units, 2,028 of which were occupied, with an average household size of approximately 2.52 persons in 2018 (City of Willits, 2019a). The General Plan Revision: Vision 2020 (City of Willits, 1992) forecasted an ultimate build-out population in Willits of approximately 7,500 residents by 2020, which would result in an estimated 33 percent increase in water consumption and would require careful monitoring of the available water services due to the limited capacity of and impact of drought on the City's surface water supply.

XIV.a) The project would not induce substantial population growth in Willits, as substantial population growth, which has not yet been realized, was projected in the General Plan Revision (City of Willits, 1992), and the project entails improvements to the treatment and transfer capabilities of the existing Willits Groundwater System. As described previously, the proposed project is intended to expand the City's conjunctive use capabilities to ensure a reliable water supply sufficient to meet community needs if surface water again becomes untenable. Although the replacement of the existing and installation of the new water line, well pump and SCADA installation, and clear well installation would facilitate an increase in the transfer capacity of the Willits Groundwater System, these improvements would largely serve to enhance treatment and operability of the Willits Groundwater System and provide the City with a resilient water supply. In addition, as the proposed project would improve the existing Willits Groundwater System treatment and transfer capabilities, it would be operated by existing City staff as part of the ongoing maintenance and operation of the Willits Groundwater System, with no additional staff needed. Therefore, a less than significant impact would occur.

XIX.b) The northern section of the Site is currently vacant and utilized for cattle grazing during the dry season and the southern section contains the existing City's groundwater treatment plant and sewer plant; as a result, no existing housing units would be removed under the project. Since the project would not displace any existing housing or residents, no impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Population and Housing.

XV. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on public services if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for (a) fire protection, (b) police protection, (c) schools, (d) parks, or (e) other public facilities**.**

DISCUSSION

There are no elements of the proposed project that would impact the ability of the City, County, or other local services providers to provide public services to the Site or local community. As previously discussed, the project includes the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, the installation of a pump and SCADA facility to manage the Long 20 well, the establishment of power to the Long 20 well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well. Upon project completion, no new employees would be required to manage the proposed improvements as City staff would maintain the project components as part of general ongoing maintenance and operations of the Willits Groundwater System.

XV.a) The project would not create additional facilities that would require increased fire protection above current levels. None of the proposed improvements would require fire protection and all development would be sited within the footprint of existing development that is currently served by the Little Lake Fire District (Mendocino County Maps – Little Lake Valley – Fire Responsibility Areas, 2019). No impact would occur.

XV.b-c) There are no portions of the proposed project that would require additional police protection or the construction of a new school. The project includes no impact on the population of Willits as existing City staff will maintain the project as part of ongoing maintenance of the Willits Groundwater System, and no new staff would be needed. Therefore, there would be no impact on police protection or schools as a result of the proposed project.

XV.d-e) As previously discussed, no residential units would be constructed, nor is the population expected to increase, as a result of the proposed project. Because the proposed project would not create a need for new or physically altered park facilities or other public facilities, it will not result in adverse physical impacts associated with the construction of such facilities. No impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have **No Impact** on Public Services.

XVI. RECREATION. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on recreation if it would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

DISCUSSION

The Site is located in the vicinity (within 5 miles) of the following neighborhood and regional parks and recreational facilities:

- Community Ball Fields, located approximately 0.28 miles south of the Site;
- Frank Grasse Dog Park and Willits Skate Park, located approximately 0.38 miles south of the Site;
- Willits Rodeo Grounds, located approximately 0.45 miles south of the Site;
- Recreation Grove, located approximately 0.46 miles southwest of the Site;
- Willits Municipal Swimming Pool, located approximately 0.59 miles west of the Site;
- Bud Snider City Park, located approximately 0.63 miles southwest of the Site;
- Highway 20 Park, located approximately 1.14 miles southwest of the Site;
- Babcock Park, located approximately 1.31 miles southwest of the Site;
- Ohl Redwood Grove Park, located approximately 2.2 miles west of the Site; and
- Little Darby Environmental Education Area and Nature Trail, located approximately 4.49 miles east of the Site.

XVI.a-b) No residential units would be constructed, nor is the population expected to increase, as a result of the proposed project. The proposed project would not increase the usage of or demand for neighborhood and regional parks or other recreational facilities. Therefore, the proposed project would not result in the physical deterioration of parks or facilities, nor would it require the construction of new park or recreational facilities. No impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have **No Impact** on Recreation.

XVII. TRANSPORTATION. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on transportation if it would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities; conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b); substantially increase hazards due to a geometric design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or result in inadequate emergency access.

DISCUSSION

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law, initiating an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts under CEQA, with the goal to better measure the actual transportation-related environmental impacts of a given project. Traditionally, transportation impacts had been evaluated by using Level of Service (LOS) analysis. Starting July 1, 2020, lead agencies are required to analyze the transportation impacts of new projects using vehicle miles traveled (VMT), instead of LOS. According to the *SB 743 Frequently Asked Questions* provided by the Governor's Office of Planning and Research (OPR), VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto the roads, the project may cause a significant transportation impact. VMT analysis is intended to promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations (OPR, 2020).

The proposed project includes improvements to the existing City groundwater treatment system that would increase the resiliency and conjunctive use capabilities and improve the quality of the City water system. The Site is comprised of three (3) parcels identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05. While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits, while the parcels identified by APN 108-030-06 and 108-020-05 are located within the unincorporated area surrounding the City. The Site will be accessed through the driveways and access roads currently utilized by City staff for ongoing maintenance and operation of the Willits Groundwater System and nearby City sewer plant.

XVII.a) The proposed project would not conflict with a plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths. It is expected that construction of the project would result in a slight increase in traffic to and from the Site, as construction workers arrive and leave the Site at the beginning and end of the day, in addition to minor interruption of traffic on adjacent streets, when heavy equipment necessary for project construction is brought to and removed from the Site.

However, once construction is complete, these temporary workers would no longer be required at the Site. Upon project completion, no increase in travel to the Site would be anticipated, as City staff would maintain the project components as part of general ongoing maintenance and operations of the Willits Groundwater System. The development proposed on-site is not be expected to significantly impact the capacity of the street system, level of service standards established by the City, or the overall effectiveness of the circulation system, nor substantially impact alternative transportation facilities, such as transit, bicycle, or pedestrian facilities, as a substantial increase in traffic trips or use of alternative transportation facilities is not anticipated and all increased trips to the Site would be temporary. A less than significant impact would occur.

XVII.b) The proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), which states:

> *"(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.*
>
> *(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152."*

The proposed project is considered a linear infrastructure project, with no impact to operational trips to the Site. All project-generated trips would be temporary in nature, ceasing upon completion of construction. In addition, as of the date of this Initial Study, the County of Mendocino and City of Willits have not established a threshold with regard to VMT impact significance consistent with CEQA Guidelines Section 15064.3, subdivision (b). As a result, a less than significant impact would occur.

XVII.c-d) The proposed project is not anticipated to substantially increase hazards due to design features or incompatible uses and would not result in inadequate emergency access as the project proposes no improvements to or that would interfere with existing transportation facilities or access corridors. As previously discussed, the project includes replacement of existing and installation of new water line, installation of a well pump and SCADA, establishment of power to the well pump and SCADA, arsenic pilot testing, and installation of a clear well. Proposed project improvements would be constructed and accessed during operation from existing access roads utilized by City staff for operation of the wells, Willits Groundwater System, and sewer plant, with no changes to the existing access roads required to serve the proposed project. As such, no impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Transportation.

XVIII. TRIBAL CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code §5020.1(k)?	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code §5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code §5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Thresholds of Significance: The project would have a significant effect on Tribal Cultural Resources if it would cause a substantial adverse change in the significance of a cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Places or in a local register of historical resources as defined in Public Resources Code §5020.1(k), or is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code §5024.1.

DISCUSSION

According to Chapter 3 (Development Element) of the Mendocino County General Plan (2009), ten (10) Native American tribes historically had territory in what is now Mendocino County. Native American tribes known to inhabit Mendocino County concentrated mainly along the coast and along major rivers and streams, while mountainous areas and redwood groves were occupied seasonally by some tribes. The entire southern third of Mendocino County was the home of groups of Central Pomo. To the north of the Central Pomo groups were the Northern Pomo, who controlled a strip of land extending from the coast to Clear Lake. The Coast Yuki claimed a portion of the coast from Fort Bragg north to an area slightly north of Rockport. They were linguistically related to a small group, called the Huchnom, living along the South Eel River north of Potter Valley. Both of these smaller groups were related to the Yuki, who were centered in Round Valley. At the far northern end of the county, several groups extended south from Humboldt County. The territory of the Cahto was bounded by Branscomb, Laytonville, and Cummings. The North Fork Wailaki was almost entirely in Mendocino County, along the North Fork of the Eel River. Other groups in this area included the Shelter Cove Sinkyone, the Eel River, and the Pitch Wailaki (County of Mendocino, 2009). The first permanent non-native settlers came to Mendocino County in the middle of the 16th century, exploring and establishing small outposts. It was almost 300 years before the first permanent non-Spanish settlements

in Mendocino County were established in April of 1852 on the coast north of Big River. Settlement in the vicinity of the City began in the mid-1880s (City of Willits, 1992, pg. III-27). As European-American settlement expanded in Mendocino County, most of the tribes known to inhabit the land were restricted to reservations and rancherias. During the 19th century, other tribes from the interior of California were forced to settle on the Round Valley Reservation in the northeastern portion of Mendocino County (County of Mendocino, 2009).

On March 12, 2020, in compliance with Assembly Bill (AB) 52, the City of Willits (City), sent consultation letters to the Middletown Rancheria Band of Pomo Indians and the Torres Martinez Desert Cahuilla Indians, two (2) Native American tribes that are traditionally and culturally affiliated to the project area and whom had previously requested notification of projects in the tribes' area of traditional and cultural affiliation pursuant to AB 52. No responses were received. On June 23, 2020, the City sent additional AB 52 consultation letters to each of the 13 Tribal representatives provided to the City of Willits on the Native American Heritage Commission (NAHC) Native American Contacts List dated October 28, 2019, including the EPA Director and Chairperson of the Cahto Tribe; the Chairpersons of the Coyote Valley Band of Pomo Indians, Guidiville Band of Pomo Indians, Hopland Band of Pomo Indians, Kashia Band of Pomo Indians of the Stewards Point Rancheria, Manchester Band of Pomo Indians, Noyo River Indian Community, Pinoleville Pomo Nation, Potter Valley Tribe, Redwood Valley or Little River Band of Pomo Indians, and Sherwood Valley Band of Pomo Indians; and the President of the Round Valley Reservation/ Covelo Indian Community. No requests for consultation were received from any of the 18 Native American tribes that were sent formal notification of the project in compliance with AB 52, as noted above. As no requests for consultation were received within the 30 day deadline specified by Public Resources Code section 21082.3 (d), the City, as Lead Agency, has deemed the Tribal consultation process complete. A copy of the NAHC Native American Contacts List is included in Appendix B.

a.i-ii) As discussed in Section V (Cultural Resources), above, no historical resources are identified at or near the Site, per Figure 10-1 of the Willits General Plan Revision: Vision 2020 (City of Willits, 1992), no responses were received from the Tribal consultation effort, and there are no known Tribal cultural resources in the project area. However, there is the possibility that a tribal cultural resource could be inadvertently discovered due to the ground-disturbing activities required during project construction. The incorporation of Mitigation Measure CUL-1, which requires that the contractor implement standard protocol similar to Mendocino County's "Discovery Clause" during project construction, and Mitigation Measure CUL-2, which requires that the City inform a cultural monitor prior to beginning excavation for the purposes of installing the proposed water line and invite the monitor to oversee excavation activities, would ensure that any currently unknown tribal cultural resources that are discovered during project construction are not adversely impacted by the project. With mitigation incorporated, a less than significant impact would occur.

MITIGATION MEASURES

Refer to Mitigation Measures CUL-1 and CUL-2 under Section V (Cultural Resources), above.

FINDINGS

The proposed project would have **Less Than Significant Impact with Mitigation Incorporated** on Tribal Cultural Resources.

XVIX. UTILITIES AND SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on utilities and service systems if it would require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects; not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years; result in a determination by the wastewater treatment provider, which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments; generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or not comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

DISCUSSION

The Site is comprised of three (3) parcels identified by Assessor's Parcel Numbers (APNs) 007-010-01, 108-030-06, and 108-020-05. While the Site is entirely owned by the City of Willits, the parcel identified by APN 007-010-01 is located within the City limits, while the parcels identified by APN 108-030-06 and 108-020-05 are located within the unincorporated area surrounding the City. The proposed project includes improvements to the Willits Groundwater System that would increase the resiliency and conjunctive use capabilities, and improve the quality of the City water system. The project would not require or result in the construction or expansion of new or existing wastewater treatment facilities and proposes no changes to existing electricity facilities, storm drainage infrastructure, nor solid waste services.

XVIX.a) The proposed project is limited to the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System to increase transfer

capacity from the Elias replacement well and the Long 20 well to the groundwater treatment system, installation of a 20 hp pump on the Long 20 well to increase the pumping capacity of the well, the installation of a SCADA facility to manage the Long 20 well, establishment of power to the well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well to enhance treatment and operability of the groundwater treatment system. The project would not require or result in the construction or expansion of new or existing wastewater treatment or stormwater drainage facilities. Electricity at the Site is currently provided by the Pacific Gas & Electric Company (PG&E). During Phase 2, a new PG&E connection to the Long 20 well would be established. The PG&E connection establishment would be limited in scope to serve only the pump and SCADA facility and would not cause a significant increase in the electricity utilized by the City. Operation of the groundwater treatment plant requires less energy than the surface water treatment plant, as minimal treatment is required for the groundwater supply, as compared to the surface water supply. In addition, due to the proximity of the groundwater treatment plant to the City water distribution system, energy costs to transport the water from source to distribution would be decreased.

The project provides benefits to water resource management in the City, including increasing the resiliency and conjunctive use capabilities and improving the quality of the City water system. Although the project would result in the expansion of the City's water supply system to allow for increased use of groundwater, when necessary, as described throughout this Initial Study, the proposed improvements to the Willits Groundwater System would not cause significant environmental effects. Therefore, a less than significant impact would occur.

XVIX.b) As described above, the proposed project would increase the resiliency and conjunctive use capabilities and improve the quality of the City water system, allowing the City to have sufficient water supplies during normal, dry, and multiple dry years. Until recently, all water for the City water supply system was supplied from surface water reservoirs on the Davis Creek watershed: Morris Reservoir and the upstream Centennial Reservoir. Water from these sources is treated at the surface water treatment plant near Morris Reservoir and piped to the City and surrounding regions approximately 2.5 miles via a single 16-inch transmission line.

The dependence of the City water supply system on a single surface source has made it vulnerable to water supply and/or water quality issues due to catastrophic failures and/or to severe or protracted drought, as was demonstrated during the water crisis the City experienced in 2014. The drought not only placed a strain on the quantity of water available, reduced levels in the reservoirs led to increased temperatures and biological growth, including algae blooms. In response to the extreme drought conditions in 2014, the City developed the Willits Groundwater System as an emergency project to supply and treat supplementary groundwater during the drought. The Willits Groundwater System included construction of a new groundwater treatment plant and the installation of over 8,000 feet of new water line to connect the Elias replacement well to the distribution system. In 2017, non-emergency use of this groundwater supply was approved by the State Water Resources Control Board (SWRCB) Division of Drinking Water, providing the City with the ability to supplement the surface water supply with groundwater and increase water supply reliability throughout the year. In the event that the surface water supply is compromised as it was in 2014, the City does not currently have the infrastructure necessary to fulfill the demand with groundwater.

The proposed project would provide the City with increased conjunctive use capabilities, allowing the City flexibility to manage water sources adaptively, considering factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health, and would help to ensure a reliable water supply in the City, sufficient to meet community needs if surface water again becomes untenable. Therefore, a less than significant impact would occur.

XVIX.c) The capacity of the local wastewater treatment plant is not affected by the proposed project. Therefore, the proposed project would have no impact.

XVIX.d-e) A significant amount of solid waste is not anticipated under the project and all solid waste generated under the project would be disposed of in accordance to all federal, state, and local statutes and regulations related to solid waste including state and local waste diversion requirements. The majority of solid waste generated by the proposed project would be anticipated during project construction and, as noted, above, project construction would be temporary in nature. Once constructed, the project would be anticipated to dispose of solid waste in accordance with the standards and practices currently in place for routine groundwater treatment operations. As such, the proposed would not negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals. A less than significant impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less Than Significant Impact** on Utilities and Service Systems.

XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage challenges?	☐	☐	☐	☒

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on wildfire if it would impair an adopted emergency response plan or emergency evacuation plan; due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage challenges.

DISCUSSION

The Site is located within the Local Responsibility Area (LRA) and is served by the Little Lake Fire District (Mendocino County Maps – Little Lake Valley – Fire Responsibility Areas, 2019). The Site is mapped as located within a "Moderate" fire hazard severity zone per Figure S-7a of the Public Review Draft *2019 Safety Element* of the City of Willits General Plan. The nearest fire station to the Site is the Little Lake Fire Protection District located approximately 0.7 miles southwest of the Site. Replacement of the water line, well pump, SCADA facility, and associated power installation, and arsenic pilot testing would improve existing structures and the clear well installation would not increase the risk of wildfires.

XX.a) The County of Mendocino County adopted a *Mendocino County Operational Area Emergency Operations Plan* (County EOP) on September 13, 2016, under Resolution Number 16-119. As noted on the Plans and Publications webpage of the Mendocino County Office of Emergency Services (MCOES), the County EOP, which complies with local ordinances, state law, and stated and federal emergency planning guidance, serves as the primary guide for coordinating and responding to all emergencies and disasters within the County. The purpose of the County EOP is to "*facilitate multi-agency and multi-jurisdictional coordination during emergency operations, particularly between Mendocino County, local and tribal governments, special districts as well as state and Federal agencies*" (MCOES – Plans and Publications, 2019).

As discussed under Section IX, Hazards and Hazardous Materials, above, there are no components of the project that would impair an adopted emergency response plan or emergency evaluation plan, including the adopted County EOP. The Site is located with the LRA and within a "Moderate" fire hazard severity zone

per Figure S-7a of the Public Review Draft *2019 Safety Element* of the City of Willits General Plan. Except for the clear well installation, the project primarily includes underground and/or nominal aboveground improvements which would have no impact on emergency response or evacuation in the project area. In addition, the clear well would be required to be constructed and installed in accordance with state and local standards, including safety and emergency access requirements. As such, there are no components of the project that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. A less than significant impact would occur.

XX.b) Under the proposed project, it is not anticipated that wildfire risks would be exacerbated due to slope, prevailing winds, and other factors. The Site is primarily flat, with elevations at the Site ranging between approximately 1,323 feet and 1,353 feet above mean sea level, Phases 1 and 2 would be implemented in a vacant agricultural area, and Phase 3 would be implanted in an area currently developed with the City's groundwater treatment plant and sewer plant. There are no factors of the Site that would cause an exacerbated risk of wildfire due to implementation of the project. In addition, the project would not require increased occupancy of the project area, as project implementation would be temporary in nature and any ongoing maintenance of the project would be infrequent. No impact would occur.

XX.c) The project would not require the installation or maintenance of associated infrastructure that would exacerbate fire risk or result in temporary or ongoing impacts to the environment. The Site is currently utilized for the Willits Groundwater System, including the Elias replacement well, Long 20 well, groundwater treatment plant, and is located adjacent to the City's sewer plant, with improvements proposed to be located within the general vicinity of these existing features. Phases 1 and 2 would include replacement of the existing water line, installation of a well pump and SCADA facility to manage the Long 20 well, and the establishment of power to the well pump and SCADA facility, and Phase 3 would include the installation of a 250,000-gallon clear well west of the groundwater treatment plant. The proposed improvements would be accessed via existing roads. In addition, during project construction and associated maintenance, appropriate Best Management Practices (BMPs) would be implemented to limit impacts to the environment. No impact would occur.

XX.d) The proposed project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage challenges, as the Site is comprised of flat agricultural land to the north and a developed groundwater treatment plant to the south, with elevations at the Site ranging between approximately 1,323 feet and 1,353 feet above mean sea level. As such, no impact would occur.

MITIGATION MEASURES

No mitigation required.

FINDINGS

The proposed project would have a **Less than Significant Impact** on Wildfire.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	☐	☐	☒	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

THRESHOLDS OF SIGNIFICANCE: The project would have a significant effect on mandatory findings of significance if it would have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory; have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.); or have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

DISCUSSION

Certain mandatory findings of significance must be made to comply with CEQA Guidelines §15065. The proposed project has been analyzed and it has been determined that it would not:

- Substantially degrade environmental quality;
- Substantially reduce fish or wildlife habitat;
- Cause a fish or wildlife population to fall below self-sustaining levels;
- Threaten to eliminate a plant or animal community;
- Reduce the numbers or range of a rare, threatened, or endangered species;
- Eliminate important examples of the major periods of California history or pre-history;
- Achieve short term goals to the disadvantage of long term goals;
- Have environmental effects that will directly or indirectly cause substantial adverse effects on human
- beings; or
- Have possible environmental effects that are individually limited but cumulatively considerable when viewed in connection with past, current, and reasonably anticipated future projects.

Potential environmental impacts from the installation of 3,750 feet of new water line and the abandonment of 3,600 feet of existing water line within the Willits Groundwater System, installation of a pump and SCADA facility to manage the Long 20 well, establishment of power to the Long 20 well pump and SCADA facility, arsenic pilot testing on the Long 20 well, and the installation of a 250,000-gallon clear well adjacent to the west of the groundwater treatment plant, have been analyzed in this document and mitigation measures have been included in the document to ensure impacts would be held to a less than significant level.

XXI.a) The project does not have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. There are no important examples of California Pre-history or history located on the Site. While the northern portion of the Site, where the replacement of existing water line is proposed, is largely mapped as a seasonal wetland and supports Baker's meadowfoam populations, the Site does not provide habitat for any fish or wildlife species. Mitigation has been applied to reduce any potential environmental impacts to levels that are less than significant.

XXI.b) No cumulative impacts have been identified as a result of the proposed project. The project is intended to increase the City's conjunctive use capabilities and provide the City with a reliable water supply sufficient to meet community needs in the event surface water becomes untenable and would provide the City with the flexibility to manage water sources adaptively, considering factors such as aquifer and watershed health, water quality, operational constraints, and ecosystem health. Individual impacts from the project would not significantly contribute to cumulative impacts in the area. A less than significant impact would occur.

XXI.c) The project will not have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly. Concerns related to the suitability of soils on-site for this type of construction are mitigated by Mitigation Measure GEO-1, which reduces the threat of failure of the clear well foundation to a level that is less than significant. A less than significant impact would occur.

Based on the findings in this Initial Study and as mitigated and conditioned, the proposed project would not have environmental effects that would cause substantial adverse effects on human beings either directly or indirectly. Potential environmental impacts associated with approval of the project have been analyzed and, as mitigated, all potential impacts can be reduced to a less-than-significant level.

MITIGATION MEASURES

Refer to Mitigation Measures BIO-1 and BIO-7 in Section IV (Biological Resources), CUL-1 and CUL-2 in Section V (Cultural Resources), GEO-1 in Section VII (Geology and Soils), and HYDRO-1 in Section X (Hydrology and Water Quality), above.

FINDINGS

The proposed project would have a **Less Than Significant Impact with Mitigation Incorporated** on Mandatory Findings of Significance.

VI. REFERENCES

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FIGURES

Figure 1 Site Vicinity Map

Figure 2 Project Overview

Figure 3 City of Willits Land Use Map

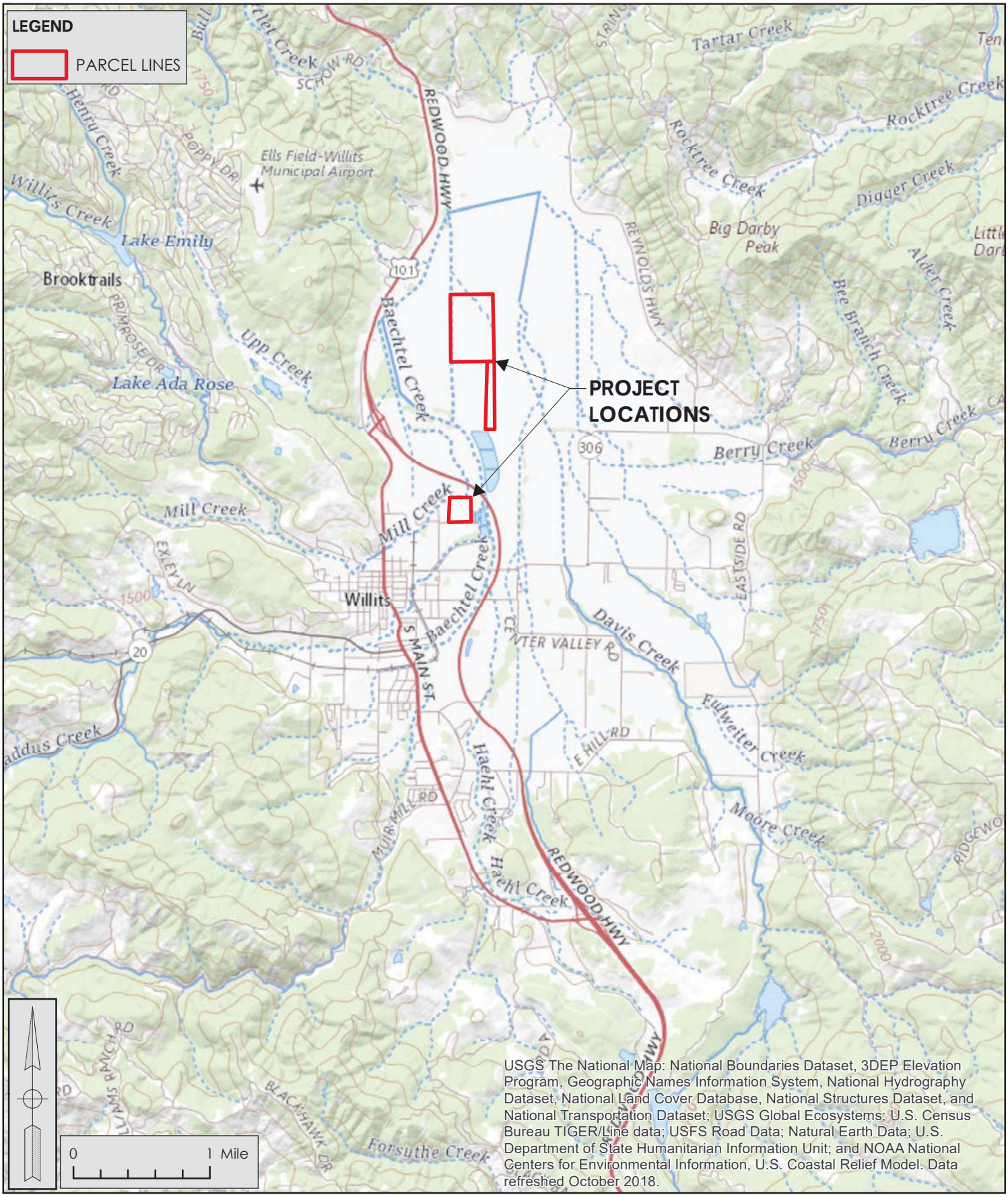
Figure 4 City of Willits Zoning Map

Figure 5 County of Mendocino Land Use Map

Figure 6 County of Mendocino Zoning Map

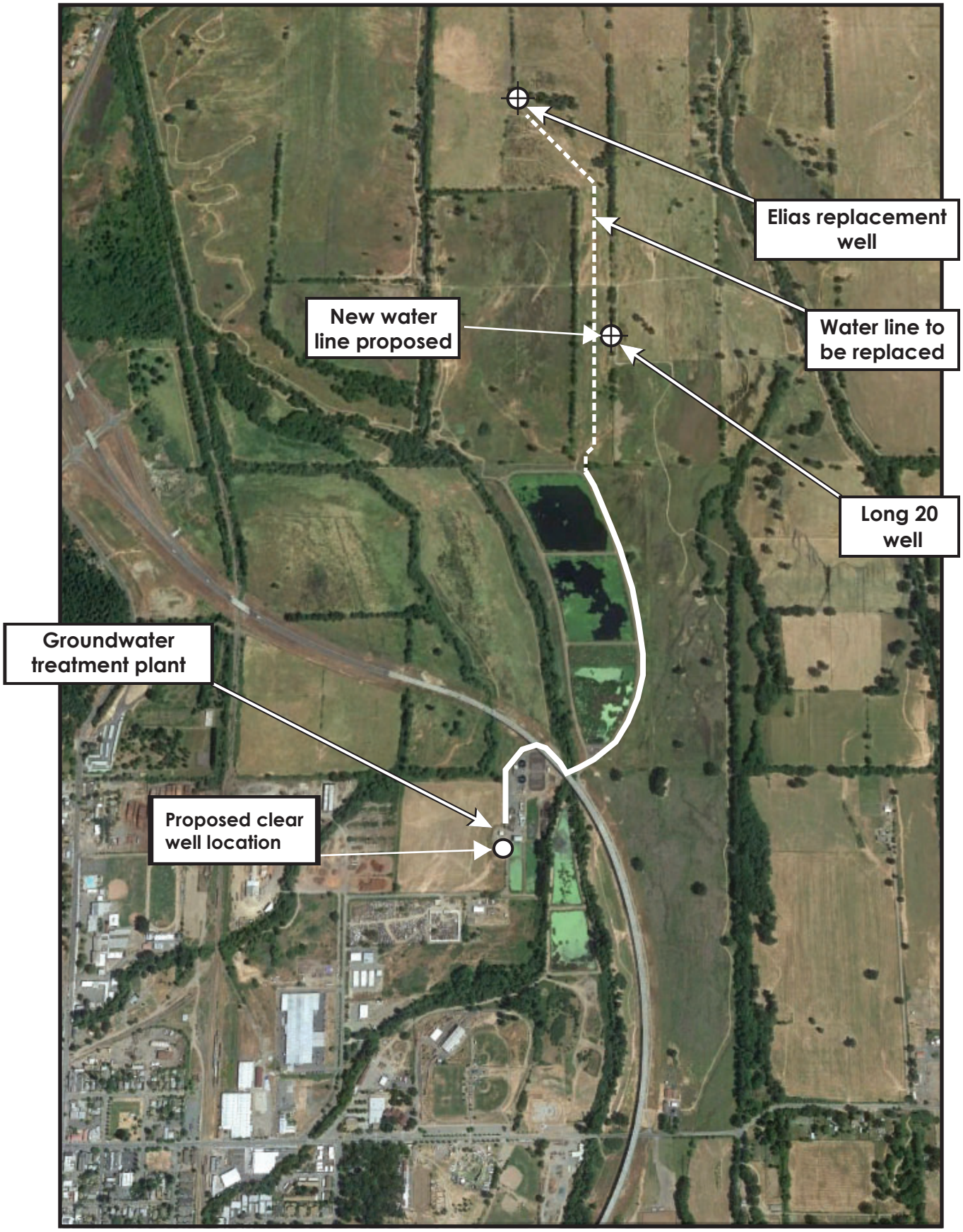
LACO EUREKA • UKIAH • SANTA ROSA 1-800-515-5054 www.lacoassociates.com	PROJECT	INITIAL STUDY	BY	JRG	FIGURE 1
	CLIENT	CITY OF WILLITS	CHECK	RMD	
	LOCATION	APN 007-010-01, 108-030-06, and 108-020-05	DATE	06/18/2020	JOB NO. 8509.08
		SITE VICINITY MAP			

REUSE OF DOCUMENTS: This document and the ideas and design incorporated herein, as an instrument of professional service, is the property of LACO Associates and shall not be reused in whole or part for any other project without LACO Associates express written authorization.



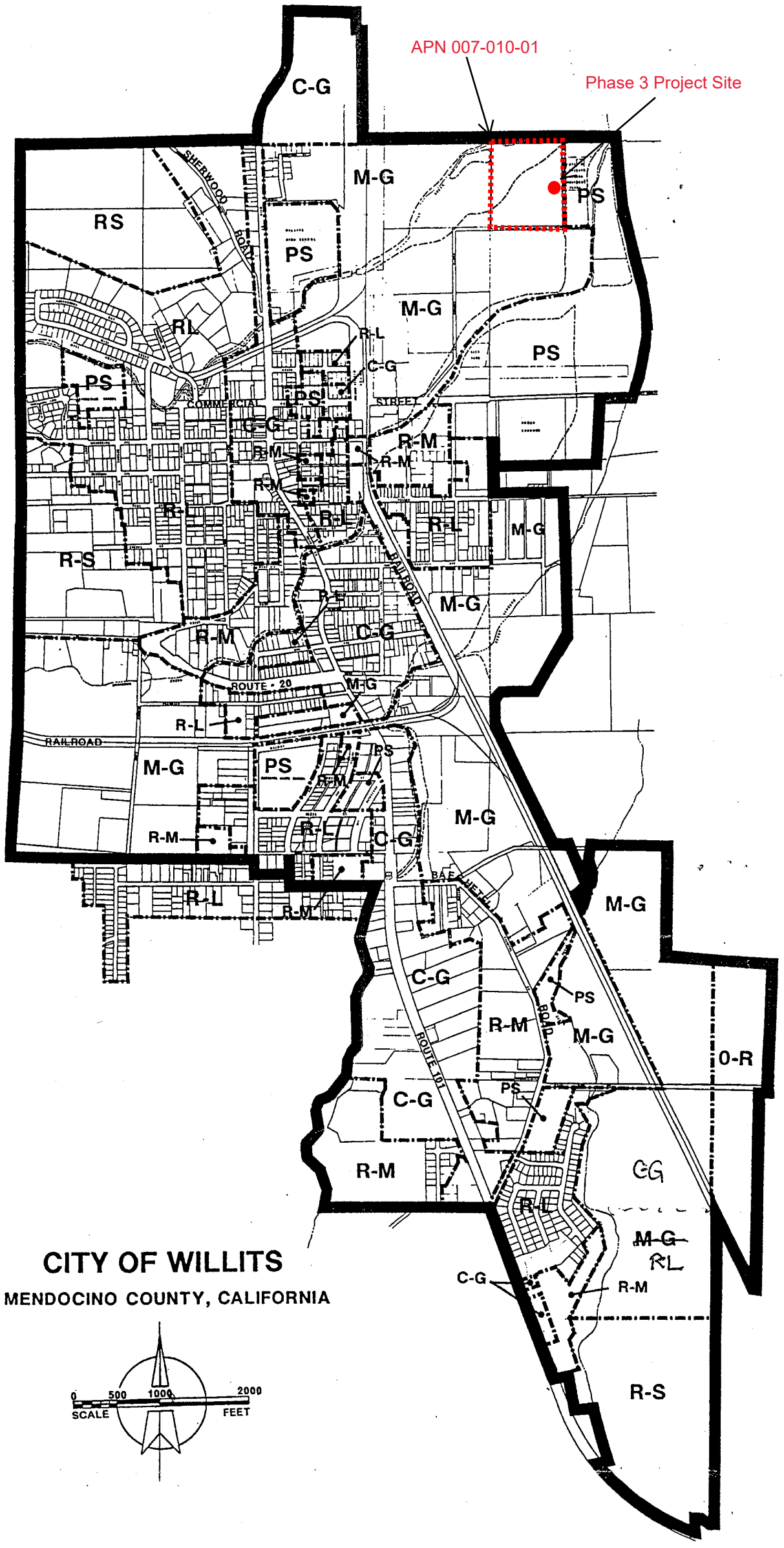
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.

Figure 2: Project Overview



Satellite data from Google Earth.
Overlay by LACO.

FIGURE 3



LEGEND

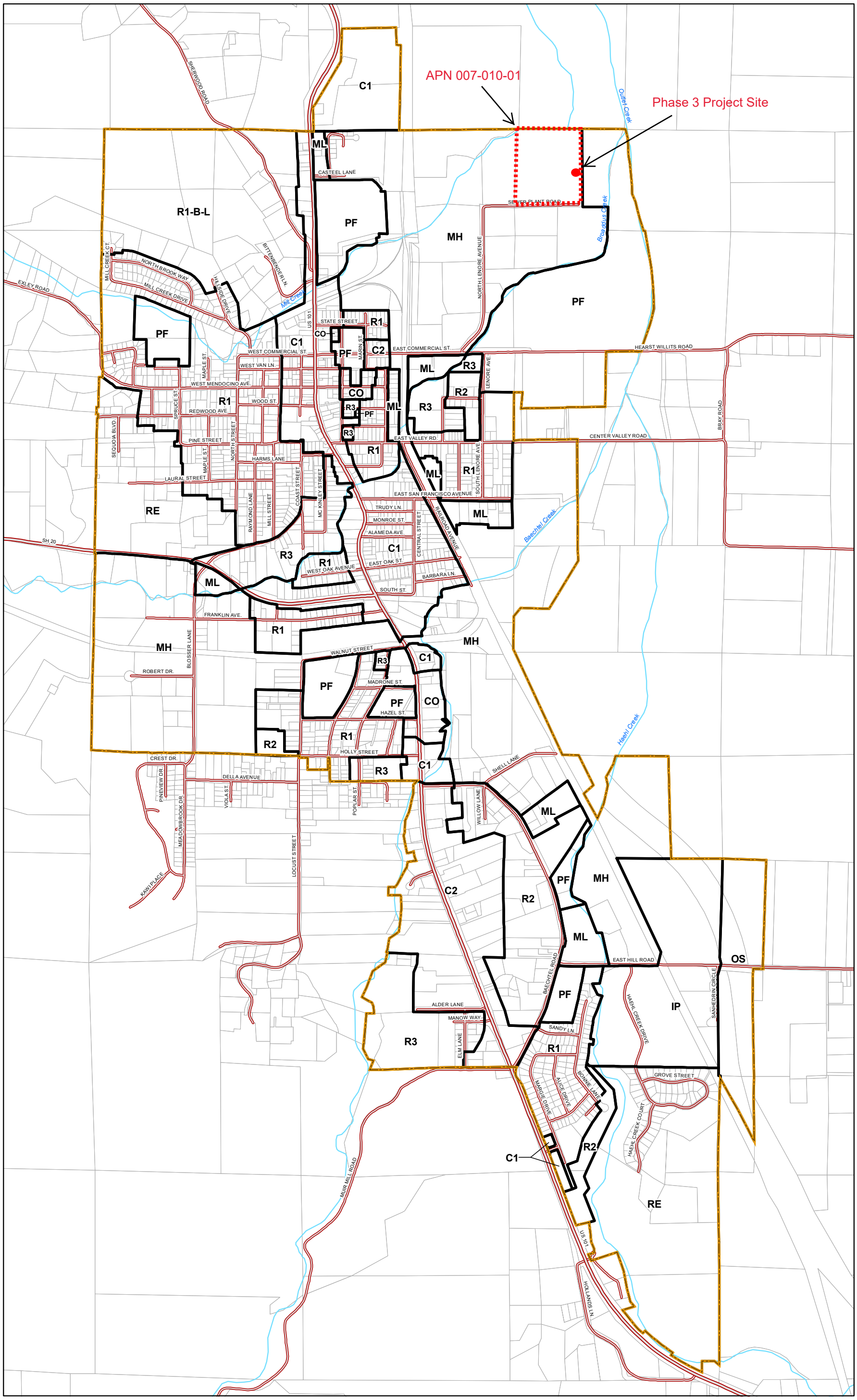
R-S:	RESIDENTIAL-SUBURBAN	PS:	PUBLIC SERVICE
R-L:	RESIDENTIAL-LOW DENSITY	0-R:	OPEN SPACE-RECREATIONAL
R-M:	RESIDENTIAL-MEDIUM DENSITY	▬	CITY LIMITS
C-G:	COMMERCIAL-GENERAL	-·-·-	DESIGNATION BOUNDARY
M-G:	INDUSTRIAL-GENERAL		

MARTIN · CARPENTER · ASSOCIATES
CITY AND REGIONAL PLANNERS

WILLITS GENERAL PLAN

GENERAL PLAN LAND USE DIAGRAM

FIGURE 4



City of Willits Zoning

Source: This map was prepared by the Mendocino County Department of Information Services GIS Program May, 2010.

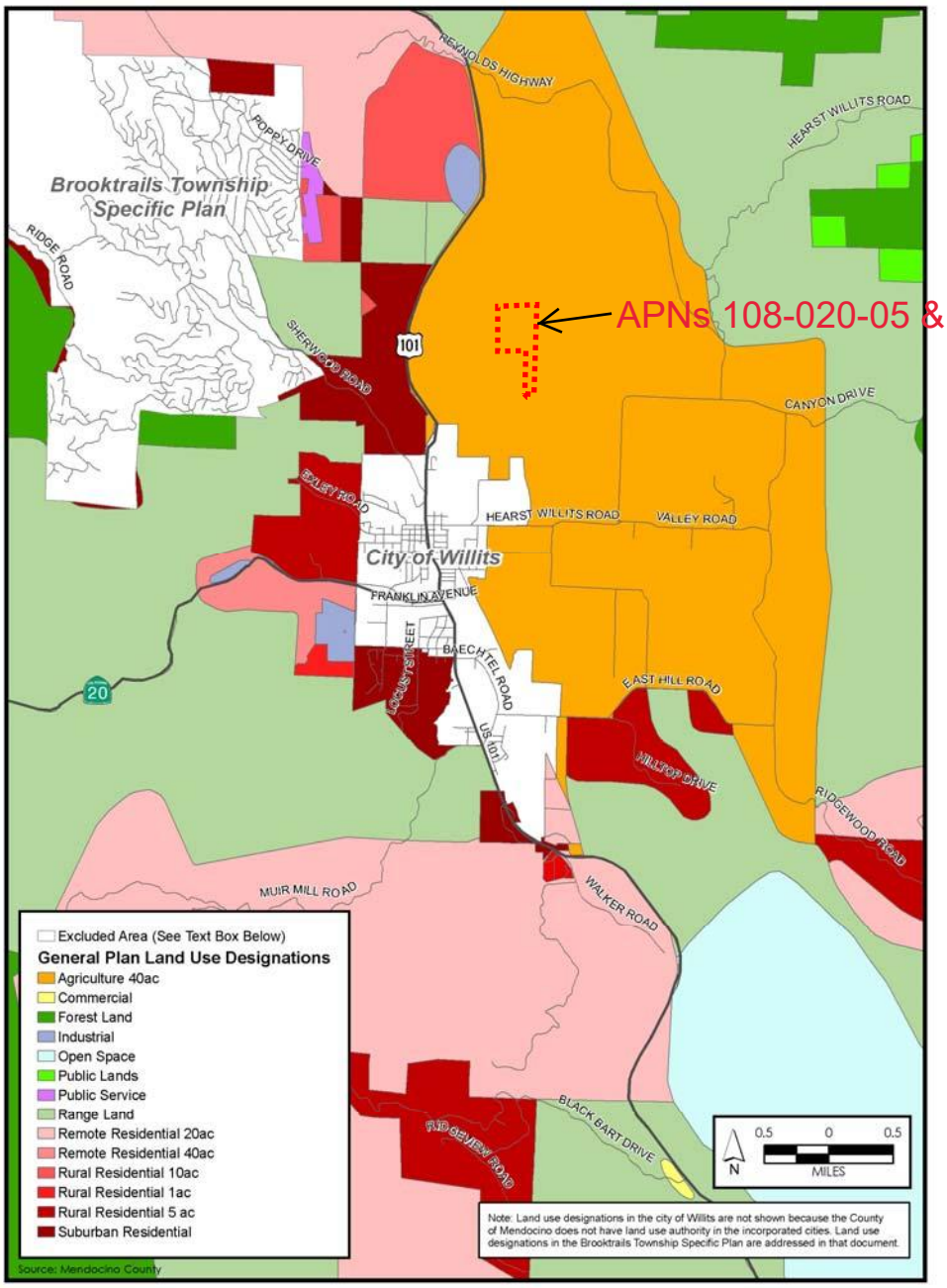
Note: This map is not a survey product and should not be used to determine legal boundaries.

Zoning
City Boundary
Parcels
Highways
Roads
Streams

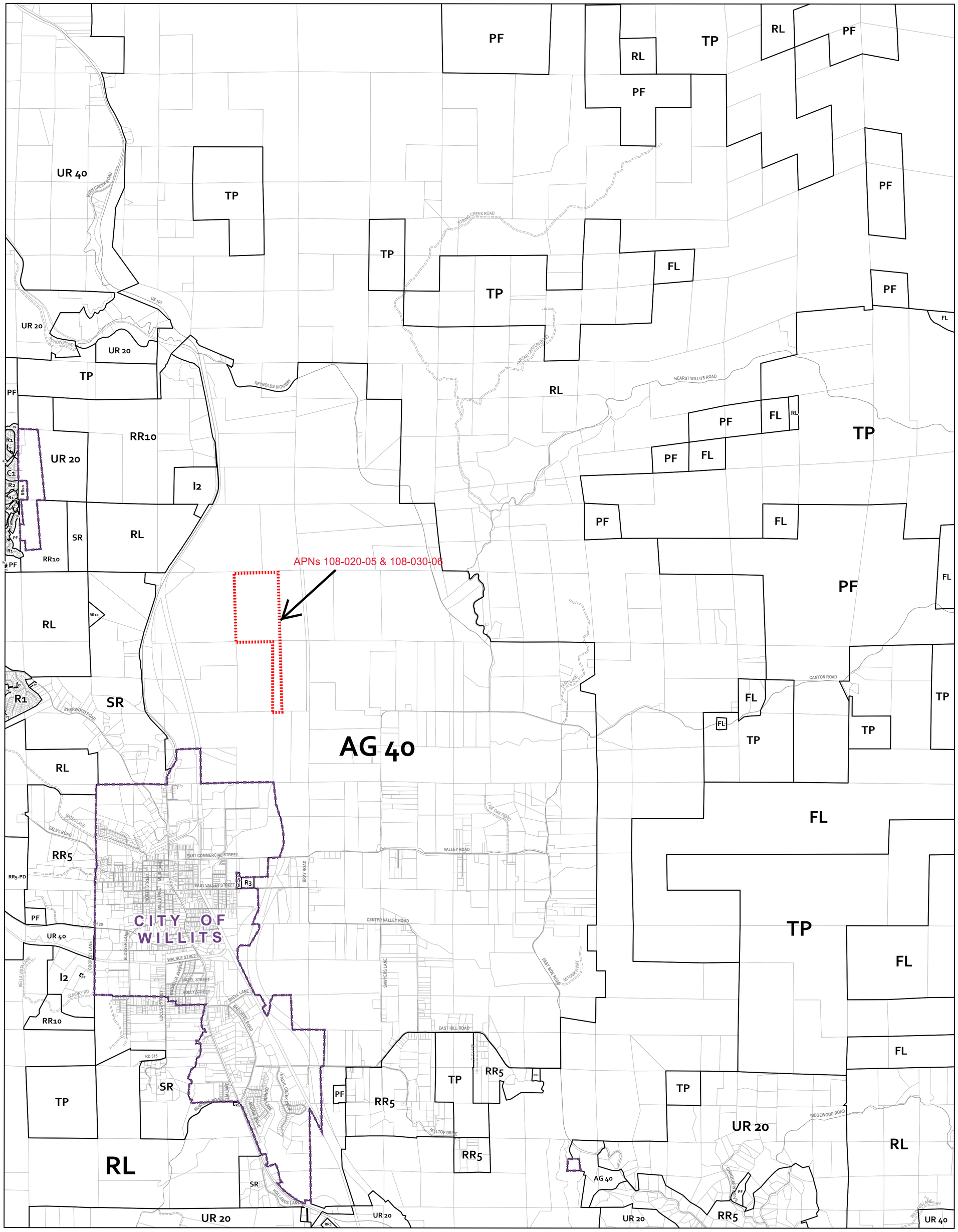
The information provided in this map is for reference only. It is not intended for any other use and should not be relied on for any other purpose. The information may be outdated, and it may include inaccuracies. To obtain the latest information in the area(s) of your interest, or to confirm the zoning details on this map, please contact the Community Development Department at (707) 459-7125.

500 250 0 500 Feet

FIGURE CP-9: WILLITS COMMUNITY MAP



ZONING DISPLAY MAP



ABBREVIATION KEY

AG	Agricultural Lands
AG-CR	Agricultural (Contract Rezone)
AV	Airport District
C	Coastal Commercial
C-PD	Coastal Commercial (Planned Development)
C1	Inland Limited Commercial
C1-CR	Inland Limited Commercial (Contract Rezone)
C2	Inland General Commercial
C2-CR	Inland General Commercial (Contract Rezone)
C2-IS	Inland General Commercial (Isolated Service)
FL	Forestland
FV	Fishing Village
I	Coastal Industrial
I1	Inland Limited Industrial
I1-CR	Inland Limited Industrial (Contract Rezone)
I2	Inland General Industrial
OS	Open Space
OS-CR	Open Space (Contract Rezone)
PI	Pinoleville Industrial
PF	Public Facility
PF-PD	Public Facility (Planned Development)
RC	Rural Community
RC-CR	Rural Community (Contract Rezone)
RL	Rangeland
RL-PD	Rangeland (Planned Development)
SR	Suburban Residential
TP	Timberland Production
UR	Upland Residential
UR-CR	Upland Residential (Contract Rezone)
UR-PD	Upland Residential (Planned Development)
R1	Single Family Residential
R2	Two Family Residential
R3	Multi Family Residential
RMR	Remote Residential
RMR-DL	Remote Residential (Development Limitation)
RMR-PD	Remote Residential (Planned Development)
RR	Rural Residential
RR-CR	Rural Residential (Contract Rezone)
RR-DL	Rural Residential (Development Limitation)
RR-PD	Rural Residential (Planned Development)
RR-PD-DL	Rural Residential (Planned Development Limitation)
RV	Rural Village
MC	Mendocino Commercial
MFL	Mendocino Forestland
MMU	Mendocino Mixed-Use
MOS	Mendocino Open Space
MPF	Mendocino Public Facility
MRM	Mendocino Multi-Family Residential
MRR	Mendocino Rural Residential
MSR	Mendocino Suburban Residential
MTR	Mendocino Town Residential
GPD	Gualala Planned Development
GVMU	Gualala Village Mixed Use
GHMU	Gualala Highway Mixed Use
GI	Gualala Industrial
RR_ [RR_]	Variable Density Zone (see note below)

ZONING DISPLAY MAP

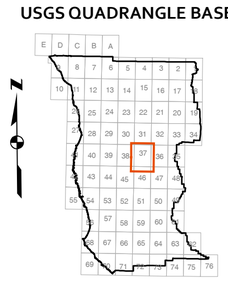
PRODUCED 2013
MENDOCINO COUNTY
PLANNING & BLDG. SVCS.

THIS IS NOT AN ADOPTED MAP

FOR DISPLAY PURPOSES ONLY

Print Date: 5/24/2013

WILLITS
USGS QUADRANGLE BASE



Zoning designations shown in [brackets] (coastal zone only) indicate 'variable density zones'. Per county code Sec. 3.8-10 In order to be developed to the smaller parcel size, areas indicated on the map as having a variable density zoning classification shall be required to be served by a public water system which utilizes surface waters, and which does not impact upon the ground water resource, or by completion of a hydrological study which supports those greater densities.

APPENDIX A

Mitigation and Monitoring Program (MMRP)

Mitigation Monitoring and Reporting Program
City of Willits
Groundwater Resiliency Improvements Project

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
Biological Resources	**BIO-1:** Prior to the start of construction, specific project locations that are associated with listed species and sensitive habitats will be identified and designated as Environmentally Sensitive Areas (ESAs) using high-visibility orange fencing, flagging and signage, or silt fencing. This applies specifically to areas with Baker's meadowfoam and to the Oregon ash, valley oak, and other native trees within the project study area. ESAs shall be shown on project design plans or maps to be provided to construction personnel. The ESA fencing shall remain in place throughout the duration of the project related construction activities to prevent the encroachment of construction equipment/personnel into sensitive areas. Only the minimum area needed for vehicle access and the placement of side cast material shall be allowed; areas that are to be avoided shall be identified as ESAs. To the extent feasible, construction access, staging, storage, and parking areas shall be located in upland areas and outside of any designated ESA. The bid package special provisions shall clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. The final project plans shall depict all locations where ESA fencing or flagging and signage would be installed and how it would be installed.	Project Contractor & Project Engineer	City of Willits	Prior to Construction

Biological Resources	**BIO-2:** Areas containing Baker's meadowfoam shall be protected with temporary fencing during construction, and these areas shall be avoided during construction. There shall be no side cast soil material placed in areas fenced for Baker's meadowfoam protection.	Project Contractor	City of Willits	Prior to Construction
Biological Resources	**BIO-3**: To reduce the potential for the take of migratory birds, including passerines and raptors, and roosting bats, ground and noise disturbance within 100 feet of the on-site trees shall be timed to occur during the non-nesting/roosting season, from September 1 to October 15. If these seasonal work restrictions cannot be adhered to, the following measures shall be performed in order to avoid or minimize impacts to passerines and raptors that may potentially nest, and bats that may potentially roost, in the project area: • A pre-construction nesting bird (both passerine and raptor) survey of the grasslands and adjacent trees shall be performed by a qualified biologist within seven (7) days of ground breaking. If no nesting birds are observed no further action is required and grading shall occur within one (1) week of the survey to prevent "take" of individual birds that could begin nesting after the survey. Inactive bird nests, other than those of eagles and threatened or endangered species, may be removed. • A bat habitat assessment of the adjacent trees for both foliage and cavity roosting bats shall be conducted by a qualified bat biologist within 14 days of the start of construction. • If active bird nests (either passerine and/or raptor) or bat roosts are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest/roost tree(s) until the young have fledged or the	Project Contractor & Qualified Biologist	City of Willits	Prior to Construction

	roosting has ceased, as determined by a qualified biologist. • The radius of the required buffer zone can vary depending on the species (i.e., 75-100 feet for passerines and bats, and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFW. • To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude. After the fencing is in place, there will be no restrictions on grading or construction activities outside the prescribed buffer zones. • Work buffers or construction delays shall be implemented until all birds have fledged.			
Biological Resources	**BIO-4**: Prior to the start of construction, specific project locations where native trees and/or their root systems cannot be avoided by vehicle traffic and construction equipment, and/or would be utilized for the placement of side cast material, shall have rubber mats or other ground protection placed to minimize soil and root disturbance by vehicle traffic and construction equipment. The bid package special provisions shall clearly describe acceptable ground protection material and the final project plans shall clearly depict how and where the ground protection measures shall be installed. After construction is complete, the ground protection measures shall be removed, and the areas reseeded, as needed.	Project Contractor & Project Engineer	City of Willits	Prior to Construction
Biological Resources	**BIO-5:** Before construction activities begin, a qualified biologist shall conduct an education program for all construction personnel. The training shall include a description of special status species, including state listed species and associated habitats with potential to occur in	Qualified Biologist	City of Willits	Prior to Construction

	the project study area; an explanation of the status of these species and their protection under the California Endangered Species Act (CESA); the measures to conserve listed species and their habitats as they relate to the work being done; proper soil excavation and replacement techniques; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews. Upon completion of the program, personnel shall sign a form stating that they attended the program and understand all of the project mitigation measures and implications of subject regulations.			
Biological Resources	**BIO-6:** A Section 404 permit from the U.S. Army Corps of Engineers (USACE) and a Section 401 Water Quality Certification from the North Coast Regional Water Quality Control Board (NCRWQCB) shall be obtained for impacts to wetlands, if required by the respective agencies. If required, these permits shall be obtained prior to implementation of the project. The project shall be designed to result in no net loss of functions and values of the existing wetlands by incorporating the following impact minimization measures: • Vehicles and construction equipment shall be rubber tired, to the extent feasible. • Ground-protection measures, as described in Mitigation Measure BIO-4, shall be placed in turn-around areas for vehicles and construction equipment to prevent the removal of vegetation and soil disturbance. • Where excavation occurs, soil shall be removed in lifts with the top 8 to 12 inches of topsoil removed and cast to one side and the remaining subsoil placed separately such that when the access hole is refilled the topsoil, along with all the seeds, will be in the same position in the soil profile, thus	Project Contractor & Project Engineer	City of Willits	Prior to Construction, During Construction, Post Construction

	allowing for quick reestablishment of existing species and reestablishment of the wetland functions and values. • Following construction, the approximate and original contours of the disturbed areas shall be restored to pre-project conditions, to the extent feasible, and any areas of bare soil shall be seeded with a native grass seed mixture comprised of species known to occur in the area.			
Biological Resources	**BIO-7:** To prevent the inadvertent entrapment of animals during construction, all excavated, steep-walled access holes more than 1-foot deep shall be covered at the close of each working day with plywood or other suitable material(s) or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes are filled, they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored overnight will be inspected before they are subsequently moved, capped, and/or buried. If at any time a listed species is discovered, the contractor and qualified biologist shall be immediately informed. The animal shall be allowed to move out of the area on its own volition or until the qualified biologist notifies the contractor to resume work in the area.	Project Contractor & Qualified Biologist	City of Willits	During Construction
Cultural Resources	**CUL-1**: In the event archaeological resources or cultural resources, including human remains, are inadvertently unearthed or discovered during construction, the contractor shall immediately halt all grading/land-clearing activities and contact the City of Willits Community Development Department (CDD). All activity in the vicinity of the resources shall cease until it can be evaluated by a qualified archaeologist and a Native American representative. If the archaeologist and Native American representative determine that the resources may be significant, they shall notify the CDD and develop an	Project Contractor	City of Willits	During Construction

	appropriate treatment plan for the resources. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. In considering any suggested mitigation proposed by the archaeologist and Native American representative, the CDD will determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) will be instituted. Work may proceed in other parts of the project area while mitigation for cultural resources is being carried out.			
Cultural Resources	**CUL-2**: A note shall be placed on all grading plans that the project contractor and/or the City shall notify a qualified cultural monitor with general knowledge of the project area prior to any excavation for the purposes of installing the proposed water line, and agree to open the Site to the cultural monitor to oversee the subsurface construction activities in order to ensure appropriate treatment of any artifacts uncovered.	Project Contractor & Project Engineer	City of Willits	Prior to Construction, During Construction
Geology and Soils	**GEO-1:** The proposed clear well installation shall comply with the recommendations pertaining to site preparation and grading, foundation, seismic design parameters, construction considerations, and future geotechnical services provided in the *Soils Report*, prepared by LACO Associates and dated June 30, 2020 (see Appendix D). Prior to construction of the project, the City of Willits Engineering Department shall review and approve of the site development plans, which must demonstrate project compliance with the recommendations of the Soils Report (LACO, 2020), in addition to any seismic requirements of the latest adopted edition of the CBC. All on-site geotechnical engineering activities shall be conducted	Project Contractor & Project Engineer	City of Willits	Prior to Construction, During Construction

	under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.			
Hydrology and Water Quality	**HYDRO-1:** In the event groundwater is encountered during foundation excavation activities, the contractor shall dewater the excavation area prior to placing concrete. Extracted groundwater shall be discharged in a manner that does not cause erosion at the discharge point. Any dewatering activities on-site shall be conducted under the supervision of a Qualified Stormwater Practitioner (QSP).	Project Contractor	City of Willits	During Construction

APPENDIX B

Cultural Resources Correspondence

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

July 23, 2020 NWIC File No.: 19-2317

Rebecca Dalske
LACO Associates
776 S. State Street, Suite 103
Ukiah, CA 95482

Re: Record search results for the proposed City of Willits Groundwater Treatment System Improvements Project.

Dear Ms. Rebecca Dalske:

Per your request received by our office on the 22nd of June, 2020, a records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Mendocino County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

Review of this information indicates that there have been two cultural resource studies that cover portions of the Willits Groundwater project area. Study 23633 (Bass 2000) included the entire project area within its study area, and included field survey for approximately 90% of the southern parcel of the project area. Study 14121 (Rondeau 1992) may have included approximately 10% of the northernmost parcel of the project area. This Groundwater Treatment System Improvements project area contains no recorded archaeological resources. The State Office of Historic Preservation Built Environment Resources Directory (OHP BERD), which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places, lists no recorded buildings or structures within or adjacent to the proposed Willits Groundwater project area. In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed Willits Groundwater project area.

At the time of Euroamerican contact the Native Americans that lived in the area were speakers of the Northern Pomo language, part of the Pomoan language family

(McLendon and Oswalt 1978: 283). There are Native American villages in the Little Lake Valley area in or adjacent to the proposed Willits Groundwater project area referenced in the ethnographic literature [*Cotsiu* and *Mitom* (Barrett 1908, McLendon and Oswalt 1978:284)].

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Mendocino County have been found in valleys, at the hill to valley interface, near creeks, and near ecotones. The Willits Groundwater project areas are located within valley lands of Little Lake Valley. The northernmost parcels are located east of Outlet Creek and bisected by an unnamed creek. The southernmost parcel is located in alluvial soils between Mill Creek and Outlet Creek. Given the similarity of these environmental factors and the ethnographic sensitivity of the area, there is a moderate to high potential for unrecorded Native American resources to be within the proposed Willits Groundwater project area.

Review of historical literature and maps indicated the possibility of historic-period activity within the Willits Groundwater project area. The Mills of Mendocino County indicated several lumber mills within the immediate or surrounding areas of the project area including; Bates Mill, Fairhurst Hill, G&S Mill, and Georgia Pacific Corp (1996: 74-76). These mills ran in the area starting in the 1940s. Several other mills in the area with unspecified locations began as early as 1908. With this in mind, there is a moderate to high potential for unrecorded historic-period archaeological resources to be within the proposed Willits Groundwater project area.

The 1942 and 1961 Willits USGS 15-minute topographic quadrangles fail to depict any buildings or structures within the Willits Groundwater project areas; therefore, there is a low possibility for any buildings or structures 45 years or older to be within the Willits Groundwater project area.

RECOMMENDATIONS:

1) There is a moderate to high potential of identifying Native American archaeological resources and a moderate to high potential of identifying historic-period archaeological resources in the project area. Due to the passage of time since the previous surveys (Rondeau 1992 and Bass 2000), and the lack of coverage of the entire project area, we recommend a qualified archaeologist conduct further archival and field study for the entire project area to identify archaeological resources. We recommend a qualified archaeologist conduct further archival and field study to identify cultural

resources. Field study may include, but is not limited to, pedestrian survey, hand auger sampling, shovel test units, or geoarchaeological analyses as well as other common methods used to identify the presence of archaeological resources. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

2) We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

3) If the proposed project area contains buildings or structures that meet the minimum age requirement, prior to commencement of project activities, it is recommended that this resource be assessed by a professional familiar with the architecture and history of Mendocino County. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

4) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

5) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

6) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic Preservation's website: https://ohp.parks.ca.gov/?page_id=28351

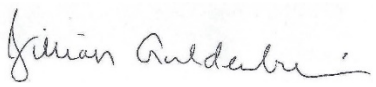
Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have

historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

Thank you for using our services. Please contact this office if you have any questions, (707) 588-8455.

Sincerely,



Jillian Guldenbrein
Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center of the Historical Resources Information System, the following literature was reviewed:

Barrett, S.A.
1908 *The Ethno-Geography of the Pomo and Neighboring Indians*. University of California Publications in American Archaeology and Ethnology 6(1):1-322. University of California Press, Berkeley. (Reprint by Kraus Reprint Corp., New York, 1964).

Bass, Henry O. (California Department of Transportation)
2000 *Historic Properties Survey Report for the Willits Bypass Project, Mendocino County, California, 01-MEN-101, KP 70.0/82.6 (PM 43.5/51.3), EA 01-262000, Volume 1.* **NWIC Report S-023633**

Dean, Walter C.
1920 *Soil Survey of the Willits Area, California*. (Advance Sheets-Field Operations of the Bureau of Soils, 1918). U.S. Department of Agriculture, Bureau of Soils, Washington, D.C.

General Land Office
1859, 1867, 1882 Survey Plat for Township 18 North/Range 13 West.

McClendon, Sally and Robert L. Oswalt
1978 Pomo: Introduction. In *California*, edited by Robert F. Heizer, pp. 274-288. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Mendocino County Historical Society
1996 *Mills of Mendocino County*. Black Bear Press, Caspar, CA.

Rondeau, Michael F. (Caltrans)
1992 *Archaeological Survey Report for the Proposed Willits Bypass on Highway 101 Near Willits, California, 1-MEN-101 P.M. 43.5/51.3, 01101-262000, Volume 1 and Volume 2.* **NWIC Report S-014121**

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

State of California Office of Historic Preservation ******
2019 *Built Environment Resources Directory*. Listing by City (through December 17, 2019). State of California Office of Historic Preservation, Sacramento.

******Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

Native American Heritage Commission
Native American Contacts List
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Cahto
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Shanel
Pomo

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Coast Yuki

Pinoleville Pomo Nation
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Pomo

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
City of Willits Housing Element Update and Safety Element Update Project, Mendocino County.

Native American Heritage Commission
Native American Contacts List
October 28, 2019

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(707) 485-5726 Fax

Round Valley Reservation/ Covelo Indian Community
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Covelo ,CA 95428 — Pit River
tribalcouncil@rvit.org — Pomo
(707) 983-6126 — Concow
(707) 983-6128 Fax — Wailaki; Wintun

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This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
City of Willits Housing Element Update and Safety Element Update Project, Mendocino County.

APPENDIX C

Habitat Assessment

Habitat Assessment

Water Supply Reliability and Drought Resiliency
with Groundwater and Conjunctive Use Project
Willits, California

December 3, 2020

Prepared for
City of Willits
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Prepared by
Wildlife Research Associates
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And

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Penngrove, CA 94951

Water Supply Reliability and Drought Resiliency Project
City of Willits

Habitat Assessment

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SUMMARY

The City of Willits (City) proposes improvements to the existing City water system to expand the City's initial groundwater capacity, allowing for increased conjunctive use and ensuring a reliable water supply sufficient to meet community needs if surface water again becomes untenable. The project site, located east of Highway 101 and north of E. Commercial Street, east of the Mill Creek, is located northeast of the City center in an area currently utilized by the City for the ongoing operation of the water treatment plant, Long 20 well, and Elias Replacement well.

This Habitat Assessment presents the findings of our literature review (including scientific literature and previous reports detailing studies conducted in the area) and the California Department of Fish and Wildlife's (CDFW) Natural Diversity Data Base (CNDDB) for reported occurrences of special status vegetation communities, plants and animals.

For purposes of this report there is an approximately 2.6-acre limit of disturbance area and a 15.34-acre study area, of which we conducted a broad biological review and surveyed for the wetland delineation. Focused plant surveys were conducted for the limit of disturbance area. Surveys for special status plants were conducted from April to June 2020 and the original 2003 wetland delineation was updated.

Based on our site visit, two vegetation communities, comprising two wildlife habitat types, occur within the entire study area. The vegetation communities are upland non-native grasslands and seasonal wetlands.

As part of this Habitat Assessment, we also evaluated the potential for occurrence of 21 special status plant species, and 27 special status wildlife species, including bats, as well as the potential for California red-legged frog and western pond turtle to occur on the parcel. No focused surveys for any special status wildlife species were conducted as part of this assessment.

To reduce impacts to special status biological resources, we recommend the following:

- A Section 404 permit from the U. S. Army Corps of Engineers (USACE) along with a Section 401 Water Quality certification from the state Regional Water Quality Control Board (RWQCB) for impacts to wetlands.

INTRODUCTION

The City of Willits contracted with Jane Valerius Environmental Consulting and Wildlife Research Associates to prepare a habitat assessment of the City of Willits Water Supply Reliability and Drought Resiliency Project (APN 108-030-06 and 108-020-05, located east of Highway 101 and north of E. Commercial Street, northeast of the City of Willits, Mendocino County, California. The proposed project includes the replacement of 3,686 feet of water line, well pump upgrades, pilot testing, and the installation of a 250,000-gallon clear well.

This Habitat Assessment is part of the preliminary analysis of both the existing environment and potential impacts from the proposed project as required under the California Environmental Quality Act (CEQA) for new projects. Federal and state agencies that have purview over biological resources include the following:

- U.S. Army Corps of Engineers (USACE) - regulates the discharge of dredged or fill material into waters of the United States,
- U.S. Fish and Wildlife Service (USFWS) - authority over federally listed plant and animal species,
- National Marine Fisheries Service (NMFS) - authority over essential fish habitat, which is habitat necessary to maintain sustainable fisheries,
- California Regional Water Quality Control Board (RWQCB) - protects all waters with special responsibility for wetlands, riparian areas, and headwaters, and the
- California Department of Fish and Wildlife (CDFW) - authority over state listed plants and animals as well as streams and lakes within the State.

Please refer to Appendix A for details on regulations protecting special status species and sensitive vegetation communities.

Based on this review and limitations of the present surveys, the following are action items to be addressed prior to ground breaking:

- Obtain Section 404 and 401 permits from the USACE and RWQCB, respectively

Site Location

The study area, located north of E. Commercial Street, is bounded by undeveloped lands on the north, east, south, and west. The project area is located in Section 6 and 7 in the central portion of the Willits 7.5-minute topographic quadrangle, within Township 18N and Range 13W (Figure 1).

Project Description

Proposed improvements include the replacement of 3,686 feet (92,150 square feet) of water line, well pump upgrades, pilot testing, and the installation of a 250,000-gallon clear well, to be completed in three (3) phases, as described below.

<u>Phase 1 – Water Line Replacement</u>

In the first phase, 3,750 linear feet of 10” high density polyethylene pipe (HDPE) will be installed using horizontal directional drilling technology. The horizontal drill will be accomplished in three phases. The first stage will require the excavation of an approximately 10’ x 40’ access hole. The drill rig is positioned at the access hole and is pivoted at an angle to drill down to approximately 7’ deep. During the first stage, a small diameter pilot hole is drilled along the designed drill path or pipeline alignment. The second stage enlarges the pilot hole to accommodate the 10” pipe installation. The third and last stage will pull the 10” HDPE pipe back through the hole. Fittings are then fused onto the pipe and connections between sections of new pipe are made, with the HDPE pipe getting connected to the existing 8” C900 pipe on either end of the project.

Access holes will be excavated approximately every 500', with little deviation in spacing expected at the time of construction. The spacing between access holes may increase, thereby reducing impacts to the wetland from excavation activities. Approximately 9 access holes will be excavated in the project area with 8 being within the seasonal wetland area and 1 being in the existing upland area. The total area of impacts to

wetlands will be approximately 3,200 sf or 0.07 acres along with 400 sf of upland area for a total of 3,600 sf or 0.08 acres of direct disturbance.

Baker's Meadowfoam areas will be protected with temporary fencing during construction to avoid these areas when constructing access holes. Horizontal drilling technology achieves pipeline installation while avoiding impacts to the surface area; therefore, there will be no impacts to Baker's Meadowfoam and minimal impacts to wetlands during the pipeline installation..

Phase 2 – Well Pump Upgrades, Pilot Testing

In the second phase, the wells would be upgraded to increase the pumping capacity and arsenic pilot tests would be performed. The existing 30 horsepower (hp) pump in the primary Elias Replacement well would be upgraded to a 70-hp pump, increasing capacity to 1,140 kgpd. A prior study showed that the well and aquifer are capable of sustaining 1,150 kgpd with adequate safety factors. The 30-hp pump and controls from the Elias Replacement well would then be installed in the secondary Long 20 well. Both pumps would require upgraded power supplies. Pilot tests would then be performed to confirm the arsenic detected in the secondary Long 20 well would be adequately removed by the groundwater treatment plant prior to integrating that source into the water system. Minimal ground disturbance would be anticipated during Phase 2 of the project, as upgraded well pumps will be installed and pilot testing will occur on existing and operational wells.

Phase 3 – Clear Well Installation

Finally, in Phase 3, a 250,000-gallon clear well would be installed to enhance treatment and operability of the groundwater treatment system. The water treatment plant as it currently is, is limited in its ability to pump water to the highest storage tank and customers in the system because the pressure filters have a maximum pressure of 80 psi (186ft). Additional pumping will be necessary for the groundwater treatment system to function as an alternative to the surface water treatment plant. Adding a clear well tank after filtration will allow for installation of additional system pumps that can overcome the system head and not carry the risk of cavitation from inline booster pump installation. Additionally, installation of a clear well tank will allow operators to add potential treatment chemicals and better monitor the finished water prior to its delivery to the system. The clear well is proposed to be installed west of the groundwater treatment plant on an existing asphalt concrete surface. The tank will be placed in a 50-foot diameter concrete pad situated above ground.

Construction Timing

The City is planning to begin construction in 2021. Work will be restricted to September 1 to October 15 to avoid nest birds and roosting bats. Construction would not begin until the soil and ground is sufficiently dry to allow for safe equipment access.

Staging Areas

Staging areas will be in uplands located in the southern portion of the study area.

Access Route and Off-haul

No vehicles will be allowed on site until conditions are sufficiently dry. It is anticipated that work would start on September 1 or after once the project area is dry enough to allow vehicle access and to avoid the nesting bird season. Vehicles will avoid environmentally sensitive areas where there are Baker's meadowfoam and native trees. These areas will be fenced. There will be small areas where vehicles will need to pass through meadowfoam areas and also potentially within the tree canopy along the western fence line in the southern portion of the site. For these areas rubber mats or other ground protection measures to ensure that the soil and roots and protection will be installed. Avoidance and minimization measures BIO-3, BIO-4 and BIO-5 will be implemented as described in the Impacts and Mitigation Section.

Best Management Practices (BMPs)

Refer to Figure 2a and 2b for the approximate locations of the drill access holes which have been located to avoid impacts to special status plants.

METHODS

Information on special status plant and wildlife species was compiled through a review of the California Natural Diversity Data Base (CNDDB 2020) for the Willits and Burbeck 7.5-minute topographic quadrangles, the California Department of Fish and Wildlife's (CDFW) Special Animals List (CDFW 2020), State and Federally Listed Endangered and Threatened Animals of California (CDFW 2020), the California Native Plant Society (CNPS) Electronic Inventory records (CNPS 2020), and the USFWS Information on Planning and Conservation (IPaC) list (USFWS 2020).

Botanical nomenclature used in this report conforms to Baldwin, et al. (2012) for plants and to *The Manual of California Vegetation*, 2nd Edition (Sawyer, et al. 2008) for vegetation communities. Nomenclature for special status animal species conforms to CDFW (2020). Appendix B presents a list of special status plant species reviewed for this project. Appendix C presents a list of special status animal species reviewed for this project.

Site Survey: Trish Tatarian, Wildlife Research Associates, and Jane Valerius, Jane Valerius Environmental Consulting, conducted a survey of the project study area on May 12, 2020. The weather was cool (~65 Fahrenheit) and raining.

Trish evaluated the parcel for small mammal burrows and surveyed for suitable potential habitat for nesting birds and roosting bat habitat using 8 x 42 roof-prism binoculars, noting presence of cavities, old bird nests and squirrel nests in trees. The reconnaissance-level site visit was intended only as an evaluation of on-site and adjacent habitat types, and no special status animal species surveys were conducted as part of this effort. Appendix D provides a list of plants species observed and Appendix E provides a list of wildlife species observed.

Protocol level surveys for special status plants were conducted by Jane Valerius and Geri Hulse-Stephens, botanists. As required by CDFW protocols, the entire limit of disturbance area was walked and all plant species identifiable at the time of the site visit were recorded. Surveys were conducted on April 20, 2020 by Geri Hulse-Stephens and on May 12 and June 18, 2020 by Jane Valerius. The surveys covered the flowering period for all special status plants with the potential to occur within the study area based on the USFWS, CNDDB and CNPS data base searches.

A formal delineation was conducted by Jane Valerius Environmental Consulting on May 12, 2020 (Jane Valerius Environmental Consulting 2020) and was submitted to the USACE on August 13, 2020 for their verification. The delineation was conducted according to the 1987 Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coastal Region (Version 2.0)* (U.S. Army Corps of Engineers (2010). The 2020 delineation updated the original 2003 verified delineation that was conducted for the wastewater treatment plant. The USACE approved the delineation in a letter dated September 24, 2020.

EXISTING CONDITIONS

The project area is located within the North Coast Province (CDFW 2015). This province is located along the Pacific coast from the California-Oregon border to the San Francisco Bay watershed in the south (CDFW 2015). The eastern boundary includes the Cascade Range along the northern portion of the province and the transition to the Sacramento Valley along the southern portion. The coastal mountain ranges within the province are aligned somewhat parallel and rise from low to moderate elevation (i.e., up to about 7,500 feet) (CDFW 2015). The climate varies considerably across the province, with high precipitation levels and

moderate temperatures in many coastal areas, and dry conditions with rain shadow effects and more extreme temperatures in some inland valleys. Overall, the province has a fairly wet climate and receives more rainfall than any other part of the state, feeding more than ten river systems (CDFW 2015).

The North Coast Province vegetation consists predominantly of conifer and mixed-conifer forests dissected by chaparral stands, riparian forests, and wetlands (CDFW 2015). Valley and foothill grassland and woodland communities emerge along the central and southern eastern border of the province, while coastal wetlands and marshes appear along the coastline (CDFW 2015). Specifically, Douglas-fir, mixed-evergreen, western hardwoods, and chaparral-mountain shrub dominate the province (CDFW 2015).

The project site is located on City-owned property currently utilized for the Elias Replacement well, Long 20 well, groundwater treatment plant, and water lines connecting the wells to the groundwater treatment plant. Uses surrounding the project areas described in Phases 1 and 2 include vacant fields utilized for agricultural activities in all directions, and the City water and wastewater treatment plants to the south. The study area is additionally utilized for cattle grazing during the dry season, typically from May to October.

The roughly rectangular-shaped 15.34-acre project area ranges in elevation between 402 meters (1,319 feet) in the north and 406 meters (1,332 feet) in the south and is situated on the northern end of Little lake Valley. The site is located east of Outlet Creek and west of Davis Creek, both of which flow from south to north. Outlet Creek receives flows from drainages on the west side of Little Lake Valley and Davis Creek receives flows from drainages on the east side of the valley. The majority of the parcel along the proposed pipeline is located within seasonal wetlands based on the delineations conducted in 2003 and updated in 2020.

Vegetation Communities

A total of two vegetation communities occur within the 15.34-acre project study area. A description of each community is presented below. The grasslands within the two parcels are grazed and irrigated in the summer and are comprised primarily of forage grasses, most of which are non-native species. Oregon ash (*Fraxinus latifolia*) trees occur along the fence lines and in small groves within the larger grassland areas. The Little Lake Valley at one time in the distance past may have been more of an Oregon ash woodland. However, with grazing and irrigation the areas within the Little Lake Valley are now primarily grassland, most of which is a seasonal to perennial wetland type.

Upland non-native grassland: There is approximately 1.32-acres of upland non-native grassland within the 15.34-acre study area (Fig. 3). The non-native grassland consists of upland grass species such as wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordaeceus*), Harding grass (*Phalaris aquatica*), hare barley (*Hordeum murinum* ssp. *leporinum*), sweet vernal grass (*Anthoxanthum odoratum*),and orchard grass (*Dactylis glomerata*) as well as many of the mesic (facultative) grass species that are found in the seasonal wetland areas including field meadow-foxtail (*Alopecurus pratensis*), ryegrass (*Festuca pratensis*), tall fescue (*Festuca arundiacea*), and rough-stalk bluegrass (*Poa trivialis*). Common non-native forb species within the upland area include spring vetch (*Vicia sativa),* four-seeded vetch (*Vicia tetrasperma*), angled pea vine (*Lathyrus angulatus*), hop clover (*Trifolium dubium*), subterranean clover (*Trifolium subterraneum*), bindweed (*Convolvulus arvensis*), hairy cat's-ear (*Hypochaeris radicata*), and chicory (*Cichorium intybus*). Some native forb species were also noted including cream sacs (*Castilleja rubicundula* ssp. *lithospermoides*) and small tarweed (*Madia exigua*).

Seasonal Wetlands. The majority of the grassland area within the project study area qualifies as a seasonal wetland type. A total of 14.02 acres of seasonal wetlands have been mapped for the study area (Figs 4 – 7). The dominant grass species is field meadow-foxtail along with ryegrass, tall fescue, rough-stalk bluegrass as well as annual bluegrass (*Poa annua*), Kentucky bluegrass (*Poa pratensis*), velvet grass (*Holcus lanatus*), small quaking grass (*Briza minor*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum),* and creeping wildrye (*Elymus triticoides*). Areas where there are slight depressions and water ponds for a longer period of time wetland plants that are classified as facultative wetland (FACW) and obligate (OBL) species are more dominant. These include semaphore grass (*Pleuropogon californicus*) and many rushes and sedges

such as slender beak sedge (*Carex athrostachya*), dense sedge (*Carex densa*), small-bract sedge (*Carex subbracteta*), toad rush (*Juncus bufonius*), Mariposa rush (*Juncus dubius*), western rush (*Juncus occidentali*s), poverty rush (*Juncus tenuis*) and iris-leaved rush (*Juncus xiphioides*). Wetland forb species include pennyroyal (*Mentha pulegium*), hyssop loosestrife (*Lythrum hyssopifolia*), popcornflower (*Plagiobothry*s sp.), button celery (*Eryngium* sp.), several buttercups (*Ranunculus occidentalis, R. orthorhynchus, R. parvilforus*), curly dock (*Rumex crispus*), and rough hedge nettle (*Stachys rigida*).

Two special status plants, Baker's meadowfoam (*Limnanthes bakeri*) (Figure 7) and Davy's semaphore grass (*Pleuropogon californicus* var. *davyi*), also occur in the deeper, depressional wetland areas. These two special status plants occur in the same locations and are further discussed in the special status plant section.

Waters of the U.S. and State

There are no creek or drainages within the delineation and project study area. Water from the study area eventually flows into Outlet Creek which is a tributary to the Eel River. A total of 14.02 acres of seasonal wetland have been mapped for the study area comprising the majority of the study area. No changes were made to the upland and wetland areas identified in the original 2003 delineation as site conditions have not changed significantly.

The 2020 delineation is consistent with the original 2003 delineation which was verified in 2003 with a date stamp of June 2003 for Corps File# 251770N. The 2020 delineation was verified by the USACE in a letter dated September 24, 2020. There were no changes to the wetland areas from 2003.

Wildlife Habitats

The value of a site to wildlife is influenced by a combination of the physical and biological features of the immediate environment. Species diversity is a function of diversity of abiotic and biotic conditions and is greatly affected by human use of the land. The wildlife habitat quality of an area, therefore, is ultimately determined by the type, size, and diversity of vegetation communities present and their degree of disturbance. Wildlife habitats are typically distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. The following is a discussion of the wildlife species supported by the on-site habitats, as described by *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). The California Wildlife Habitat Relationship (CWHR) habitat classification scheme was developed by the CDFW to support the CWHR System, a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles and amphibians. A description of the species supported in each habitat is presented below.

Annual grasslands: Native and non-native grasslands typically provide foraging, hunting and nesting habitat for a wide variety of wildlife species. California grasslands, once comprised of a wide variety of perennial grasses, riparian forests, vernal pools, wetlands, chaparral shrub, and open oak woodlands, are now at less than one percent of pre-settlement following cropland conversion and urbanization, which has seen an increase since the 2000's (Audubon 2019). Small species using this habitat as primary habitat include reptiles and amphibians, such as northern alligator lizard (*Elgaria coerulea*), western fence lizard (*Sceloporus occidentalis*) and Pacific slender salamander (*Batrachoseps attenuatus*), which feed on invertebrates found within and beneath vegetation and rocks within the vegetation community. The grasslands on the site are typical of cattle grazed non-native grasslands and provide habitat for small mammals, such as meadow vole (*Microtis californicus*), and Botta's pocket gopher (*Thomomys bottae*), the evidence of which was observed along the pipeline route. Other species potentially occurring on the site include opportunistic small mammals, such as western harvest mice (*Reithrodontomys megalotis*) and house mice (*Mus musculus*), which are attracted to nearby anthropogenic structures. Ground nesting passerines (perching birds), such as California quail (*Lophortyx californicus*), mourning dove (*Zenaidura macroura*), and meadowlark (*Sturnella neglecta*) are a few seed-eaters that nest and forage in grasslands, if feral cats are not in high numbers, and have potential to occur on the site. Avian species inured to human habitation, such as California towhee (*Melozone crissalis*), Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), American kestrel (*Falco sparverius*), and western scrub-jay (*Aphelocoma californica*) forage and hunt in the

grasslands but may nests in the trees, were observed on the property and likely nest on the parcel. Please refer to Appendix E for a list of wildlife species observed.

Valley Foothill Riparian: We have included the Oregon ash trees along the fence row under this type of wildlife habitat. The Oregon ash trees are not a complex wildlife habitat, compared to the Valley Foothill Riparian habitat along Outlet Creek that contains a diversity of trees; however, the moisture in the field and the nearness of Outlet Creek on the west and Davis Creek on the east provides a continuation of the valley foothill riparian habitat through the Oregon ash trees. This habitat type contains food for species such as orange-crowned warbler (*Vermivora celata*), western kingbird (*Tyrannus verticalis*) and Brewer's blackbird (*Euphagus cyanocephalus*). These species are bark gleaners, eating insects that are in the bark of trees, as well as catching insects in flight. The spotted towhee (*Pipilo maculatus*) and California towhee (*Melozone crissalis*) glean insects from the foliage on the ground, such as under leaf litter and plants. California quail (*Callipepla californica*) and song sparrow (*Melospiza melodia*) use shrubs such as Himalayan blackberry, growing around trees, for feeding and nesting and these two species were observed on site. Other species, Cooper's hawk (*Accipiter cooperii*), use the tall trees as roosting and foraging sights during the day. Several of the trees were of a diameter large enough to support roosting bats species, such as silver-haired bat (*Lasionycteris noctivagans*) in the foliage of the ash trees.

Fresh Emergent Wetland: None of the wetlands supported ponding water. Rather they provided an above-ground moisture that is important to amphibians as they move across a landscape. Amphibian species potentially using the fresh emergent wetland include the Pacific chorus frog (*Pseudacris regilla*) and western toad (*Anaxyrus boreas*). Vertebrate species that may opportunistically forage within the fresh emergent wetland within the study area include great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), and raccoon (*Procyon lotor*), among others, feeding on amphibians. Aerial foraging species that hunt over marshy areas that supported winged insects include various swallow species, such as tree swallow (*Tachycineta bicolor*).

Movement Corridors

Wildlife movement includes migration (i.e., usually one way per season), inter-population movement (i.e., long-term genetic flow) and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations.

These linkages among habitat types can extend for miles between primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement among populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape results in wildlife populations that consist of discrete sub-populations comprising a large single population, which is often referred to as a meta-population. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub, the movement between wildlife populations is facilitated through habitat linkages, migration corridors and movement corridors. Depending on the condition of the corridor, genetic flow between populations may be high in frequency, thus allowing high genetic diversity within the population, or may be low in frequency. Potentially low frequency genetic flow may lead to complete isolation, and if pressures are strong, potential extinction (McCullough 1996; Whittaker 1998).

As described in the *California Essential Connectivity Project* (Spencer, et al. 2010), the study area is located in North Coast Ecoregion (Spencer et al. 2010). The natural drainages in the area (e.g., Davis Creek and Outlet Creek) flow north and east into the Eel River and west into the Pacific Ocean. The Study Area is not within a Natural Landscape Block (defined as relatively natural habitat blocks that support native biodiversity). The study area is not located in an Essential Connectivity Area (defined as areas that are essential for ecological connectivity between blocks) (Spencer et al. 2010).

Movement corridors for large and small mammals occur between this parcel and potentially occupied areas in Little Lake Valley. There are no barriers to movement between this site and other undeveloped lands.

SPECIAL STATUS BIOLOGICAL RESOURCES

Certain vegetation communities, and plant and animal species are designated as having special status based on their overall rarity, endangerment, restricted distribution, and/or unique habitat requirements. In general, special status is a combination of these factors that leads to the designation of a species as sensitive. The Federal Endangered Species Act (FESA) of 1973 outlines the procedures whereby species are listed as endangered or threatened. Additionally, FESA provides a means to conserve the ecosystems upon which listed species depend, to develop a program for the conservation of listed species, and to achieve the purposes of certain treaties and conventions. Moreover, the Act states that it is the policy of Congress that the Federal Government will seek to conserve threatened and endangered species and use its authorities in furtherance of the purposes of the Act (https://www.federalregister.gov/d/2019-15812/p-10). The California Endangered Species Act (CESA) amends the California Fish and Wildlife Code to protect species deemed to be locally endangered and essentially expands the number of species protected under the FESA.

Special Status Vegetation Communities

Sensitive natural communities are those that are considered rare in the region, may support special status plant or wildlife species, or may receive regulatory protection (i.e., through Section 404 of the CWA and/or Sections 1600 et seq. of the California Fish and Wildlife Code). In addition, sensitive natural communities include plant communities that have been identified as having highest inventory priority in the California Natural Diversity Database (CNDDB). *A Manual of California Vegetation* (Sawyer, et al. 2008) also provides the rarity ranking status of these communities.

No special status vegetation communities have been reported in the CNDDB for the two topographic quadrangles, Willits and Burbeck (CNDDB 2020). However, the seasonal wetlands are considered to be sensitive natural communities because of their wetland status. These wetlands are also subject to the jurisdiction of the USACE and the RWQCB as there is a no net loss of wetlands policy by both the federal government and the state. A portion of the seasonal wetlands are also occupied by Baker's meadowfoam, a state listed rare and CNPS Rank 1B plant as well as Davy's semaphore grass, a CNPS Rank 4 species. Areas occupied by Baker's meadowfoam and Davy's semaphore grass will be avoided so no mitigation is required.

Special Status Plant Species

Special status plant species are those species that are legally protected under the FESA and/or the CESA as listed or proposed for listing as threatened or endangered, as well as species that are considered rare by the scientific community. For example, the California Native Plant Society (CNPS) has identified some species as List 1 or 2 species and may be considered rare or endangered pursuant to Section 15380(b) of the State California Environmental Quality Act (CEQA) Guidelines. The CDFW has compiled a list of "Special Plants" (CDFW 2020), which include California Special Concern species. These designations are given to those plant species whose vegetation communities are seriously threatened. Although these species may be abundant elsewhere, they are considered to be at some risk of extinction in California. Although Special Concern species are afforded no official legal status under FESA or CESA, they may receive special consideration during the planning stages of certain development projects and adverse impacts may be deemed significant under the California Environmental Quality Act (CEQA).

A total of 21 special status plant species have been reported occurring on the two topographic quadrangles (CNDDB 2020). See Appendix A for a list of the species evaluated.

The following set of criteria has been used to determine each species' potential for occurrence on the site in Appendix A:

- **Present**: Species is known to occur on the site, based on CNDDB records, and/or was observed onsite during the field survey(s).

• **High**: Species is known to occur on or near the site (based on CNDDB records within 5 miles, and/or based on professional experience) and there is suitable habitat onsite.
• **Moderate/Low**: Species is known to occur in the vicinity of the site, but there is only marginal habitat onsite -OR- species is not known to occur in the vicinity of the site, however, the site is within the species' range and there is suitable habitat onsite.
• **None**: There is no suitable habitat for the species onsite -OR- species was surveyed for during the appropriate season with negative results.

The majority of these species are not expected to occur within the project study area due to lack of habitat. The site does not have any serpentine, rhyolitic, sandy or alkaline soils and there is no coastal scrub, coastal prairie, closed-cone coniferous forest, North Coast coniferous forest, lower montane coniferous forest, chaparral within the proposed development area.

Surveys for special status plants were conducted on April 20, May 12, and June 18, 2020. These surveys covered the flowering period for special status plants that had the potential to occur within the project area based on the presence of potential habitat.

Two special status plants, Baker's meadowfoam (*Limnanthes bakeri*) and Davy's semaphore grass (*Pleuropogon californicus* var. *davyi*) were observed and mapped during the appropriately timed surveys. These species are further discussed below.

Baker's meadowfoam (*Limnanthes bakeri*)
Status: California Rare (CR) and CNPS 1B

General Ecology and Distribution: Baker's meadowfoam is endemic to Mendocino County and the Little Lake Valley of Willits. The majority of known populations are located in Willits, with some populations recorded from the Laytonville, Covelo East, Ukiah, Mina, Bluenose Ridge USGS quadrangles. This species occurs in marshes and swamps, valley and foothill grassland, meadows and seeps and vernal pool habitats. The miro-habitat consists of seasonally moist or saturated sites within grassland and also in swales, roadside ditches and margins of freshwater marshy areas (CNDDB 2020).

Project Area Occurrence: A total of 0.59 acres of Baker's meadowfoam was mapped within the 15.34-acre study area. Populations of Baker's meadowfoam were originally mapped in 2000 during studies for the proposed wastewater treatment plant improvements. The populations remain relatively unchanged. In the study area, Baker's meadowfoam appears to prefer areas where vehicles or other disturbance have created ruts or depressions within the grassland area, creating areas where water ponds for a slightly longer period of time. It appears to be adapted to disturbance and to grazing. A detailed study of Baker's meadowfoam was conducted for Caltrans by Jones & Stokes Associates (JSA), Balance Hydrologics, and Dr. J. A. Dole as part of the *Supplemental Natural Environment Study* for the Willits Bypass Project (Caltrans 2000). The Caltrans study resulted in a significant increase in both the number and geographic extent of known populations of Baker's meadowfoam in the Little Lake Valley, as well as other areas within the County along with more current studies. A comparison of the distribution map provided in the Caltrans study shows that the meadowfoam population on the City's property is a very small fraction of the total population within the Little Lake Valley. Areas occupied by Baker's meadowfoam grass will be avoided so no mitigation is required

Davy's semaphore grass (*Pleuropogon californicus* var. *davyi)*
Status: CNPS 4

General Ecology and Distribution: Davy's semaphore grass is a perennial rhizomatous herbaceous grass that occurs in cismontane woodland, lower montane coniferous forest and meadows and seeps. This species has a limited distribution in California but is considered to be not very endangered (CNPS 2020). It is known to occur in Lake and Mendocino Counties.

Project Area Occurrence: In the study area is associated with Baker's meadowfoam and occurs along with the common semaphore grass (*Pleuropogon californicus* var. *californicus*), which is an annual species as opposed the perennial Davy's semaphore grass. There are no recorded occurrences in the CNDDB for this species because Rank 4 species are typically not recorded in the data base. Areas occupied by Baker's meadowfoam and Davy's semaphore grass will be avoided so no mitigation is required.

Special Status Animal Species

Special status animal species include those listed by the USFWS (2020) and the CDFW (2020). The USFWS officially lists species as either Threatened or Endangered, and as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act *(e.g*., bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA), the Birds of Conservation Concern in which the project area is within the Bird Conservation Region 32 (USFWS 2008) and state protection under CEQA Section 15380(d). Under FESA, the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct and includes significant habitat modification or degradation that results in significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

In addition, many other species are considered by the CDFW to be Species of Special Concern; these are listed in Shuford and Gardali (2008), Williams (1986), and Thomson et al. (2016). Although such species are afforded no official legal status under the California Endangered Species Act, they are on a watch for conservation planning and management as it pertains to the California Environmental Quality Act and as such, they may receive special consideration during the planning and CEQA review stages of certain development projects. The CDFW further classifies some species under the following categories: "fully protected", "protected fur-bearer", "protected amphibian", and "protected reptile". The designation "protected" indicates that a species may not be taken or possessed except under special permit from the CDFW; "fully protected" indicates that a species can be taken for scientific purposes by permit only. Take under CESA is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Of the 10 special status animal species identified as potentially occurring in the vicinity of the project area, including within a 3 mile radius (CNDDB 2020), several additional species were evaluated for their potential to occur within the study area, based on: 1) review of the Information for Planning and Conservation (IPaC) for the study area (USFWS 2019), 2) the "Special Animals" list (CDFW 2020) that includes those wildlife species whose breeding populations are in serious decline, and 3) the habitat present on site. For those species with no suitable potential habitat on the site (i.e. fish), no further analysis was conducted. See Appendix C for a list of the 27 species evaluated. Several of these species have a high potential for occurrence at the project site and are discussed below. Species that have no likelihood to occur on site but are prominent in today's regulatory environment (e.g., western bumble bee) are also discussed below.

Insects: Western bumble bee (*Bombus occidentalis*)
Status: State Candidate Endangered

General Ecology and Distribution: There have been significant range losses of *Bombus occidentalis* in their range, particularly from lower elevation sites in California, western Oregon and western Washington. Exposure to organophosphate, carbamate, pyrethroid and particularly neonicotinoid insecticides has recently been identified as a major contributor to the decline of many pollinating bees, including honey bees and bumble bees. *Bombus occidentalis*, like most other species of bumble bees, typically nests underground in abandoned rodent burrows or other cavities (Williams, et al. 2014). Availability of nests sites for *B. occidentalis* may depend on rodent abundance. Bumble bees, including *B. occidentalis*, are generalist foragers and have been reported visiting a wide variety of flowering plants. Bumble bees require plants that bloom and provide adequate nectar and pollen throughout the colony's life cycle, which is from early February to late November for *B. occidentalis* (although the actual dates likely vary by elevation). Western bumble bees have been observed taking nectar from a variety of flowering plants, including *Aster spp.*,

Brassica spp., *Centaurea spp., Cimicifuga arizonica, Corydalis caseana, Chrysothamnus* spp., *Cirsium* spp., *Cosmos* spp., *Dahlia spp., Delphinium nuttallianum, Erica carnea, Erythronium grandiflorum, Foeniculum* spp., *Gaultheria shallon, Geranium* spp., *Gladiolus* spp., *Grindelia* spp., *Haplopappus* spp., *Hedysarum alpinum, Hypochoeris* spp., *Ipomopsis aggregata, Lathyrus* spp., *Linaria vulgaris, Lotus* spp., *Lupinus monticola, Mentha* spp., *Medicago* spp., *Melilotus* spp., *Mertensia ciliata, Monardella* spp., *Nama* spp., *Origanum* spp., *Orthocarpus* spp., *Pedicularis capitata, P. kanei,* and *P. langsdorfii, P. groenlandica, Penstemon procerus, Phacelia* spp., *Prunus* spp., *Raphanus* spp., *Rhododendron* spp., *Salix* spp., *Salvia* spp., *Solidago* spp., *Symphoricarpos* spp., *Tanacetum* spp., *Taraxacum* spp., *Trifolium dasyphyllum, Trichostema* spp., *Trifolium* spp. and *Zea* spp. (Williams et al. 2014). The habitat for this species is described as open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows (Furnish 2016). Nests occur primarily in underground cavities such as old squirrel or other animal nests and in open west-southwest slopes bordered by trees, although a few nests have been reported from above-ground locations such as in logs among railroad ties and in basements in San Francisco (Thorp et al. 1983).

Project Area Occurrence: No specie specific surveys were conducted for this habitat assessment. Although no sightings have been reported in or near the project area (CNDDB 2020), the likelihood of the site occupancy by this species is little to none. The only evidence of fossorial mammals observed was pocket gopher burrows on the site; these are not open burrows and female bees would not be able to access the burrows. As a result, the nesting site availability is thought to be low to none. The same reasoning applies to overwintering habitat. The tall grasses with little to no bare ground and a lack of flowering plants also reduces the likelihood of the species occurring in the project area. No further action is required.

Foothill Yellow-legged Frog (*Rana boylii*) (FYF)
Status: CDFW states that listing of the Northwest/North Coast clade is not warranted at this time. CDFW Species of Special Concern.

General Ecology and Distribution: This species typically inhabits rocky streams, preferring streams with cobble sized substrates (Hayes and Jennings 1988, CDFW 2018). Occupied drainages range from sea level to 2,040 meters (6,700 feet) (Hayes and Jennings 1988). Streams with shallow, low-gradient channels with riffles that have unconsolidated coarse substrates in woodland, chaparral or forest with little to no bank vegetation cover are also preferred (Hayes et al 2016). *R. boylii* prefers small to moderate sized streams with at least some cobble-sized substrate (Thomson et al. 2016).

Project Area Occurrence: No surveys were conducted for this species as part of this habitat assessment. This species has been reported in Outlet Creek approximately 3,680 feet to the south (CNDDB #912) (CNDDB 2020). The proposed project will occur 970 east of Outlet Creek. No suitable breeding habitat or juvenile frog habitat is present within the project area. Small drainages on the site do not provide suitable aquatic habitat based on their size, and ephemeral nature. Therefore, no further action is required.

Red-bellied Newt (*Taricha rivularis*)
Status: CDFW Species of Special Concern

General Ecology and Distribution: This species spends non-breeding seasons in terrestrial habitat and breeds in streams with moderate flow and clean rocky substrate.

Project Area Occurrence: No surveys were conducted for this species as part of this habitat assessment. This species has been reported more than 3 miles south in Hael Creek and more than 3.7 miles west in Broaddus Creek (CNDDB 2020). Development in the grassland area, which was sun exposed with no canopy or structural cover will not impacts adults. No further action is required.

Western Pond Turtle (*Emys marmorata*) (WPT)
Status: CDFW Species of Special Concern

General Ecology and Distribution: This medium sized turtle ranges in size to just over 8 inches (21cm) with a low carapace that is generally olive, brownish or blackish (Stebbins 2003, Thomson et al. 2016). Primary habits include permanent water sources such as ponds, streams and rivers. It is often seen basking on logs, mud banks or mats of vegetation, although wild populations are wary and individuals will often plunge for cover after detecting movement from a considerable distance. Although it is an aquatic species with webbed feet, it can move across land in response to fluctuating water level, an apparent adaptation to the variable rainfall and unpredictable flows that occur in many coastal California drainage basins (Rathbun, *et al.* 1993). In addition, it can over-winter on land or in water or remain active in the winter, depending on environmental conditions (Rathbun, *et al.* 1993; Thomson et al. 2016). Females travel from aquatic sites into open, grassy areas to lay eggs in a shallow nest (Holland 1992; Rathbun, *et al.* 1993). Nests have been reported from 2-400 meters or more away from water bodies (Thomson et al. 2016).

Project Area Occurrence: No surveys were conducted for this species as part of this habitat assessment. This species is expected to occur in reservoirs located off-site. This species has been reported in Lake Emily, at the confluence of Willits and Dutch Henry creeks (CNDDB 2020). No suitable habitat occurs in the study area. No further action is required.

Nesting Passerines – including song sparrow (*Melospiza melodia*), common yellowthroat (*Geothylpis trichas*) among others
Status: USFWS Migratory Bird Treaty Act and CDFW Code 3503.

General Ecology and Distribution: As early as February, passerines begin courtship and once paired, they begin nest building, often around the beginning of March, although some species may nest as early as February, such as Anna's hummingbird, or as late as July, as in the case of California towhee. Nest structures vary in shapes, sizes and composition and can include stick nests, mud nests, matted reeds and cavity nests. For example, black phoebes may build a stick nest under the eaves of a building. Depending on environmental conditions, young birds may fledge from the nest as early as May and, if the prey base is large, the adults may lay a second clutch of eggs with the young fledging by the end of August.

Project Area Occurrence: No surveys were conducted for these species as part of this habitat assessment. Several passerine (perching birds) species may nest on the site in the various habitats, including, but not limited to, grasshopper sparrow in the grasslands, California quail in blackberry bushes and white-breasted nuthatch in the trees. A nesting bird survey shall be conducted before disturbance of any of these habitats, and seasonal restrictions put into place for occupied habitats, to ensure no take of individuals will occur. See below for further details.

Nesting Raptors – white-tailed kite (*Elanus leucurus*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperi*)
Status: USFWS Migratory Bird Treaty Act and CDFW 3503.5

General Ecology and Distribution: Raptors nest in a variety of substrates including, cavities, ledges and stick nests. For example, Cooper's hawks are small bird hunters, hunting on the edges of forests in broken forest and grassland habitats where passerines forage for seeds and insects. Nests occur in heavily forested areas near a water source. Research sites on nesting Cooper's hawks rarely show the nests more than a quarter of a mile away from water, whether it is a cattle tank, stream or seep (Snyder and Snyder 1975). Trees typically used by Cooper's hawks include coast live oaks, cottonwoods, and black oaks (Call 1978), as well as second growth conifer stands or deciduous riparian areas. Most raptors build stick nests, except for American kestrels that nest in cavities. In general, the breeding season for raptors occurs in late March through June, depending on the climate, with young fledging by early August

Project Area Occurrence: No surveys were conducted for these species as part of this habitat assessment. Foraging habitat for raptors, such as white-tailed kite and red-shouldered hawk, among others, occurs throughout the project area. A pair of white-tailed kites were observed copulating in the trees located east of

the Elias Replacement well. The trees within the study area provide suitable nesting habitat for Cooper's hawks and white -tailed kites may nest in the trees east of the. See below for further details.

Roosting bats – including western red bat (*Lasiurus blossevillii*) and hoary bat (*Lasiurus cinereus*).
Status: CDFW Species of Special Concern (SSC), as well as Fish and Wildlife Code Sections 86, 2000, 2014, 3007, Title 14, Sections 15380, 15382

Within California, 25 bats species occur, of which 11 are classified as SSC (CDFW 2020). Removal of occupied roosts without prior humane eviction or other actions approved by the CDFW would result in "take", defined under the CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill".

General Ecology and Distribution: Bats in this region of California are not active year-round and their activity periods can be split into two distinct seasons, the maternity season and the winter season. During the maternity season (April 15 to August 31), non-volant young (those not capable of flight) of colonial bats remain in the roost until late summer (end of August), after which they may disperse from the natal roost or remain into or throughout the winter. During the winter season (October 15 to February 28), bats typically enter torpor, rousing only occasionally to drink water or opportunistically feed on insects. The onset of torpor is dependent upon environmental conditions, primarily temperature and rainfall.

Obligate tree-roosting bats include western red bat (*Lasiurus blossevillii)* an SSC species that could occur in the project area;. Western red bats use tree foliage, typically of large-leafed trees such as cottonwood (*Populus fremontii*) and others such as the Oregon ash within the project area, but is also associated with orchards where suitable canopy density occurs. Western red bat females roost singly and with 2-6 pups during maternity season, and there is evidence that Western red bat is often faithful to selected trees.

Project Area Occurrence: Suitable potential tree canopy habitat for western red bat is present within the study area within the ash trees, as well as for a non-SSC tree-roosting species, hoary bat (*Lasiurus cinereus*) within the maternity season. Obligate tree-roosting bat species, and to some extent, colonial bats, may switch tree roosts frequently, particularly after young are volant, but are sometimes faithful for longer periods (weeks). See below for further details.

Recovery Units
The study area is not located in any Recovery Plan Area for any species (CNDDB 2020).

Critical Habitat
The study area is not located in any Critical Habitat for any species (USFWS 2020).

IMPACTS AND MITIGATION MEASURES

This section summarizes the potential biological impacts within the study area. The analysis of these impacts is based on a single reconnaissance-level survey for wildlife and three surveys for plants of the study area, a review of existing databases and literature, and personal professional experience with biological resources of the region. Potential impacts to special status biotic resources are identified as resulting from ground disturbance which includes trenching, vegetation removal, vehicle traffic and noise disturbance from construction activities as well as the potential compaction of tree roots. Mitigations for these biological impacts are provided below.

CEQA Guidelines Sections 15206 and 15380 were used to determine impact significance. Impacts are generally considered less than significant if the habitats and species affected are common and widespread in the region and the state.

A species may be treated as rare or endangered even if it has not been listed under CESA or FESA. Species are designated endangered when it survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, disease or other factors.

For the purposes of this report, three principal components in the evaluation were considered:

- Magnitude of the impact (e.g., substantial/not substantial)
- Uniqueness of the affected resource (rarity)
- Susceptibility of the affected resource to disturbance (sensitivity)

The evaluation of significance must consider the interrelationship of these three components. For example, a relatively small-magnitude impact (e.g., disturbing a nest) to a state or federally listed species would be considered significant because the species is at low population levels and is presumed to be susceptible to disturbance. Conversely, a common habitat such as non-native grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact (e.g., removal of extensive vegetation) would be required for it to be considered a significant impact.

For the purposes of this report, impacts are considered temporary if they occur within one season (i.e., a single dry season). Impacts are considered direct if individuals are impacted.

General Avoidance and Minimization Measures (AMMs)

General AMMs and BMPs would be implemented during construction of the project that would avoid and minimize potential effects of the project on protected resources. These measures include, but are not limited to, the following:

BIO-1: Seasonal Work Restrictions. The Migratory Bird Treaty Act (MBTA) generally prohibits the take of migratory birds and their nests. Roosting bats are protected under CDFW regulations. To reduce the potential for the take of migratory birds and roosting bats, noise disturbance associated with excavation will be timed to occur during the non-nesting/roosting season, from September 1 to October 15. Otherwise pre-construction surveys must be conducted by a qualified biologist for any vegetation clearing conducted outside this window to ensure avoidance of nesting birds or roosting bats. Migratory birds may nest on the ground, on structures, or in trees, shrubs, or other vegetation, and the biologist shall focus their survey on these areas. Inactive bird nests, other than those of eagles and threatened or endangered species, may be removed. If active nests are found in the work area, appropriate buffers shall be established in coordination with CDFW. Work buffers or construction delays shall be implemented until all birds have fledged.

BIO-2: Worker Environmental Awareness Training. Before construction activities begin, a qualified biologist shall conduct an education program for all construction personnel. The training will include a description of special status species, including state listed species and associated habitats with potential to occur in the project study area; an explanation of the status of these species and their protection under the FESA and CESA; the measures to conserve listed species and their habitats as they relate to the work being done; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all the AMMs and implications of subject regulations.

BIO-3: Environmentally Sensitive Area Fencing. Prior to the start of construction, specific project locations that are associated with listed species and sensitive habitats will be identified and designated as Environmentally Sensitive Areas (ESAs) using high-visibility orange fencing, flagging and signage, or silt fencing. This applies specifically to areas with Baker's meadowfoam and to the Oregon ash, valley oak and other native trees within the project study area. ESAs will be shown on project design plans or maps to be provided to construction personnel. The ESA fencing will remain in place throughout the duration of the project related construction activities to prevent the encroachment of construction equipment/personnel into sensitive areas. The bid package special provisions will clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and

equipment storage, and other surface-disturbing activities within ESAs. The final project plans would depict all locations where ESA fencing or flagging and signage would be installed and how it would be installed.

BIO-4: Bakers Meadowfoam Soil Side Cast Ground Protection. Baker's Meadowfoam areas will be protected with temporary fencing during construction to avoid these areas when constructing access holes. Horizontal drilling technology achieves pipeline installation while avoiding impacts to the surface area; therefore, there will be no impacts to Baker's Meadowfoam and minimal impacts to wetlands during the pipeline installation. There will be no side cast soil material placed in areas fenced for Baker's meadowfoam protection.

BIO-5: Ground Protection for Environmentally Sensitive Areas. Prior to the start of construction, specific project locations where native trees and/or their root systems cannot be avoided by vehicle traffic will have rubber mats or other ground protection placed to minimize soil disturbance by vehicle traffic. Only the minimum area needed for vehicle access will be allowed, otherwise these areas will be avoided as described in BIO-3. The bid package special provisions will clearly describe acceptable ground protection material. The final project plans would depict all locations where ground protection would be installed and how it would be installed. After construction is complete the ground protection measures will be removed, and the areas reseeded.

BIO-6: Avoidance of Entrapment. To prevent the inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1-foot deep will be covered at the close of each working day with plywood or other suitable materials or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored overnight will be inspected before they are subsequently moved, capped and/or buried. If at any time a listed species is discovered, the Resident Engineer and qualified biologist will be immediately informed. The animal will be allowed to move out of the area on its own volition or until the qualified biologist notifies the Resident Engineer to resume work in the area.

BIO-7: Restoration of Disturbed Areas. All areas disturbed during construction activities shall be reseeded with native grasses and forbs that will be designated in the seed mix for restoring areas disturbed by construction. The disturbed areas shall be restored to pre-project conditions to the maximum extent practicable.

BIO-8: Storm Water Pollution Prevention Plans (SWPPP) implementation. Pursuant to Section 402 of the Clean Water Act and Caltrans' Construction General Permit (Order 2009-009-DWQ), the City of Willits shall prepare a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall incorporate best management practices (BMPs) to control sedimentation and runoff and meet CGP requirements. Protective measures would include the following:

- No discharge of pollutants from vehicles and equipment shall be allowed to enter into any storm drains or water courses.
- Vehicle and equipment fueling, and maintenance operations must be located away from watercourses, except at established commercial gas stations or established vehicle maintenance facility or staging areas with BMPs installed and maintained.
- Spill containment kits will be maintained onsite at all times during construction operations.
- Dust control measures will include use of water trucks and organic tackifiers to control dust in disturbed areas, covering temporary access road entrances and exits with rock (rocking) or comparable stabilization techniques, and covering of temporary stockpiles when weather conditions require.

BIO-9: General Construction Site Management Practices. The following site restrictions will be implemented to avoid or minimize effects on protected species and their habitats:

- A speed limit of 20 miles per hour (mph) in the project footprint in unpaved areas will be enforced to reduce dust and excessive soil disturbance.
- Construction access, staging, storage, and parking areas will be located in upland areas and outside of any designated ESA. Access routes and the number and size of staging and work areas will be limited to the minimum necessary to construct the proposed project.
- All food and food-related trash items will be enclosed in sealed trash containers and removed completely from the site at the end of each day.
- No pets from project personnel will be allowed anywhere in the project area during construction.

Waters of the U.S. and State, Including Wetlands
Project Direct Impact: There will be direct temporary impacts to approximately 3,200 SF or 0.07 acres of seasonal wetlands from the drilling of bore holes for the proposed pipeline project. The new water line will be placed within and/or adjacent to the existing water line. Vehicles will be rubber tired and turn around areas will have rubber mats with gravel to prevent removal of vegetation and soil disturbance. The mats and gravel will be removed once the project is completed and the vegetation will restore naturally.

Project Mitigation: A section 404 permit may not be required for the project since the impacts will be less than 0.1 acres and the project will comply with all of the Nationwide Permit conditions. However, a Section 401 Water Quality Certification permit will be required.

The wetlands in the project study area are comprised mostly of mesic pasture grasses as the area is used for grazing and irrigation and have been for many decades. Soil removal will occur in the driest part of the season. Soil will be removed in lifts with the top 8 to 12 inches of topsoil removed and cast to one side and the remaining subsoil placed separately so that when the trench is refilled the topsoil, along with all the seeds, will be in the same position in the soil profile thus allowing for quick reestablishment of existing species and reestablishment of the wetland functions and values. Any areas of bare soil will also be seeded with a native grass seed mixture comprised of species known to occur in the area. There will be a no net loss of wetlands so that no additional mitigation or compensation measures are expected to be required. The horizontal drilling process will be completed within 11 to 14 days so that there is minimal temporary loss of wetland habitat. All appropriate AMMs, best management practices (BMPs) and erosion control measures will be implemented to protect any bare or exposed areas and prevent soil loss or erosion. All AMMs listed above (BIO-1 to BIO-9) apply to this mitigation measure.

Special Status Vegetation Community
The wetlands on site are considered sensitive and support a state listed rare plant, Baker's meadowfoam, as well as the CNPS Rank 4 Davy's semaphore grass. Impacts to wetlands are discussed above.

Special Status Plants
Two special status plants occur within the wetlands within the study area: Baker's meadowfoam, a state listed rare and CNPS Rank 1B species, and Davy's semaphore grass, a CNPS Rank 4 species. Baker's meadowfoam areas within the limit of disturbance will be fenced and avoided. There will be no impacts to Baker's meadowfoam or Davy's semaphore grass. No mitigation is required.

Special Status Wildlife

Wildlife Movement Corridors
The open grasslands on the parcel allows for unimpeded movement. The proposed pipeline development will not permanently impede movement by aquatic or terrestrial species.

Invertebrates
Although two native bees have a moderate potential to occur on the site, based on the habitats present, a sufficient amount of habitat will remain after the proposed pipeline is in place that will not cause a decrease in the number of individuals in this portion of Mendocino County.

Recommendation
Planting of native hedgerows will benefit native bees. Species to be used include blue elderberry (*Sambucus nigra*) and western redbud (*Cercis occidentalis*) along riparian corridors, and coyote bush (*Baccharis pilularis*), among others, in the upland habitats (Vaughan, et al. 2015).

Vertebrates
Project Direct Impacts: **Passerines and raptors nesting** in the Oregon ash trees, shrubs and the grasslands within the project area may be impacted if construction occurs during the nesting season (February 1 through August 31).

Project Mitigation: If seasonal work restrictions cannot be adhered to in BIO-1, the following mitigation measures should be followed in order to avoid or minimize impacts to passerines and raptors that may potentially nest in the project area:

1) Disturbance/construction near and adjacent to (i.e., 75-100 feet for passerine nesting habitat and 200-300 feet for raptor nesting habitat) potential nesting trees, shrubs and grasslands should be conducted outside the nesting season, which occurs between approximately February 1 and August 31.
2) If disturbance/construction between August 31 and February 1 is infeasible and groundbreaking must occur within the nesting season, a pre-construction nesting bird (both passerine and raptor) survey of the grasslands and adjacent trees shall be performed by a qualified biologist within 7 days of ground breaking. If no nesting birds are observed no further action is required and grading shall occur within one week of the survey to prevent "take" of individual birds that could begin nesting after the survey.
3) If active bird nests (either passerine and/or raptor) are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist.
4) The radius of the required buffer zone can vary depending on the species, (i.e., 75-100 feet for passerines and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFW.
5) To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude.

After the fencing is in place there will be no restrictions on grading or construction activities outside the prescribed buffer zones.

Project Direct Impacts: Construction/disturbance near or adjacent to trees (i.e., within100 feet) may cause **direct mortality of roosting bats**, if the trees provide suitable roosting habitat and are disturbed during seasonal periods of inactivity (maternity season).

Colonial bats that roost in trees are seasonally inactive (e.g. non-volant young during maternity season or torpid bats during winter months). Conducting visual cavity surveys is only rarely possible due to difficulty with access and number of trees and night emergence surveys of potential roost trees is generally only feasible logistically and economically, where a few habitat trees occur, because only 1-2 trees can be surveyed each night per observer. Also, because bats tend to switch tree roosts more frequently than more stable roosts such as caves, mines, rock outcrops, buildings, bridges, or culverts, negative results have extremely limited temporal validity (24-48 hours).

Project Mitigation: If seasonal work restrictions cannot be adhered to in BIO-1, the following mitigation measures should be followed in order to avoid or minimize impacts to roosting bats. To prevent take (i.e., harm, harass, kill through roost abandonment or causing flight during the day when predators are present) of individual roosting bats a bat habitat assessment of the trees along the project area should be conducted by a qualified bat biologist. Specific recommendations based on the habitats on the site will be made to prevent direct impacts to individuals that may be roosting on the site. However, determining occupancy of foliage roosting bats is difficult and time consuming and can be costly. As a result, it is typically easier to presume presence of foliage roosting bats and avoid disturbance during the maternity roosting season (April 15 – August 31). Following the seasonal work restrictions identified in Bio-1 (construction to occur between September 1 to October 15) will negate the need for a bat habitat assessment.

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QUALIFICATIONS OF BIOLOGISTS

Jane Valerius is a plant ecologist and wetlands specialist with more than 40 years of highly professional experience both in conducting field studies and in managing projects. Ms. Valerius is proficient in conducting vegetation and biotic surveys, rare plant surveys, and wetland delineations. Ms. Valerius has designed mitigation monitoring plans for wetlands, habitat restoration plans for endangered species and prepared environmental impact assessments to support development of public works projects, residential communities, landfill and mining expansion, and energy and water resource facilities.

⇒ Master of Science, Range Ecology, Colorado State University, Fort Collins, CO, May 1982
⇒ Bachelor of Arts, Environmental Biology, University of Colorado, Boulder, CO, December 1977

- Conducted ecological, botanical and wetland studies in California, Oregon, Nevada, Idaho, Colorado, Wyoming, Utah, Arizona, and North Dakota.
- Specialize in flora of the western United States; conducted special status plant surveys according to California Department of Fish and Game protocol for Marin, Sonoma, Mendocino, Napa, Solano, Contra Costa, Alameda, San Joaquin, Merced, Fresno, Butte, Eldorado, Amador, Sacramento, Yolo, San Bernardino, San Mateo, Siskiyou and other counties.
- Extensive experience with wetland delineations, permitting, mitigation plans, creation and construction of wetlands, including vernal pools.
- Work with the San Francisco, Sacramento and Los Angeles U. S. Army Corps of Engineers districts. Experience with NEPA/CEQA.
- Prepare restoration, revegetation, and reclamation plans. Prepare exotic pest plant control plans.
- Monitor environmental compliance of mining operations, transmission line, and residential development projects.
- Active in professional organizations including past Director-at-Large for the Society for Ecological Restoration (1994-1997), member of the California Native Plant Society, California Exotic Pest Plant Council and California Botanical Society.

Trish Tatarian is a seasoned biologist, with 28 years of experience working as project manager and technical biologist for consulting firms in the environmental consulting field. Co-founder of Wildlife Research Associates, Trish has been an independent wildlife consultant since 2001. She has built consensus with agency personnel and a variety of clients ranging from federal agencies to independent developers. Trish is a widely-experienced general ecologist, who focuses on conducting surveys for special status amphibians, birds, and mammals, conducting vegetation community and wildlife habitat characterization, and aerial photograph interpretation.

◊ M.Sc., Biology, Sonoma State University 2005
◊ B.S., Ecology, San Francisco State University 1992

- Holder of a 10(A)1(a) USFWS permit, since 1998, and a CDFW Scientific Collecting permit, since 1992, holds a permit for foothill yellow-legged frog (*Rana boylii*)
- Conducts research on the federally-listed Threatened California red-legged frog (*Rana draytonii*) and the Endangered Sonoma County population of the California tiger salamander (*Ambystoma californiense*).
- Between 2013 and 2018 taught 16 Workshops on California Red-legged Frog Biology in Santa Cruz, Livermore, Elkhorn Slough and Auburn
- Conducts presence absence surveys for California red-legged frog, California tiger salamander, foothill yellow-legged frog, western pond turtle, as well as construction monitoring. Has prepared numerous site Assessments, Biological Assessment, Mitigation and Monitoring plans and Habitat Conservation Plans
- Conducts nesting passerine and raptor surveys, bat habitat assessments and emergence surveys
- Experienced with CEQA/NEPA and has strong working relationship with various divisions of the USFS, USFWS and CDFW.

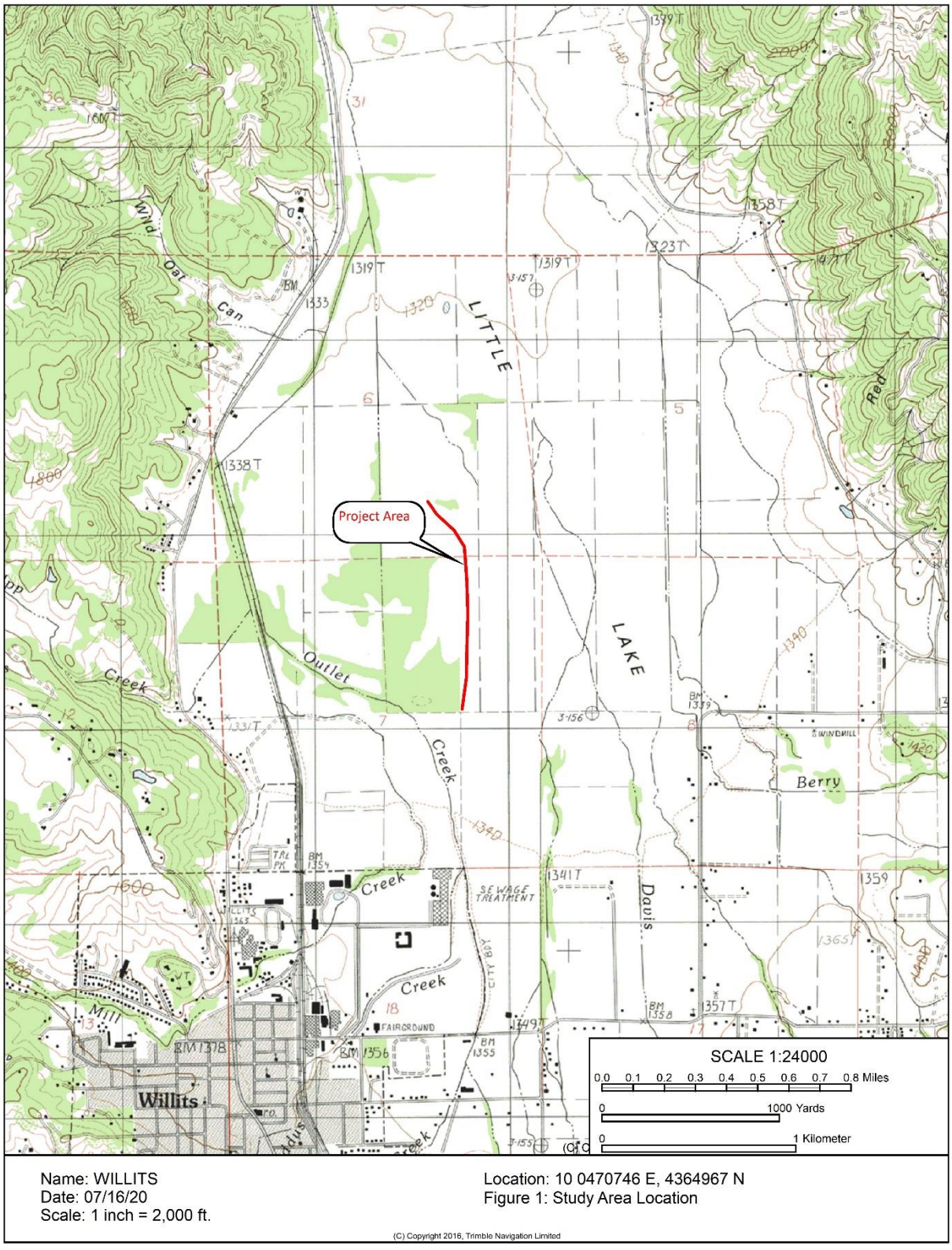


FIGURE 1: LOCATION MAP

FIGURE 2: EROSION CONTROL PLAN

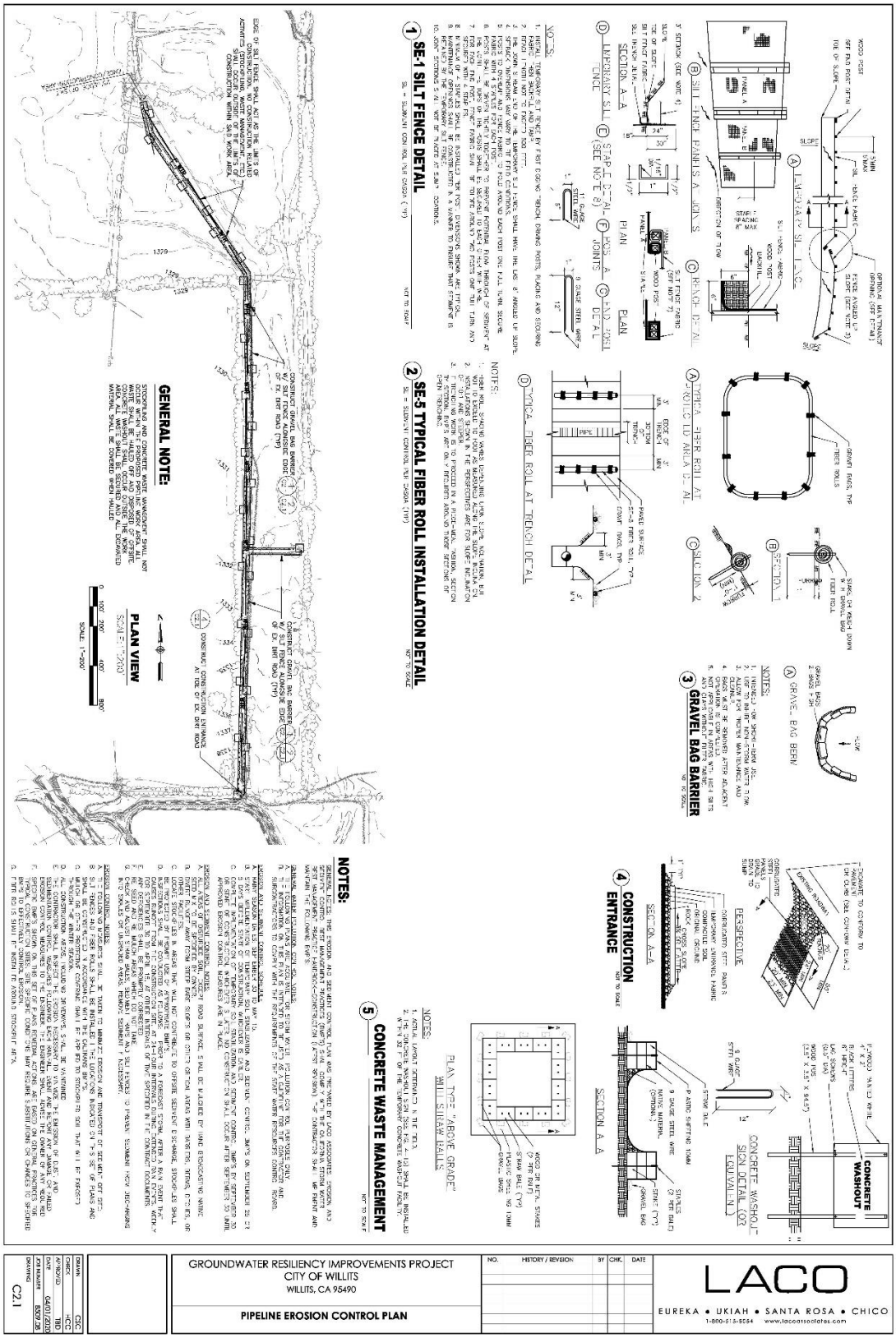




Figure 3. Non-native grassland in southern portion of the study area.



Figure 4. Seasonal wetlands in southern portion of study area.



Figure 5. Seasonal wetlands in mid-portion of study area.



Figure 6: Seasonal wetlands in northern portion of study area.



Figure 7: Photo of Baker's meadowfoam in Long 20 looking north taken on April 20, 2020.

APPENDIX A: FEDERAL, STATE AND LOCAL PLANS, POLICIES, REGULATIONS AND ORDINANCES

Federal Endangered Species Act (FESA) - U.S. Fish and Wildlife Service

Pursuant to ESA, the U.S. Fish and Wildlife Service (USFWS) has regulatory authority over federally listed species. Under ESA, a permit to "take" a listed species is required for any federal action that may harm an individual of that species. Take is defined under Section 9 of ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Under federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Section 7 of ESA requires all federal agencies to consult with USFWS to ensure that their actions are not likely to "jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification" of designated critical habitat. No federal approvals or other actions are anticipated as being required to implement the project at this time. Therefore, consultation under Section 7 of ESA is not expected. However, if USACE determines that wetlands and/or other waters of the United States on the project site are subject to protection under Section 404 of the CWA, or any other federal action becomes necessary, consultation under Section 7 of ESA would be required.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain a permit for incidental take under Section 10(a) of ESA. Section 10(a) of ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan (HCP) that includes components to minimize and mitigate impacts associated with the take. The permit is known as an incidental take permit. The project proponent must obtain a permit before conducting any otherwise-lawful activities that would result in the incidental take of a federally listed species.

Clean Water Act Sections 404 and 401 - U.S. Army Corps of Engineers

USACE regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. Waters of the United States are defined as waters where use, degradation, or destruction could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are somehow connected to any of these waters or their tributaries. Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands falling under USACE jurisdiction must demonstrate the presence of three specific wetland parameters: hydric soils, hydrophytic vegetation, and sufficient wetland hydrology. Generally, wetlands include swamps, marshes, bogs, and similar areas. Lakes, rivers, and streams are defined as "other waters." Jurisdictional limits of these features are typically noted by the ordinary high-water mark (OHWM). The OHWM is the line on the shore or bank that is established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in soils, lack of woody or terrestrial vegetation, the presence of litter or debris, or other characteristics of the surrounding areas.

Isolated ponds or seasonal depressions had been previously regulated as waters of the United States. However, in Solid Waste Agency of Northwestern Cook County (SWANCC) v. United States Army Corps of Engineers et al. (January 8, 2001), the U.S. Supreme Court ruled that certain "isolated" wetlands (e.g., non-navigable, isolated, and intrastate) do not fall under the jurisdiction of the CWA and are no longer under USACE jurisdiction (although isolated wetlands are regulated by the State of California under the Porter-Cologne Water Quality Control Act—see discussion below). Some circuit courts (e.g., U.S. v. Deaton, 2003; U.S. v. Rapanos, 2003; Northern California River Watch v. City of Healdsburg, 2006), however, have ruled that the SWANCC opinion does not prevent CWA jurisdiction if a "significant nexus" such as a hydrologic connection exists, whether it be human-made (e.g., roadside ditch) or natural tributary to navigable waters, or direct seepage from the wetland to the navigable water, a surface or underground hydraulic connection, an ecological connection (e.g., the same bird, mammal, and fish populations are supported by both the wetland and the navigable water), and changes to chemical concentrations in the navigable water due to water from the wetland.

Section 404 prohibits the discharge of dredged or fill material into waters of the United States (including wetlands) without a permit from USACE. With respect to the proposed project, the discharge of dredged or fill material includes the following activities:

- placement of fill that is necessary for the construction of any structure or infrastructure in a water of the United States;
- the building of any structure, infrastructure, or impoundment requiring rock, sand, dirt, or other material for its construction;
- site-development fills for recreational, industrial, commercial, residential, or other uses; and
- construction of causeways or road fills.

The regulations and policies of USACE, the U.S. Environmental Protection Agency (EPA), and USFWS mandate that the filling of wetlands be avoided unless it can be demonstrated that no practicable alternatives (to filling wetlands) exist. If the placement of fill into waters of the U.S., including wetlands, meets certain criteria the project be permitted under one of the Nation Wide Permits (NWP), which is an expedited permit process.

Section 401 of the CWA requires an applicant for any federal permit that may result in a discharge into waters of the United States to obtain a certification from the state that the discharge will comply with provisions of the CWA. The regional water quality control boards (RWQCBs) administer this program. Any condition of water quality certification would be incorporated into the USACE permit. The state has a policy of no net loss of wetlands and typically requires mitigation for impacts on wetlands before it will issue a water quality certification.

Essential Fish Habitat - National Marine Fisheries Service

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA). Protection of EFH is mandated through changes implemented in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). NMFS further defines essential fish habitat as areas that "contain habitat essential to the long-term survival and health of our nation's fisheries" (NMFS 2007). EFH can include the water column, bottom substrate types such as gravels suitable in size for salmonid spawning, and vegetation and woody structures that provided habitat for rearing. Under regulatory guidelines issued by NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with NMFS (50 CFR 600.920).

California Environmental Quality Act (CEQA)

CEQA is a California statute passed in 1970, shortly after the United States federal government passed NEPA, to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts.

The CEQA statute, California Public Resources Code § 21000 et seq., codifies a statewide policy of environmental protection. According to CEQA, all state and local agencies must give major consideration to environmental protection in regulating public and private activities, and should not approve projects for which there exist feasible and environmentally superior mitigation measures or alternatives.

California Endangered Species Act (CESA) – California Department of Fish and Wildlife

The California Endangered Species Act (CESA) (FGC §§ 2050–2116) is administered by the California Department of Fish and Wildlife. The CESA prohibits the “taking” of listed species except as otherwise

provided in state law. The CESA includes FGC Sections 2050–2116, and policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The CESA requires mitigation measures or alternatives to a proposed project to address impacts to any State listed endangered, threatened or candidate species, or if a project would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. Section 86 of the FGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Unlike the ESA, CESA applies the take prohibitions to species under petition for listing (state candidates) in addition to listed species. Section 2081 of the FGC expressly allows DFW to authorize the incidental take of endangered, threatened, and candidate species if all of the following conditions are met:

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- Issuance of the permit will not jeopardize the continued existence of the species.
- The permit is consistent with any regulations adopted in accordance with §§ 2112 and 2114 (legislature-funded recovery strategy pilot programs in the affected area).
- The applicant ensures that adequate funding is provided for implementing mitigation measures and monitoring compliance with these measures and their effectiveness.

The CESA provides that if a person obtains an incidental take permit under specified provisions of the ESA for species also listed under the CESA, no further authorization is necessary under CESA if the federal permit satisfies all the requirements of CESA and the person follows specified steps (FGC § 2080.1).

Species Protection under California Department of Fish and Wildlife

The CDFW is established under the Fish and Game Code (FGC) (FGC § 700) and states that the fish and wildlife resources of the state are held in trust for the people of the state by and through CDFW (FGC § 711.7(a)). All licenses, permits, tag reservations and other entitlements for the take of fish and game authorized by FGC are prepared and issued by CDFW (FGC § 1050 (a)).

Provisions of the FGC provide special protection to certain enumerated species such as:

§ 3503 protects eggs and nests of all birds.
§ 3503.5 protects birds of prey and their nests.
§ 3511 lists fully protected birds.
§ 3513 protects all birds covered under the federal Migratory Bird Treaty Act.
§ 3800 defines nongame birds.
§ 4150 defines nongame mammals.
§ 4700 lists fully protected mammals.
§ 5050 lists fully protected amphibians and reptiles.
§ 5515 lists fully protected fish species.

In addition, the Native Plant Protection Act (NPPA), directs the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." As a result, the NPPA allows the California Fish and Game Commission to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants.

Waters of the State - California Regional Water Quality Control Board

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the USACE under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to

impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination.

If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat - California Department of Fish and Wildlife
Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of the State Fish and Wildlife Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

California Native Plant Society (CNPS)
The California Native Plant Society (CNPS) is a statewide non-profit organization dedicated to the monitoring and protection of sensitive species in California. The CNPS publishes and maintains an Inventory of Rare and Endangered Vascular Plants of California, focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California. The list serves as the candidate list for listing as threatened and endangered by the CDFG. The Inventory assigns plants to the following categories:

A. Presumed Extinct in California
B. Rare or endangered in California and elsewhere
Rare or endangered in California, more common elsewhere
Plants for which more information is needed
Plants of limited distribution.

Additional rarity, endangerment, and distribution codes are assigned to each taxa.

Plants on Ranks 1A, 1B, and 2 of the CNPS Inventory consist of plants that may qualify for listing, and the Department recommends they be addressed in CEQA projects (CEQA Guidelines Section 15380). However, a plant need not be in the Inventory to be considered a rare, threatened, or endangered species under CEQA. In addition, the DFG recommends, and local governments may require, protection of plants which are regionally significant, such as locally rare species, disjunct populations of more common plants, or plants on the CNPS Ranks 3 and 4.

Appendix B: Special Status Plant Species Potentially Occurring in the Study Area

Scientific Name **Common Name**	**Status USFWS/ CDFW/ CNPS rank**	**Habitat Affinities and Blooming Period/Life Form**	**Habitat Present/Absent**	**Potential for Occurrence**
Alisma gramineum Grass alisma	-/-/2B	Assorted shallow freshwater marshes and swamps. Blooms June to August. Elevation: 390-1800m.	**P**	Medium. Potential habitat present in study area. Not observed during surveys.
Astragalus agnicidus Humboldt County milk-vetch	-/CE/1B	Openings, disturbed areas, sometimes roadsides in broadleafed upland forest, North Coast coniferous forest. Blooms April to September. Elevation: 190-800m.	A	None. No habitat present in study area.
Brasenia schreberi Watershield	-/-/2B	Freshwater marshes and swamps. Blooms June to September. Elevation: 30-2200m.	**P**	Medium. Potential habitat present in study area. Not observed during surveys.
Ceanothus gloriosus var. *exaltatus* Glory brush	-/-/4	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal scrub/sandy. Blooms March to May. Elevation: 5-520m.	A	None. No habitat present in study area.
Cypripedium montanum Mountain lady's-slipper	-/-/4	Broadleafed upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Blooms March to August. Elevation: 185-225m.	A	None. No habitat present in study area.
Gilia capitata ssp. *pacifica* Pacific gilia	-/-/1B	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland. Blooms April to August. Elevation: 5-1665m.	A	None. No habitat present in study area.
Hemizonia congesta ssp. *congesta* Congested-headed hayfield tarplant	-/-/1B	Valley and foothill grassland, sometimes roadsides. Blooms April to November. Elevation: 20-560m.	**P**	None. Typical habitat not present in study area. Not observed during surveys.
Hesperolinon adenophyllum Glandular western flax	-/-/1B	Chaparral, cismontane woodland, valley and foothill grassland, usually serpentinite. Blooms May to August. Elevation: 150-1315m.	A	None. No habitat present in study area.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS rank	Habitat Affinities and Blooming Period/Life Form	Habitat Present/Absent	Potential for Occurrence
Lasthenia burkei Burke's goldfields	FE/CE/1B	Meadows and seeps (mesic), vernal pools. Blooms April to June. Elevation: 15-600m.	A	None. Not observed during surveys. No recorded occurrences within the 2-quadrangle search. Listing from the USFWS IPaC search.
Lasthenia conjugens Contra Costa goldlfields	FE/-/1B	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/ mesic. Blooms March-June. Elevation: 0-470m.	A	None. Not observed during surveys. No recorded occurrences within the 2-quadrangle search. Listing from the USFWS IPaC search.
Limnanthes bakeri Baker's meadowfoam	-/CR/1B	Meadows and seeps, freshwater marshes and swamps, vernally mesic valley and foothill grasslands, vernal pools. Blooms: April to May. Elevation: 175-910m.	**P**	**High. Present in study area. Populations have been mapped**.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	-/-/1B	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic. Blooms April to July. Elevation: 5-1740m.	**P**	Medium. Potential habitat present in study area. Not observed during surveys.
Perideridia gairdneri ssp. *gairdneri* Gairdner's yampah	-/-/4	Broadleafed upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools/vernally mesic. Blooms June to October. Elevation: 0-610m.	**P**	Low. Potential habitat present in study area. Not observed during surveys.
Piperia candida White-flowered rein orchid	-/-/1B	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest, sometimes on serpentinite. Blooms (March) May to September. Elevation: 30-1310.	A	None. No habitat present in study area.
Pleuropogon californicus var. *davyi* Davy's sempaore grass	-/-/4	Cismontane woodland, lower montane coniferous forest, meadows and seeps. Blooms March to June. Elevation: 150-610m.	**P**	**High. Present in study area. Populations have been mapped. Occurs with Baker's meadowfoam.**
Pleuropogon hooverianus North coast semaphore grass	-/CT/1B	Broadleafed upland forest, meadows and seeps, North Coast coniferous forest/ open areas, mesic. Blooms April-June. Elevation: 10-671m.	**P**	High. Potential habitat present in study area. Not observed during surveys.
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed	-/-/2B	Assorted shallow freshwater marshes and swamps. Blooms (June) July-September. Elevation: 369-2172m.	A	None. Typical habitat not present in study area.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS rank	Habitat Affinities and Blooming Period/Life Form	Habitat Present/Absent	Potential for Occurrence
Trifolium amoenum Showy Indian clover	FE/-/1B	Coastal bluff scrub, valley and foothill grassland, sometimes on serpentinite. Blooms April to June. Elevation: 5-415m.	A	None. Typical habitat not present in study area. No recorded occurrences in CNDDB for the 2 quadrangles. Listing from the USFWS IPaC search.
Trifolium hydrophilium Saline clover	-/-/1B	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. April-June. Elevation: 0-300m.	**P**	**High**. Potential grassland habitat in study area. Not found during surveys. Recorded occurrence from 2.3 miles NNE of Willits High School (CNDDB 2020).
Viburnum ellipticum Oval-leaved viburnum	-/-/2B	Chaparral, cismontane woodland, lower montane coniferous forest. Blooms May to June. Elevation: 215-1400m.	A	None. No habitat present in study area.
Wyethia longicaulis Humboldt County wyethia	-/-/4	Broadleafed upland forest, coastal prairie, lower montane coniferous forest, sometimes roadsides. Blooms May to July. Elevation: 750-1525m.	A	None. No habitat present in study area.
Special Status Vegetation Communities				
Valley Oak Woodland			A	None

NOTES:

U.S. FISH AND WILDLIFE SERVICE

FE = federally listed Endangered

CALIFORNIA DEPT. OF FISH AND WILDLIFE

CE = California listed Endangered

CR = California listed as Rare

CT = California listed as Threatened

CALIFORNIA NATIVE PLANT SOCIETY -

Rank 1B: Plants rare and endangered in California and elsewhere

Rank 2B: Plants rare and endangered in California but more common elsewhere

Rank 4: Plant of limited distribution – a watch list.

Appendix C: Special Status Animal Species Potentially Occurring in the Study Area

Common Name *Scientific Name*	Status USFWS CDFW	Habitat Affinities and Reported Localities in the Project Area	Habitat Present/Absent	Potential for Occurrence
Invertebrates				
Obscure Bumble bee *Bombus caliginosus*	-/-	Food plants include *Baccharis, Circium, Lupinus, Lotus, Grindelia* and *Phacelia*	A	None: no suitable habitat present. No open small mammal burrows present for females to breed or overwinter. Site too wet for overwintering.
Western bumble bee *Bombus occidentalis*	-/-	Bumblebees will visit a range of different plant species and are important generalist pollinators of a wide variety of flowering plants and crops. Nesting and overwintering requirements include west facing slopes and open small mammal burrows.	A	None: no suitable habitat present. No open small mammal burrows present for females to breed or overwinter. Site too wet for overwintering.
Amphibians				
foothill yellow-legged frog *Rana boylii*	-/SSC	Prefers permanent stream pools, and creeks with emergent and/or riparian vegetation.	A	None: no suitable habitat present.
California red-legged frog *Rana draytonii*	FT/-	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland habitat especially during the wet winter months. Study area outside species range (CNDDB 2020).	A	None: outside species range.
Red-bellied newt *Taricha rivularis*	-/SSC	Spends dry season underground within root channels. Requires rapid streams with temps between 15°C and 26° C and rocky substrate for breeding and egg-laying.	A	None: no suitable habitat present.
Reptiles				
Western pond turtle *Emys marmorata*	SC/SSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires upland sites for egg-laying. Species occurs more than 3 miles to the west of the site (CNDDB 2020).	A	None: no suitable habitat present.
Birds				

Common Name *Scientific Name*	Status USFWS CDFW	Habitat Affinities and Reported Localities in the Project Area	Habitat Present/Absent	Potential for Occurrence
Cooper's hawk *Accipiter cooperi*	MB/ SSC	Nests primarily in deciduous riparian forests. May also occupy dense canopied forests from gray pine-oak woodland to ponderosa pine. Forages in open woodlands.	**P**	**Moderate**: Suitable nesting habitat present.
sharp-shined hawk *Accipiter striatus*	/ WL	Dense canopy pine or mixed conifer forest and riparian habitats. Water within one mile required.	**P**	**Moderate**: Suitable nesting habitat present.
grasshopper sparrow *Ammodramus savannarum*	BCC/SSC	Typically found in tall, dense grass, nesting on the ground at the base of grass tuft.	**P**	**Moderate**: Suitable nesting habitat present.
golden eagle *Aquila chrysaetos*	BCC/	Forages in a variety of habitats including grasslands, chaparral and oak woodland supporting abundant mammals. Nests on cliffs and escarpments and tall trees.	A	None: no suitable nesting habitat present
Great blue heron *Ardea herodius*	/ SSC	Nests colonially in large trees near water	A	None: no suitable nesting habitat present
Oak titmouse *Baeolophus inornatus*	BCC	Nests in cavities in trees.	**P**	**High**: suitable nesting habitat present. Observed on site.
Western snowy plover *Charadrius alexandrinus nivosus*	FT/-	Nests on sandy, gravelly or friable soils on beaches, salt pond levees and shores of large alkaline lakes.	A	None: no suitable nesting habitat present
Yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/SE	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles or wild grape. Not reported in area (CNDDB 2020).	A	None: No suitable nesting habitat present.
white-tailed kite *Elanus leucurus*	/CFP	Inhabits low rolling foothills and valley margins with scattered oaks and river bottom- lands or marshes adjacent to deciduous woodlands. Prefers open grasslands, meadows and marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**P**	**High**: suitable nesting habitat present. Observed on site at the northern well.
common yellowthroat *Geothylpis trichas sinuosa*	BCC/SSC	Nests in fresh and salt marshes in tall grasses, tule patches and willows and forages in thick, continuous cover down to the water surface.	**P**	**High**: suitable nesting habitat present. Observed on site.

Common Name *Scientific Name*	Status USFWS CDFW	Habitat Affinities and Reported Localities in the Project Area	Habitat Present/Absent	Potential for Occurrence
bald eagle *Haliaeetus leucocephalus*	BCC/CFP	Nests in tall snags near water and forages on fish. This species winters near large bodies of waters with fish.	A	None: no suitable habitat present
yellow-breasted chat *Icteria virens*	-/SSC	Nets in dense riparian forests and along stream and marsh edges. Reported in flood plain between Outlet Creek and Davis Creek in 1977 (CNDDB 2020).	**P**	**High**: suitable nesting habitat present
Western screech owl *Megascops kennicottii kennicottii*	BCC	Nests in cavities in forests, particularly deciduous trees.	A	None: no suitable habitat present
Allen's hummingbird *Selasphorus sasin*	BCC/-	Nests in wooded areas, meadows, or thickets along shaded streams, on a branch low down on stem, although placement height varies between 10 inches and 90 feet.	**P**	**High**: suitable nesting habitat present
California yellow warbler *Setophaga (Dendroica) petechia*	BCC/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores or alders and in mature chaparral. Reported in flood plain between Outlet Creek and Davis Creek in 1977 (CNDDB 2020).	**P**	**High**: suitable nesting habitat present.
northern spotted owl *Strix occidentalis caurina*	FT, BCC/CT	Dense coniferous and hardwood forest, shaded, steep sided canyons.	A	None: no suitable habitat present.
Lesser yellowlegs *Tringa flavipes*	BCC/-	Breeds in open boreal forest with shallow wetlands. Winters in wide variety of shallow fresh and saltwater habitats.	A	None: no suitable habitat present
Mammals				
Sonoma tree vole *Arborimus pomo*	-/SSC	Inhabits old growth, North Coast coniferous forests, redwood forests, and montane hardwood coniferous forests. Is found in the North Coast fog belt from Oregon to Sonoma County. Feeds almost exclusively on Douglas fir needles.	A	None: no suitable habitat present.

Common Name *Scientific Name*	Status USFWS CDFW	Habitat Affinities and Reported Localities in the Project Area	Habitat Present/Absent	Potential for Occurrence
Western red bat *Lasiurus blossevillii*	-/SSC, WBWG:H	Solitary roosting, except when females are with young (from 2 to 6 are born). Roosts almost exclusively in foliage, under overhanging leaves, in woodland borders, rivers, agricultural areas including orchards, and urban areas with mature trees. Typically found in large cottonwoods, sycamores, walnuts and willows associated with riparian habitats.	**P**	**High**: Oregon ash trees provide suitable roosting habitat.
Hoary bat *Lasiurus cinereus*	-/-, WBWG:M	Roosts singly except when females are with young (from 2 to 4 are born) in dense foliage of medium to large coniferous and deciduous trees. Highly migratory, occurs from sea level to tree line in Sierra Nevada.	**P**	**High**: Oregon ash trees provide suitable roosting habitat.
Fisher – west Coast DPS *Pekania pennanti*	FPT/SCT	Intermediate to large trees stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning. Needs large areas of mature dense forests.	A	None: no suitable habitat present.

U.S. FISH AND WILDLIFE SERVICE (USFWS)

FE = federally listed Endangered
FT = federally listed Threatened
FC = federal candidate for listing
BCC = Bird of Conservation Concern
MBTA = Migratory Bird Treaty Act.

CALIFORNIA DEPT. OF FISH AND WILDLIFE (CDFW)

CE = California listed Endangered
CT = California listed as Threatened
SSC = California Special Concern species

WESTERN BAT WORK GROUP (WBWG)- PRIORITY

California includes multiple regions where a species may have different WBWG Priority ranks, therefore the CNNDB includes categories for Medium-High, and Low-Medium Priority.

Appendix D: Plant species observed on April 20, May 12, and June 18, 2020.

Scientific Name	Common Name
Aira caryophyllea	Silver hairgrass*
Alisma lanceolatum	Water plantain*
Alopecurus pratensis	Field meadow-foxtail*
Alopecurus saccatus	Pacific foxtail grass
Anthoxanthum odoratum	Vernal grass*
Aphanes occidentalis	Lady's mantel
Avena barbata	Wild oats*
Briza minor	Small quaking grass*
Brodiaea elegans	Elegant brodiaea
Bromus diandrus	Rip-gut brome*
Bromus hordaeceus	Soft chess*
Callitriche heterophylla	Varied leaved water starwort
Callitriche marginata	Water starwort
Camassia quamash	Common camas
Cardamine oligosperma	Western bitter cress
Carduus pycnocephalus	Italian thistle*
Carex athrostachya	Slender beak sedge
Carex barbarae	Santa Barbara sedge
Carex densa	Dense sedge
Carex gracilior	Slender sedge
Carex subbracteata	Small-bract sedge
Carex tumulicola	Foothill sedge
Castilleja rubicundula ssp. *lithospermoides*	Cream sacs
Centaurea soltitialis	Yellow star thistle*
Cerastium glomeratum	Mouse-ear chickweed*
Cichorium intibus	Chicory*
Cirsium vulgare	Bull thistle*
Conium maculatum	Poison hemlock*
Convolvulus arvensis	Bindweed*
Crassula tillaea	Moss pygmy weed*
Cyperus eragrostis	Tall flat sedge
Dactylis glomerata	Orchard grass*
Dipsacus fullonum	Common teasel*
Eleocharis macrostachya	Common spikerush
Elymus triticoides	Creeping wildrye
Epilobium ciliatum	Fringed willow herb
Erodium cicutarium	Red-stemmed filaree*
Eryngium aristulatum	Jepson's button celery
Festuca arundinacea	Tall fescue*
Festuca bromoides	Brome fescue*
Festuca myuros	Rattail fescue*
Festuca perennis	Ryegrass*
Foeniculum vulgare	Fennel*
Fraxinus latifolia	Oregon ash
Geranium dissectum	Cut-leaf geranium*
Geranium molle	Dove-foot geranium*
Glyceria declinata	Low manna grass*

Scientific Name	Common Name
Gratiola ebracteata	Bractless hedge-hyssop
Helminthotheca echioides	Bristly ox-tongue*
Holcus lanatus	Velvet grass*
Hordeum brachycarpum ssp. *brachycarpum*	Meadow barley
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley*
Hordeum murinum ssp. *leporinum*	Hare barley*
Hypochaeris radicata	Rough cat's-ear*
Juncus bufonius	Toad rush
Juncus dubius	Mariposa rush
Juncus patens	Spreading rush
Juncus tenuis	Lesser poverty rush
Juncus xiphioides	Iris-leaved rush
Lamium purpureum	Purple dead nettle*
Lasthenia glaberrima	Smooth goldfields
Lathyrus angulatus	Angled pea vine*
Limnahthes douglasii var. *nivea*	Douglas meadowfoam
Limnanthes bakeri	**Baker's meadowfoam State Rare; CNPS Rank 1B**
Linum bienne	Common flax*
Lotus corniculatus	Bird's-foot trefoil*
Lupinus bicolor	Dwarf lupine
Lysimachia arvensis	Scarlet pimpernel*
Lythrum hyssopifolia	Hyssop loosestrife*
Madia exigua	Small tarweed
Matricaria discoidea	Pineapple weed*
Medicago polymorpha	Bur clover*
Mentha pulegium	Pennyroyal*
Parentucellia viscosa	Yellow glandweed*
Phalaris aquatica	Harding grass*
Phalaris arundinaceae	Reed canary grass*
Phelum pratense	Timothy grass*
Plagiobothrys sp.	Popcornflower
Plantago lanceolata	English plantain*
Plantago major	Common plantain*
Pleuropogon californicus	Semaphore grass
Pleuropogon californicus* var. *davyi	**Davy's semaphore grass CNPS Rank 4**
Poa annua	Annual blue grass*
Poa trivialis	Rough bluegrass*
Polypogon monsepliensis	Rabbitsfoot grass*
Quercus lobata	Valley oak
Ranunculus occidentalis	Western buttercup
Ranunculus orthorhynchus	Straight-beak buttercup
Ranunculus parviflorus	Small-flowered buttercup*
Rubus armeniacus	Himalayan blackberry*
Rubus ursinus	California blackberry
Rumex acetosella	Sheep sorrel*
Rumex crispus	Curly dock*
Sisrynchium bellum	Blue-eyed grass
Sonchus asper	Spiny sowthistle*
Spergularia rubra	Sand spurrey*

Scientific Name	Common Name
Stachys rigida	Rough hedge-nettle
Symphoricarpos albus var. *laevigatus*	Snowberry
Taraxacum officinale	Dandelion*
Thalictrum fendleri	Meadow rue
Trifolium dubium	Little hop clover*
Trifolium fragiferum	Strawberry-head clover*
Trifolium hirtum	Rose clover*
Trifolium hybridum	Alsike clover*
Trifolium repens	White clover*
Trifolium subterraneum	Subterranean clover*
Trifolium vareigatum	White-tip clover
Triglochin scilloides	Flowering quillwort
Triphysaria pusilla	Dwarf owl's-clover
Triteleia hyacinthina	White brodiaea
Triteleia hyacinthine	White brodiaea
Veronica anagallis-aquatica	Water speedwell*
Veronica peregina ssp. *xalapensis*	Purslane speedwell
Vicia sativa ssp. *nigra*	Narrow-leaved vetch*
Vicia sativa ssp. *sativa*	Spring vetch*
Vicia tetrasperma	Four seeded vetch*
Zeltnera sp.	Centaury

Species with an * are non-native.

Appendix E: Wildlife species observed on May 12, 2020.

Scientific Name	Common Name
Birds	
Agelaius phoeniceus	Red-winged blackbird
Aphelocoma californica	Western Scrub-Jay
Callipepla californica	California quail
Cathartes aura	Turkey vulture
Colaptes auratus	Northern flicker
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Elanus leucurus	White-tailed kite - State Fully Protected
Euphagus cyanocephalus	Brewer's blackbird
Geothylpis trichas	Common yellowthroat
Icterus bullockii	Bullock's oriole
Melospiza melodia	Song sparrow
Melozone crissalis	California towhee
Psaltriparus minimus	Bushtit
Sialia mexicana	Western bluebird
Tachycineta bicolor	Tree swallow
Tyrannus verticalis	Western kingbird
Vermivora celata	Orange-crowned warbler
Mammals	
Odoicoileus hemionius californicus	Black-tailed deer
Thomomys bottae	Botta's pocket gopher

Appendix F

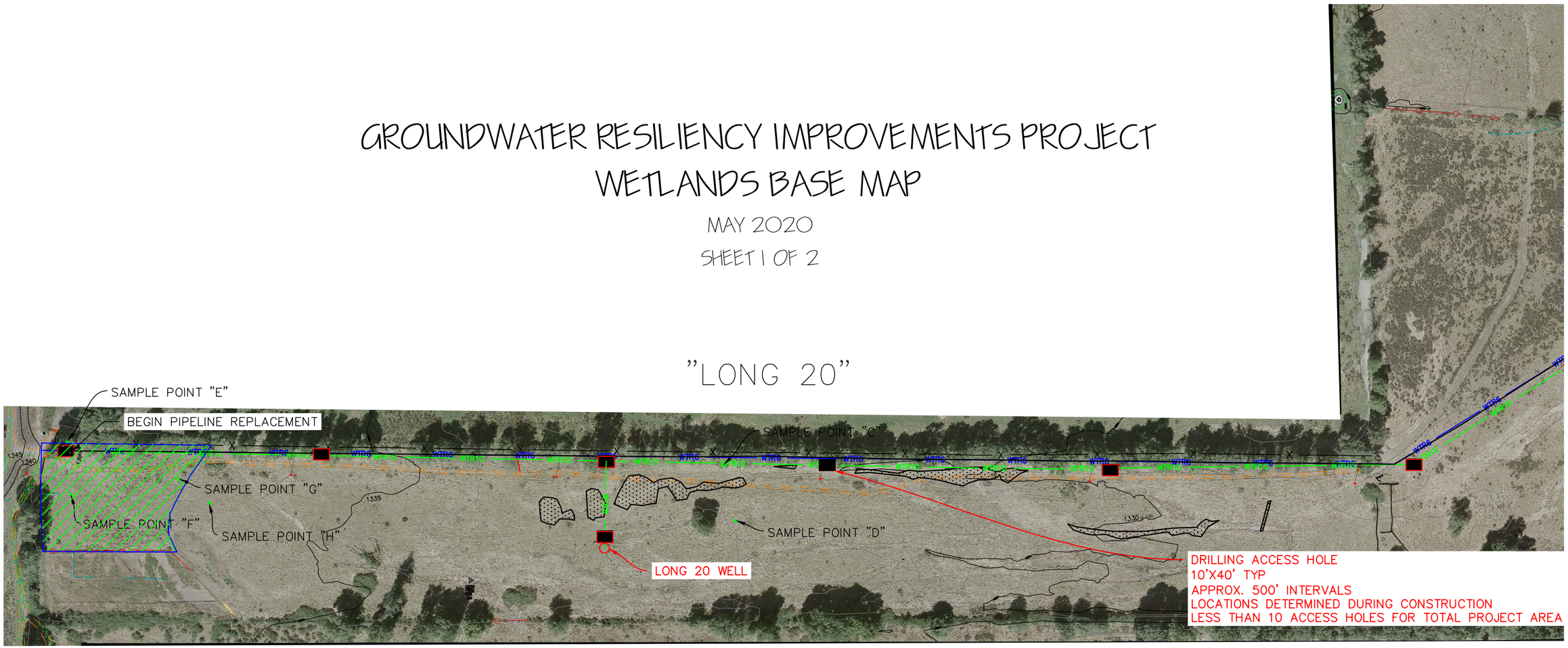
Groundwater Resiliency Improvements Project Maps

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
WETLANDS BASE MAP

MAY 2020

SHEET 1 OF 2

"LONG 20"



SCALE: 1"=200'

CONTOUR INTERVAL=1'

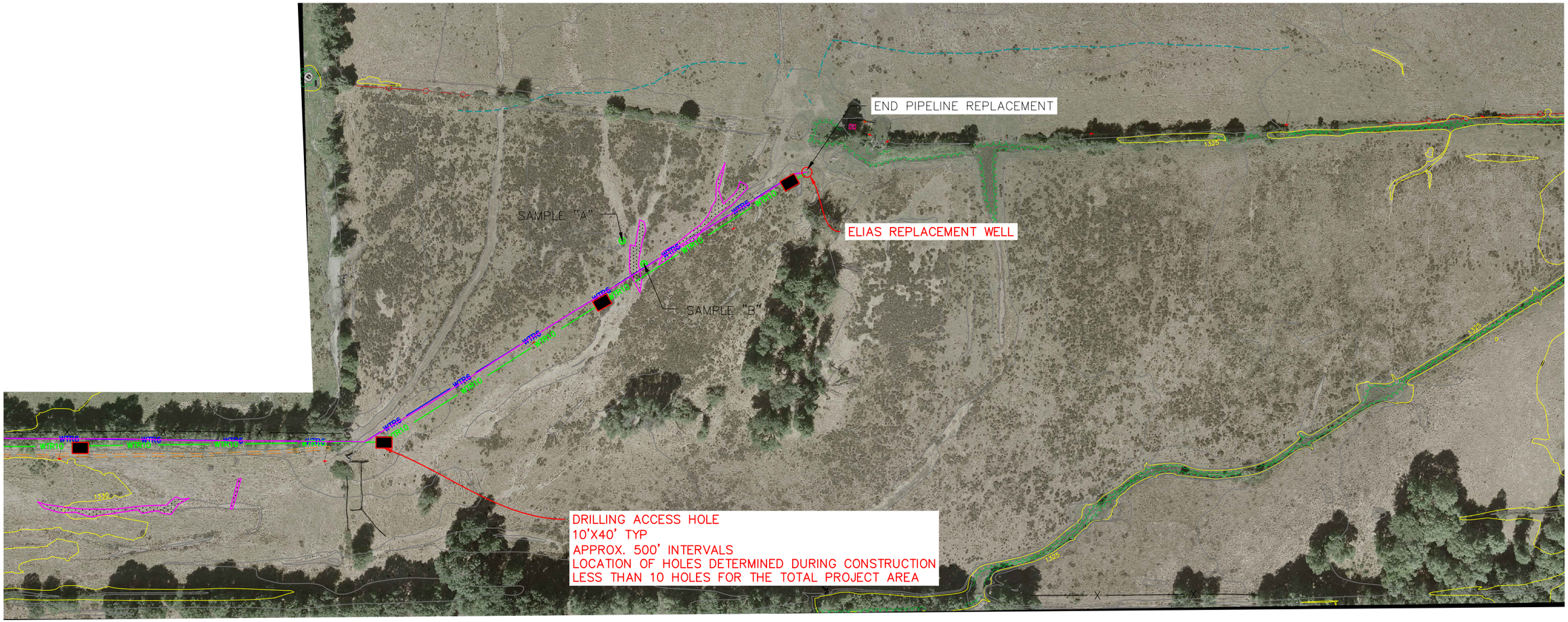
NOTE: ENTIRE MAPPED AREA ON THIS SHEET IS CLASSIFIED AS WETLANDS, EXCEPT "UPLAND AREA"

- PROPOSED WATER LINE
- EXISTING WATER LINE
- EXISTING FENCE
- WETLAND SAMPLE POINT
- EXISTING ROAD ACCESS
- BAKERS MEADOWFOAM
- UPLAND AREA
- DRILL ACCESS HOLES

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
WETLANDS BASE MAP

MAY 2020

SHEET 2 OF 2



DRILL ACCESS HOLES

PROPOSED WATER LINE

WELL SITE

EXISTING WATER LINE

EXISTING FENCE

WETLAND SAMPLE POINT

EXISTING ROAD ACCESS

BAKERS MEADOWFOAM

SCALE: 1"=200'

CONTOUR INTERVAL=1'

NOTE: ENTIRE MAPPED AREA ON THIS SHEET IS CLASSIFIED AS WETLANDS

APPENDIX D

Soils Report

LACO

TECHNICAL MEMORANDUM

Soils Report
Proposed Clearwell
300 North Lenore Avenue, Willits, California

Date: June 30, 2020
Project No.: 8509.08

Prepared For: City of Willits

Prepared By: Jennifer Genetti
Assistant Geologist

Reviewed By: Edward Crump, P.E.
Senior Engineer
P.E. C 055444; EXP 12/31/20



Attachments:

Figure 1:	Site Vicinity Map
Figure 2:	Site Map
Appendix 1:	Clearwell Details
Appendix 2:	Boring Logs
Appendix 3:	Laboratory Results
Appendix 4:	Liquefaction Analysis Results

1.0 INTRODUCTION

This Technical Memorandum presents the results of a geotechnical exploration performed by LACO Associates (LACO) for the proposed construction of a new clearwell ("proposed clearwell") at the Groundwater Treatment Plant, located at 300 North Lenore Avenue, Willits, California (Assessor's Parcel Number 007-010-01; "the Site"). As shown on the Vicinity Map (Figure 1), the Site is located approximately 800 feet west of U.S. Highway 101 and approximately one mile southeast of the North Main Street exit. The approximate area of the proposed clearwell location is shown on the Site Map, enclosed as Figure 2.

1.1 Project Understanding

We understand the project will consist of constructing a proposed 250,000-gallon water storage tank (clearwell) at the City of Willits' (CLIENT) groundwater treatment plant. The proposed clearwell is one of the anticipated upgrades for a groundwater resiliency improvement project for the City of Willits. Details for the proposed clearwell are provided in Appendix 1. Any changes to the above referenced project

understanding will require an addendum to this Memorandum at the expense of the CLIENT or property owner.

1.2 Scope of Services

Our scope of services is intended to support the design and construction of the foundation system for the proposed clearwell. In accordance with the Contract for Professional Services between CLIENT and LACO dated January 9, 2020, under Exhibit A dated December 2, 2019, our work consisted of the following:

- Review available geotechnical (soils) and/or geologic reports, maps, and other relevant data regarding the Site and vicinity.
- Review historical aerial photography of the project area.
- Conduct a geologic reconnaissance of the Site to identify potential geologic and anthropogenic hazards that might affect the development, and to identify boring locations.
- Obtain a drilling permit from the Mendocino County Health and Human Services Agency, perform utility service alert (USA), and coordinate with the property owners to finalize boring clearance.
- Explore subsurface conditions by directing the drilling of three (3) hollow-stem auger borings, up to 41.5 feet deep.
- Log the soils encountered during drilling and collect soil samples for laboratory testing.
- Perform engineering analyses based on the literature review and field/laboratory data in order to develop conclusions and recommendations.
- Perform an evaluation of geologic hazards affecting the Site and proposed improvements.
- Prepare a technical memorandum that includes the following:
    - Recommended foundation type(s) for the proposed clearwell and design criteria for the recommended foundation type(s), consistent with the current edition of the California Building Code (CBC)
    - Estimates of foundation settlement
    - Assessment of potential earthquake-related hazards in accordance with CBC requirements including surface fault rupture, quantitative liquefaction analysis, quantitative static and dynamic differential settlement analysis, and slope instability
    - Recommendations regarding earthwork including site and subgrade preparation; fill material quality, placement, and compaction requirements; and subdrains
    - Construction considerations

2.0 EXPLORATION

Our exploration consisted of reviewing published maps and historical aerial photography related to the surface topography and geology of the Site vicinity and performing a subsurface exploration. Documents reviewed are presented in the References section (Section 6.0) of this Memorandum.

Our subsurface exploration was conducted on April 15, 2020, and consisted of drilling three borings (B1 through B3) at the approximate locations shown in Figure 2. The borings were drilled to depths of 41.5 feet, 2.5 feet, and 16.5 feet below ground surface (bgs), respectively. The borings were drilled by Clearheart Drilling, Inc. using a CME 75 high torque auger rig drilling rig equipped with 7.25-inch diameter hollow-stem augers. Our geologist logged the borings and obtained both disturbed and relatively undisturbed soil samples for visual classification and laboratory testing. Soils were logged in general accordance with the American Society for Testing and Materials (ASTM) Test Procedure D2488 Visual-Manual Procedures. Boring logs are presented in Appendix 2

LACO obtained soil samples from the borings with split-spoon samplers that were driven with a 140-pound auto-trip hammer falling 30 inches. The sampler included a 2.5-inch ID modified California (MC) sampler. The number of hammer blows required to drive the samplers were recorded and are presented on the boring logs. MC blow counts were converted to SPT (standard penetration test) values using a 0.65 conversion factor.

2.1 Laboratory Testing

Disturbed soil samples collected during the field exploration were submitted to LACO's materials laboratory for the following tests:

- Atterberg Limits by ASTM D4318; and,
- Percent Finer by ASTM D1140.

Laboratory test results are included as Appendix 3 and are summarized in Table 1.

Table 1. Summary of Laboratory Test Results

Boring	Depth (feet bgs)	Unified Soil Classification System Soil Type	ASTM D1140 Fines Content Percent	ASTM D4318 Plasticity Index Percent	ASTM D4318 Liquid Limit Percent
B1	1 to 2.5	Clayey Sand with Gravel	19.4	14	33
B1	25 to 25.5	Sandy Lean Clay	68.2	-	-
B3	9 to 9.5	Sandy Lean Clay	69.6	-	-

LACO will archive the soil samples collected for this project for 60 days following the issuance of this Memorandum. Unless directed otherwise by the CLIENT, the samples will be discarded after the 60-day archive period.

3.0 SITE CONDITIONS

3.1 Surface Conditions

The Site is located at the Groundwater Treatment Plant in Willits, California. The planned building location for the proposed clearwell is relatively flat and situated on an existing fill pad. The planned building area is bound by the groundwater treatment facility to the north, a large grassy soil pile to the south, a chain link fence to the west, and an asphalt-paved road to the east. Google Earth© historical aerial imagery indicates the large grassy soil pile to the south originated from grading activities between 2006 and 2017. Immediately adjacent to the road is a pumping facility and two water basins. Beyond the chain link fence to the west is a large grassy field. Within the building area and its immediate vicinity there are underground sewer, water, and electrical lines.

3.2 Geologic Setting

The Site is located in the California Coast Ranges Geomorphic Province (CGS, 2002). This province is seismically active and geologically complex due to historic and ongoing tectonic deformation that is characterized by northwest-trending faults and topographic and geologic features. The California Coast Range province extends west to the Pacific Ocean, east to the Great Valley, north to Oregon, and south to the Transverse Ranges. The complex structure of the Coast Ranges Geomorphic Province began with a period of plate convergence during late Jurassic which involved eastward thrusting of oceanic crust

beneath the coastal crust and was characterized by the accretion of material to the continent and the formation of east-dipping thrust and reverse faults. Beginning in the mid-Cenozoic and continuing to the present, the plate boundary was dominated by right-lateral, strike-slip deformation which was superimposed on the existing structures. This is characterized by the northwest-trending nearly vertical faults of the San Andreas system.

The oldest bedrock units in the Coast Ranges Geomorphic Province are those of the Jurassic-Cretaceous Franciscan Complex and the Great Valley Sequence. Younger bedrock units consist of the Tertiary-aged Sonoma Volcanic Group, the Plio-Pleistocene-age Clear Lake Volcanics, and sedimentary rock formations such as the Petaluma, Wilson Grove, and Huichica. Quaternary-aged alluvium generally covers the bedrock in the valleys and low-lying areas.

Published geologic maps indicate the Site is underlain by the Quaternary alluvial deposits (Cardwell, 1965). A cross-section presented by Farrar (1986) indicates that the upper 50 feet of Quaternary alluvial deposits in the Site's vicinity generally consist of clay and sand.

3.3 Subsurface Conditions

Our exploration indicates the Site is underlain by approximately 7 feet of undocumented fill overlying alluvial deposits to the maximum depth explored of 41.5 feet bgs. Undocumented fill consists of heterogenous deposits of brown clayey sand with gravel and greyish brown clay. The brown clayey sand with gravel fill had fine to medium sand and fine to coarse angular gravel. Alluvial deposits consist of approximately 3 to 8 feet of brown sandy lean clay, overlying approximately 27 feet of lean clay with sand interbedded with 6-inch-thick beds of sandy lean clay. The 3 to 8 feet thick layer of brown sandy lean clay contained fine to coarse sand and was saturated and soft. The reddish brown mottled with moist, medium stiff grey lean clay with sand. The 6-inch-thick brown sandy lean clay interbeds were medium stiff and moist to wet.

3.4 Groundwater Conditions

Groundwater was encountered in boring B1 at a depth of 8.5 feet bgs. The local minimum depth to groundwater level of 1.07 feet bgs was recorded in monitoring well (MW-1) at the Mendocino County Department of Public Works' (MCDPW) Willits Road Yard (Geotracker Global ID T0604500093), approximately 2,400 feet southeast of the Site (LACO, 2019).

3.5 Slope Instability

The Site is not mapped on published slope stability maps. Given the relatively shallow slopes both on and adjacent to the Site, we consider the potential for slope instability to adversely affect the Site to be negligible.

3.6 Seismicity

The Site is in a seismically active region where large earthquakes may be expected to occur during the economic lifespan of the project due to the seismic activity of the northern section of the San Andreas Fault System, which forms the boundary between the Pacific Plate and the North American Plate. The northward movement of the Pacific Plate relative to the North American Plate is accommodated across a complex system of strike-slip, right-lateral, parallel, and sub-parallel faults which include the San Andreas, West Napa, Healdsburg/Rodgers Creek, Maacama, Concord-Green Valley, and Hayward Faults, among others.

The Site is not mapped as a special studies zone per the Alquist-Priolo Earthquake Fault Zoning Act, thus the likelihood of surface rupture from a potentially active fault is considered low (CDMG, 1983; accessed May 25, 2020). The closest active faults to the Site are within the northern section of the Maacama Fault Zone, which is located approximately 0.75 miles west of the Site (CGS, 2010). According to the 2008 Ground Motion Interpolator, within 50 years, the Site has a 10 percent probability of experiencing peak ground accelerations (PGA) up to 0.553 times the acceleration of gravity (g) and a 2 percent probability of experiencing PGA of 0.994 g (Branum, et al., 2016; accessed May 25, 2020).

3.7 Lurching

Seismic slope failure, or lurching, is a phenomenon that occurs during earthquakes when slopes or man-made embankments yield and displace in the unsupported direction. Unsupported slopes or embankments were not observed within or adjacent to the project Site. Provided the project is constructed according to the recommendations of this Memorandum, we judge the potential for impact to the proposed clearwell from lurching is low.

3.8 Liquefaction

Liquefaction is a phenomenon in which saturated soil undergoes momentary loss of shear strength when subjected to strong earthquake-induced ground shaking. The occurrence of this phenomenon is dependent on many complex factors including the intensity and duration of ground shaking, particle size distribution, and density of the soil.

To evaluate the potential for liquefaction induced settlement to occur at the Site, we utilized the results of field and laboratory tests and input parameters presented in Table 2, and the computer program LiqSVs developed by GeoLogismiki©.

Table 2. Liquefaction Analysis Input Parameters

Calculation Method	Maximum Moment Magnitude	PGA_M
NCEER 1998	7.1	1.217

In our analysis, we used field and laboratory data from boring B1, the groundwater level during drilling of 8.5 feet bgs, and local minimum groundwater level of 1.07 feet bgs during a hypothetical seismic event. Maximum Moment Magnitude was estimated from the Maacama Fault Zone, located approximately 0.75 miles west of the Site. Risk-targeted maximum considered earthquake peak ground acceleration adjusted for site class effects (PGA_M) was estimated in accordance with Section 11.8.3 of the American Society of Civil Engineers (ASCE) Standard 7-16 (ASCE, 2016), utilizing equation 11.8-1 of ASCE 7-16. Fine-grained soils with a plasticity index (PI) of 7 or greater tend to exhibit clay-like behavior and the fine-grained fraction tends to control when that fraction exceeds 35 percent (Boulanger and Idriss, 2006). Therefore, soils that have more than 35 percent passing No. 200 sieve and a PI of 7 or greater were input into LiqSVs as non-liquefiable layers.

Liquefaction has three potential consequences: liquefaction-induced settlement, bearing capacity failure, and lateral spreading toward a free face. Each is evaluated in the following paragraphs.

3.8.1 Liquefaction-Induced Settlement

Our evaluations indicate that the underlying soil layers encountered during our exploration are not susceptible to liquefaction. In general, our exploration encountered cohesive soils with a fine-grained fraction exceeding 35 percent, which extended to the maximum depths explored and are not considered

susceptible to liquefaction. The surface on the Site was blanketed by up to 7 feet of potentially liquefiable undocumented fill. These soils will be removed and replaced as select engineered fill minimizing the potential for liquefaction of these deposits. The results of our analyses are presented in Appendix 3.

3.8.2 Bearing Capacity Failure

Bearing capacity failure is sudden and extreme settlement of foundations that typically occurs when the liquefied layer is relatively close (typically within two times the footing width, depending on the loads) to the bottom of the foundation. The near surface soils will be improved by grading prior to construction; therefore, we judge that the potential for bearing capacity failure will be minimal.

3.8.3 Lateral Spreading

Lateral spreading can occur where continuous layers of liquefiable soil slope or extend to a free face, such as a creek bank. Provided the near surface undocumented fill material is improved by grading according to the specifications of this Memorandum, we judge the potential for liquefaction-induced lateral spreading at the Site is low.

3.9 Flooding

The Site and surrounding area have been mapped in flood hazard Zone AE, which is a regulatory flood zone that has a one percent annual chance flooding (FEMA, 2011). Therefore, potential for flooding should be considered for the proposed project.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The results of our exploration program indicated the project is feasible from a geotechnical standpoint. The primary geotechnical concern at the Site is the presence of undocumented fill in the proposed building location. To mitigate this concern, we recommend that the undocumented fill be removed and replaced as a pad of engineered fill following the Site Preparation and Grading section (Section 4.1) of this Memorandum.

4.1 Site Preparation and Grading

Undocumented fill should be removed to expose a firm non-yielding soil subgrade. Based on our exploration, soil removal depth of up to 7 feet should be anticipated. The excavations of the undocumented fill should extend a minimum of 3 feet horizontally beyond the perimeter of the tank pad. However, actual over-excavation depths could vary and be deeper as determined in the field by a LACO representative. Following the excavation, a LACO representative in the should approve the subgrade to check it is suitable to accept fill. The exposed soil subgrade should then be scarified to a depth of 6 inches, moisture conditioned to at least 2 percent wet of the optimum moisture content, and compacted to at least 90 percent relative compaction.[1] The desired grades may then be achieved by the placement of properly compacted select

[1] Relative compaction refers to the ratio of the in place dry density of the soil to the maximum dry density as described in the latest addition of the ASTM D1557 compaction test procedure. Optimum Moisture Content is the water content as a percentage of the dry weight of the soil corresponding to the maximum dry density.

engineered fill. Material proposed for use as select fill should be free of organic or other deleterious material and rocks with a maximum dimension greater than 3 inches, and should meet the following criteria:

Fraction Finer than No. 200 Sieve:	Between 5 percent and 60 percent
Plasticity Index:	15 percent or less
Liquid Limit:	35 percent or less

Our exploration indicates that the existing undocumented fill encountered between ground surface and 7 feet bgs is suitable for use as select fill. Prior to importation of material proposed as fill, the material should be approved by a LACO representative in the field. Fill should be placed in lifts no greater than 8 inches in loose thickness, moisture conditioned to near the optimum moisture content, and compacted to at least 90 percent relative compaction. In areas to receive vehicular loads, the upper 6 inches of soil subgrade should be compacted to at least 95 percent relative compaction and be firm and unyielding when subjected to proof-rolling during construction.

4.2 Foundation

The foundation should bear on a minimum of 30 inches of select engineered fill in accordance with recommendations presented in Section 4.1 of this Memorandum. The foundation should be designed using a maximum allowable bearing pressure of 3,000 pounds per square foot (psf). This value can be increased by a factor of one-third when considering wind and seismic loads. The tank foundation should be constructed per the manufacturer's specifications and bear upon select engineered fill as described in Section 4.1 of this Memorandum.

4.3 Seismic Design Parameters

Earthquake design parameters presented herein are based on the CBC and the standard "Minimum Design Loads and Associated Criteria for Buildings and Other Structures," (ASCE 7-16), which, in turn, is based on a maximum considered earthquake ground motion, defined as the motion caused by an event with a 2 percent probability of exceedance within a 50-year period (recurrence interval of approximately 2,500 years). Per Section 20.3.1 of ASCE 7-16, the Site was assigned a Site Class E based on average soil properties in the top 100 feet.

Seismic design parameters S_s and S_1 for the Site were generated using Seismic Design Maps tool co-developed by the Structural Engineers Association of California (SEAOC) and California's Office of Statewide Health Planning and Development (OSHPD), Site Class E, and the following location: 39.4189°N, -123.3429°E (SEAOC and OSHPD, 2020)

S_s = 2.652
S_1 = 1.003

where:

S_s Mapped spectral response acceleration, 5 percent damped, at 0.2 second period [times the acceleration of gravity (g)].
S_1 Mapped spectral response acceleration, 5 percent damped, at 1.0 second period (times g).

Structures on Site Class E with a S_s or S_1 greater than or equal to 1.0 and 0.2, respectively require a Site-specific response analysis unless designed following the exceptions presented in section 11.4.8 of ASTM 7-16. It is our assumption that structures can be designed following the exceptions presented in 11.4.8 (summarized below) and that a Site-specific response analysis is not required. **Should the fundamental period of vibration of any structure prove to be greater than 0.5 or the exceptions presented in Section 11.4.8 prove unachievable during the design of all structures, a Site-specific response analysis can be provided in a supplemental document, under a separate agreement.**

- Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the Site coefficient F_a is taken as equal to that of Site Class C.
- Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_s and the equivalent static force procedure is used for design.

Provided the stated exceptions are incorporated into the design of all structures, seismic design parameters presented in Table 3 may be utilized. Structures should be assigned a seismic design category of E for structures with risk category I, II or III.

Table 3. Summary of Seismic Design Parameters

Site Class	F_a	F_v	S_s	S_1	S_{MS}	S_{M1}	S_{DS}	S_{D1}	T_s
E	1.200	2.000*	2.652	1.003	3.182	2.006*	2.122	1.337*	0.630

*Values F_v, $S_{M1,}$ and S_{D1} may only be used for calculation of T_s.

The factors are defined as follows:

F_a – Short period coefficient to modify 0.2 second period of mapped spectral response accelerations.

F_v – Long-period coefficient to modify 1.0 second period of mapped spectral response accelerations.

S_{MS} – Maximum considered earthquake spectral response acceleration, 5 percent damped, at 0.2 seconds (times g).

S_{M1} – Maximum considered earthquake spectral response acceleration, 5 percent damped, at 1.0 second period (times g).

S_{DS} – Design spectral response acceleration, 5 percent damped, at 0.2 second period (times g).

S_{D1} – Design spectral response acceleration, 5 percent damped, at 1.0 second period (times g).

T_s $S_{D1}/S_{DS.}$

4.4 Construction Considerations

4.4.1 Groundwater

Groundwater levels were encountered between 8.5 and 14 feet bgs during our exploration. The local minimum depth to groundwater level of 1.07 bgs feet was recorded approximately 2,400 feet southeast of the Site. Provided construction is performed during the dry months of summer or early fall, it may not be a concern. However, if groundwater accumulates in foundation excavation, it should be pumped out prior to concrete placement.

4.4.2 Surface Drainage

The Site and surrounding area have been mapped in flood hazard Zone AE, which is a regulatory flood zone (FEMA, 2011). Therefore, potential for flooding should be considered for the proposed project. The Site should generally be graded to provide positive drainage away from foundations. The grading should not allow water to pond on the Site nor to migrate beneath any structure.

4.5 Future Geotechnical Services

To check for conformance with the specific recommendations contained within this Memorandum and to confirm assumptions made in the preparation of this Memorandum are valid, LACO should be retained to perform the following:

- Review the completed project plans and specifications; and,
- Observe and test (as necessary) the earthwork and foundation phases of construction to confirm that subsurface conditions exposed during construction are consistent with our subsurface exploration and allow design changes in the event that subsurface conditions differ from those anticipated.

These services and associated fees are not included in LACO's current scope of services. LACO can provide a scope and fee estimate for these services at the time the project plans are near completion and when project construction schedules are known.

5.0 LIMITATIONS

This Memorandum has been prepared for the exclusive use of the City of Willits, its contractors, and consultants, and appropriate public authorities for specific application to development of the Site. LACO has exercised a standard of care equal to that generated for this industry to ensure that the information contained in this Memorandum is current and accurate. The opinions presented in this Memorandum are based upon information obtained from subsurface excavations, a site reconnaissance, review of geologic maps and data available to us, and upon local experience and engineering judgment, and have been formulated in accordance with generally accepted geotechnical engineering practices that exist in California at the time this Memorandum was prepared. In addition, geotechnical issues may arise that are not apparent at this time. No other warranty, expressed or implied, is made or should be inferred.

Data generated for this Memorandum represent information gathered at that time and at the widely spaced locations indicated. Subsurface conditions may be highly variable and difficult to predict. As such, the recommendations included in this Memorandum are based, in part, on assumptions about subsurface conditions that may only be observed and/or tested during subsequent project earthwork. Accordingly, the validity of these recommendations is contingent upon review of the subsurface conditions exposed during construction in order to check that they are consistent with those characterized in this Memorandum. Upon request, LACO can discuss the extent of (and fee for) observations and tests required to check the validity of the recommendations presented herein.

The opinions presented in this Memorandum are valid as of the present date for the property evaluated. Changes in the condition of the property can occur over time, whether due to natural processes or the works of man, on this or adjacent properties. In addition, changes in applicable standards of practice can occur, whether from legislation or the broadening of knowledge. Accordingly, the opinions presented in this Memorandum may be invalidated, wholly or partially, by changes outside our control. Therefore, this

Memorandum is subject to review and should not be relied upon after a period of three years, nor should it be used, or is it applicable, for any property other than that evaluated. This Memorandum is valid solely for the purpose, site, and project described in this document. Any alteration, unauthorized distribution, or deviation from this description will invalidate this Memorandum. LACO assumes no responsibility for any third-party reliance on the data presented. Additionally, the data presented should not be utilized by any third-party to represent data for any other time or location.

6.0 REFERENCES

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FIGURES

Figure 1 **Site Vicinity Map**

Figure 2 **Site Map**

LACO	PROJECT	PROPOSED CLEAR WELL	BY	JRG	FIGURE
EUREKA • UKIAH • SANTA ROSA	CLIENT	CITY OF WILLITS	CHECK	JNK	1
1-800-515-5054 www.lacoassociates.com	LOCATION	300 N LENORE AVE, WILLITS, CALIFORNIA	DATE	06/10/2020	JOB NO. 8509.08
		SITE VICINITY MAP			

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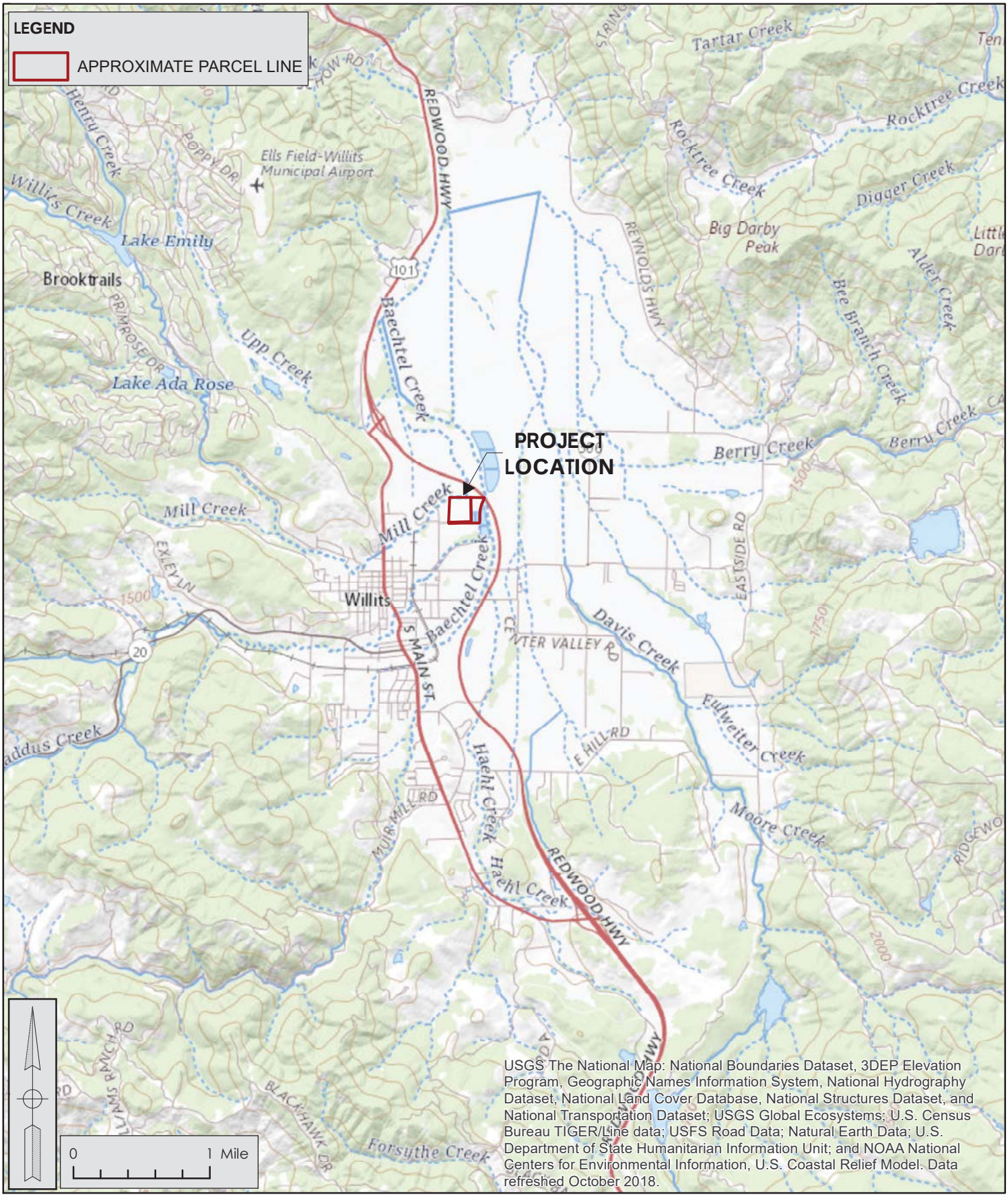

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.

LACO EUREKA • UKIAH • SANTA ROSA 1-800-515-5054 www.lacoassociates.com	PROJECT	PROPOSED CLEAR WELL	BY	JRG	FIGURE 2
	CLIENT	CITY OF WILLITS	CHECK	JNK	
	LOCATION	300 N LENORE AVE, WILLITS, CALIFORNIA	DATE	06/10/2020	JOB NO. 8509.08
		SITE MAP			

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APPENDIX 1

Clearwell Details

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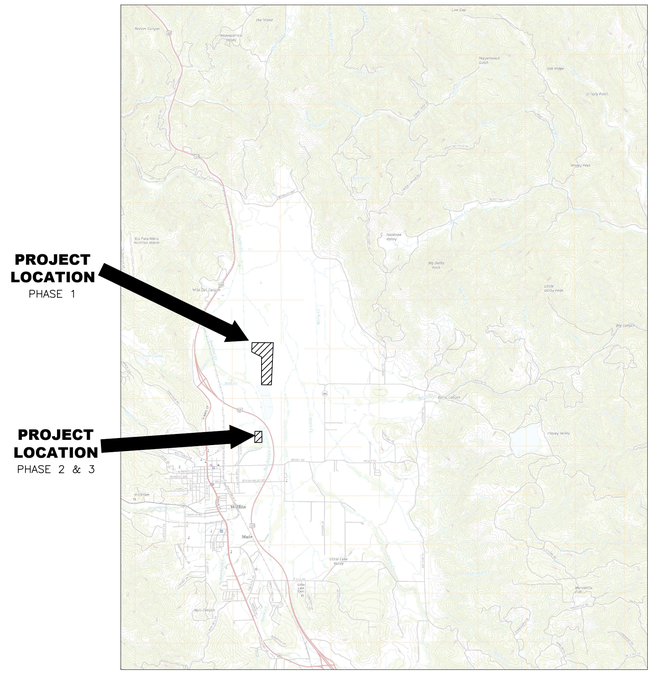
GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT

PHASE 1 - WATER MAIN REPLACEMENT
PHASE 2 - WELL PUMP UPGRADES & PILOT TESTING
PHASE 3 - CLEARWELL INSTALLATION

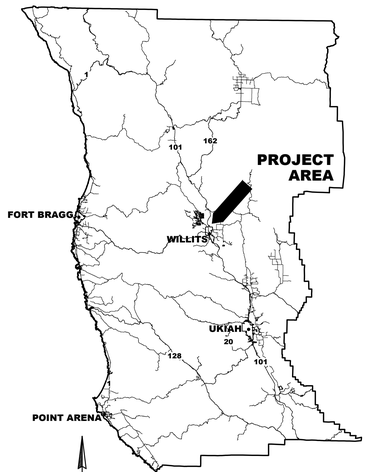
COUNTY OF MENDOCINO, CITY OF WILLITS
WILLITS, CA



LOCATION MAP
N.T.S.



VICINITY MAP
NO SCALE



AREA MAP
N.T.S.

USA SYSTEM INFORMATION

CONTACT INFORMATION

CITY OF WILLITS
707-263-3578

FERRELLGAS LAKE CO
DANIEL DAVIDSON
707-263-0333

MEDIACOM CLEARLAKE OAK
CRAIG BILLINGS
707-350-4708

PACIFIC BELL
510-645-2929

PGE DISTR UKIAH
800-743-5000

SHEET INDEX

	SHEET NUMBER	SHEET TITLE
	C0.0	TITLE SHEET & COVER
	C0.1	ABBREVIATIONS & LEGEND
	C0.2	CIVIL GENERAL NOTES
PHASE 3	C1.0	CLEARWELL (PR) SITE PLAN
PHASE 3	C1.1	CLEARWELL PAD GRADING AND DETAILS
	C2.0	PIPELINE EXISTING CONDITIONS & DEMOLITION
	C2.1	PIPELINE EROSION CONTROL PLAN
PHASE 1	C2.2	PIPE PLAN AND PROFILE OVERVIEW
	C2.3	PIPE PLAN AND PROFILE STA 01+00.00 TO 09+79.54
	C2.4	PIPE PLAN AND PROFILE STA 09+79.54 TO 19+68.48
	C2.5	PIPE PLAN AND PROFILE STA 19+68.48 TO 29+90.38
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PHASE 2	C3.0	CIVIL DETAILS
PHASE 3	C3.1	WELL DETAILS
	C3.2	CLEARWELL CONNECTION DETAILS

50% DESIGN SET – NOT FOR CONSTRUCTION

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1-800-515-5054 www.lacoassociates.com

NO.	HISTORY / REVISION	BY	CHK.	DATE

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

TITLE SHEET & COVER

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C0.0

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ABBREVIATIONS

A

AB – AGGREGATE BASE
ABON – ABANDONED
AC – ASPHALT CONCRETE
ACP – ASBESTOS CEMENT PIPE
ACI – AMERICAN CONCRETE INSTITUTE
AG – AGGREGATE
APPROX – APPROXIMATELY
ASTM – AMERICAN SOCIETY FOR TESTING & MATERIALS
@ – AT

B

BC – BEGIN CURVE
BCR – BEGIN CURB RETURN
BF – BLIND FLANGE
BFPD – BACK FLOW PREVENTION DEVICE
BFV – BUTTERFLY VALVE
BLDG – BUILDING
BM – BENCH MARK
BOT – BOTTOM
BRG – BEARING
BSW – BACK OF SIDEWALK
BTWN – BETWEEN
BVC – BEGINNING OF VERTICAL CURVE
BW – BOTTOM OF WALL

C

CATV – CABLE TELEVISION
CB – CATCH BASIN
CEIL – CEILING
CFM – CUBIC FEET PER MINUTE
CI – CAST IRON
CIP – CAST IRON PIPE
C.I.P. – CAST–IN–PLACE
CJ – CONSTRUCTION JOINT
CL,℄ – CENTERLINE
CLR – CLEAR
CMP – CORRUGATED METAL PIPE
CMU – CONCRETE MASONRY UNIT
CO – CLEANOUT
CONC – CONCRETE
CONT – CONTINUOUS
COORD – COORDINATE
CPLG – COUPLING
CTR – CENTER
CU FT – CUBIC FEET
CV – CHECK VALVE
CW – COLD WATER
CY – CUBIC YARD

D

° – DEGREE (ANGLE)
d – PENNY (NAIL SIZE)
DBL – DOUBLE
DDCV – DOUBLE DETECTOR CHECK VALVE
DI – DRAINAGE INLET
DIA – DIAMETER
DIAG – DIAGONAL
DIM – DIMENSION
DIP – DUCTILE IRON PIPE
DRWY – DRIVEWAY
DWG – DRAWING

E

<E> – EXISTING
EA – EACH
EC – END CURVE
ECR – END CURB RETURN
EF – EACH FACE
EL – ELBOW
ELEC – ELECTRIC OR ELECTRICAL
ELEV – ELEVATION
ENGR – ENGINEER
EP – EDGE OF PAVEMENT
EQ – EQUAL
EQUIP – EQUIPMENT
EVC – END OF VERTICAL CURVE
EW – EACH WAY
EXC – EXCAVATE
EXP JT – EXPANSION JOINT
EXT – EXTERIOR

F

FC – FACE OF CURB
FF – FINISHED FLOOR
FG – FINISHED GRADE
FH – FIRE HYDRANT
FL,℄ – FLOW–LINE
FLG – FLANGE
FLR – FLOOR
FS – FINISHED SURFACE
FT – FOOT
FT² – SQUARE FEET
FT³ – CUBIC FEET
FTG – FOOTING

G

G – GAS
GALV – GALVANIZED
GIP – GALVANIZED IRON PIPE
GPM – GALLONS PER MINUTE
GRD – GRADE
GSP – GALVANIZED STEEL PIPE
GV – GATE VALVE

H

HB – HOSE BIBB
HDR – HEADER
HP – HORSEPOWER
HORIZ – HORIZONTAL
HT – HEIGHT
HW – HOT WATER

I

ID – INSIDE DIAMETER
IN – INCH
INT – INTERIOR
INV – INVERT

J

JT – JOINT
JP – JOINT POLE

K

KIP – THOUSAND POUNDS
KW – KILOWATT

L

∠ – ANGLE (DEGREES)
LB – POUND
LF – LINEAR FEET
LG – LONG
LT – LEFT

M

MATL – MATERIAL
MAX – MAXIMUM
MECH – MECHANICAL
MFR – MANUFACTURER
MH – MANHOLE
MIN – MINIMUM
MISC – MISCELLANEOUS
MJ – MECHANICAL JOINT
MTL – METAL

N

<N> – NEW
NC – NORMALLY CLOSED
NIC – NOT IN CONTRACT
NO. – NUMBER
NO – NORMALLY OPEN
NPT – NATIONAL PIPE THREAD
NTS – NOT TO SCALE
– NUMBER

O

OC – ON CENTER
OD – OUTSIDE DIAMETER
OG – ORIGINAL GROUND
OHE – OVERHEAD ELECTRIC
OZ – OUNCE
OVHD – OVERHEAD

P

PB – PULL BOX
PCC – POINT OF COMPOUND CURVATURE
PCF – POUNDS PER CUBIC FOOT
PE – PLAIN END
PERF – PERFORATED
PEP – POLYETHYLENE PIPE
PL,℄ – PROPERTY LINE
PLYWD – PLYWOOD
POC – POINT ON CURVE
PP – POWER POLE
PRC – POINT OF REVERSE CURVATURE
PREFAB – PREFABRICATED
PSF – POUNDS PER SQUARE FOOT
PSI – POUNDS PER SQUARE INCH
PSIG – POUNDS PER SQUARE INCH GAUGE
PV – PLUG VALVE
PVC – POLYVINYL CHLORIDE PLASTIC
PVI – POINT OF VERTICAL INTERSECTION
PVMT – PAVEMENT
PVT – PRIVATE

Q

QTY – QUANTITY

R

R – RADIUS
RC – RELATIVE COMPACTION
RCP – REINFORCED CONCRETE PIPE
RD – ROAD
RDCR – REDUCER
RDWD – REDWOOD
REQD – REQUIRED
RG – RAIN GARDEN
RM – ROOM
RSP – ROCK SLOPE PROTECTION
RT – RIGHT
R/W – RIGHT–OF–WAY

S

SL – SLOPE
SCHED – SCHEDULE
SD – STORM DRAIN
SDMH – STORM DRAIN MAN HOLE
SECT – SECTION
SHT – SHEET
SIM – SIMILAR
SPEC – SPECIFICATIONS
SQ – SQUARE
SQ FT – SQUARE FOOT
SQ IN – SQUARE INCH
SS – SANITARY SEWER
SSMH – SEWER SYSTEM MAN HOLE
STA – STATION
STD – STANDARD
STL – STEEL
SW – SIDEWALK
SYMM – SYMMETRICAL

T

T – TELEPHONE
TAN – TANGENT
T&B – TOP AND BOTTOM
T&G – TONGUE AND GROOVE
TBC – TOP BACK OF CURB
TBM – TEMPORARY BENCH MARK
TC – TOP OF CURB
TELEM – TELEMETRY
TEMP – TEMPERATURE OR TEMPORARY
THD – THREAD
TOC – TOP OF CONCRETE
TOG – TOP OF GRATE
TOF – TOP OF FOOTING
TOW – TOP OF WALL
TP – TOP OF PAVEMENT OR TELEPHONE POLE
<TYP> – TYPICAL

U

UBC – UNIFORM BUILDING CODE
UOS – UNLESS OTHERWISE SPECIFIED
UG – UNDERGROUND
UTIL – UTILITY
UP – UTILITY POLE

V

V – VOLT
VC – VERTICAL CURVE
VCP – VITRIFIED CLAY PIPE
VERT – VERTICAL
VPI – VERTICAL POINT OF INTERSECTION

W

WM – WATER METER
WV – WATER VALVE

X

XFMR – TRANSFORMER

Y

YD – YARD
YD² – SQUARE YARD
YD³ – CUBIC YARD

NOTES:

1. CONTACT THE ENGINEER FOR SYMBOLS NOT LISTED.
2. THIS IS A STANDARD SHEET, THEREFORE SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET WHICH DO NOT APPEAR ON THE PLANS.
3. SITE AND UTILITY SYMBOLS SHOWN ON THIS SHEET ARE NOT INTENDED TO REPRESENT THE PHYSICAL SCALE OR SHAPE OF ANY ITEMS. WHERE LARGE–SCALE PLANS ARE PRESENTED, THE SYMBOLS SHOWN HEREON MAY BE REPLACED BY DETAILS MORE SUITED TO THE DRAWING SCALE.

UTILITIES LEGEND

PROPOSED	EXISTING	
⊗	⊗	GATE VALVE
	⊗ PV	PLUG VALVE
	⊗ BV	BALL VALVE
	⊗ BFV	BUTTERFLY VALVE
P	P	AUTOMATICALLY OPERATED VALVE (P= PNEUMATIC, E= ELECTRIC, S= SOLENOID, H=HYDRAULIC. D= DIAPHRAGM ACTUATOR)
		3–WAY VALVE
		GLOBE VALVE
		ANGLE VALVE
		PRESSURE REGULATING VALVE
		PRESSURE RELIEF VALVE
		CHECK VALVE
		AIR OR VACUUM RELEASE VALVE
AV	AV	AIR AND VACUUM VALVE
CA	CA	COMBINATION AIR VALVE
		FLOW METER
	NF	HOSE BIBB (NF=NON–FREEZE)
		REDUCER
		FIRE HYDRANT
		DROP INLET
MH	MH	MANHOLE
		CLEANOUT
UG E	UG E	UNDERGROUND ELECTRICAL
OH E	OH E	OVERHEAD ELECTRICAL
TV	TV	CABLE TELEVISION
J	J	JOINT UTILITIES
TM	TM	UNDERGROUND TELEMETRY LINE
OH TM	OH TM	OVERHEAD TELEMETRY LINE
T	T	UNDERGROUND TELEPHONE LINE
OH T	OH T	OVERHEAD TELEPHONE LINE
W	W	WATER LINE
SS	SS	SANITARY SEWER LINE
SD	SD	STORM DRAIN LINE
G	G	GAS LINE
FM	FM	FORCE MAIN AND DIRECTION OF FLOW

SIZE AND MATERIAL OF EXISTING PIPING MAY BE SHOWN WHEN KNOWN.

SIZE AND MATERIAL OF NEW PIPING MAY BE SHOWN ON PLAN OR IN PROFILE.

		CULVERT
		POLE MOUNTED STREETLIGHT
XXXXXX	NOT USED	ITEM TO BE REMOVED
//////	NOT USED	ITEM TO BE ABANDONED IN PLACE
WM	WM	WATER METER
PB	PB	PULL BOX AND DESIGNATION
R4–4		SIGN AND DESIGNATION
MB	MB	MAIL BOX

LINE DESIGNATION

2.0 / 12 – INDICATES LINE DESIGNATION; INDICATES SHEET WHERE CONTINUATION OCCURS (REPLACED BY A LINE IF OCCURS ON SAME SHEET)

TOPOGRAPHIC LEGEND

PROPOSED	EXISTING	
NOT USED	×	
NOT USED		BENCH MARK
47.55	(47.55)	
NOT USED	42.6 +	
+	+	RADIUS POINT
		TOP OF CUT
		TOP OF FILL
		TOP OF SLOPE
		TOE OF SLOPE
200	180	CONTOUR LINE
		CONCRETE
		PAVEMENT
NOT USED		ROCKS
NOT USED		STUMPS
		TREES
		ROADS
JP	JP	LP=LIGHT POLE) GUY WIRE
X	X	FENCE
R	R	
		EASEMENT LINE
		CENTERLINE
NOT USED		MARSH
		LAWN
NOT USED		SPRING
TP–4	TP–4	
		PROPERTY CORNER
		SURVEY MONUMENT
		CONTROL POINT
		DRIVEWAY

CURVE DATA

R (RADIUS)
L (LENGTH)
△ (DELTA)
T (TANGENT)

DESIGNATION

1 / C5.1 – DETAIL

A / C3.1 – SECTION

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NO.	HISTORY / REVISION	BY	CHK.	DATE

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

ABBREVIATIONS & LEGEND

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C0.1

50% DESIGN SET – NOT FOR CONSTRUCTION

Mar 10,2020-12:06pm
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GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE PROJECT DOCUMENTS AND THE FOLLOWING STANDARDS:
   A. CALIFORNIA BUILDING CODE (CBC) (2019)
   B. AMERICAN WATER WORKS ASSOCIATION (AWWA) (LATEST REVISION)
   C. CITY OF WILLITS STANDARD DESIGN AND CONSTRUCTION STANDARDS (11/12/11)
2. THE ENGINEER PREPARING THESE PLANS SHALL NOT BE RESPONSIBLE NOR LIABLE FOR ANY UNAUTHORIZED CHANGES TO, OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
3. THE CONTRACTOR SHALL AGREE TO DEFEND, INDEMNIFY, AND HOLD THE DESIGN PROFESSIONALS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.
4. LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE FROM RECORD INFORMATION ONLY AND ARE SHOWN FOR INFORMATION ONLY. ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES PRIOR TO EXCAVATION IN ORDER TO JOIN OR PROTECT THESE UTILITIES DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL MAINTAIN A NEAT APPEARANCE TO THE WORK. IN ANY AREA VISIBLE TO THE PUBLIC, THE FOLLOWING SHALL APPLY: WHEN PRACTICABLE, BROKEN CONCRETE AND DEBRIS DEVELOPED DURING CLEARING AND GRUBBING SHALL BE DISPOSED OF CONCURRENTLY WITH ITS REMOVAL. IF STOCKPILING IS NECESSARY, THE MATERIAL SHALL BE REMOVED OR DISPOSED OF WEEKLY. STOCKPILING IS TO OCCUR IN SPECIFIED OR DESIGNATED AREAS ACCORDING TO THE PROJECT'S DESIGNATED QUALIFIED SWPPP PRACTITIONER (QSP). THE CONTRACTOR SHALL FURNISH TRASH BINS FOR ALL DEBRIS FROM STRUCTURE CONSTRUCTION. ALL DEBRIS SHALL BE STOCKPILED OR HAULED OFF DAILY. FORMS OR FALSEWORK THAT ARE TO BE REUSED SHALL BE STACKED NEATLY CONCURRENTLY WITH THEIR REMOVAL. FORMS AND FALSEWORK THAT ARE NOT TO BE REUSED SHALL BE DISPOSED OF CONCURRENTLY WITH THEIR REMOVAL.
6. CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT 1-800-227-2600 A MINIMUM OF 48 HOURS IN ADVANCE OF ANY EXCAVATION. CONTRACTOR SHALL IMMEDIATELY REPORT ANY DISCREPANCIES IN RECORD INFORMATION TO THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION OF ANY WORK.
7. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF PROJECT CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
8. CONTRACTOR SHALL IMMEDIATELY HALT ALL GRADING/LAND-CLEARING ACTIVITIES AND CONTACT THE CITY OF WILLITS COMMUNITY DEVELOPMENT DEPARTMENT AT 707-459-4601 IMMEDIATELY IF ARCHAEOLOGICAL, HISTORICAL OR PALEONTOLOGICAL RESOURCES ARE ENCOUNTERED, OR IN THE EVENT OF THE ACCIDENTAL DISCOVERY OF HUMAN REMAINS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS OF THE "CONSTRUCTION SAFETY ORDERS", MOST CURRENT REVISION, ISSUED BY THE STATE OF CALIFORNIA, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. THE DESIGN, ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS ETC., IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND HAS NOT BEEN CONSIDERED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED.
10. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS BEFORE THE COMMENCEMENT OF CONSTRUCTION.
11. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS ON OR ADJACENT TO PROJECT SITE. CONTRACTOR SHALL REPAIR OR REPLACE ALL DAMAGE TO EXISTING IMPROVEMENTS TO THE SATISFACTION OF THE ENGINEER.
12. CONTRACTOR SHALL VERIFY CONDITIONS AND DIMENSIONS AT THE SITE BEFORE STARTING WORK AND IMMEDIATELY NOTIFY THE ENGINEER IF ANY CONDITIONS OR DIMENSIONS ARE UNUSUAL OR NOT AS SHOWN ON THESE PLANS.
13. DO NOT USE SCALED DIMENSIONS; USE WRITTEN DIMENSIONS. WHERE NO DIMENSIONS ARE SHOWN, CONSULT ENGINEER FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
14. CONTRACTOR SHALL PROVIDE MARKED UP DRAWINGS SHOWING "AS-BUILT" CONDITIONS FOR ALL DEVIATIONS FROM THE PLANS AS SHOWN HEREON, UPON COMPLETION OF CONSTRUCTION, AND PRIOR TO RELEASE OF FINAL PAYMENT. LEGIBLE MARKUPS BY HAND ARE ACCEPTABLE.
15. UTILITIES REQUIRED FOR CONSTRUCTION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
16. CONTRACTOR SHALL REMOVE ALL DELETERIOUS MATERIAL FROM SITE GENERATED DURING CONSTRUCTION INCLUDING BUT NOT LIMITED TO BROKEN CONCRETE, STUMPS, ROCKS, DEBRIS, ASPHALT RUBBLE, AND GARBAGE, AND LEGALLY DISPOSE OF THE ABOVE.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING.
18. ALL UNDERGROUND UTILITIES SHALL BE INSTALLED PRIOR TO CONSTRUCTION OR REPAIR OF STREET STRUCTURAL SECTION.
19. TRENCH SHORING SHALL BE IN ACCORDANCE WITH THE CAL-OSHA CONSTRUCTION SAFETY ORDERS, LATEST REVISION, WHERE REQUIRED.
20. CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 48 HOURS IN ADVANCE OF QUALITY CONTROL INSPECTION TESTING.
21. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AT ALL INTERSECTIONS OF PROPOSED WORK AND EXISTING UTILITIES. THE EXPLORATORY EXCAVATIONS SHALL BE MADE FORTY-EIGHT (48) HOURS IN ADVANCE OF THE PROPOSED WORK. IF THERE IS A CONFLICT WITH THE APPROVED PLANS THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE CITY OF WILLITS IMMEDIATELY FOR A POSSIBLE REDESIGN. INFORMATION ON SAID CONFLICT(S) SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL INCLUDE: LOCATION, ELEVATION, UTILITY TYPE, MATERIAL AND SIZE.
22. LOCATIONS AND DIMENSIONS OF EXISTING RIGHTS-OF-WAY AND EASEMENTS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE LIMITS OF RIGHTS-OF-WAY AND EASEMENTS IN ORDER TO AVOID ENCROACHMENTS.
23. THE CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF ANY AND ALL ITEMS DISTURBED OR DAMAGED BY CONSTRUCTION OR RELATED ACTIVITIES INCLUDING, BUT NOT LIMITED TO: PAVING, STABILIZED EARTH, DRIVEWAYS AND UTILITIES SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR WITH EQUAL MATERIAL AT THE CONTRACTOR'S EXPENSE.
24. THE DISPOSAL OF ANY EXCESS EARTHWORK MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
25. THE CONTRACTOR SHALL NOTIFY CITY OF WILLITS 72 HOURS BEFORE COMMENCING WITH CONSTRUCTION. CONTRACTOR SHALL ARRANGE A PRECONSTRUCTION MEETING WITH THE CITY AND ENGINEER OF RECORD PRIOR TO THE 72 HOUR NOTICE.
26. WHERE MINIMUM SEPARATION BETWEEN UTILITIES IS REQUIRED, THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
27. ALL ELEVATIONS SHOWN ON THIS PLAN REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
28. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS FOR APPROVAL BY THE CITY PRIOR TO PROCUREMENT.
29. THE CONTRACTOR SHALL SUBMIT AND AWAIT APPROVAL FOR ALL FURNISHED CONCRETE AND PIPE BEDDING SPECIFICATIONS PRIOR TO POURING/IMPORTING. SPECIFICATIONS SHALL INCLUDE GRADATIONS AND ANY AND ALL MATERIALS USED WITHIN BACKFILL OR BEDDING MATERIALS.
30. LAYOUT WORK (CONSTRUCTION STAKING) SHALL BE PERFORMED BY A PERSON PROPERLY LICENSED TO PERFORM CONSTRUCTION STAKING IN THE STATE OF CALIFORNIA.
31. MISCELLANEOUS IRON SHALL BE GALVANIZED (EXCEPT FOR MANHOLE COVERS).
32. CONSTRUCTION SHALL OCCUR BETWEEN 8:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY, UNLESS PRIOR APPROVAL IS RECEIVED FOR ALTERNATIVE HOURS.
33. CONTRACTOR TO COMPLY WITH ANY AND ALL MITIGATION MEASURES ADOPTED BY THE CITY OF WILLTS FOR THIS PROJECT.
34. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE DUST CONTROL MEASURES FOR THE ENTIRE CONSTRUCTION PERIOD OF THIS PROJECT TO THE SATISFACTION OF THE COUNTY AND AIR QUALITY MANAGEMENT DISTRICT AS APPLICABLE.

UTILITY GENERAL NOTES

1. ALL EXCAVATIONS SHALL BE BACKFILLED OR COMPLETELY COVERED WITH WATERPROOF PLASTIC AT THE END OF EACH WORK DAY.
2. ALL BURIED UTILITY PIPES TO BE ABANDONED IN PLACE SHALL BE CUT, PLUGGED AND FILLED WITH GROUT.
3. CONTRACTOR IS LIABLE FOR ANY NON APPROVED PLAN CHANGES. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, IN WRITING FOR REVIEW AND APPROVAL. CONTRACTOR SHALL, AT THEIR OWN EXPENSE, REMOVE AND RECONSTRUCT ANY WORK NOT IN ACCORDANCE WITH THESE PLANS, OR THE APPROVED PLAN CHANGES.
4. CONTRACTOR SHALL NOT BEGIN EXCAVATION UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD BY THE APPLICABLE ENTITY RESPONSIBLE FOR THAT PARTICULAR UTILITY. THE CONTRACTOR SHALL NOTIFY EACH APPLICABLE ENTITY AT LEAST 24 HOURS BEFORE STARTING WORK.
5. THE CONTRACTOR SHALL VERIFY EXISTING INVERTS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

WATER PIPING SPECIFICATIONS

1. WATER PIPING SHALL BE CONSTRUCTED OF DR-18 C900 PVC PER AWWA C900.
2. TESTING WATER LINES AND APPURTENANCES SHALL BE CLEANED, FLUSHED, CHLORINATED, PRESSURE AND BACTERIAL TESTED PRIOR TO ACCEPTANCE IN ACCORDANCE WITH STATE HEALTH DEPARTMENT SPECIFICATIONS.
3. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, MANUFACTURERS' RECOMMENDATIONS AND, UNLESS OTHERWISE SPECIFIED, PER THE CITY OF WILLITS DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS.
4. MARKING AND TRACING OF NEW MAINS AND SERVICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
   A. ALL MAINS AND SERVICE LINES SHALL USE TRACER WIRE (NO. 10 INSULATED SOLID WIRE) FOR DETECTION.
   B. WHEN TRACER WIRE IS PLACED ON THE WATER MAINS, THE WIRE SHALL BE HALF HITCHED AROUND EACH BELL END OF PIPE. THE WIRE SHALL BE RUN UP THE OUTSIDE OF EACH VALVE RISER STANDPIPE THEN INTO THE VALVE BOX, FOR CONNECTION PURPOSES.

CONCRETE FOUNDATION SPECIFICATIONS

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 P.S.I. FOR THE WATER STORAGE TANK SLAB AND FOUNDATION AND 3,000 P.S.I. FOR OTHER ELEMENTS , MAXIMUM COARSE AGGREGATE 3/4", AND SHALL BE PLACED AT A MAXIMUM SLUMP OF 4 IN. UNLESS OTHERWISE NOTED.
2. ALL SAWCUT CONTROL JOINTS SHALL BE SAWN WITHIN 8 HOURS OF PLACEMENT OF CONCRETE SLAB.

PIPE PRESSURE TESTING AND PIPE DISINFECTION SPECIFICATIONS

1. THE WATER PIPE SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF AWWA C651-05 AND THE CITY OF WILLITS DESIGN AND CONSTRUCTION STANDARDS SECTION 99-1.15. THE SYSTEM SHALL BE TESTED FOR A MINIMUM DURATION OF 15 MINUTES AT 200 PSI & 30 MINUTES AT 150 PSI. MAXIMUM LEAKAGE SHALL NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE PER 24 HOURS. PIPE AND FITTINGS SHALL BE PRESSURE-TESTED PRIOR TO PLACING CONCRETE BACKFILL.
2. THE PIPELINE SHALL BE DISINFECTED IN ACCORDANCE WITH THE FOLLOWING WHERE APPLICABLE:
   A. AFTER ALL OTHER WORK HAS BEEN COMPLETED AND PRIOR TO PLACING THE LINE IN SERVICE, THE CONTRACTOR SHALL COMPLETELY DISINFECT ALL WATER LINES, VALVES, FITTINGS AND RELATED ITEMS, IN ACCORDANCE WITH AWWA C651, STANDARD FOR DISINFECTING WATER MAINS.
   B. CONTRACTOR SHALL FLUSH THE MAIN LINES PRIOR TO DISINFECTION UNLESS THE CALCIUM HYPOCHLORITE TABLET METHOD OF DISINFECTION IS USED. THE FLUSHING VELOCITY SHALL BE NOT LESS THAN 2.5 FEET PER SECOND. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT FLUSHING SITES CAN ADEQUATELY CONTAIN THE QUANTITIES OF WATER FLUSHED FROM THE PIPES WITHOUT DAMAGE TO NEARBY IMPROVEMENTS AND/OR TERRAIN. FLUSHING IS NOT SUBSTITUTE FOR PREVENTATIVE MEASURES TAKEN BEFORE AND DURING PIPE LAYING TO PREVENT CONTAMINATING MATERIAL FROM ENTERING MAINS.
   C. DISINFECTION MAY BE ACCOMPLISHED BY USE OF CALCIUM HYPOCHLORITE TABLETS ATTACHED TO THE TOP OF PIPES AS THEY ARE LAID BY MEANS OF AN APPROVED FOOD GRADE ADHESIVE. THE AMOUNT OF ADHESIVE SHALL BE LIMITED TO THE SMALLEST PRACTICABLE AMOUNT APPLIED TO ONE SIDE OF THE TABLET ONLY. NOTE THAT SINCE FLUSHING OF LINES IS NOT POSSIBLE, CONTRACTOR MUST USE EXTREME CARE TO PREVENT CONTAMINATING MATERIALS FROM ENTERING THE PIPE DURING INSTALLATION; CONTAMINATES ENTERING THE LINE, INCLUDING TRENCH WATER OR OTHER FOREIGN MATERIALS, WILL REQUIRE FLUSHING AND DISINFECTION BY OTHER MEANS.
   D. AFTER THE APPLICATION RETENTION PERIOD, HEAVILY CHLORINATED WATER SHALL NOT REMAIN IN PROLONGED CONTACT WITH PIPE. IN ORDER TO PREVENT DAMAGE TO THE PIPE LINING OR CORROSION DAMAGE TO THE PIPE ITSELF, THE HEAVILY CHLORINATED WATER SHALL BE FLUSHED FROM THE MAIN UNTIL CHLORINE MEASUREMENTS SHOW THAT THE CONCENTRATION IN THE WATER LEAVING THE MAIN IS NO HIGHER THAN THAT GENERALLY PREVAILING IN THE SYSTEM OR IS ACCEPTABLE FOR DOMESTIC USE (0.2 MG/L).
   E. IF THERE IS ANY POSSIBILITY THAT THE CHLORINATED DISCHARGE WILL CAUSE DAMAGE TO THE ENVIRONMENT, THEN A REDUCING AGENT SHALL BE APPLIED TO THE WATER TO BE WASTED TO NEUTRALIZE THOROUGHLY THE CHLORINE RESIDUAL REMAINING IN THE WATER. FEDERAL, STATE AND LOCAL REGULATORY AGENCIES SHOULD BE CONTACTED TO DETERMINE SPECIAL PROVISIONS FOR THE DISPOSAL OF HEAVILY CHLORINATED WATER.
3. BACTERIOLOGICAL QUALITY TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING WHERE APPLICABLE:
   A. AFTER DISINFECTION AND FLUSHING AND PRIOR TO PLACING THE POTABLE WATER PIPELINES AND PLUMBING IN SERVICE, WATER SAMPLES SHALL BE COLLECTED AND TESTED FOR BACTERIOLOGICAL QUALITY. THE PIPELINES AND PLUMBING SHALL BE CONSIDERED AS PROPERLY DISINFECTED IF THE TEST RESULTS SHOW THE ABSENCE OF COLIFORM ORGANISMS.
   B. TESTING SHALL BE IN ACCORDANCE WITH CURRENT STATE REQUIREMENTS.
   C. IF THE INITIAL DISINFECTION FAILS TO PRODUCE SATISFACTORY SAMPLES, DISINFECTION AND TESTING SHALL BE REPEATED BY THE CONTRACTOR UNTIL SATISFACTORY SAMPLES HAVE BEEN OBTAINED. THE TABLET METHOD CANNOT BE USED IN THESE SUBSEQUENT DISINFECTIONS. SUBSEQUENT TESTS SHALL BE PERFORMED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE TESTING.
4. THE CONTRACT PRICE PAID FOR VARIOUS SIZES OF WATER PIPE SHALL INCLUDE FULL COMPENSATION FOR PRESSURE TESTING, AND NO SEPARATE PAYMENT WILL BE MADE FOR THESE INCLUDED ITEMS.
5. THE CONTRACT PRICE PAID FOR VARIOUS SIZES OF WATER PIPE SHALL INCLUDE FULL COMPENSATION FOR DISINFECTING PIPE AND NO SEPARATE PAYMENT WILL BE MADE FOR THIS INCLUDED ITEM.

GRADING AND FILL SPECIFICATIONS

1. IMPORT ENGINEERED FILL SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF WILLITS DESIGN AND CONSTRUCTION STANDARDS.
2. BEFORE COMPACTION BEGINS, THE SELECT FILL SHALL BE BROUGHT TO A MOISTURE CONTENT THAT WILL PERMIT PROPER COMPACTION BY EITHER AERATING THE MATERIAL IF IT IS TOO WET OR SPRAYING THE MATERIAL WITH WATER IF IT IS TOO DRY.
3. FILL MATERIAL SHALL BE SPREAD IN UNIFORM LIFTS NOT EXCEEDING 8 INCHES IN COMPACTED THICKNESS. EACH LIFT SHALL BE THOROUGHLY MIXED BEFORE COMPACTION TO ENSURE A UNIFORM DISTRIBUTION OF WATER CONTENT.
4. ANY IMPORT FILL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER AND CIVIL ENGINEER PRIOR TO PLACEMENT. AT LEAST SEVEN DAYS PRIOR TO PLACEMENT OF ANY FILL, THE ENGINEER SHALL BE NOTICED OF THE SOURCE OF MATERIAL AND SAMPLES SHALL BE OBTAINED TO DETERMINE THE SUITABILITY OF THE MATERIALS AND FOR LABORATORY COMPACTION TESTS ON THESE SAMPLES.
5. NATIVE MATERIAL MAY BE USED AS SELECT FILL IF APPROVED BY THE ENGINEER. NATIVE MATERIAL SHALL HAVE ALL ORGANIC MATERIAL AND ALL ROCK LARGER THEN 3" IN DIA REMOVED PRIOR TO USE.
6. ALL FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS THAT ARE NO THICKER THEN 8". ALL MATERIAL SHALL BE COMPACTED TO THE SPECIFICATIONS INDICATED ON THE PLANS.
7. ANY IMPORT FILL TO BE USED AS LANDSCAPE TOPSOIL SHALL BE FREE OF ANY MATERIAL LARGER THAN 3/4"

MATERIAL COMPACTION SPECIFICATIONS

1. RELATIVE COMPACTION (95 PERCENT). THE FOLLOWING SHALL APPLY IN LIEU OF SECTION 19-5.03 OF THE STATE STANDARD SPECIFICATIONS:
   A. ANY AREA OF THE SUBGRADE DETERMINED BY THE ENGINEER TO BE UNSTABLE, AS EVIDENCED BY EXCESSIVE DEFLECTION UNDER THE MOVEMENT OF EQUIPMENT, SHALL BE BROUGHT TO SATISFACTORY STABILITY BY ADDITIONAL ROLLING, REWORKING, REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL, OR STABILIZATION WITH LIME, OR THE INSTALLATION OF GEOTEXTILE FABRIC AS DIRECTED BY THE ENGINEER.
   B. LIME-TREATED MATERIALS SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT RELATIVE COMPACTION IN ACCORDANCE WITH THE PROVISIONS OF SECTION 24, EXCEPT WHEN LIME IS USED TO STABILIZE UNSUITABLE MATERIAL AS SPECIFIED IN SECTION 19-2.02 OF THE STATE STANDARD SPECIFICATIONS.

AGGREGATE BASE

1. AGGREGATE BASE SHALL BE CLASS 2, 3/4 INCH MAXIMUM GRADATION, AND SHALL CONFORM TO THE CITY OF WILLITS DESIGN & CONSTRUCTION STANDARDS - LATEST EDITION
2. AGGREGATE BASE MAY INCLUDE OR CONSIST OF MATERIAL PROCESSED FROM RECLAIMED ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE, LEAN CONCRETE BASE, CEMENT TREATED BASE, GLASS OR A COMBINATION OF ANY OF THESE MATERIALS. AGGREGATE BASE INCORPORATING RECLAIMED GLASS SHALL NOT BE PLACED AT LOCATIONS WHERE SURFACING WILL NOT BE PLACED OVER THE AGGREGATE BASE. IF THE TOP 6 INCHES OF AGGREGATE BASE IS TO REMAIN EXPOSED, THE AGGREGATE BASE SHALL HAVE A DRY UNIT WEIGHT OF NOT LESS THAN 120 LBS/CF.
3. THE GRADED BASE MATERIAL SHALL BE COMPACTED TO 95 PERCENT RELATIVE COMPACTION BASED ON CTM 216 OR ASTM D-1557 TESTING PROCEDURES.
4. THE SURFACE OF THE FINISHED AGGREGATE BASE SHALL BE FIRM AND UNYIELDING. ANY VISIBLE MOVEMENT VERTICALLY OR HORIZONTALLY OF THE AGGREGATE BASE UNDER THE ACTION OF CONSTRUCTION EQUIPMENT OR OTHER MAXIMUM LEGAL AXLE LOADS SHALL BE CONSIDERED AS EVIDENCE THAT THE AGGREGATE BASE DOES NOT MEET THE REQUIREMENT.

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GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

CIVIL GENERAL NOTES

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C0.2

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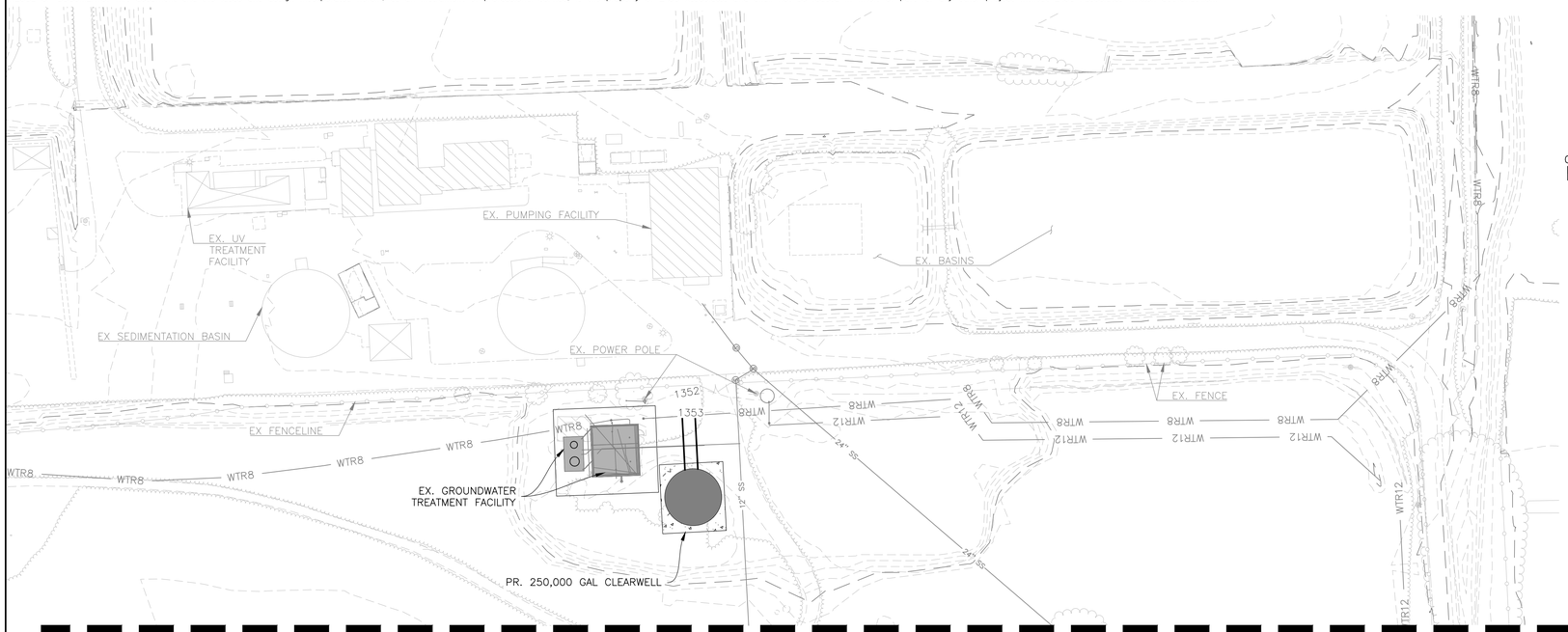
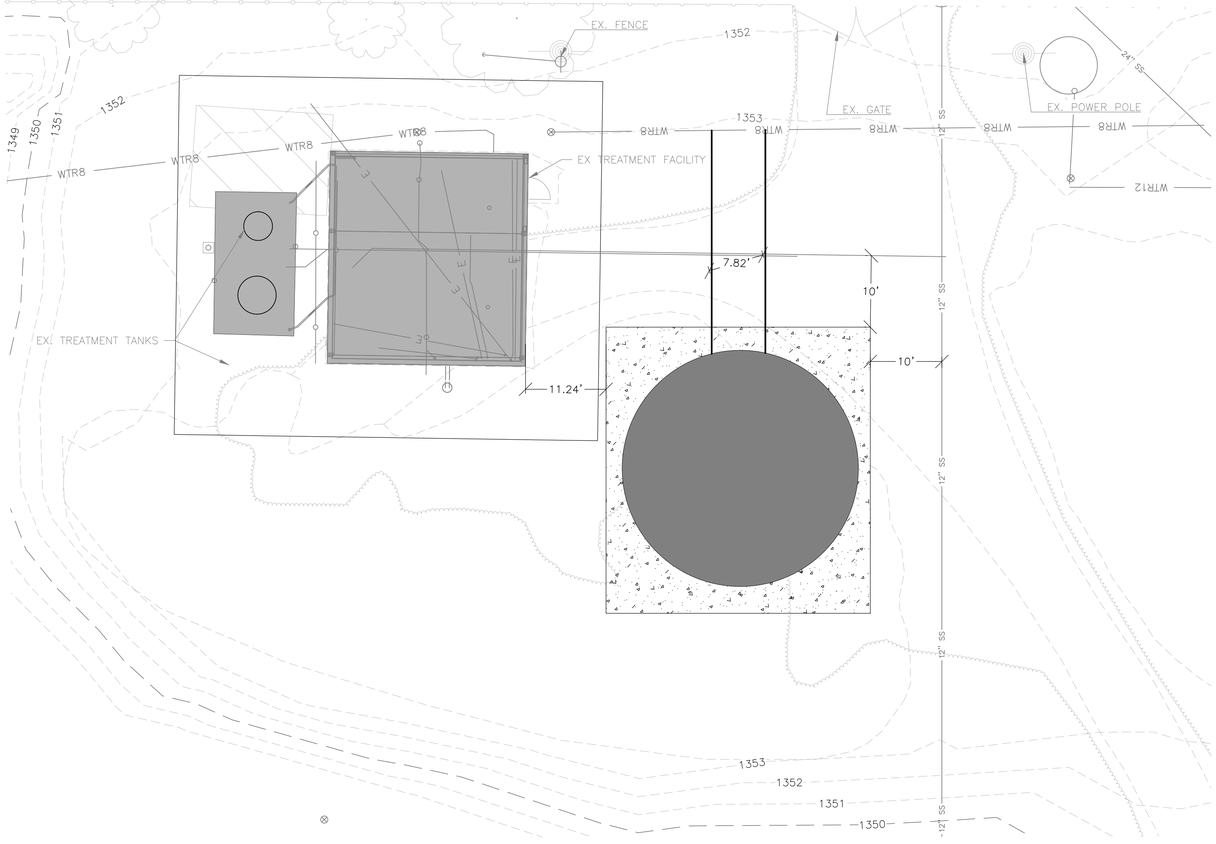


PLAN VIEW

SCALE:1":40'

0 20' 40' 80' 120'

SCALE: 1"=40'



PLAN VIEW

SCALE:1":10'

0 5' 10' 20' 40'

SCALE: 1"=10'

SCALE:
HORIZ: 1" = 200'
VERT: 1'" = 5'

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CLEARWELL (PR) SITE PLAN

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CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C1.0

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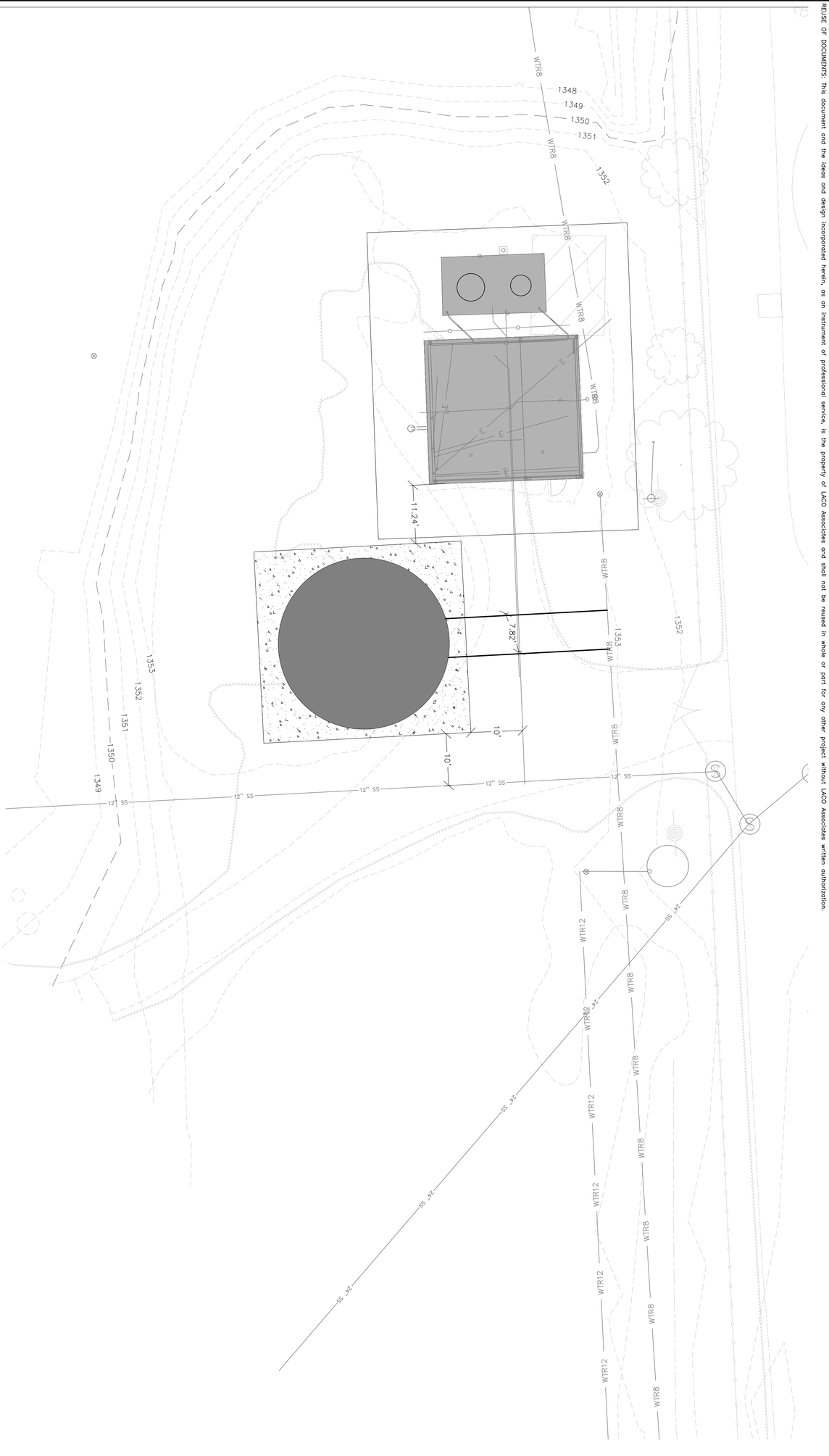

SCALE:
HORIZ: 1" = 200'
VERT: 1" = 5'

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DATE	TBD
JOB NUMBER	8509.08
DRAWING	C1.1

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CLEARWELL PAD GRADING AND DETAILS

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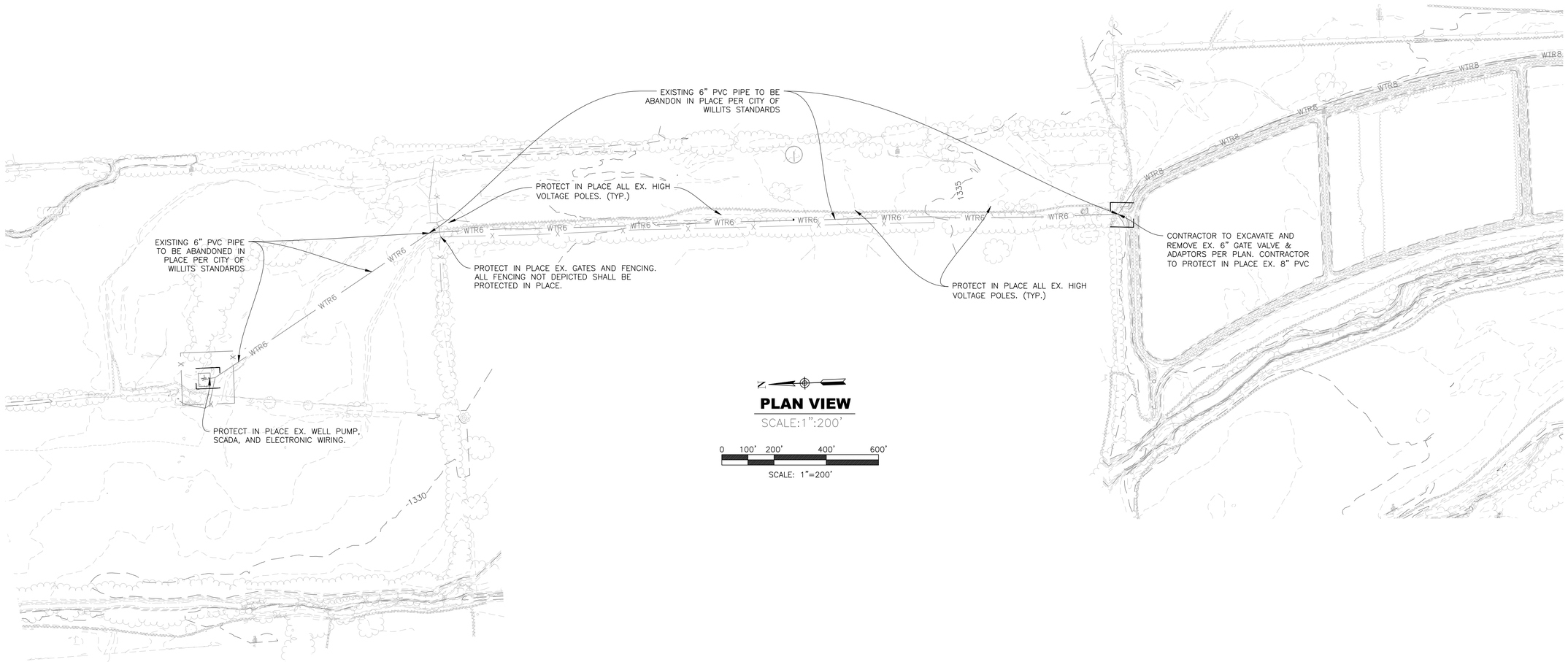

PLAN VIEW

SCALE:1":200'

0 100' 200' 400' 600'

SCALE: 1"=200'

GENERAL NOTE:

CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL PIPE, CONCRETE, OR NON-ORGANIC DEBRIS & MATERIAL THAT WOULD IMPEDE THE CONSTRUCTION WITHIN THE DEFINED LIMITS OF THE PROPOSED WATER MAIN. FOR ALL CUTS INTO EXISTING PIPING CONTRACTOR SHALL REMOVE ANY TRACER WIRE, PLASTIC COVERING, OR VALVING WITHIN THE PROPOSED LIMITS. CONTRACTOR SHALL EXECUTE THEIR BEST JUDGEMENT WHEN DETERMINING WHETHER OR NOT TO CONTACT THE ENGINEER OF RECORD FOR REMOVAL OF NON-SPECIFIED MATERIAL.

IF ANY AND ALL ARCHEOLOGICAL MATERIAL OR CULTURAL RESOURCES FOUND DURING THE COURSE OF CONSTRUCTION, DEMOLITION AND CONSTRUCTION IS TO STOP IMMEDIATELY AND

SCALE:
HORIZ: 1" = 200'
VERT: 1'" = 5'

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PIPELINE EXISTING CONDITIONS & DEMOLITION

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DATE	TBD
JOB NUMBER	8509.08
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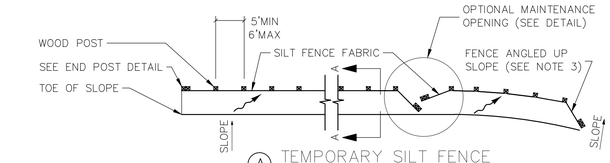
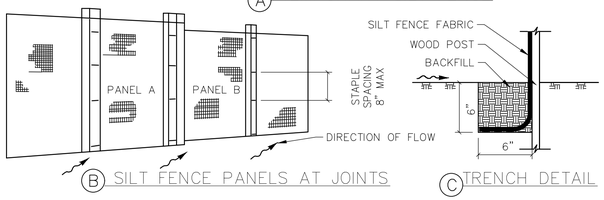
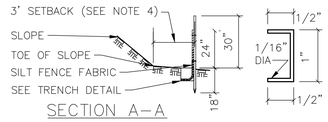


A TEMPORARY SILT FENCE

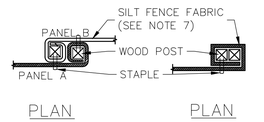


B SILT FENCE PANELS AT JOINTS

C TRENCH DETAIL



SECTION A–A



PLAN

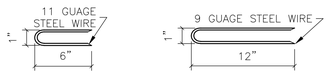
PLAN

D TEMPORARY SILT FENCE

E STAPLE DETAIL (SEE NOTE 8)

F POST AT JOINTS

G END POST DETAIL

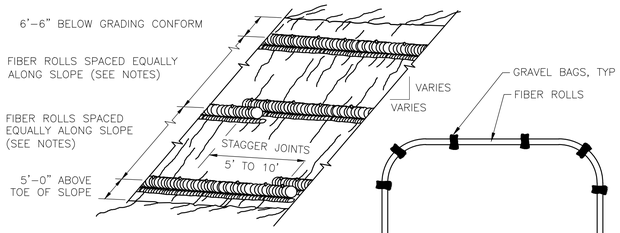


NOTES:

1. INSTALL TEMPORARY SILT FENCE BY FIRST DIGGING TRENCH, DRIVING POSTS, PLACING AND SECURING FABRIC. THEN BACKFILL AND TAMP.
2. REACH LENGTH NOT TO EXCEED 500 FEET.
3. THE DOWN STREAM END OF THE TEMPORARY SILT FENCE SHALL HAVE THE LAST 8' ANGLED UP SLOPE.
4. SETBACK DIMENSIONS MAY VARY TO FIT FIELD CONDITIONS.
5. POSTS TO OVERLAP AND FENCE FABRIC TO FOLD AROUND EACH POST ONE FULL TURN. SECURE FABRIC WITH 4 STAPLES FOR EACH POST.
6. POSTS SHALL BE DRIVEN TIGHTLY TOGETHER TO PREVENT POTENTIAL FLOW–THROUGH OF SEDIMENT AT THE JOINT. THE TOPS OF THE POSTS SHALL BE SECURED TO EACH OTHER WITH WIRE.
7. FOR EACH END POST, FENCE FABRIC SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN AND SECURED WITH 4 STAPLES.
8. MINIMUM OF 4 STAPLES SHALL BE INSTALLED PER POST. DIMENSIONS SHOWN ARE TYPICAL.
9. MAINTENANCE OPENINGS SHALL BE CONSTRUCTED IN A MANNER TO ENSURE THAT SEDIMENT IS RETAINED BY THE TEMPORARY SILT FENCE.
10. JOINT SECTIONS SHALL NOT BE PLACED AT SUMP LOCATIONS.

1 SE-1 SILT FENCE DETAIL

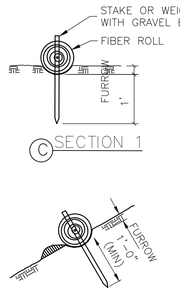
SE = SEDIMENT CONTROL PER CASQA (TYP) — NOT TO SCALE



PERSPECTIVE

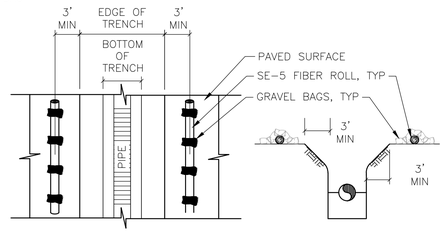
A FIBER ROLL (TYPE 1)

B TYPICAL FIBER ROLL AT PROTECTED AREA DETAIL



C SECTION 1

D SECTION 2



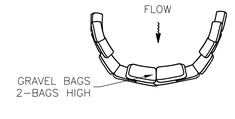
E TYPICAL FIBER ROLL AT TRENCH DETAIL

NOTES:

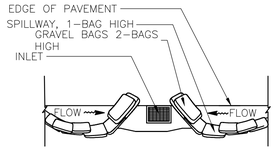
1. FIBER ROLL SPACING VARIES DEPENDING UPON SLOPE INCLINATION, BUT NOT TO EXCEED 10 FOOT AS MEASURED ALONG THE SLOPE INCLINATION.
2. INSTALLATIONS SHOWN IN THE PERSPECTIVES ARE FOR SLOPE INCLINATION OF 10:1 AND STEEPER.
3. IF TRENCHING WORK IS TO PROCEED IN A PIECE–MEAL FASHION, SECTION BY SECTION. BMP'S ARE ONLY REQUIRED AROUND THOSE SECTIONS OF OPEN TRENCHING.

2 SE-5 TYPICAL FIBER ROLL INSTALLATION DETAIL

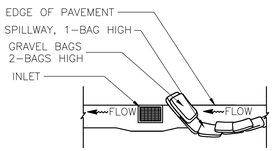
SE = SEDIMENT CONTROL PER CASQA (TYP) — NOT TO SCALE



A GRAVEL BAG BERM



B GRAVEL BAG BARRIER FOR INLET ON SUMP



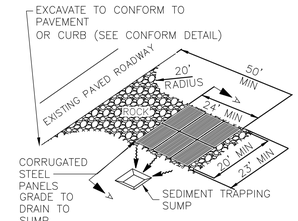
C GRAVEL BAG BARRIER FOR INLET ON GRADE

NOTES:

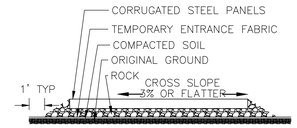
1. INTENDED FOR SHORT–TERM USE.
2. USE TO INHIBIT NON–STORM WATER FLOW.
3. ALLOW FOR PROPER MAINTENANCE AND CLEANUP.
4. BAGS MUST BE REMOVED AFTER ADJACENT OPERATION IS COMPLETED.
5. NOT APPLICABLE IN AREAS WITH HIGH SILTS AND CLAYS WITHOUT FILTER FABRIC.

3 GRAVEL BAG BARRIER

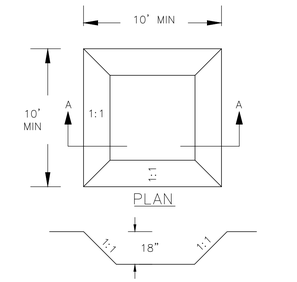
NOT TO SCALE



PERSPECTIVE



SECTION A–A

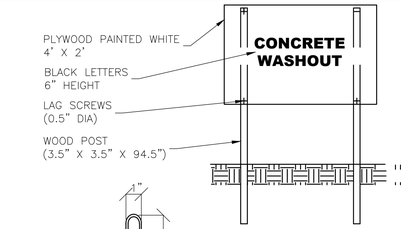


PLAN

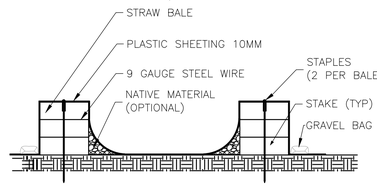
ELEVATION SEDIMENT TRAPPING SUMP

4 CONSTRUCTION ENTRANCE

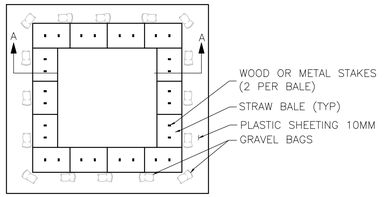
NOT TO SCALE



CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)



SECTION A–A



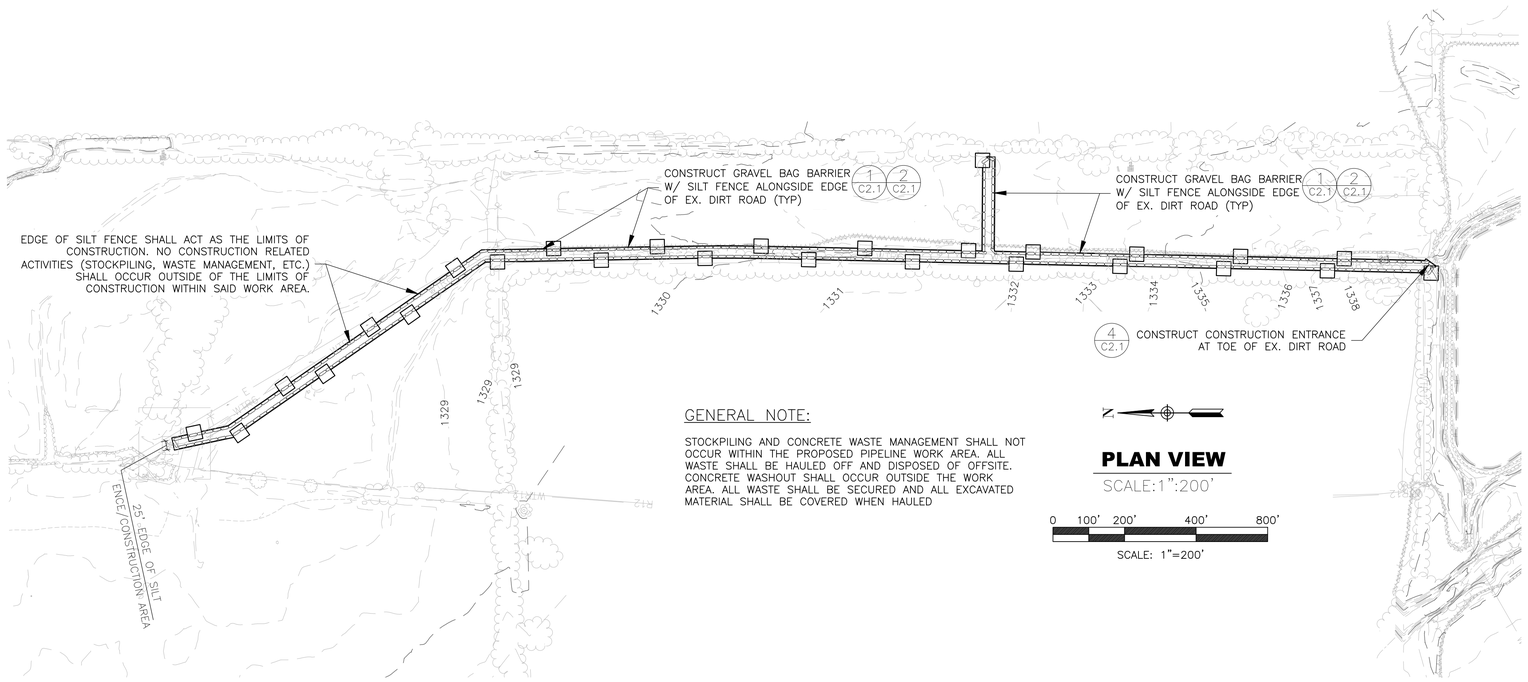
PLAN TYPE "ABOVE GRADE" WITH STRAW BALES

NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE FIG. 4–15) SHALL BE INSTALLED WITHIN 32 FT OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

8 CONCRETE WASTE MANAGEMENT

NOT TO SCALE



GENERAL NOTE:

STOCKPILING AND CONCRETE WASTE MANAGEMENT SHALL NOT OCCUR WITHIN THE PROPOSED PIPELINE WORK AREA. ALL WASTE SHALL BE HAULED OFF AND DISPOSED OF OFFSITE. CONCRETE WASHOUT SHALL OCCUR OUTSIDE THE WORK AREA. ALL WASTE SHALL BE SECURED AND ALL EXCAVATED MATERIAL SHALL BE COVERED WHEN HAULED

PLAN VIEW

SCALE:1":200'

0 100' 200' 400' 800'

SCALE: 1"=200'

NOTES:

GENERAL NOTES: THIS EROSION AND SEDIMENT CONTROL PLAN WAS PREPARED BY LACO ASSOCIATES. EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL COMPLY WITH THE CALIFORNIA STORM WATER BEST MANAGEMENT PRACTICE HANDBOOK–CONSTRUCTION (LATEST REVISION). THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE FOLLOWING BMP'S:

GENERAL WATER POLLUTION CONTROL NOTES:

A. THE FOLLOWING PLANS ARE ACCURATE FOR STORM WATER POLLUTION CONTROL PURPOSES ONLY.
B. THE INFORMATION ON THIS PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTORS TO COMPLY WITH THE REQUIREMENTS OF THE STATE WATER RESOURCES CONTROL BOARD.

EROSION AND SEDIMENT CONTROL SCHEDULE

A. RAINY SEASON DATES: OCTOBER 15 TO MAY 15.
B. START IMPLEMENTATION OF TEMPORARY SOIL STABILIZATION AND SEDIMENT CONTROL BMP'S ON OCTOBER 10 OR 5 DAYS BEFORE START OF CONSTRUCTION, WHICHEVER IS EARLIER.
C. COMPLETE IMPLEMENTATION OF TEMPORARY SOIL STABILIZATION AND SEDIMENT CONTROL BMP'S BY OCTOBER 15 OR START OF CONSTRUCTION, WHICHEVER IS LATER. NO CONSTRUCTION SHALL OCCUR AFTER OCTOBER 1 UNTIL APPROVED EROSION CONTROL MEASURES ARE IN PLACE.

EROSION AND SEDIMENT CONTROL NOTES:

A. ALL AREAS OF DISTURBED SOIL, EXCEPT ROAD SURFACE, SHALL BE MULCHED BY HAND BROADCASTING NATIVE SEED MIX TO BE SPECIFIED BY OWNER.
B. DIVERT RUNOFF AWAY FORM STEEP BARE SLOPES OR OTHER CRITICAL AREAS WITH BARRIERS, BERMS, DITCHES, OR OTHER FACILITIES.
C. LOCATE STOCKPILES IN AREAS THAT WILL NOT CONTRIBUTE TO OFFSITE SEDIMENT DISCHARGE, STOCKPILES SHALL BE PROTECTED BY PROMPT USE OF APPROPRIATE BMP'S.
D. INSPECTIONS SHALL BE CONDUCTED AS FOLLOWS: PRIOR TO A FORECAST STORM, AFTER A RAIN EVENT THAT CAUSES RUNOFF FROM THE CONSTRUCTION SITE, AT 24–HOUR INTERVALS DURING EXTENDED RAIN EVENTS. WEEKLY FOR OCTOBER 15 TO APRIL 15, AT OTHER INTERVALS OF TIME SPECIFIED IN THE CONTRACT DOCUMENTS.
E. ANY DEFICIENCIES SHALL BE PROMPTLY CORRECTED, SUCH AS:
F. RE–SEED AND RE–MULCH AREAS WHICH DO NOT TAKE.
G. CHECK AND ADJUST STRAW BALES, SEDIMENT TRAPS AND SILT FENCES TO PREVENT SEDIMENT FROM DISCHARGING INTO SWALES OR UNGRADED AREAS. REMOVE SEDIMENT IF NECESSARY.

EROSION CONTROL NOTES:

A. THE FOLLOWING MEASURES SHALL BE TAKEN TO MINIMIZE EROSION AND TRANSPORT OF SEDIMENT OFF SITE:
B. SILT FENCES AND FIBER ROLLS SHALL BE INSTALLED I THE LOCATIONS INDICATED ON THIS SET OF PLANS AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CALTRANS BMP'S.
C. MULCH OR OTHER PROTECTIVE COVERING SHALL BE APPLIED TO STOCKPILED SOIL THAT WILL BE EXPOSED THROUGH THE WINTER SEASON.
D. ALL CONSTRUCTION AREAS, INCLUDING DRIVEWAYS, SHALL BE MAINTAINED AS
E. THE CONTRACTOR SHALL INSPECT THE EROSION NECESSARY TO MINIMIZE THE EMISSION OF DUST. AND SEDIMENTATION CONTROL MEASURES FOLLOWING EACH RAINFALL EVENT AND REPORT ANY DAMAGE OR FAILED EROSION CONTROL MEASURES TO THE ENGINEER. THE ENGINEER SHALL ADVISE THE OWNER OF ANY REQUIRED
F. SPECIFIC BMP'S SHOWN ON THIS SET OF PLANS REMEDIAL ACTIONS. ARE BASED ON GENERAL PRACTICES FOR TYPICAL CONSTRUCTION SITES. SITE SPECIFIC CONDITIONS MAY REQUIRE SUBSTITUTIONS OR CHANGES TO SPECIFIED BMPS TO EFFECTIVELY CONTROL EROSION.
G. FIBER ROLLS SHALL BE INSTALLED AROUND STOCKPILE AREA.

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NO.	HISTORY / REVISION	BY	CHK.	DATE

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

PIPELINE EROSION CONTROL PLAN

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.1

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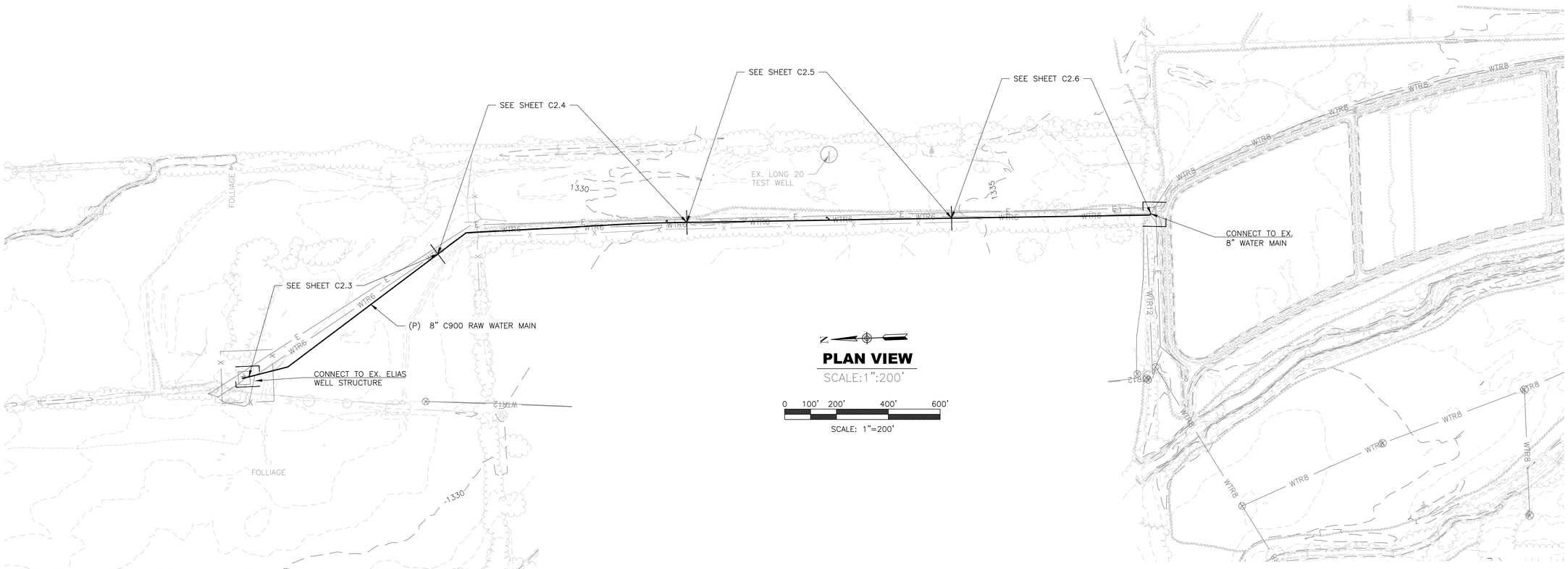

PLAN VIEW

SCALE:1":200'

0 100' 200' 400' 600'

SCALE: 1"=200'

50% DESIGN SET – NOT FOR CONSTRUCTION

Mar 10,2020-12:07pm
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NO.	HISTORY / REVISION	BY	CHK.	DATE

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WILLITS, CA 95490

PIPE PLAN AND PROFILE OVERVIEW

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.2

SCALE:
HORIZ: 1" = 200'
VERT: 1'" = 5'

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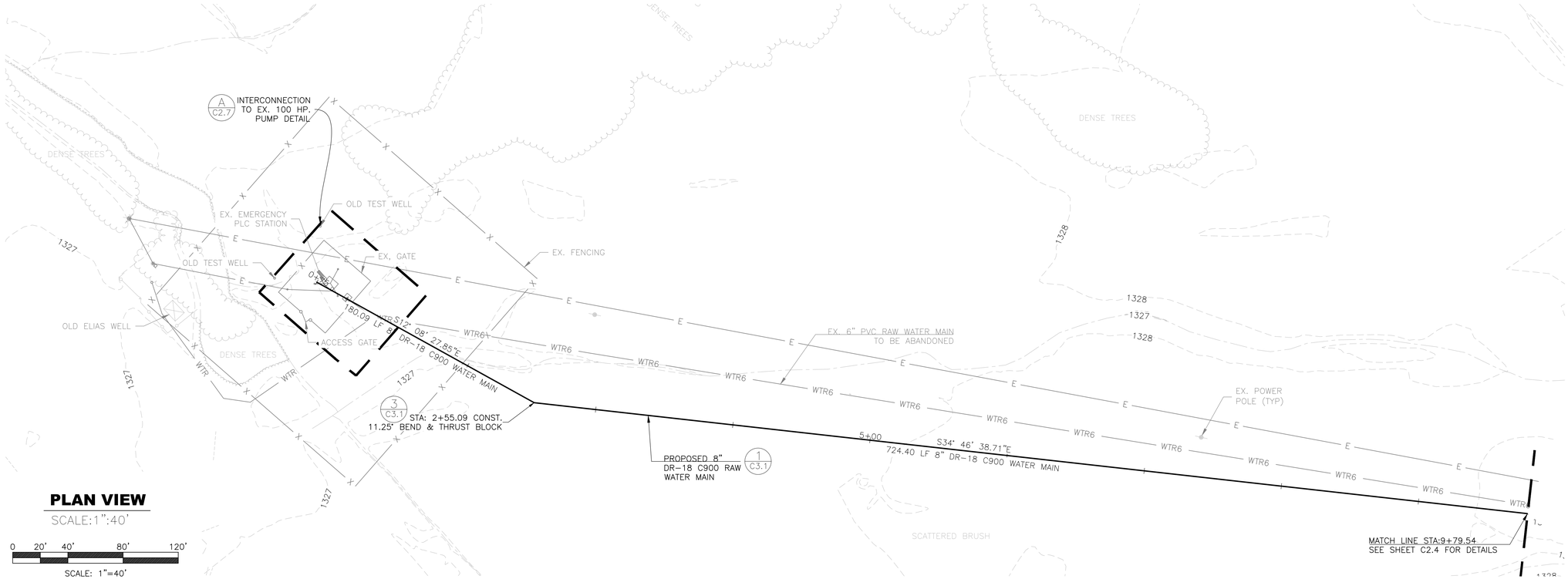
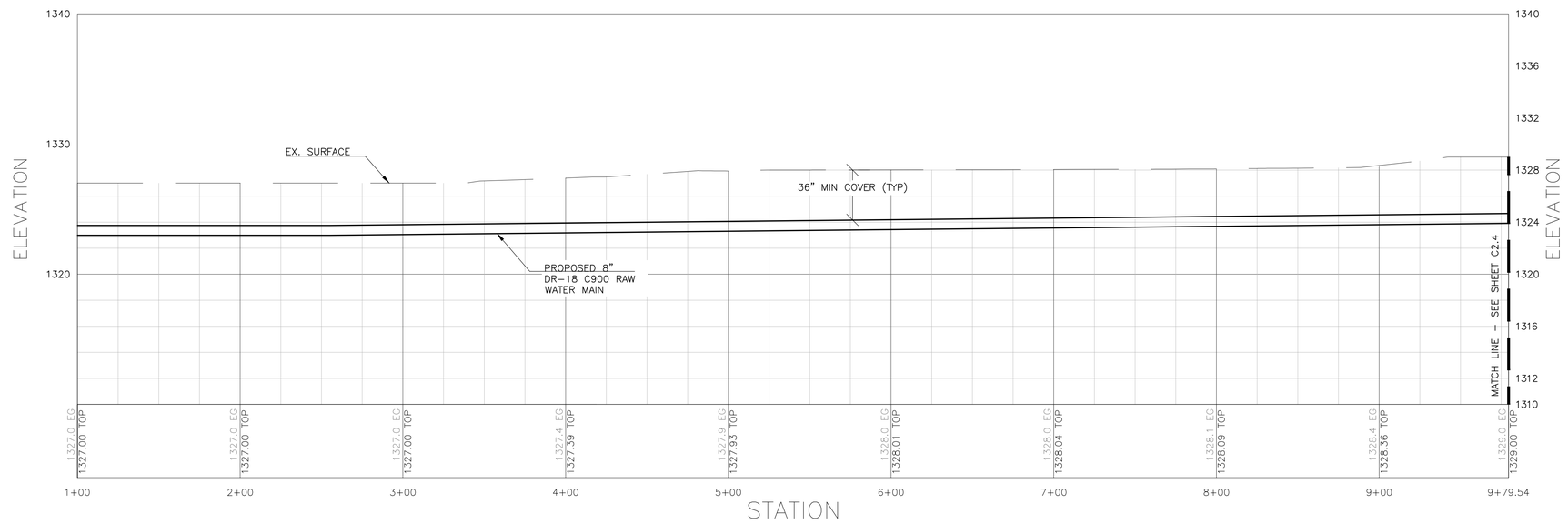


PLAN VIEW

SCALE:1":40'

0 20' 40' 80' 120'

SCALE: 1"=40'



SCALE:
VERT: 1" = 5'
HORIZ: 1" = 40'

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GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

PIPE PLAN AND PROFILE STA 01+00.00 TO 09+79.54

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.3

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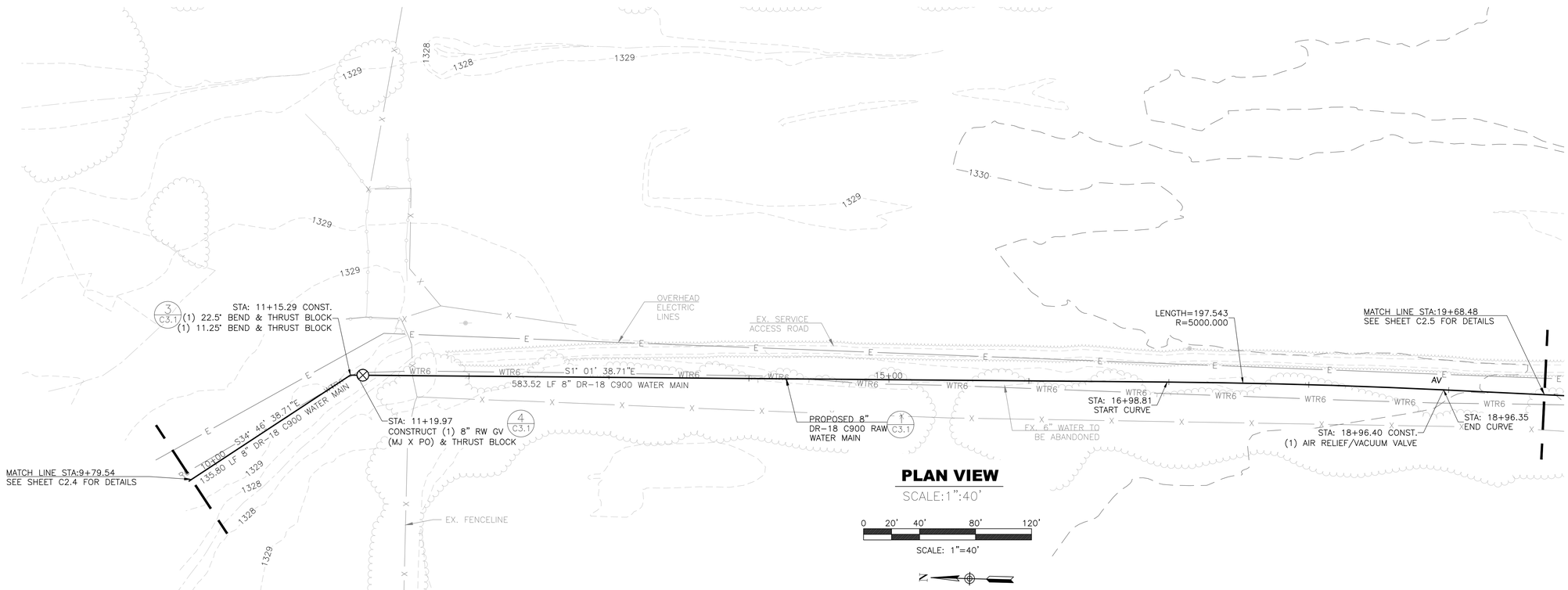


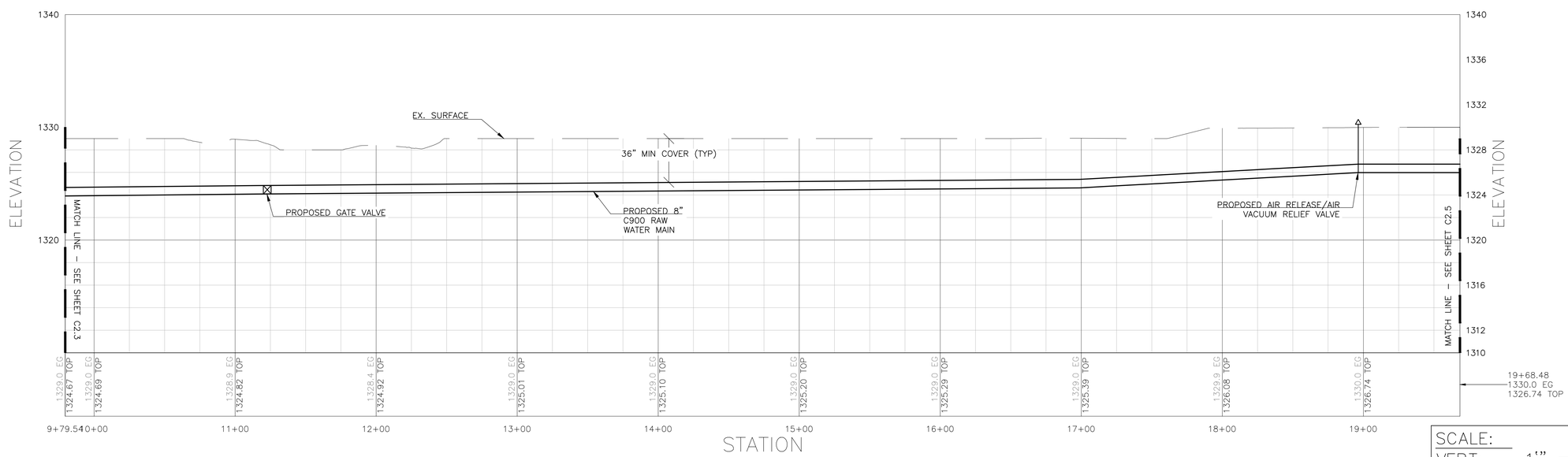
PLAN VIEW

SCALE:1":40'

0 20' 40' 80' 120'

SCALE: 1"=40'

N



SCALE:
VERT: 1" = 5'
HORIZ: 1" = 40'

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WILLITS, CA 95490

PIPE PLAN AND PROFILE STA 09+79.54 TO 19+68.48

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.4

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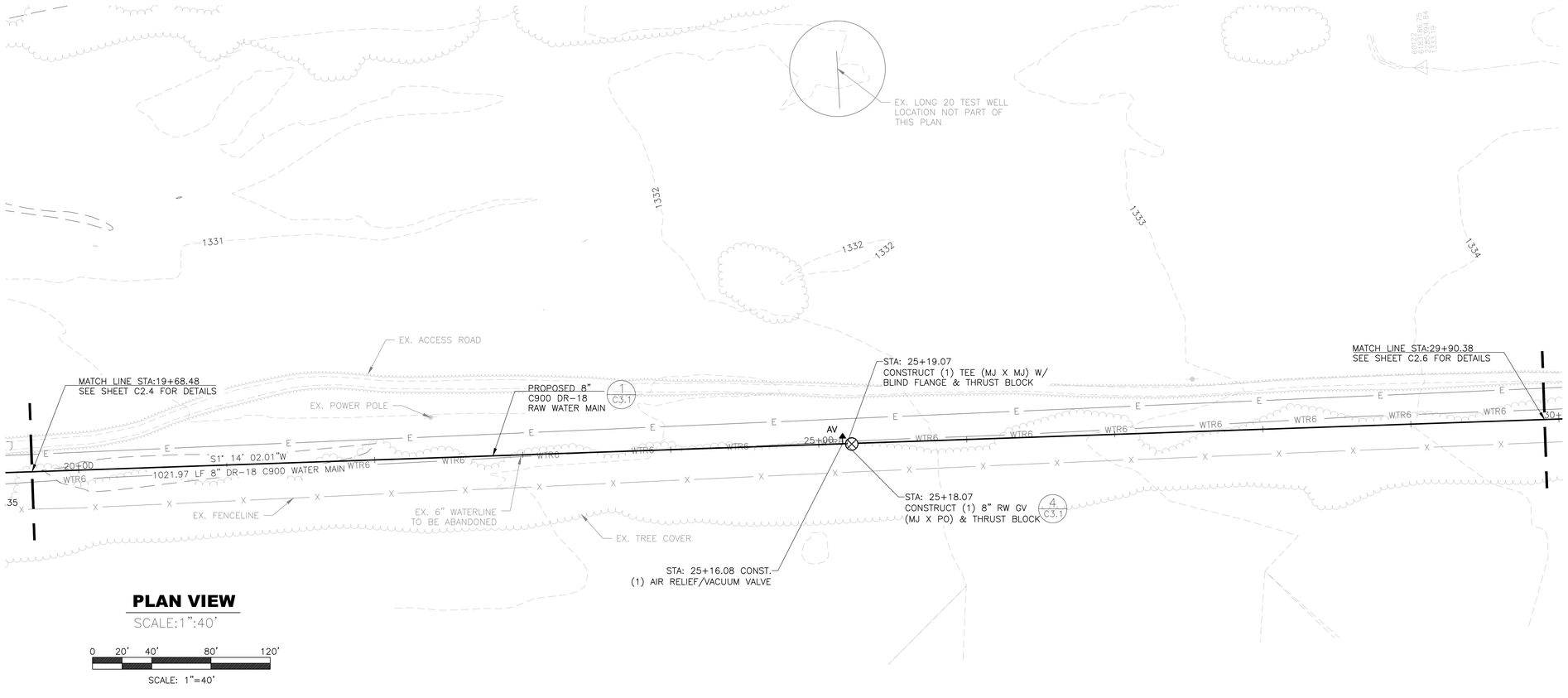
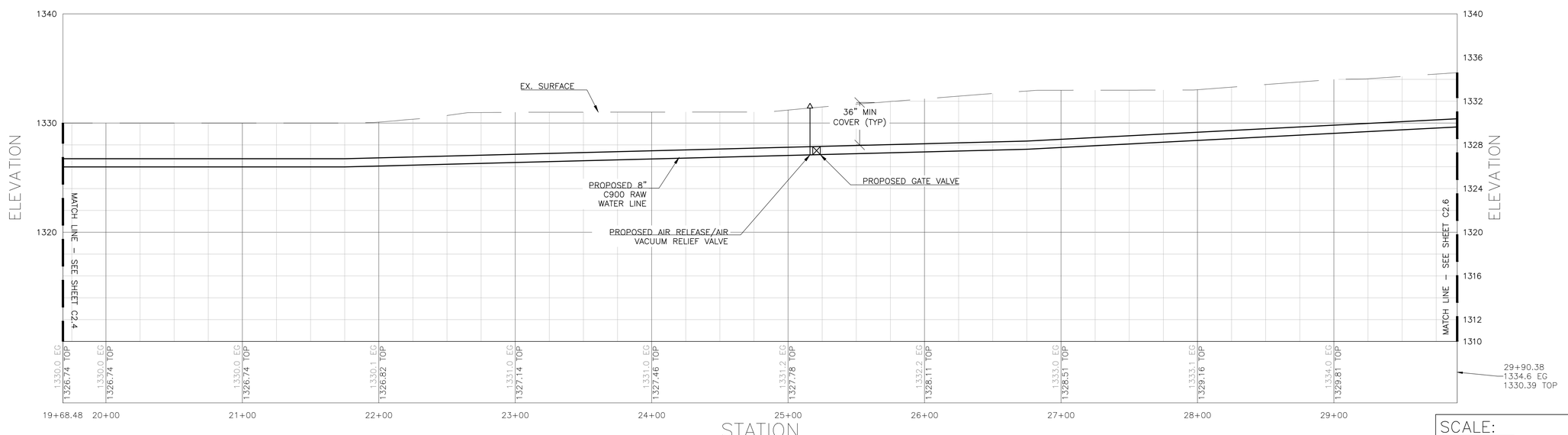


PLAN VIEW

SCALE:1":40'

0 20' 40' 80' 120'

SCALE: 1"=40'



SCALE:
VERT: 1'" = 5'
HORIZ: 1" = 40'

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GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
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PIPE PLAN AND PROFILE STA 19+68.48 TO 29+90.38

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.5

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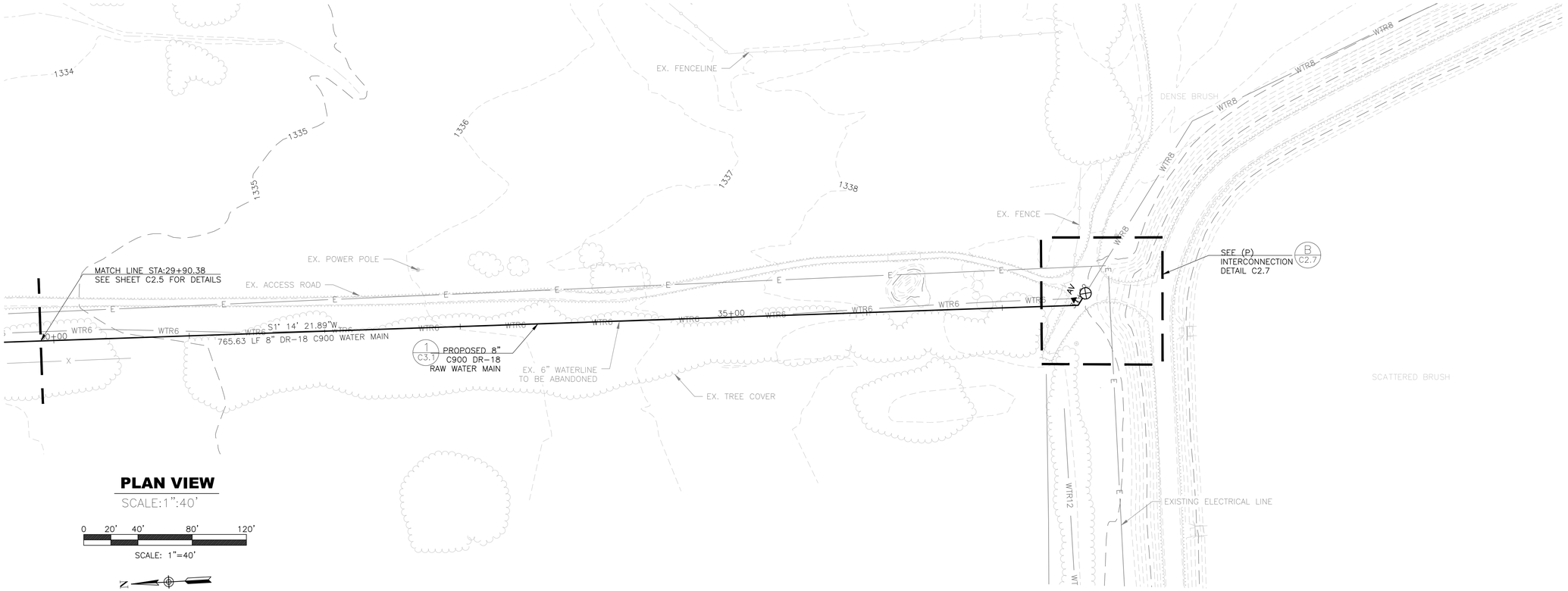
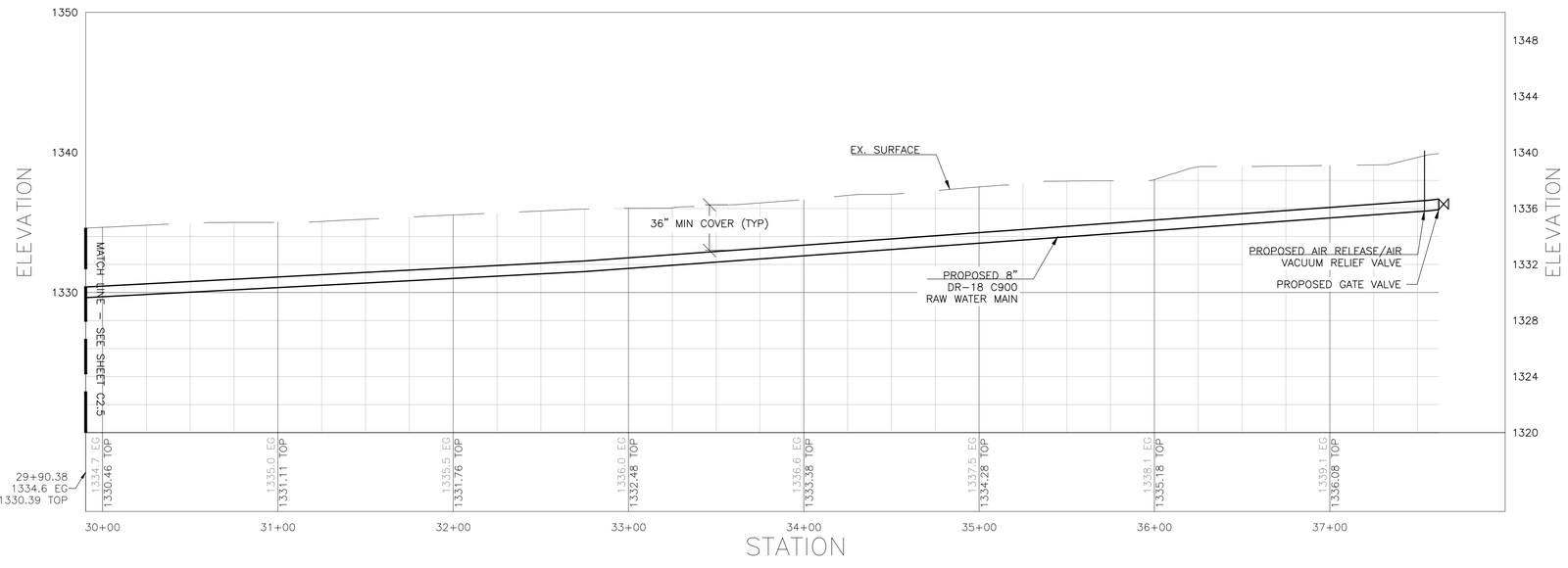


PLAN VIEW

SCALE: 1":40'

0 20' 40' 80' 120'

SCALE: 1"=40'



SCALE:
VERT: 1" = 5'
HORIZ: 1" = 40'

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PIPE PLAN AND PROFILE STA 29+90.38 TO STA 37+62.18

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.6

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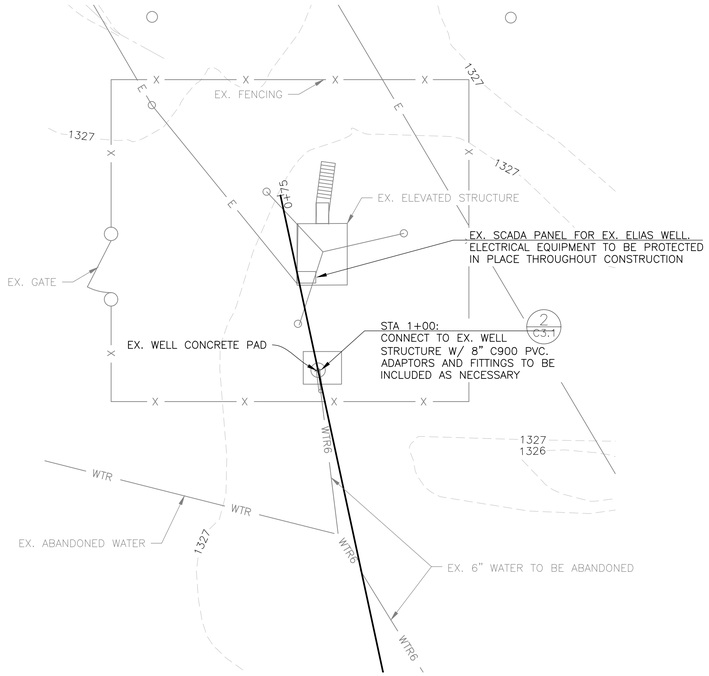
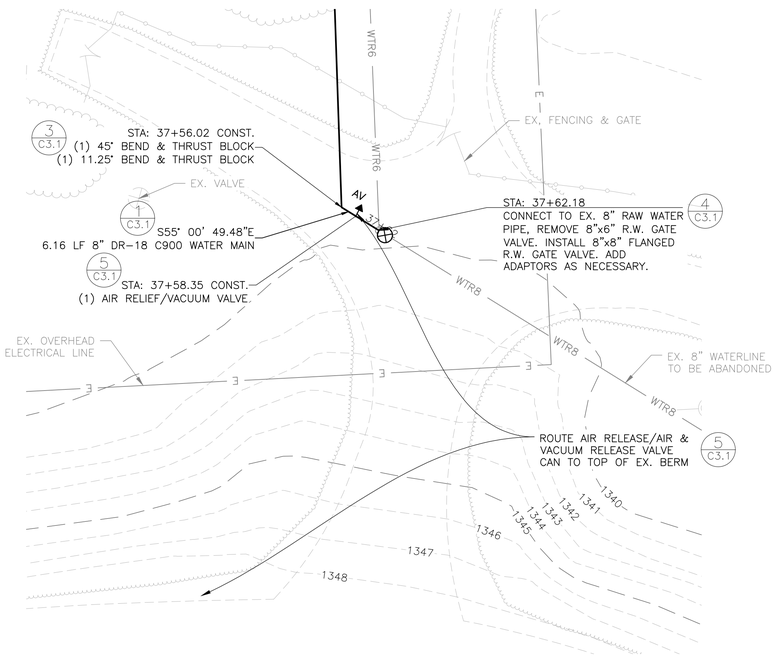


A **WELL INTERCONNECTION DETAIL**
1" = 10'



B **8" PIPE INTERCONNECTION DETAIL**
1" = 10'

PLAN VIEW
0 5' 10' 20' 40'
SCALE: 1"=10'

50% DESIGN SET – NOT FOR CONSTRUCTION

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INTERCONNECTION DETAILS

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C2.7

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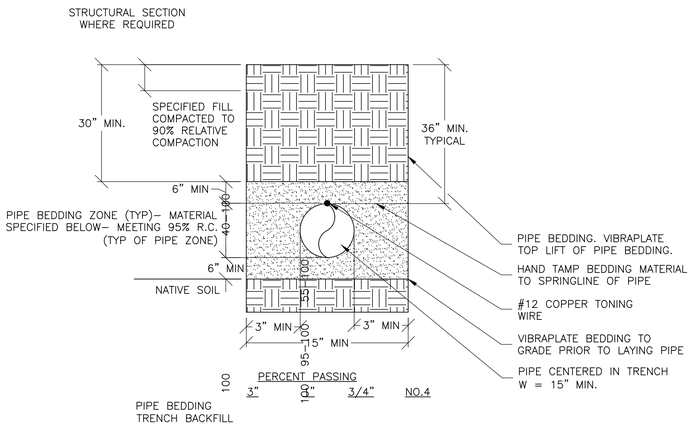
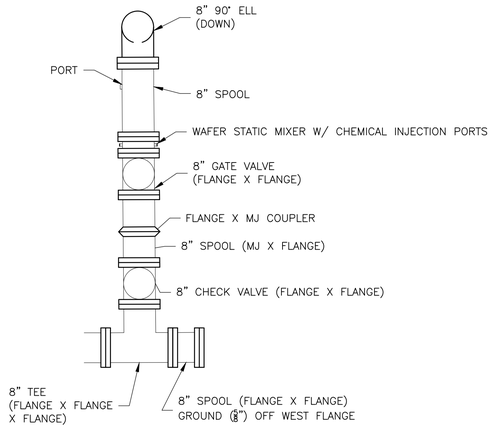


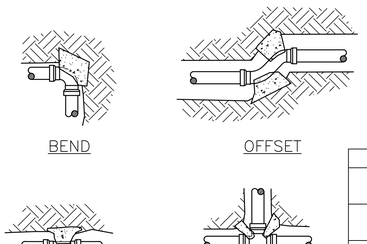
1 TYPICAL TRENCH DETAIL

N.T.S.



2 CONNECTION TO EXISTING WELL

N.T.S.



3 THRUST BLOCK DETAIL

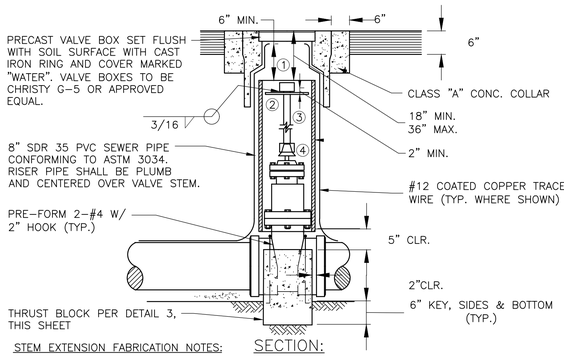
PER CITY OF WILLITS DESIGN AND CONSTRUCTION STANDARDS N.T.S.

NOTES:

1. SAFE BEARING LOAD OF SOIL SHALL NOT BE EXCEEDED.
2. CONCRETE BLOCKING CAST–IN–PLACE, TO EXTEND FROM BELLS OF FITTINGS TO UNDISTURBED SOIL AND ENTIRE BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
3. IN USING THE THRUST BLOCKING TABLE BELOW, ASSUME 2000 P.S.F. BEARING CAPACITY UNLESS OTHERWISE SHOWN ON THE PLANS. THE DESIGN ENGINEER SHALL SPECIFY THRUST BLOCKING REQUIREMENTS FOR ALL OTHER SOIL BEARING CONDITIONS.
4. FOR PLUGGED LEG(S) OF TEE OR CROSS, USE HARNESS TYPE BLOCKING AS SHOWN ON THE CITY OF WILLITS STD. DETAIL NO. 516 AND CONCRETE BLOCKING INDICATED IN THE TABLE BELOW.
5. CONCRETE SHALL BE 6 SACK MIX.

* MIN. REQ'D BEARING AREA IN SF PER 100 P.S.I. TEST PRESSURE							
PIPE SIZE	SOIL BRG CAPACITY	HARNESS BLOCKS	TEES & DEAD ENDS	90° BENDS	45° BENDS	22 ½° BENDS	11 ¼° BENDS
4"	1000 2000	2 1	2 1	3 1.5	2 1	1 0.5	1 0.5
6"	1000 2000	4 2	4 2	6 3	3 2	2 1	2 1
8"	1000 2000	7 4	7 4	10 5	5 3	3 2	3 2
10"	1000 2000	12 6	12 6	17 8.5	10 5	5 25	5 25
12"	1000 2000	16 8	16 8	22 11	12 6	6 3	6 3

* MULTIPLY NO. IN TABLE BY TEST PRESSURE & DIVIDE BY 100



STEM EXTENSION FABRICATION NOTES:

1. ALL WELDS TO RISER SHAFT SHALL BE FILLET WELD ALL AROUND, AS SPECIFIED BELOW.
2. ALL STEEL REQUIRED FOR RISER FABRICATION SHALL BE STRUCTURAL STEEL PER ASTM A36.

VALVE STEM EXTENSION PARTS LIST	
DESIGNATION	DESCRIPTION
①	VALVE OPERATING NUT OR 1–7/8" x 1–7/8" x 2" HIGH, SOLID STEEL WELDED TO RISER SHAFT.
②	1/8" THK. x 7–1/2" DIA. GUIDE PLATE WELDED TORISER SHAFT.
③	1–1/2" x 3/16" SQUARE STEEL TUBING, LENGTH AS REQUIRED. EDGE WELD OPERATING NUT AT BOTH ENDS.
④	2–1/2" x 3/16" SQUARE STEEL TUBING 2–1/2" IN LENGTH WELDED TO RISER SHAFT.

NOTES:

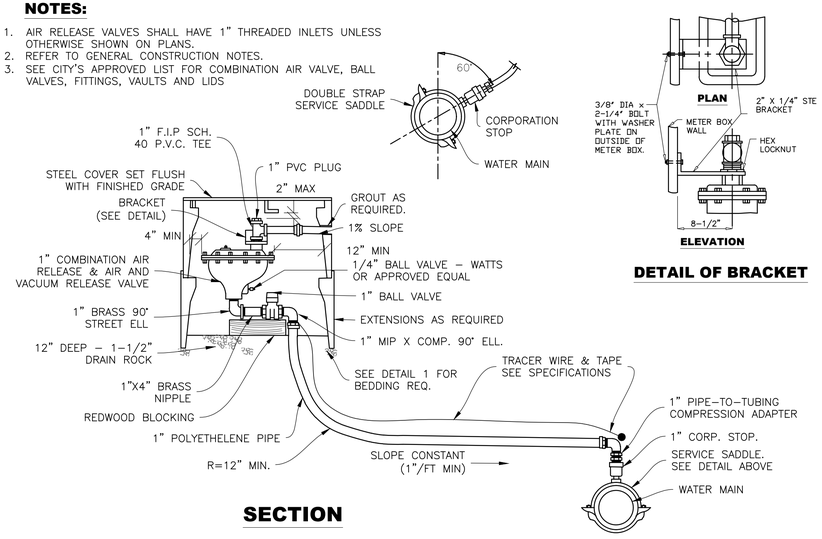
1. IF VALVE IS INSTALLED SO THAT THE TOP OF THE OPERATING NUT IS LESS THAN 36" BELOW FINISHED GRADE, THE STEM RISER IS NOT REQUIRED.
2. ALL EXTERNAL BOLTS AND NUTS ON VALVES SHALL BE 304 STAINLESS STEEL OR VALVE ASSEMBLY SHALL BE POLY WRAPPED. SEE GENERAL CONSTRUCTION NOTES.
3. IF ENDLINE VALVE, THEN PROVIDE ADEQUATE THRUST BLOCKING & RESTRAINT OR FLANGED/ MJ CONNECTION.
4. PROVIDE CLOW, WATEROUS, OR AVK VALVE.
5. CONCRETE: 2500 psi.

4 TYPICAL GATE VALVE WITH VALVE BOX AND RISER

N.T.S.

NOTES:

1. AIR RELEASE VALVES SHALL HAVE 1" THREADED INLETS UNLESS OTHERWISE SHOWN ON PLANS.
2. REFER TO GENERAL CONSTRUCTION NOTES.
3. SEE CITY'S APPROVED LIST FOR COMBINATION AIR VALVE, BALL VALVES, FITTINGS, VAULTS AND LIDS

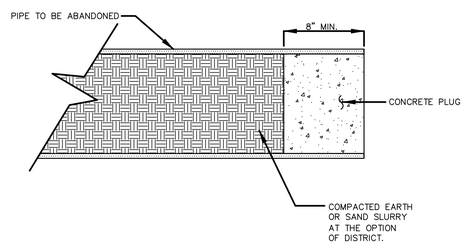


SECTION

DETAIL OF BRACKET

5 INSTALLATION OF AIR & VACUUM & AIR RELEASE VALVE ASSEMBLY

N.T.S.



10" DIAMETER PIPE AND SMALLER

NOTES:

1. PIPE PLUGS SHALL BE INSTALLED TO THE SATISFACTION OF THE DISTRICT.
2. ABANDONED PIPES, 12" AND LARGER, SHALL BE BROKEN INTO EVERY 50' AND SHALL BE FILLED COMPLETELY WITH SAND SLURRY.

6 ABANDONED PIPE PLUG DETAIL

N.T.S.

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NO.	HISTORY / REVISION	BY	CHK.	DATE

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

CIVIL DETAILS

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C3.1

50% DESIGN SET – NOT FOR CONSTRUCTION

Mar 10,2020-12:28pm
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DRAWN: CSC
CHECK: HCC
APPROVED:
DATE: TBD
JOB NUMBER: 8509.08
DRAWING: C3.2

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

WELL DETAILS

NO.	HISTORY / REVISION	BY	CHK.	DATE

LACO
EUREKA • UKIAH • SANTA ROSA • CHICO
1-800-515-5054 www.lacoassociates.com

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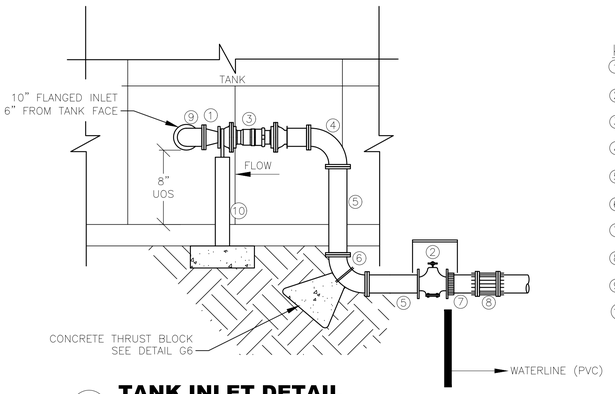
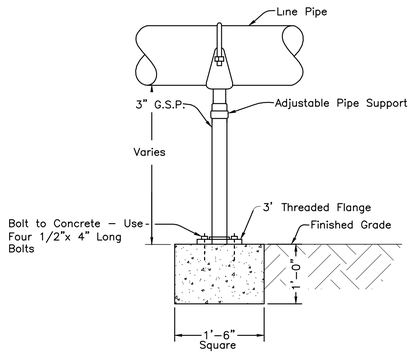


XX **TANK INLET DETAIL**

N.T.S.

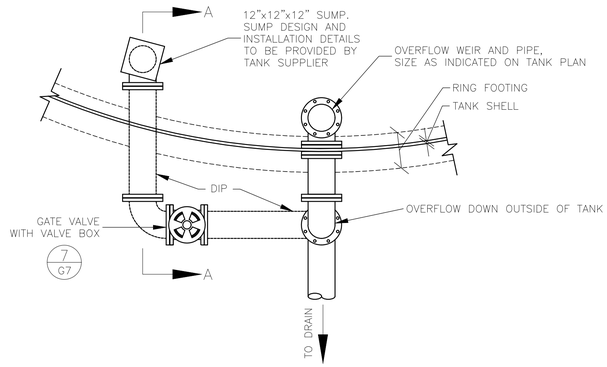
KEY NOTES:

1. 8"x10" FLxFL D.I. REDUCER
2. 8" FLxFL GATE VALVE WITH VALVE BOX (7/G7)
3. FLEXIBLE EXPANSION JOINT
4. 8" FLxFL D.I. 90° ELBOW
5. 8" D.I. SPOOL FLxFL CONTRACTOR TO VERIFY LENGTH
6. 8" FLxFL D.I. 90° ELBOW
7. FLANGED COUPLING ADAPTER
8. 8" MECHANICAL JOINT RESTRAINT
9. 10" 90° ELBOW
10. ADJUSTABLE PIPE SUPPORT, AS NEEDED, SEE DETAIL THIS SHEET

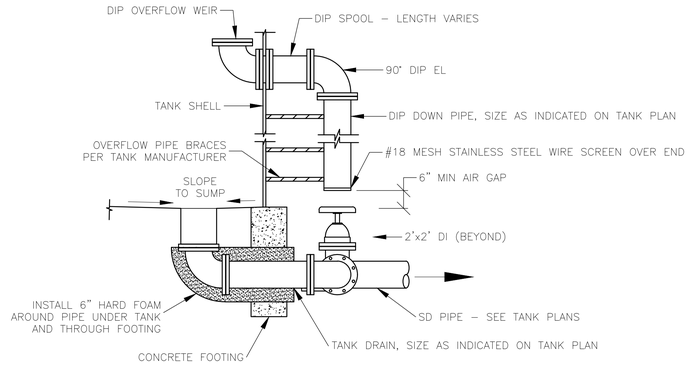


XX **PIPE SUPPORT DETAIL**

N.T.S.



PLAN



SECTION A A

XX **TANK OVERFLOW AND DRAIN**

N.T.S.

50% DESIGN SET – NOT FOR CONSTRUCTION

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NO.	HISTORY / REVISION	BY	CHK.	DATE

GROUNDWATER RESILIENCY IMPROVEMENTS PROJECT
CITY OF WILLITS
WILLITS, CA 95490

CLEARWELL CONNECTION DETAILS

DRAWN	CSC
CHECK	HCC
APPROVED	TBD
DATE	TBD
JOB NUMBER	8509.08
DRAWING	C3.3

APPENDIX 2

Boring Logs

BORING NUMBER B1

LACO

CLIENT City of Willits
PROJECT NAME Proposed New Clear Well
PROJECT NUMBER 8509.08
PROJECT LOCATION 300 North Lenore Avenue, Willits, CA
DATE STARTED 4/15/20 **COMPLETED** 4/15/20
GROUND ELEVATION _____ **HOLE SIZE** 2.5 inches
DRILLING CONTRACTOR Clear Heart Drilling
GROUND WATER LEVELS:
DRILLING METHOD HSA
▽ **AT TIME OF DRILLING** 8.50 feet
LOGGED BY JRG **CHECKED BY** JNK
▼ **AT END OF DRILLING** 11.00 feet
NOTES Blow counts have been converted to standard penetration test values

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	TESTS AND REMARKS	Pocket Penetrometer (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
0		Heterogeneous Fill Deposits Brown Sandy Gravel and Grayish Brown Clay moist, medium dense fine to medium sand, fine to coarse angular gravel	MC	73	4-9-11 (20)					33	19	14	19
			MC	83	13-12-14 (26)								
5			MC	75	3-6-10 (16)								
		(CL) Brown Sandy Lean Clay soft, saturated fine to coarse sand ▽											
10		▼	MC	0	1-1-1 (2)								
15		(CL) Reddish Brown mottled with Grey Lean Clay with Sand that is interbedded with 6 inch thick beds of Sandy Lean Clay moist, medium stiff fine sand	MC	83	3-3-5 (8)								
20			MC	60	3-3-3 (6)								
25			MC	97	3-3-4 (7)								68
30			MC	97	3-3-3 (6)								
35													

(Continued Next Page)

GEOTECH BORING NEW - GINT STD US LAB.GDT - 6/24/20 12:41 - P:\8500\8509 CITY OF WILLITS\8509.08 GROUNDWATER RESILIENCY PROJECT\08 GEOLOGY\FIELD DATA\8509.08 BORING LOGS.GPJ

LACO

CLIENT City of Willits **PROJECT NAME** Proposed New Clear Well

PROJECT NUMBER 8509.08 **PROJECT LOCATION** 300 North Lenore Avenue, Willits, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	TESTS AND REMARKS	Pocket Penetrometer (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	ATTERBERG LIMITS (%) PLASTIC LIMIT	ATTERBERG LIMITS (%) PLASTICITY INDEX	FINES CONTENT (%)
35		(CL) Reddish Brown mottled with Grey Lean Clay with Sand that is interbedded with 6 inch thick beds of Sandy Lean Clay moist, medium stiff fine sand *(continued)*	MC	100	1-3-4 (7)								
40			MC	67	3-4-6 (10)								

Bottom of borehole at 41.5 feet.

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BORING NUMBER B2

LACO

CLIENT City of Willits
PROJECT NAME Proposed New Clear Well
PROJECT NUMBER 8509.08
PROJECT LOCATION 300 North Lenore Avenue, Willits, CA
DATE STARTED 4/15/20 **COMPLETED** 4/15/20
GROUND ELEVATION _____ **HOLE SIZE** 2.5 inches
DRILLING CONTRACTOR Clear Heart Drilling
GROUND WATER LEVELS:
DRILLING METHOD HSA
AT TIME OF DRILLING ---
LOGGED BY JRG **CHECKED BY** JNK
AT END OF DRILLING --- No Groundwater Encountered
NOTES Blow counts have been converted to standard penetration test values

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	TESTS AND REMARKS	Pocket Penetrometer (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
0		Heterogeneous Fill Deposits Brown Sandy Gravel and Grayish Brown Clay moist, medium dense fine to medium sand, fine to coarse angular gravel	MC		5-8-8 (16)								
		Encountered unmarked metal plate Refusal at 2.5 feet. Bottom of borehole at 2.5 feet.											

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BORING NUMBER B3

LACO

CLIENT City of Willits
PROJECT NAME Proposed New Clear Well
PROJECT NUMBER 8509.08
PROJECT LOCATION 300 North Lenore Avenue, Willits, CA
DATE STARTED 4/15/20 **COMPLETED** 4/15/20
GROUND ELEVATION _____ **HOLE SIZE** 2.5 inches
DRILLING CONTRACTOR Clear Heart Drilling
GROUND WATER LEVELS:
DRILLING METHOD HSA
▽ **AT TIME OF DRILLING** 10.00 feet
LOGGED BY JRG **CHECKED BY** JNK
▼ **AT END OF DRILLING** 11.75 feet
NOTES Blow counts have been converted to standard penetration test values

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	TESTS AND REMARKS	Pocket Penetrometer (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
0		Heterogeneous Fill Deposits Brown Sandy Gravel and Grayish Brown Clay moist, medium dense fine to medium sand, fine to coarse angular gravel	MC		8-21-17 (38)								
5			MC		4-5-8 (13)								
		(CL) Brown Sandy Lean Clay soft, saturated fine to coarse sand	MC		1-1-2 (3)								70
10		▽ (CL) Reddish Brown mottled with Grey Lean Clay with Sand ▼ moist, medium stiff fine sand											
15			MC		4-4-5 (9)								

Bottom of borehole at 16.5 feet.

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APPENDIX 3

Laboratory Results

LACO

FINER THAN #200 SIEVE
ASTM C117/ASTM D-1140

PROJECT	Proposed New Clear Well			JOB NO. 8509.08	SHEET
CLIENT	City of Willits			SAMPLE ID 284	1 of 1
LOCATION	Willits, CA	TEST BY	GF	DATE	5/20/20
		CHECKED BY	GF	CHECK DATE	5/20/20

B1 @ 1.0' & 2.0'

(B)	Net sample (Dry)	676.5	gms
(C)	Dry sample after washing	545.2	gms
	Total Material finer than 200 sieve	131.3	gms
(A)	% Material finer than 200 sieve	**19.4%**	
	A=[(B-C)/B]X100		

B1 @ 25.0'

(B)	Net sample (Dry)	152.4	gms
(C)	Dry sample after washing	48.4	gms
	Total Material finer than 200 sieve	104.0	gms
(A)	% Material finer than 200 sieve	**68.2%**	
	A=[(B-C)/B]X100		

B3 @ 9.0'

(B)	Net sample (Dry)	195.9	gms
(C)	Dry sample after washing	59.6	gms
	Total Material finer than 200 sieve	136.3	gms
(A)	% Material finer than 200 sieve	**69.6%**	
	A=[(B-C)/B]X100		

0

(B)	Net sample (Dry)	0.0	gms
(C)	Dry sample after washing	0.0	gms
	Total Material finer than 200 sieve	0.0	gms
(A)	% Material finer than 200 sieve	**#DIV/0!**	
	A=[(B-C)/B]X100		

0

(B)	Net sample (Dry)	0.0	gms
(C)	Dry sample after washing	0.0	gms
	Total Material finer than 200 sieve	0.0	gms
(A)	% Material finer than 200 sieve	**#DIV/0!**	
	A=[(B-C)/B]X100		

0

(B)	Net sample (Dry)	0.0	gms
(C)	Dry sample after washing	0.0	gms
	Total Material finer than 200 sieve	0.0	gms
(A)	% Material finer than 200 sieve	**#DIV/0!**	
	A=[(B-C)/B]X100		

ATTERBERG LIMITS
ASTM D-4318

PROJECT	Proposed New Clear Well			JOB NO. 8509.08	SHEET 1 of 1
CLIENT	City of Willits			SAMPLE ID 284	
LOCATION	B1 @ 1.0' & 2.0'	TEST BY	GF	DATE	5/20/20
SOIL TYPE	Brn Clayey Sand W/ Gravel (SC)	CHECKED BY	GF	CHECK DATE	5/20/20

PLASTIC LIMIT

	Point 1	Point 2	Point 3
Tare + Wet Soil (gm)	22.43	21.81	
Tare + Dry Soil (gm)	20.17	19.76	
Water (gm)	2.26	2.05	
Tare (gm)	13.27	13.46	
Dry Soil (gm)	6.90	6.30	
Water Content (%)	**32.8%**	**32.5%**	
* Number of Blows	**25**	**25**	

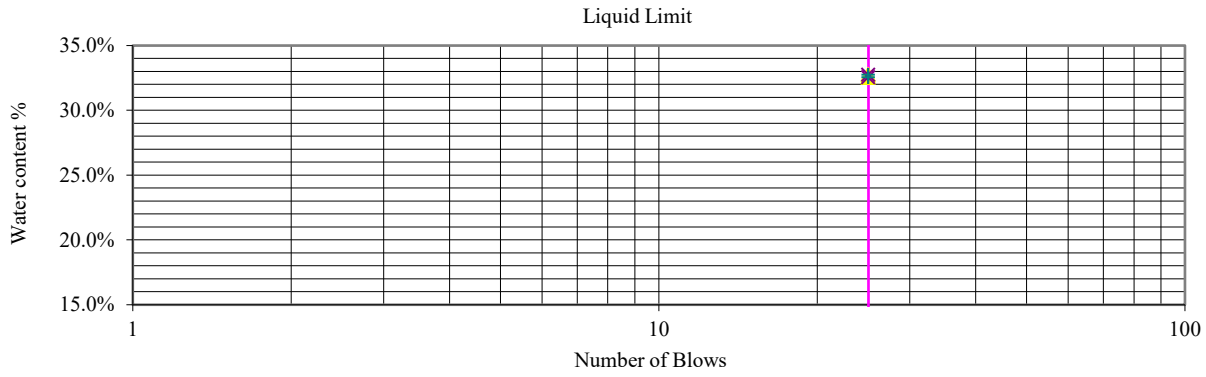
Run 1	Run 2	Run 3
15.17	14.37	
13.93	13.27	
1.24	1.10	
7.37	7.27	
6.56	6.00	
18.9%	**18.3%**	

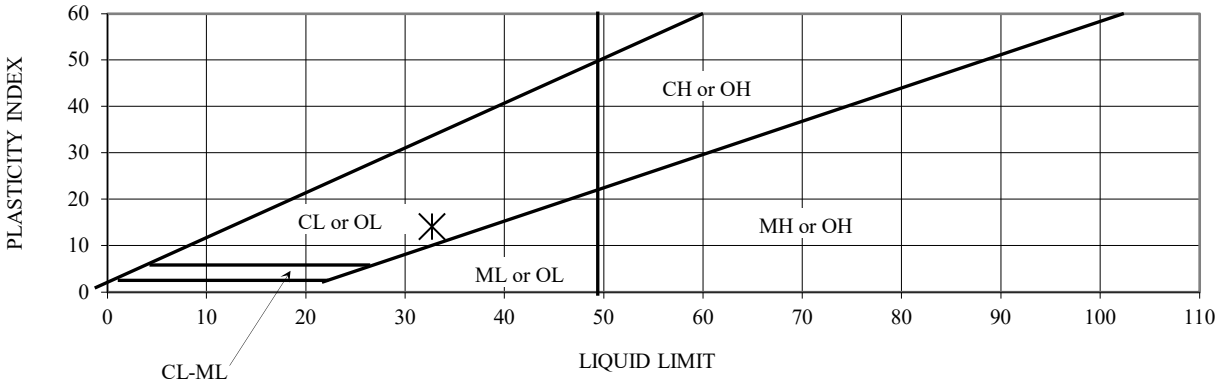
* Groove closure = 13mm

LIQUID LIMIT = 33

PLASTIC LIMIT = 19

PLASTIC INDEX = 14





APPENDIX 4

Liquefaction Analysis Results

GEOLOGISMIKI Geotechnical Software

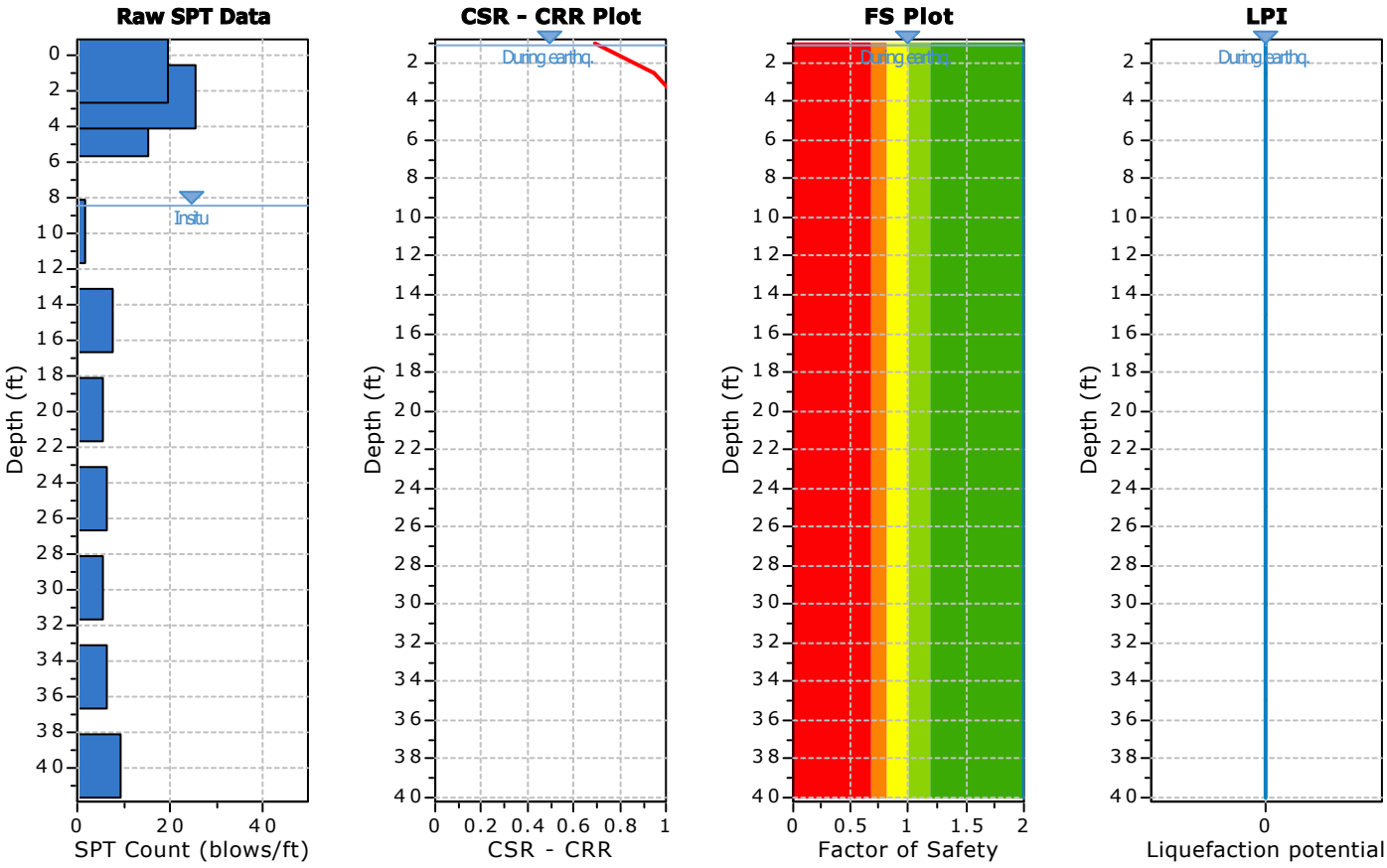
SPT BASED LIQUEFACTION ANALYSIS REPORT

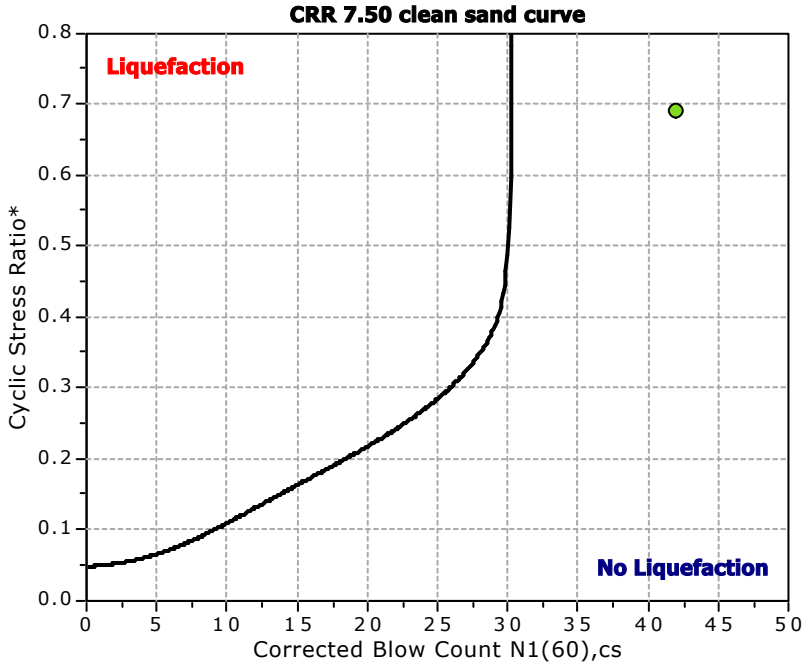
Project title : Proposed New Clear Well **SPT Name: B1**

Location : 300 North Lenore Avenue, Willits, CA

:: Input parameters and analysis properties ::

Analysis method:	NCEER 1998	G.W.T. (in-situ):	8.50 ft
Fines correction method:	NCEER 1998	G.W.T. (earthq.):	1.07 ft
Sampling method:	Standard Sampler	Earthquake magnitude M_w:	7.10
Borehole diameter:	65mm to 115mm	Peak ground acceleration:	1.22 g
Rod length:	3.28 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.40		





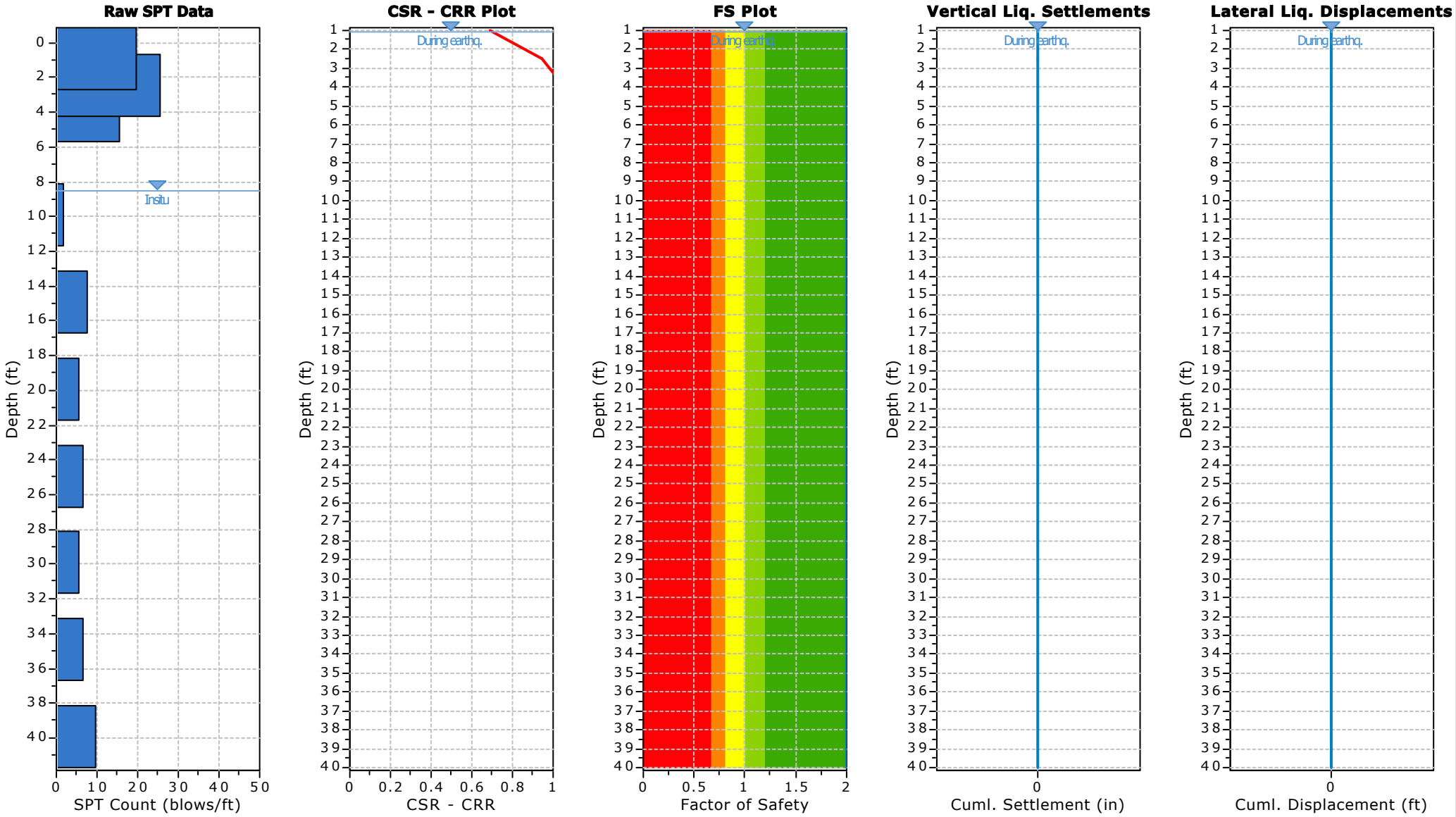
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::

Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
1.00	20	19.40	130.00	2.50	No
2.50	26	19.40	130.00	1.50	No
4.00	16	19.40	130.00	3.00	No
10.00	2	69.60	110.00	8.00	No
15.00	8	68.20	110.00	3.25	No
20.00	6	68.20	110.00	5.00	No
25.00	7	68.20	110.00	5.00	No
30.00	6	68.20	110.00	5.00	No
35.00	7	68.20	110.00	5.00	No
40.00	10	68.20	110.00	3.25	No

Abbreviations

Depth: Depth at which test was performed (ft)
SPT Field Value: Number of blows per foot
Fines Content: Fines content at test depth (%)
Unit Weight: Unit weight at test depth (pcf)
Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	Fines Content (%)	α	β	$(N_1)_{60cs}$	$CRR_{7.5}$
1.00	20	130.00	0.07	0.00	0.07	1.70	1.40	1.00	0.75	1.00	36	19.40	3.51	1.08	42	4.000
2.50	26	130.00	0.16	0.00	0.16	1.63	1.40	1.00	0.75	1.00	44	19.40	3.51	1.08	51	4.000
4.00	16	130.00	0.26	0.00	0.26	1.52	1.40	1.00	0.75	1.00	26	19.40	3.51	1.08	31	4.000
10.00	2	110.00	0.59	0.00	0.59	1.25	1.40	1.00	0.85	1.00	3	69.60	5.00	1.20	9	4.000
15.00	8	110.00	0.87	0.00	0.87	1.09	1.40	1.00	0.85	1.00	10	68.20	5.00	1.20	17	4.000
20.00	6	110.00	1.14	0.00	1.14	0.97	1.40	1.00	0.95	1.00	8	68.20	5.00	1.20	15	4.000
25.00	7	110.00	1.42	0.00	1.42	0.87	1.40	1.00	0.95	1.00	8	68.20	5.00	1.20	15	4.000
30.00	6	110.00	1.69	0.00	1.69	0.79	1.40	1.00	1.00	1.00	7	68.20	5.00	1.20	13	4.000
35.00	7	110.00	1.97	0.00	1.97	0.72	1.40	1.00	1.00	1.00	7	68.20	5.00	1.20	13	4.000
40.00	10	110.00	2.24	0.00	2.24	0.66	1.40	1.00	1.00	1.00	9	68.20	5.00	1.20	16	4.000

Abbreviations

σ_v: Total stress during SPT test (tsf)
u_o: Water pore pressure during SPT test (tsf)
σ'_{vo}: Effective overburden pressure during SPT test (tsf)
C_N: Overburden corretion factor
C_E: Energy correction factor
C_B: Borehole diameter correction factor
C_R: Rod length correction factor
C_S: Liner correction factor
$N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
α, β: Clean sand equivalent clean sand formula coefficients
$N_{1(60)cs}$: Corected $N_{1(60)}$ value for fines content
$CRR_{7.5}$: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR*	FS	
1.00	130.00	0.07	0.00	0.07	1.00	1.00	0.793	1.15	0.689	1.00	0.689	2.000	●
2.50	130.00	0.16	0.04	0.12	1.00	1.00	1.089	1.15	0.947	1.00	0.947	2.000	●

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR^*	FS	
4.00	130.00	0.26	0.09	0.17	0.99	1.00	1.214	1.15	1.056	1.00	1.056	2.000	
10.00	110.00	0.59	0.28	0.31	0.98	1.00	1.472	1.15	1.280	1.00	1.280	2.000	
15.00	110.00	0.87	0.43	0.43	0.97	1.00	1.545	1.15	1.343	1.00	1.343	2.000	
20.00	110.00	1.14	0.59	0.55	0.96	1.00	1.576	1.15	1.370	1.00	1.370	2.000	
25.00	110.00	1.42	0.75	0.67	0.94	1.00	1.582	1.15	1.376	1.00	1.376	2.000	
30.00	110.00	1.69	0.90	0.79	0.92	1.00	1.568	1.15	1.363	1.00	1.363	2.000	
35.00	110.00	1.97	1.06	0.91	0.89	1.00	1.532	1.15	1.332	1.00	1.332	2.000	
40.00	110.00	2.24	1.22	1.02	0.85	1.00	1.475	1.15	1.283	1.00	1.283	2.000	

Abbreviations

$\sigma_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
$u_{o,eq}$: Water pressure at test point, during earthquake (tsf)
$\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
r_d : Nonlinear shear mass factor
α: Improvement factor due to stone columns
CSR : Cyclic Stress Ratio (adjusted for improvement)
MSF : Magnitude Scaling Factor
$CSR_{eq,M=7.5}$: CSR adjusted for M=7.5
K_{sigma}: Effective overburden stress factor
CSR^*: CSR fully adjusted
FS: Calculated factor of safety against soil liquefaction

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
1.00	2.000	0.00	9.85	1.50	0.00
2.50	2.000	0.00	9.62	1.50	0.00
4.00	2.000	0.00	9.39	1.50	0.00
10.00	2.000	0.00	8.48	6.00	0.00
15.00	2.000	0.00	7.71	5.00	0.00
20.00	2.000	0.00	6.95	5.00	0.00
25.00	2.000	0.00	6.19	5.00	0.00
30.00	2.000	0.00	5.43	5.00	0.00
35.00	2.000	0.00	4.67	5.00	0.00
40.00	2.000	0.00	3.90	5.00	0.00

Overall potential I_L : 0.00

I_L = 0.00 - No liquefaction
I_L between 0.00 and 5 - Liquefaction not probable
I_L between 5 and 15 - Liquefaction probable
I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	α	b	γ	ε_{15}	N_c	ε_{Nc} (%)	Δh (ft)	ΔS (in)
1.00	36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.000

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	a	b	γ	ε_{15}	N_c	ε_{Nc} (%)	Δh (ft)	ΔS (in)

Cumulative settlemetns: 0.000

Abbreviations

τ_{av}: Average cyclic shear stress
p: Average stress
G_{max}: Maximum shear modulus (tsf)
a, b: Shear strain formula variables
γ: Average shear strain
ε_{15}: Volumetric strain after 15 cycles
N_c: Number of cycles
ε_{Nc}: Volumetric strain for number of cycles N_c (%)
Δh: Thickness of soil layer (in)
ΔS: Settlement of soil layer (in)

:: Vertical settlements estimation for saturated sands ::

Depth (ft)	D_{50} (in)	q_c/N	e_v (%)	Δh (ft)	s (in)
2.50	0.00	5.00	0.00	1.50	0.000
4.00	0.00	5.00	0.00	3.00	0.000
10.00	0.00	5.00	0.00	8.00	0.000
15.00	0.00	5.00	0.00	3.25	0.000
20.00	0.00	5.00	0.00	5.00	0.000
25.00	0.00	5.00	0.00	5.00	0.000
30.00	0.00	5.00	0.00	5.00	0.000
35.00	0.00	5.00	0.00	5.00	0.000
40.00	0.00	5.00	0.00	3.25	0.000

Cumulative settlements: 0.000

Abbreviations

D_{50}: Median grain size (in)
q_c/N: Ratio of cone resistance to SPT
e_v: Post liquefaction volumetric strain (%)
Δh: Thickness of soil layer to be considered (ft)
s: Estimated settlement (in)

:: Lateral displacements estimation for saturated sands ::

Depth (ft)	$(N_1)_{60}$	D_r (%)	γ_{max} (%)	d_z (ft)	LDI	LD (ft)
1.00	36	84.00	0.00	2.50	0.000	0.00
2.50	44	100.00	0.00	1.50	0.000	0.00
4.00	26	71.39	0.00	3.00	0.000	0.00
10.00	3	24.25	0.00	8.00	0.000	0.00
15.00	10	44.27	0.00	3.25	0.000	0.00
20.00	8	39.60	0.00	5.00	0.000	0.00
25.00	8	39.60	0.00	5.00	0.000	0.00
30.00	7	37.04	0.00	5.00	0.000	0.00
35.00	7	37.04	0.00	5.00	0.000	0.00
40.00	9	42.00	0.00	3.25	0.000	0.00

:: Lateral displacements estimation for saturated sands ::

Depth (ft)	$(N_1)_{60}$	D_r (%)	γ_{max} (%)	d_z (ft)	LDI	LD (ft)

Cumulative lateral displacements: 0.00

Abbreviations

D_r: Relative density (%)
γ_{max}: Maximum amplitude of cyclic shear strain (%)
d_z: Soil layer thickness (ft)
LDI: Lateral displacement index (ft)
LD: Actual estimated displacement (ft)

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