



ELK VALLEY RANCHERIA
NONPOINT SOURCE
POLLUTION ASSESSMENT
REPORT

Revision 1

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SECTION 1.0

OVERVIEW

REVISION NUMBER 2

This Nonpoint Source Pollution (“NPS”) Assessment Report completed in February, 2017 has been completed to address the increase in the Tribe’s land holdings and to update the short-term and long-term best management practices (“BMP”) presented in the original version of the NPS Management Program Plan based on current economic, social, and environmental conditions.

1.1 PURPOSE AND NEED

The Elk Valley Rancheria (the “Tribe”) is a federally recognized Indian tribe located in Crescent City, California near the Pacific Coast in central Del Norte County (**Figure 1**). Developments on Tribal trust and fee land (the “Reservation”) include the Tribal administration office, Tribal community center, single- family homes, Elk Valley Head Start, and the Elk Valley Casino and ancillary facilities. Land uses on the Reservation include open space, rural residential, grazing land, commercial, governmental, and mining (**Figure 2**).

The purpose of this NPS Report is to identify waters on the Reservation that cannot be expected to maintain Tribal water quality standards without nonpoint source pollution controls; identify the sources of nonpoint source pollution that affect these waters; and describe BMPs to minimize water quality impacts from NPS pollution. Tribal waters on the Reservation are defined by the Tribe as waterways with the potential to be identified as waters of the U.S., herein referred to as Reservation waters.

This NPS Assessment Report was prepared, and subsequently revised, to support the Tribal environmental program in assessing the effects of NPS pollution on water quality of the Reservation waters. This Report and each subsequent revision is part of a larger effort to unify Tribal environmental protocol and procedures in order to address existing environmental conditions and prevent future degradation of the Tribe’s natural environment while meeting Tribal economic development goals. Submittal of this NPS Assessment Report ensures the Tribe continues to meet the eligibility requirements for funding under Section 319(h) of the Clean Water Act. Section 319(h) funding is used to implement NPS pollution prevention programs and implement specific NPS BMPs and remediation projects to improve Reservation water quality, providing a benefit to the watershed as a whole.

ELK VALLEY RANCHERIA



Data Source: ESRI, County of Del Norte, Elk Valley Rancheria
Created by: EVR Environmental Services
This map is for illustration purposes only
Date: February 1, 2017

Figure 1: Elk Valley Rancheria Location

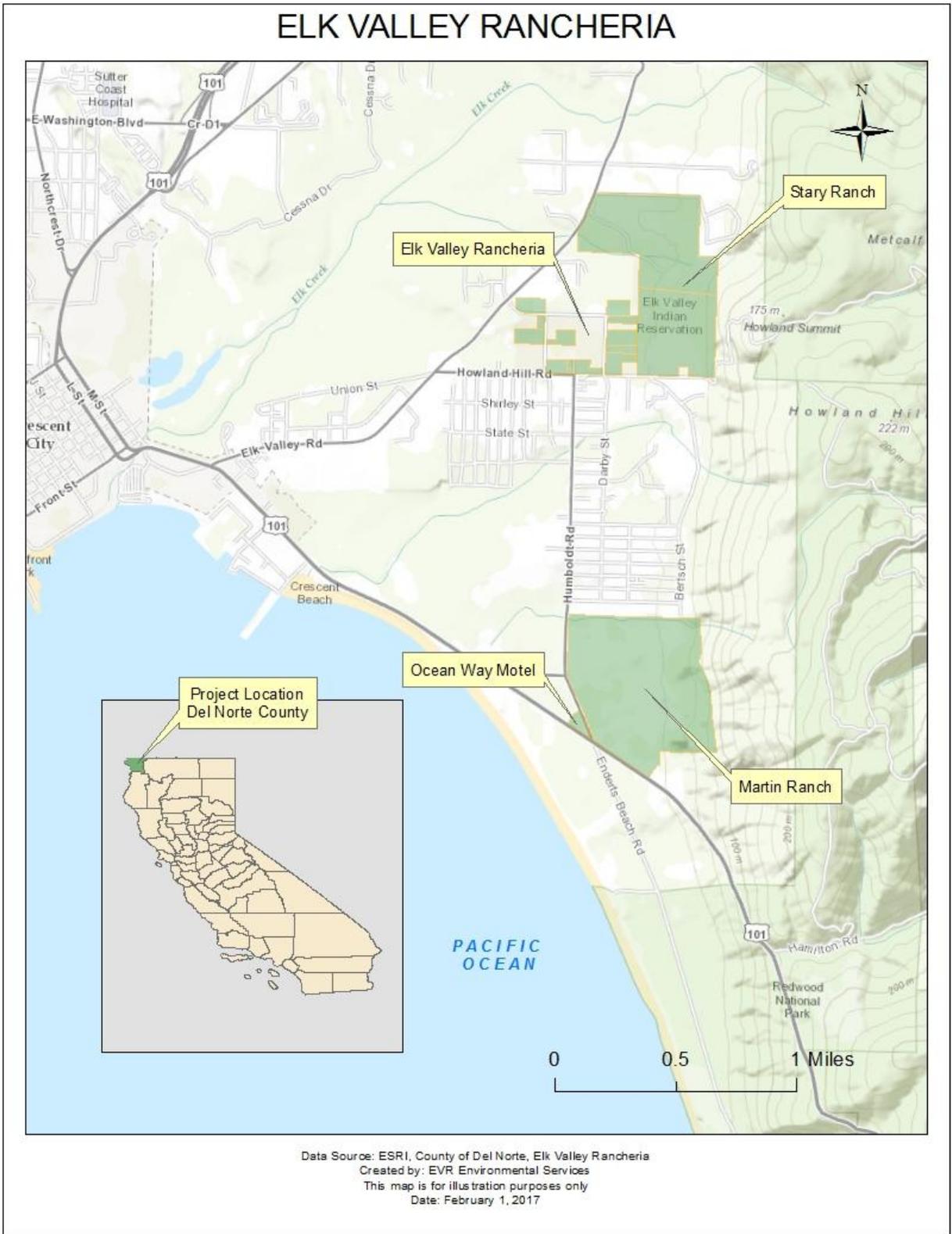


Figure 2: Elk Valley Rancheria Vicinity

1.2 SUMMARY OF ANALYSIS

The Tribe, in its effort to preserve the Reservation waters, has analyzed the potential for impact to water quality from NPS pollution. Since the initial Assessment Report and Management Program Plan, the Tribal Environmental Services Department has implemented a surface water quality sampling program of Reservation waters under an approved Quality Assurance Program Plan (“QAPP”) in accordance with CWA Section 106 criteria. Samples are collected from 9 surface water locations representing three locations on waters at the upstream edge of the Reservation, five locations on waters at the downstream edge of the Reservation, and one downstream location off Reservation near Elk Valley Road north of Howland Hill Road. Accordingly, where data is available a quantitative assessment correlating Reservation water quality impairment to NPS pollution sources was conducted. To supplement the water quality data, Reservation waters were visually assessed for potential impairment from NPS pollution based on location and distance to NPS sources. There are no activities on the Reservation waters that result in point source pollution discharges into Reservation waters and therefore NPS pollution is the highest threat to Reservation water quality and is directly linked to the goals of the Tribe’s water quality monitoring program funded under CWA Section 106. The reservation and Tribal properties consist of both developed and undeveloped land, and are therefore subject to different sources of NPS pollution including runoff from residential properties, commercial enterprises including the Tribe’s casino, agriculture (in particular cattle grazing), mining, and landscape modification.

For the purposes of this NPS pollution source assessment, the reservation and Tribal properties were divided into two study areas. The first study area is the Stary Ranch/Reservation proper, which includes all the trust properties and fee properties within and contiguous to the 100-acre historic boundaries of the reservation located north of Howland Hill Road, and east of Elk Valley Road (**Figure 2**). The Stary Ranch is approximately 179 acres in size, and can be described as forested land, with several large pastures and a Tribal gravel mining operation. The Reservation is comprised of both trust and fee land that includes parcels that support the Tribe’s casino, the Tribal Administration Building, the Tribal Gaming Commission Office, Elk Valley Head Start facility, and numerous residential parcels that support housing and undeveloped land. The second study area is known as the Martin Ranch and is located north of U.S. Highway 101, and east of Humboldt Road (**Figure 2**). The Martin Ranch property is the future site of the Tribe’s new casino and resort development, and includes the adjacent 3.1 acre Ocean Way Motel property located on the southwest corner of the Martin Ranch.

Approximately 3.0 miles of creek were assessed in this Report. The land uses predominantly affecting water quality in the study area are agriculture (cattle grazing), mining, and urban runoff. Approximately 2.87 miles of streams or creeks were listed as moderately impaired. Overall, the water quality of the entire Reservation is moderately impaired from NPS sources within and adjacent to reservation and Tribal properties. Through visual observation of Reservation waters and drainage patterns from NPS pollution sources, the Tribe determined the percentage of Reservation waters being impaired by each NPS pollution category:

STARY RANCH/RESERVATION:

- Agriculture (Pasture Land), Impairment Ranking = 22% of Reservation waters impaired.
- Urban runoff (Surface Runoff), Impairment Ranking = 22% of Reservation waters impaired.
- Resource Extraction (Surface Mining), Impairment Ranking = 5% of Reservation waters impaired.
- Construction (Roadway, Land Development, Construction Debris), Impairment Ranking = 5% of Reservation waters impaired.

MARTIN RANCH:

- Wildlife Corridor, Impairment Ranking = 22% of Reservation waters impaired.
- Construction (Roadway and Land Development), Impairment Ranking = 5% of Reservation waters impaired.

The predominant contaminants of concern include the following constituents:

STARY RANCH/RESERVATION:

- Coliform from grazing lands;
- Sediments originating from soil disturbed by construction, grazing, urbanization, mining, and unpaved roadway use which accelerates natural sediment production.
- Noxious Weed and Invasive Species Infestations that alter hydrologic cycles, sediment deposition and erosion processes which negatively impact water quality.

MARTIN RANCH:

- Coliform from wildlife corridors;
- Sediments originating from soil disturbed by construction, grazing and unpaved roadway use which accelerates natural sediment production.
- Noxious Weed and Invasive Species that alter hydrologic cycles, sediment deposition and erosion processes which negatively impact water quality.

SECTION 2.0

INTRODUCTION

This NPS Assessment Report and Management Program Plan identifies possible sources of NPS pollution, describes the processes and programs needed for the Tribe to address NPS pollution, and presents programs and practices for the Tribe to implement and reduce NPS pollution on the reservation and Tribal properties. Once submitted, the Tribe will apply for CWA Section 319(h) funding to establish and fund these programs and practices.

2.1 ELK VALLEY RANCHERIA, CALIFORNIA

The Elk Valley Rancheria, California the “Tribe” is a federally recognized Indian tribe located in Crescent City near the Pacific Coast in central Del Norte County (**Figure 1**). In 1906, one hundred (100) acres of land was purchased for "homeless Indians of Del Norte County," formally establishing the reservation at its present location. The initial Tribal membership, consisting of displaced Indian people of Tolowa, Hoopa, Karuk and Yurok ancestry, organized a tribal government pursuant to the Indian Reorganization Act of 1934. In 1958, the US Congress officially terminated the Tribe, along with 43 others in California, after the passage of the "California Rancheria Act." In addition to revoking the Tribe's right to self-government and other measures, the termination policy divided and transferred reservation properties to individual members, requiring the payment of property taxes. During the period of termination, more than half of the original 100 acres fell out of Indian ownership.

In the mid-1970s, the Elk Valley Rancheria Indian community joined with other terminated groups in a lawsuit against the federal government, arguing against the wrongful withdrawal of federal jurisdiction under the 1958 legislation. In 1983, a Federal District Court judge ruled on this lawsuit, referred to as the "Tillie Hardwick Case," restoring the sovereign rights of the Tribe, among other groups, "with the same status as they possessed prior to...the California Rancheria Act." Since the 1983 court ruling, the Tribe has initiated actions to reestablish a viable tribal community, resume full governmental authority, and actively pursue its primary goal of achieving economic self-sufficiency. The Tribe is governed by the Elk Valley Rancheria, California Tribal Council. “It shall be the duty of the Tribal Council to govern all the people, resources, land, and water reserved to the Tribe in accordance with this Constitution, and under such laws as may hereinafter be adopted by the Tribal Council [Tribal Constitution (Constitution), Article IV, §1].” The Tribal Council is comprised of nine members, including a Chairperson, Vice-Chairperson, Secretary, Treasurer and five (5) additional Tribal Council members. The members of the Tribal Council are elected to four (4) year terms on a staggered basis.

TRIBAL AUTHORITIES, ORDINANCES, AND CERTIFICATION OF LEGAL AUTHORITY

The Tribal Council, pursuant to Article V of the Tribal Constitution (Constitution), is expressly authorized to exercise several enumerated powers, including, but not limited to:

- License and regulate the conduct of all business activities within tribal jurisdiction (Constitution, § 1(h));
- Manage, develop, protect and regulate the use of water, minerals, and all other natural resources within Tribal jurisdiction (Constitution, § 1(k));
- Enact laws and codes governing the conduct of individuals and prescribing disciplinary action for offenses against the Tribe; to maintain order, to protect the safety and welfare of all persons within tribal jurisdiction; and to provide for the enforcement of laws and codes of the Tribe (Constitution, § 1(l));
- Establish tribal courts and administrative bodies, and to provide for the courts' jurisdiction; procedures, and a method for the selection of judges (Constitution, § 1(m)); and
- Take all actions which are necessary and proper for the exercise of the powers delegated to the Tribal Council or to any person or committee under the supervision of the Tribal Council (Constitution, § 1(r)).

The Tribal Council is authorized to regulate and to protect natural resources, including but not limited to water, within Indian country. Likewise, the Constitution expressly provides that the Tribal Council may take all actions necessary and proper for the exercise of the enumerated powers. In addition, to the expressly enumerated powers contained in the Constitution, Tribal law provides that the "Tribal Attorney shall be the official responsible for the prosecution and enforcement of all Tribal ordinances in all courts of competent jurisdiction [Ordinance of the Elk Valley Rancheria (Ordinance) #99-36, § 3.02.600]." Accordingly, the Tribe can seek, as appropriate, in courts of competent jurisdiction, e.g., federal district court, state court, or Tribal court (or its equivalent):

- Civil Enforcement
- Injunctive Relief
- Civil Fines; Penalties
- Criminal Enforcement

The described enforcement mechanisms meet or exceed the authority contained in the Clean Water Act § 504 as the Tribe maintains and may exercise its rights at law or in equity and may obtain remedies pursuant to federal, state and Tribal law.

Therefore, the Tribe has inherent sovereign authority and is presumed to have authority to regulate, manage, and protect water resources on Tribal lands. The Tribe submitted letters to the USEPA dated January 15, 2010, March 12, 2010, and April 9, 2010 affirming that the Tribe exercises jurisdiction over the lands and Reservation waters. The Tribe actually exercises that authority under the Constitution and

may take appropriate enforcement action pursuant to federal, state, and Tribal law in courts of competent jurisdiction.

In April of 2010, the Tribal Council approved Ordinance 2010-02, “Elk Valley Pollution Control Ordinance” (“Ordinance”). The Ordinance prohibits any person from discharging any pollutant into Reservation waters, requires any person that discharges to such waters to contact the Tribal Council within 24 hours of any discharge, assigns liability for the clean-up and abatement of such discharge to the discharging party, and provides the option for the Tribal Council to bring a civil action against the discharger. In accordance with Tribal authority as discussed above, the Tribal Council declared that it wishes to eliminate all discharges of pollutants into Reservation waters, that elimination of such discharges is necessary to maintain water quality for consumption and other domestic purposes by residences of the reservation, and that the enacting of the Ordinance is an emergency measure to maintain the quality of Reservation waters until the Tribal Council can enact a new ordinance comprehensively regulation water quality and discharging of pollutants within the reservation boundaries and Tribal properties.

In August of 2009, the Tribal Council approved Ordinance 09-02, “Elk Valley Rancheria, California Cultural Resources Ordinance” (“Ordinance”). The Ordinance establishes the process to inventory, preserve, protect, and manage Cultural Resources that: perpetuates the culture, traditions, and sovereignty of Elk Valley Rancheria; is based on policy, statutory regulation, and research; and is consistent with appropriate Tribal economic development, including tourism, marketing, and investment. Described in the Ordinance is the Tribal authority and commitment to preserve, protect, and promote Tribal culture and heritage, including the management of prehistoric and contemporary cultural sites and materials, which are fundamental in the recognition of traditional lifeways, values, and histories of the Tribe. The Ordinance further states that these cultural sites and materials include, but are not limited to, trails, traditional cultural properties (“TCPs”), those associated with traditional foods and other natural resources, other sacred sites as designated by the Tribe, habitations, and historical events and personalities. It is recognized that these are an invaluable, irreplaceable, and endangered Tribal resource. It is a basic Tribal intent that these resources be protected and preserved with the traditional Tribal territorial limits, whether within its current reservation or not.

The Tribe’s current water quality monitoring program officially began in 2011 with the issuance of a grant under CWA Section 106. Accordingly, under the Tribe’s 106 CWA program, the Tribe conducts water quality sampling of the Reservation waters under an approved QAPP to establish baseline conditions. In addition, the original NPS Assessment Report and Management Program Plan (Approved by USEPA on September 22, 2011) was developed in accordance with Section 319(h) of the CWA and associated future funding under Section 319(h), to provide additional data concerning water quality impacts from Tribal operations and land uses. Together, the data obtained under the Section 106 and Section 319(h) programs will assist the Tribe in developing a new ordinance that would comprehensively regulate water quality and the discharge of pollutants to Reservation waters.

2.2 RESERVATION WATERS

STARY RANCH/RESERVATION

An informal delineation of waters of the U.S. was performed on Stary Ranch/Reservation (**Figure 3**). A year round stream, two seasonal streams, isolated wetlands, and three seeps were identified on the 179-acre Stary Ranch property (AES, 2002). A seasonal tributary to Elk Creek is located north of the Tribal Administration Building on the Reservation, which is fed by intermittent streams that traverse the Elk Valley Casino and residential parcels on the Reservation. The seasonal streams and year-round stream encompass large riparian areas as well as the stream channels.

MARTIN RANCH

There are three main drainage features that cross through Martin Ranch. A northern creek parallels the north property line flowing east to west and exits the property through two 36-inch diameter culverts under Humboldt Road. A second creek is located in the southeastern portion of the property adjacent to private property and Highway 101, discharging into a 24-inch diameter culvert under Highway 101 that conveys water to the Enderts Beach area where it eventually drains into the Pacific Ocean (**Figure 4**) (AES, 2005a). The central portion of the study area drains west towards Humboldt Road, emptying into a wetland complex and a roadside drainage ditch that supports three smaller diameter culverts that drain into Crescent City Marsh Wildlife Area. Various culverts along these roadways convey runoff towards the Enders Beach Area, ultimately discharging into the Crescent City Marsh Wildlife Area and ultimately into the Pacific Ocean.

GROUNDWATER

The Reservation and Tribal properties are located within the Smith River Plain Groundwater Basin (Basin 1-1). This resource is a 70 square mile coastal basin drained by the Smith River. It consists mostly of younger alluvium. Well yields range from a maximum of 500 gallons per minute (“gpm”) to an average of 50 gpm. High iron content is present in some areas and danger of seawater intrusion exists in the northern part of the basin (DWR, 1975).

Coastal geology significantly affects the availability and quality of groundwater according to a recent study (MWH America, Inc., 2004a). Overlying strata include the St. George Formation consisting of 350 to 400-foot thick fine-grained sediments that are not conducive to recharge, which is necessary for a deep aquifer water supply. Sitting on top of the St. George Formation is the Battery Formation, which is 35 feet thick and consists of lenses of stream gravels conducive to high levels of water-water withdrawal and high recharge capacity (MWH America, Inc., 2004).

2.4 OBJECTIVES AND GOALS OF THE REPORT

This NPS Assessment Report and Management Program Plan includes an assessment of current and past water quality issues to determine the need for continued monitoring of water resources and

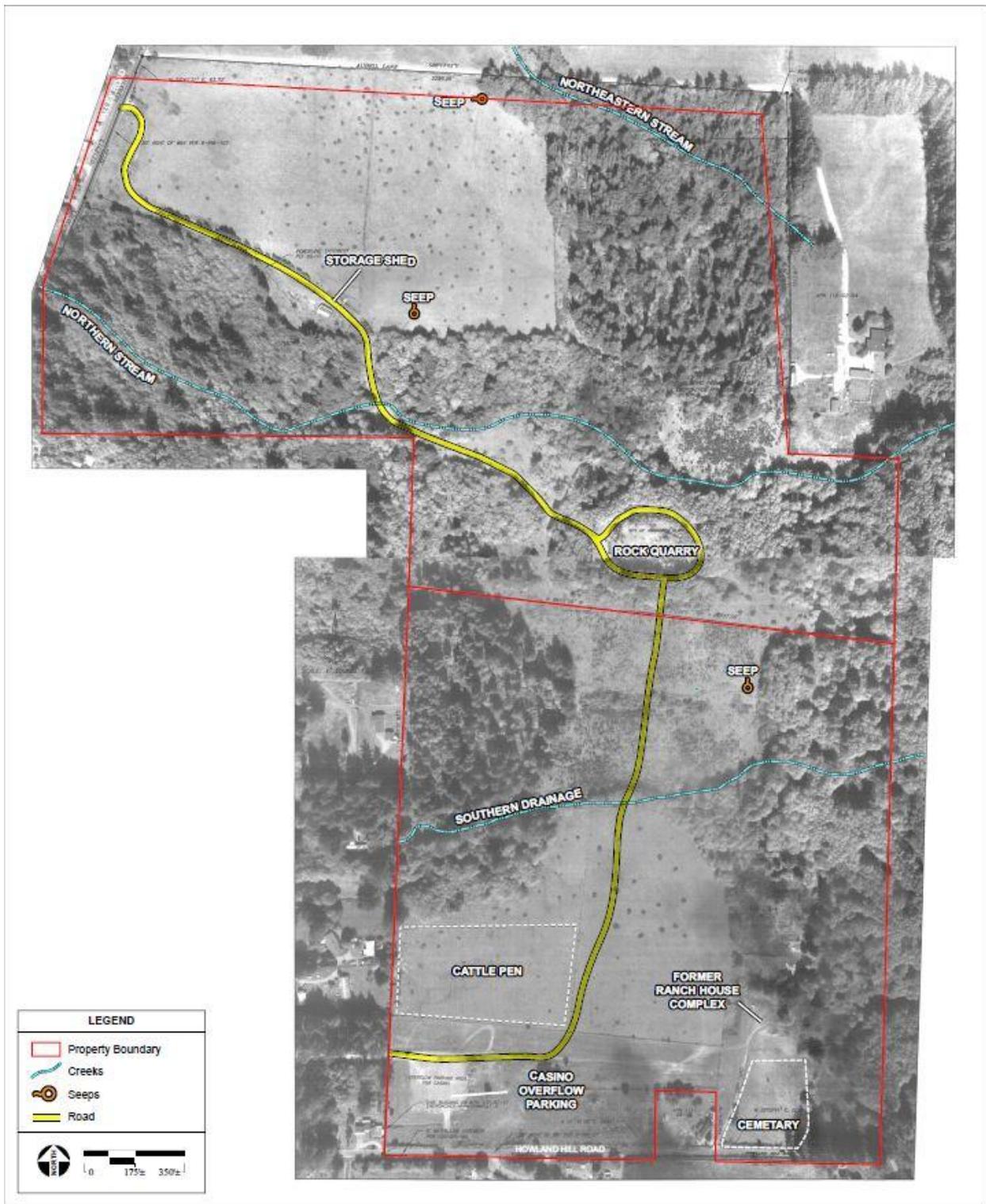


Figure 3: Stary Ranch Waters of the Reservation

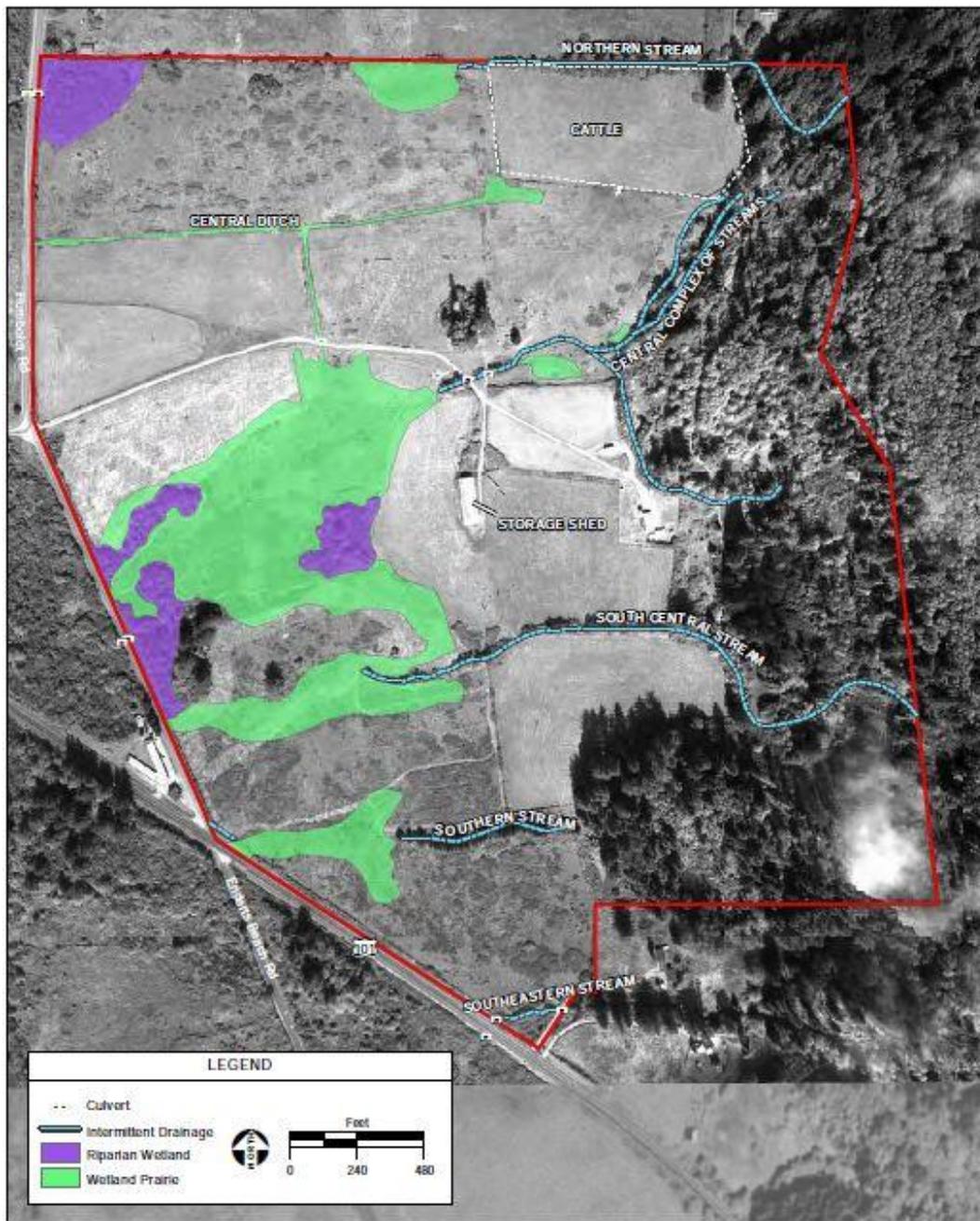


Figure 4: Martin Ranch Waters of the Rancheria

implementation of BMPs to reduce NPS pollutant loads to Reservation waters. Objectives of this NPS Assessment Report and Management Program Plan are as follows:

Objective 1:

Assess the quality of the Reservation waters, including groundwater, to link land use practices on the Reservation to water quality.

Goal: Develop and implement Tribal policies and ordinances to reduce the water quality impacts of NPS pollution from land uses (commercial, governmental, agricultural, mining, and residential) to Reservation surface and groundwater. Replace the existing Ordinance with a new ordinance facilitating the development and implementation of water quality standards for future protection of the Reservation waters, protection of public health and welfare, and enhancement to water quality in the region while meeting Tribal economic development goals.

Objective 2:

Develop strategies and activities to increase the health of the Reservation surface and groundwater.

Goal: Encourage and promote community awareness of the effects and importance of activities such as creek cleanups, habitat restoration, erosion control, and other programs to restore the health of the Reservation surface and groundwater for all beneficial uses.

Objective 3:

Determine the most effective BMPs to protect water quality in the future.

Goal: Revise existing BMPs that have been found inoperable or unable to be implemented and, select and implement BMPs that have a high chance for success for integration into the NPS Management Program Plan.

2.5 PUBLIC PARTICIPATION

NPS pollution is a community-wide issue and successful implementation of a Tribal management program will rely upon relationships between Tribal and non-Tribal community members. Therefore, the Tribe is seeking public input on this NPS Assessment Report. Accordingly, the Tribe released this NPS Assessment Report to community members within and adjacent to the Reservation boundaries for a 30-day review and comment period. This Report was published for public comment on September 22, 2015 (Appendix A). No comments were received.

SECTION 3.0

METHODOLOGY

3.1 DATA SOURCES

As discussed above, the Tribe is in the early stages of initiating a water quality monitoring program under CWA Section 106 and associated sampling program under a QAPP (last revised May, 2013). Currently, there is limited site-specific data which allows for a general assessment of NPS pollution sources and water quality. A visual assessment of the study area for NPS pollution sources was conducted in June 2011. Due to a lack of significant change to the land uses as assessed in the 2011 NPS Assessment Report and Management Program Plan and due to financial constraints, an updated visual assessment was conducted for this update of the NPS Assessment Report. NPS pollution sources were assessed based on the land use and distance/gradient to Reservation waters. NPS sources were then ranked based on the potential for adverse impacts to water quality on the study area and difficulty for implementation of potential NPS source controls. If a NPS pollution source was located adjacent to the banks or within the higher gradient reaches of the study area Reservation waters, then the source was considered to constitute a potential source of degradation of water quality on the Reservation.

In addition to the visual assessment, NPS pollution and water quality were evaluated using resources from the USEPA, the North Coast Regional Water Quality Control Board (“NCRWQCB”), and from environmental reviews of projects within the watershed.

3.2 DATA MANAGEMENT

Under the Tribe’s CWA Section 106 Water Quality Monitoring Program, sampling data records and reports will continue to be maintained by the Tribe’s Environmental Services Department.

The Tribe’s Environmental Services Department has been collecting surface data on Reservation waters since 2011. Due to staff turnover, however, regular data collection didn’t begin until 2013. Ultimately data from 12 sampling events performed from 2011 to September of 2015 and funded by the Tribe’s CWA 106 program were used to inform parts of this Assessment Report.

A total of nine locations have been sampled for the Reservation surface waters monitoring and sampling program. The samples are collected at the upstream and downstream locations for each of the four perennial streams identified which pass through Tribal lands, and the one location where the stream originates on Tribal lands. Four locations will be at the upstream edge of Tribal lands and five locations will be at the downstream edge of Tribal lands.

Water samples are collected 6 - 12 inches below the water's surface, if sufficient water is present to attain that depth. If insufficient water is present to reach 6-inches, samples are collected at least one inch below the surface of the water. However, samples analyzed for volatile constituents, such as petroleum hydrocarbons, will be collected at the water surface. At each sampling location, sample bottles/containers designated for a particular analysis (e.g., anions) will be filled sequentially before containers designated for another analysis are filled (e.g., metals). If a QC sample is collected at a given location, containers designated for a particular analysis for both the sample and QC sample are filled sequentially before containers for another analysis are filled. For field duplicate samples, containers with two different sample designations (e.g., metals designation SW1 and metals designation SW-11 [duplicate of SW-1]) are filled alternately. Water samples are collected directly from the streams into sample bottles/containers appropriate for the specific analysis or field measurement. The sampling locations are accessible without having to wade into the stream. Preservatives are added before sample collection. Filtration and acidification of the metal samples are handled at the laboratory. Once the samples are collected and preserved, they are kept chilled (if appropriate) and processed for shipment to the laboratory.

Surface water samples are analyzed at each sample collection location for the following field measurement parameters: pH, dissolved oxygen, conductivity (as specific conductance), turbidity and temperature. Field measurements are taken at each location prior to sample collection for laboratory analysis. Field instruments are calibrated (according to the manufacturer's instructions) at the beginning of each date of sampling and checked at the end of each day. Field instrument calibration and sample measurement data are recorded in the field logbook.

Water samples designated for laboratory analyses are transported to either North Coast Laboratory, a California certified laboratory (ELAP #1247) located in Arcata California, or, in the case of bacteria analysis, Crescent City Laboratory due to its close proximity to the sample sites. Samples are transported either via courier or hand carried to the aforementioned labs. Samples are transported under chain-of-custody documentation.

Surface water samples designated for laboratory analysis will be analyzed for the following measurement parameters and analytical methods: petroleum hydrocarbons via EPA 3550/3630/GCFID/8015B, EPA 1664, EPA 8260B; heavy metals via EPA 200.7/200.8; herbicides & pesticides via EPA 615 & EPA 623; secondary water contaminants (e.g., total dissolved solids, alkalinity, etc.) via EPA 300.0, Standard Method 20th Edition 2540 c, 2320 B and 4500-PE, and; bacteria via Standard Method 21st Edition 9223 B.

Field quality control is intended to provide an assessment of possible field contamination and assessment of field variability. The latter may include variability in sampling techniques and instrument variability.

Blanks are used as the primary method to assess field contamination, and field duplicates are collected to assess combined sampling and analysis technique variability, as well as sample heterogeneity. Only one type of blank is collected for each day that sampling occurs. USEPA regional policy is to use blanks in the following order of preference: equipment blanks; field blanks; and, trip blanks. Additionally, a

temperature blank will accompany each cooler to the laboratory and will be measured for temperature upon arrival at the laboratory.

Field duplicate samples are collected to evaluate the precision of sample collection through analysis. Field duplicates are collected at designated sample locations by alternately filling two distinct sample containers for each analysis. Field duplicate samples are preserved, packaged, and sealed in the same manner described for the surface water samples. A separate sample number and station number is assigned to each duplicate. The samples are submitted as “blind” (i.e., not identified as field duplicates) samples to the laboratory for analysis. For the current project, field duplicates are collected for each analytical parameter. The duplicate samples are collected at random locations for each sampling event. Field sampling and handling procedures are evaluated, and problems corrected through greater attention to detail, additional training, revised sampling techniques, or corrective actions that appear appropriate to the Environmental Services Coordinator.

Data collected is managed through Microsoft Excel and ArcMap, and reported to Tribal Council and the USEPA using two methods. First, the annual Water Quality Assessment Report (“WQAR”) is submitted to EPA project officers and Tribal leadership at the end of each calendar year. The WQAR discusses the overall water quality findings for a given CWA 106 grant cycle. The WQAR highlights particular areas of concern in the quality and management of Reservation waters. Second, raw data is uploaded into the EPA Water Quality Exchange (“WQX”) database for public consumption.

Field observations during data collection include livestock and wildlife ground disturbance, decaying vegetation and eroded soil near several of the sampling locations. Thus, assumptions include excessive Coliform, E. coli and turbidity due to animal access to the Reservation waters, decaying vegetation and streambank erosion.

SECTION 4.0

LAND USE

4.1 PHYSIOGRAPHIC CHARACTERISTICS OF THE RESERVATION

GEOLOGY

Del Norte County can be divided into two topographic entities. The mountainous portion of the county comprises approximately 92% of the total county area. The rocks of the western portion of this mountainous terrain are predominately of sandstone (graywacke variety) and shale of the Franciscan Complex. The extensive eastern portion of the mountainous belt comprises the Northern Coast Ranges and the Klamath Mountains, which are inseparable topographically. The remaining county area and the Reservation are restricted coastal lowland and dismembered assemblage of mainly marine rocks deposited during a time span of 90 to 145 million years ago.

This coastal platform remained under water until recent times when it was uplifted. Two formations of importance are distinguished on the top of the platform. The first is known as the Saint George formation and was deposited in Pliocene time. It is about 350 to 400 feet thick and is composed mainly of fine grain sediments that are not conducive to recharge which is necessary for deep water supply. The second, known as the Battery formation, was deposited in the last million years, and covers the study area. It is about 35 feet thick, lying on top of the Saint George formation, and has a high water yielding capacity. The Battery formation represents an interfingering of near-shore marine and non-marine conditions such as lenses of stream gravels (AES, 2003a).

TOPOGRAPHY

Stary Ranch/Reservation

Elevation on the Stary Ranch/Reservation varies from approximately 40 feet above mean sea level (“amsl”) along the western border of the study area near Elk Valley Road, to approximately 183 feet amsl along the eastern portion of the Stary Ranch, which borders Redwood National and State Parks. With the exception of relatively steep slopes along the eastern border, the Stary Ranch slopes gradually to the west. The remainder of the Stary Ranch/Reservation study area is residential/governmental/commercial and the parcels have been mechanically altered to support development (AES, 2003a).

Martin Ranch

The Martin Ranch site is relatively level on the western boundary and slopes upward to the east. Elevations range from approximately 10 feet amsl along the western boundary to 320 amsl on the eastern boundary. The eastern edge of the site is relatively steep in places with elevations rising from 120 feet amsl to 320 feet amsl over relatively short distances (AES, 2006).

SOILS

Stary Ranch/Reservation

Soils on the Stary Ranch/Reservation were formed in an old marine terrace that slopes westward to the Pacific Ocean. Slopes are zero to three percent. The soil types on the subject site are Talawa fine sandy loam (Ta2), Hutsinpillar silty clay loam (Hp2), Rowdy loam (Ry3) and Rowdy clay loam (Ry6) (AES, 2003a).

The Talawa series consists of dark brown fine sandy loam soils with a minimal profile development. Parent material is dune sand principally of sedimentary origin with fairly high quartz content. Internal drainage is good, runoff is slow, and permeability is moderately rapid. The Hutsinpillar series includes dark brown, poorly drained, fine textured soils that have a strongly developed profile. They are poorly drained and permeability is slow to very slow. The Rowdy series comprises dark gray, well-drained young soils on broad alluvial fans between slopes or mountains and flood plains. This soil is poorly drained with moderately slow permeability (AES, 2003a).

Martin Ranch

Soils on the Martin Ranch include those found on the Stary Ranch/Historic Reservation parcels except for the Talawa soils. In addition, the Timmons soil series is found on Martin Ranch, which consists of well-drained soils developing on medium textured alluvium from sedimentary rock alluvium (AES, 2006).

4.2 LAND USE AND SOCIOECONOMICS

Del Norte County is located at the extreme northwestern corner of California. Crescent City is California's northernmost coastal city. It is located approximately 350 miles north of San Francisco and 330 miles south of Portland, Oregon. The area is bordered by the Pacific Ocean, broad beaches, coastal bluffs, a harbor, scattered forests, and rural residences. The County contains extensive areas of National Forest, State Parks and National Parks, open space, and agricultural land. Public land makes up the majority of Del Norte County land holdings, equating to approximately 80% of the total County land base. There are very few urban areas. Most towns are located along Highway 101, a major north-south highway (AES, 2006), and U.S. Highway 199, a major west-east highway.

The Reservation lies within the Smith River Watershed (**Figure 5**) is adjacent to National and State Parks. The Four California State Parks (Prairie Creek Redwoods, Jedediah Smith Redwoods, Del Norte Coast Redwoods and the Mill Creek Acquisition) and the Redwood National Park represent a cooperative management effort between the National Park Service and California Department of Parks and Recreation. Together these parks comprise approximately 45 percent of all the old-growth redwood forest remaining in California and are a World Heritage Site and International Biosphere Reserve, protecting resources cherished by citizens of many nations. East of the Redwood National and State Parks is Six Rivers National Forest, encompassing over one million acres, which includes the Smith River National Recreation Area. North of Crescent City are recreational areas including Tolowa Dunes State

ELK VALLEY RANCHERIA - SMITH RIVER WATERSHED

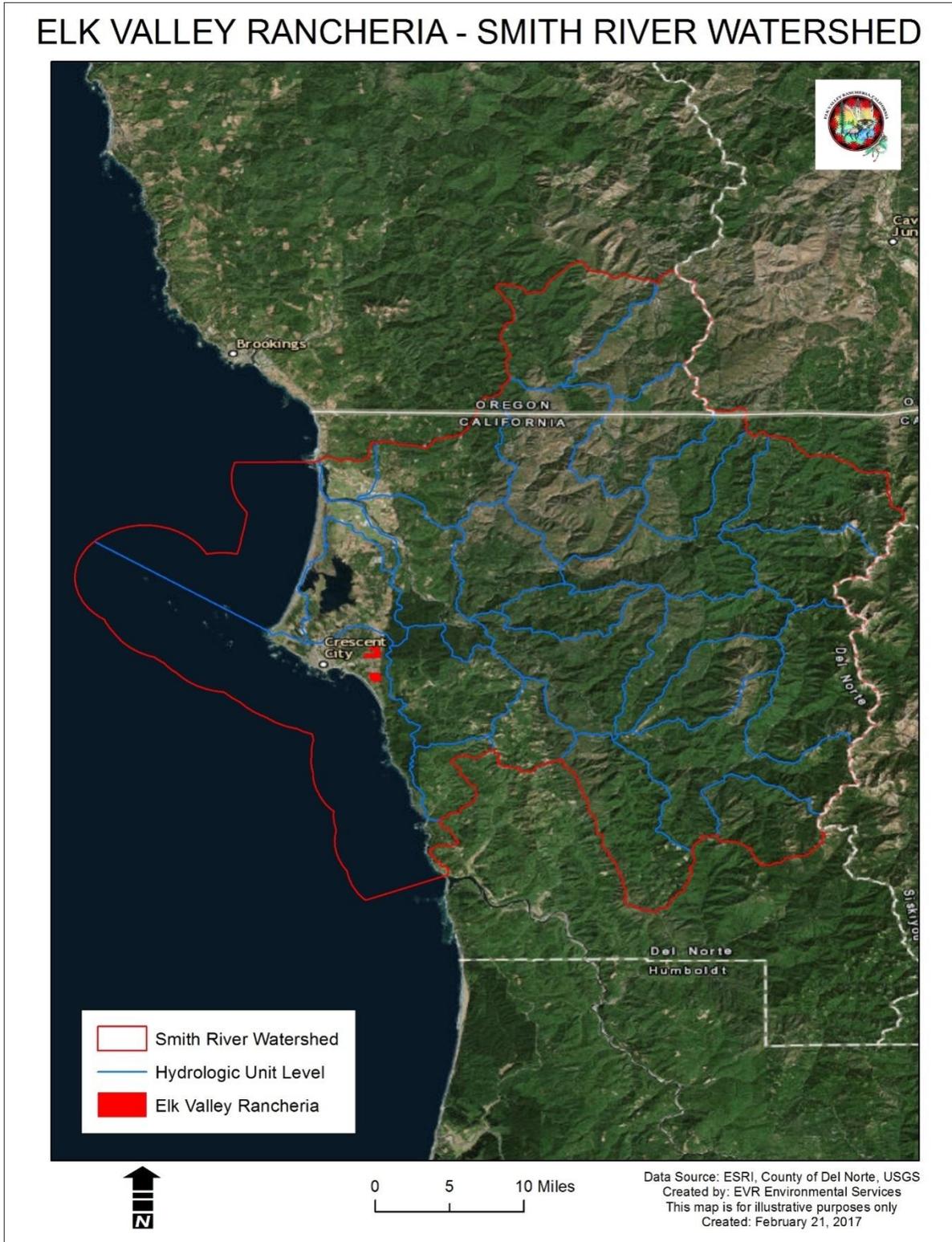


Figure 5: Elk Valley Rancheria/Smith River Watershed

Park and Pelican State Beach. Federal parks, State parks, and other recreational areas in Del Norte County offer scenic views, camping, fishing, trails, picnic areas, and swimming, among other activities (AES, 2006).

ELK VALLEY RANCHERIA, CALIFORNIA

The Tribe has acquired sixteen parcels of land within or near the Reservation as part of a plan to restore Tribal land holdings and to reclaim land within the Tribe’s aboriginal territory (**Figure 2**). In addition, there are 5 parcels held in trust for individuals within the historic boundaries of the Reservation. **Table 1** lists the parcels of land acquired by the Tribe or individuals on or near the Reservation and the ownership title (trust versus fee). The following are descriptions of the land uses and facilities that have the potential to impact surface water quality through NPS pollutions.

TABLE 1
TRIBAL PARCELS

| Parcel Name | Owner | Land Use | Study Area Location | APN # |
|--|-------------|--|-----------------------------|--------------------------|
| Trust Parcels | | | | |
| Stary Ranch (2 Parcels) | Tribe | Mining/Agriculture/ Commercial/Tribal Government | Stary Ranch/ Reservation | 112-020-69 112-020-68 |
| Elk Valley Head Start/Small Community Center | Tribe | Tribal Government | Stary Ranch/ Reservation | 112-071-01 |
| Tribal Housing & Administration Building (440 Mathew Street) | Tribe | Tribal Government | Stary Ranch/ Reservation | 112-072-06 |
| 338 Mathews Street | Tribe | Residential | Stary Ranch/ Reservation | 112-072-02 |
| 275 Mathews Street | Tribe | Single Family Residential | Stary Ranch/ Reservation | 112-073-08 |
| Tribal Administration Building (2332 Howland Hill Road) | Tribe | Tribal Government | Stary Ranch/ Reservation | 112-073-21 |
| Casino-Parking Lot | Tribe | Commercial | Stary Ranch/ Reservation | 112-071-16 |
| Casino/Residence | Individual* | Commercial/Residential | Stary Ranch/ Reservation | 112-071-11 |
| 365 and 375 Wyentae Street | Individual | Residential | Stary Ranch/ Reservation | 112-071-10 |
| 495 Wyentae Street | Individual | Residential | Stary Ranch/ Reservation | 112-071-08 |
| 2508A/B Norris Avenue | Individual | Residential | Stary Ranch/ Reservation | 112-071-06 |
| 2347 Howland Hill Road | Individual | Residential | Stary Ranch/ Reservation | 112-073-13 |

| | | | | |
|--------------------------------------|------------|----------------------------------|-----------------------------|--|
| 2350 Howland Hill Road | Individual | Residential | Stary Ranch/ Reservation | 112-073-17 |
| Martin Ranch | Tribe | Agriculture/Future Commercial | Martin Ranch | 115-020-28 |
| Ocean Way Motel | Tribe | Commercial | Martin Ranch | 115-020-20 |
| Tribal Fee Parcels | | | | |
| 951 ½ Elk Valley Road (3 parcels) | Tribe | Residential | Stary Ranch/ Reservation | 112-222-01 112-222-02 112-222-03 |
| 2201 and 2211 Norris Avenue | Tribe | Residential | Stary Ranch/ Reservation | 112-072-08 |
| 2221 Norris Avenue | Tribe | Residential | Stary Ranch/ Reservation | 112-072-09 |
| 2170 Howland Hill Road | Tribe | Residential | Stary Ranch/ Reservation | 112-180-35 |
| 2455 Norris Avenue | Tribe | Residential | Stary Ranch/ Reservation | 112-073-16 |
| 730 Wyentae Street | Tribe | Residential | Stary Ranch/ Reservation | 112-073-15 |

* The Tribe and the individual entered into a lease agreement approved by the Bureau of Indian Affairs to operate the casino on a portion of the trust lands.

Stary Ranch

There is a mix of land uses in the area including agricultural, residential, commercial, and undisturbed land/open space. The reservation borders the Stary Ranch to the southwest. Agricultural, commercial, and residential land uses are present to the north, south, and west. Recreational and related open space uses are present to the east. The Stary Ranch has historically been used for livestock grazing, hard rock mining, coffin manufacturing, timber production (i.e. a logging camp) and residential purposes. The site was the location of a historic ranch house complex that contained a residence, barn, shed, and wooden corral/cattle chute. At one time, this same area contained more recent residential development including a mobile home, garage, animal shed, garden, and numerous parked cars (as identified by a cultural resource survey in 1986). Currently, the site is utilized for livestock grazing, casino overflow parking, hard rock mining, residential purposes, and as a cemetery (AES, 2003b).

Livestock grazing is limited to a portion of Stary Ranch north and adjacent to the over-flow parking of the adjacent casino (**Figure 3**). The cattle are located within a pen (**Photo 1**); however, cattle are routinely observed outside the pen. The rock quarry is currently in operation and is located in the center of the property with access from the south via an unpaved road originating at the casino over-flow parking lot and from the west from an access gate and unpaved road leading from Elk Valley Road, south of the intersection of Elk Valley Road and Aubell Lane (**Figure 3**). Surrounding the rock quarry are various storage piles of excavated soils and rock (**Photo 2**). Adjacent and east of the rock quarry are piles of debris from construction projects (**Photo 3**). A majority of the land use on the Stary Ranch is open space. The cemetery is located within the southeastern corner of Stary Ranch, adjacent to Howland Hill Road. The cemetery includes a paved parking area located north of the cemetery. The Stary Ranch does not



PHOTO 1: Stary Ranch cattle Grazing



PHOTO 2: Stary Ranch Rock Quarry



PHOTO 3: Stary Ranch Construction Debris



PHOTO 4: Head Start dumpsters

contain aboveground or underground storage tanks, containers, or drums associated with hazardous materials (AES, 2003b).

Elk Valley Head Start/ Small Community Center

The Elk Valley Head Start/ Small Community Center parcel is located off Norris Avenue, east of the intersection of Norris Avenue and Mathew Street (**Figure 2**). The Elk Valley Head Start/ Small Community Center Parcel contain a public building that houses a Head Start educational program, which serves the Reservation and the entire community, a library, and Indian Health Services offices. All utilities are underground. A liquid propane gas (LPG) tank is mounted in the back yard along the eastern property line. The parcel is served by Elk Valley Road and Norris Avenue. The front (south side) of the parcel contains a row of small landscaping trees lining the street, pole-mounted lights, paved driveways

and encroachments onto Norris Avenue, and approximately 30 paved parking spaces. Solid waste is stored within a container located in the southern parking lot adjacent to Norris Avenue (**Photo 4**). The back of the parcel contains lawn areas and playground equipment surrounded by cyclone fencing. Surrounding land uses include a single-family residences to the south, scattered single-family residences and open space to the north, open space on the east, and residential and open space to the west. The parcel is served by community water and sewer systems and paved, county maintained roads (AES, 2003c).

Tribal Housing & Gaming Commission Facility

The Housing/Gaming Commission Facility parcel is located south of the Elk Valley Head Start/ Small Community Center parcel across Norris Avenue and contains three Tribal houses and the Gaming Commission Facility surrounded by landscaping, lawn areas, and wood perimeter fencing on the west. Access is primarily via Mathews Street, but is also provided from Norris Avenue. Overhead utilities exist on four poles along Mathews Street. The parcel slopes gently to the south and west and concrete and metal culverts are located under the driveways along Mathews Street and Norris Avenue. The site contains 17 paved parking spaces and one handicapped space, which drain towards Mathews Street (**Photo 5**). No natural vegetation exists, with the exception of four native Sitka spruce trees in one yard. Surrounding land uses include single-family residential on the south, east, and west, and the Tribe's Elk Valley Head Start/ Small Community Center on the north. The parcel is served by community water and sewer systems and paved County maintained roads (AES, 2003c).

Residential Allotments

Tribal residences are located throughout and adjacent to the historic 100 acre boundaries of the Reservation. The residential parcels consist of access driveways and single-family homes. A typical residential lot is presented as **Photo 6**. The parcel is located in the center of the reservation and it indicative of the types of NPS pollution sources. Development of the residences and associated structures result in hydromodification of the parcels leading to potential sedimentation from stormwater runoff. In addition, various sources of NPS pollution are typically stored on a parcel including household and automobile related chemicals and building materials.

Tribal Administration Building

The Tribal Administration Building Parcel is located on Howland Hill Road, east of Elk Valley Road (**Figure 2**) and is the current location of the Tribal Office Building, a propane tank, and a private residence. The parcel is bound from the north by a private residence, to the east by private residences, to the south by Howland Hill Road, and to the west by Mathews Road. There is a small maintenance building located adjacent to the Tribal Office Building (**Photo 7**). The building houses an emergency generator and maintenance equipment. A private residence is located on the Subject Property. An approximate 500-gallon AST used for heating oil was present in back of the residence (**Photos 8**). There are no signs of leaks or staining in the area around the AST. A propane tank is located on the parcel that supplies fuel to the Tribal Office Building kitchen (**Photo 9**). The parcel is served by community water and sewer systems and paved county maintained roads (AES, 2004).



PHOTO 5: Tribal Environmental Services



PHOTO 6: Residential Parcel



PHOTO 7: Tribal Admin Storage



PHOTO 8: Tribal Admin Maintenance

Elk Valley Casino-Parking Lot

The Elk Valley Casino-Parking Lot parcel is bounded by Howland Hill Road to the south, Wyentae Street to the west, Green Residence to the north, and the Stary Ranch to the east (**Figure 2**). Surrounding land uses include the casino parking lot, Green Residences to the north and a maintenance building, residential development to the west, and agricultural/mining to the east. The Elk valley Casino – Parking Lot parcel currently consists of the Elk Valley Casino and associated parking lot (**Photo 10**). Solid waste and recyclable materials are stored in dumpsters behind the Casino (**Photo 11**), up-gradient from the parcel’s drainage ditch that runs along Wyentae Street (**Photo 12**) (AES, 2003d).

Martin Ranch

The Martin Ranch study area lies within the Crescent city’s Sphere of Influence but outside of its City Limits and Urban Boundary. Surrounding land uses consist primarily of grazing lands, parklands, open space and residential housing. To the north of the Martin Ranch site is a residential neighborhood served by public sewer and water facilities. To the east are forested lands and the Mill Creek Acquisition owned by the California Department of parks and Recreation. South of the Martin Ranch site, there are lands owned by the California Department of Fish and Game. To the west are state lands managed by the California Department of Fish and Game, including the Crescent City Marsh Wildlife Area. The Ocean Way Motel is also located immediately west of the Martin Ranch parcel and is included in the study area. U.S. Highway 101 is located adjacent to the southern portion of the study area (AES, 2006).

A gravel driveway provides access to the interior of the Martin Ranch from Humboldt Road and travels east to the center of the study area. This driveway is approximately one-third of a mile in length. A metal utility shed is located at the end of the driveway (**Photo 13**). A single-family residence that was previously located on the property included a septic tank and leach field, have been removed. Elk are commonly spotted on the Martin Ranch (**Photo 14**) (AES, 2006).

SOCIOECONOMICS

According to the 2000 Census (U.S. Census Bureau, 2002), the Reservation has a population of 77 (members and non-members) and contains 36 housing units. Updated information provided by the HUD’s Office of Native American Programs in the *2008 Indian Housing Block Grant* indicates that the Tribe has grown to 94 enrolled members (HUD, 2008). The 2000 Census data indicates that approximately 52 percent of all residents self-identify as Native American or Alaskan Natives. Approximately 73 percent of all occupied households own their homes, while approximately 27 percent



PHOTO 9: Tribal Admin Parking



PHOTO 10: Casino Parking



PHOTO 11: Casino Receiving Area



PHOTO 12: Behind Casino, Wyentae View



PHOTO 13: Shed on Martin Ranch



PHOTO 14: Elk on Martin Ranch

rent. Employment and income opportunities are available from Tribal government operations and the Elk Valley Casino. Local jobs generated as a result of Tribal government operations and the gaming enterprise are the primary employment and income generators for the Tribe. Approximately 29 percent of the employed population over 16 years of age is classified as management, professional, and related occupations and over 29 percent are employed in construction, extraction, and maintenance operations. Other employment opportunities for the Reservation residents are available in the Crescent City area. Despite the employment opportunities available, over 55 percent of the population, 16 years of age or older, are not in the labor force. Approximately 13 percent of the civilian labor force is unemployed. Median household income of the Tribe is \$18,750, well below that of the City and County, and approximately 26 percent of the overall population is below the poverty level. According to the BIA's *Indian Labor Force Report* (BIA, 2005), 49 percent of Tribal members available for work were unemployed at the time of the survey (**Table 2**).

TABLE 2
 ELK VALLEY RANCHERIA, CALIFORNIA
 POPULATION AND LABOR FORCE ESTIMATES

| Tribal Characteristics | Members | Tribal Characteristics | Members |
|------------------------|---------|---|---------|
| Enrollment | 90 | Not available for work | 0 |
| Under age 16 | 7 | Available for work (total workforce) | 41 |
| Age 16 through 64 | 32 | Employed | 21 |
| At age 65 and over | 9 | Not employed | 20 |
| Source: BIA, 2005 | | | |

SECTION 5.0

SURFACE AND GROUNDWATER QUALITY SUMMARY

5.1 HYDROLOGIC SETTING

The Reservation and Tribal Properties within the two study areas are located in the Smith River Plain Hydrologic Subarea of the Lower Smith River Hydrologic Area within the Smith River Hydrologic Unit [USGS hydrologic unit code (HUC) 18010101]. Drainage from the Stary Ranch/Reservation properties flow to Elk Creek. Elk Creek then flows for 1.5 to 2 miles southwest to the Pacific Ocean. The Stary Ranch/Reservation properties are located in the Kings Valley-Frontal Pacific Ocean subwatershed (HUC 18010101501). Runoff from the Martin Ranch area drains into the Crescent City Marsh Wildlife Area, which drains directly into the Pacific Ocean, approximately ½-mile down slope of the western property boundary. The Martin Ranch is located in the Wilson Creek-Frontal Pacific Ocean subwatershed (HUC 18010101502).

The Smith River watershed and associated subwatersheds are located within Region IX of the USEPA and the NCRWQCB. Waters located on Tribal trust lands are subject to the jurisdiction of Environmental Protection Agency (“EPA”) Region IX, and those on fee lands are subject to the jurisdiction of the NCRWQCB and the Tribe.

5.2 SURFACE WATERS

Rancheria waters are streams, creeks, and wetlands located on Tribal properties and the Reservation lands that exhibit hydrologic connectivity to important water resources off the Reservation and have been categorized as potential waters of the United States through previous site assessments. The beneficial uses of waters within the Smith River Plain Hydrologic Area for the Crescent City Harbor have been determined by the NCRWQCB to be as follows:

- Freshwater replenishment
- Navigation
- Water contact recreation and Non-contact recreation
- Commercial and sport fishing
- Warm freshwater habitat (potential)
- Cold freshwater habitat
- Wildlife habitat
- Rare, threatened, or endangered species
- Migration of aquatic organisms
- Shellfish harvesting
- Aquaculture

STARY RANCH/RESERVATION

A tributary to Elk Creek flows in an east to west direction through Stary Ranch, north of the gravel quarry (**Figure 3**) (Stary Ranch Northern Stream). Another tributary to Elk Creek is present in the northeastern corner of Stary Ranch (Stary Ranch Northeastern Stream). This intermittent stream originates in the hills located to the east of Stary Ranch (AES, 2005b). An intermittent tributary to Elk Creek is located north of the Tribal Administration Building, flowing in an east to west direction (Tribal Administration Stream) (AES, 2004). Storm water runoff on the north side of the Tribal Office Building flows through a vegetated area and eventually reaches Elk Creek. The three tributary streams are characterized by a defined channel and flows associated with storm water runoff and localized surfacing groundwater for approximately one mile to Elk Creek. Red alder woodland generally forms dense canopies along the drainage corridors. In addition to the streams within Stary Ranch, two defined drainage channels convey storm water through the Stary Ranch/Reservation. South of the quarry and north of the cattle pen (**Figure 3**), storm water flows from the hills east of Stary Ranch through a defined channel with associated riparian habitat (Stary Ranch Southern Drainage) (AES, 2005b). Additionally, a roadside drainage ditch directs runoff from the Stary Ranch/Reservation located along Howland Hill Road (Howland Hill Road Drainage). The drainages leave the Stary Ranch/Reservation and discharge into various roadside drainages flowing toward tributaries of Elk Creek. The properties north of Howland Hill Road and west of Stary Ranch drain to a series of roadside ditches that also feed Elk Creek and are not considered Reservation waters. However, the Tribe understands that these drainages are important in relation to NPS pollution control. Acreages for the Reservation waters are provided in **Table 3**.

TABLE 3
STARY RANCH/RESERVATION WATERS

| Feature | Miles |
|--------------------------------|--------------|
| Perennial Streams | 0.13± |
| Intermittent Streams/Drainages | 1.34± |
| TOTAL | 1.46± |

SOURCE: AES, 2011.

MARTIN RANCH

Five streams convey runoff from the eastern ridge (Rellim Ridge) onto the property: the northern stream, central complex of streams, south-central stream, southern stream, and southeastern stream (AES, 2005a) (**Figure 4**). Four of these streams furnish surface water to the wetlands on and off the study area. At the terminus of each channel, water spreads out over the ground surface and infiltrates each wetland. A brief description of each stream, stream branch, and associated wetland or seep appears below.

Northern Stream (Palustrine), Wetland Prairie (Palustrine), and Forested Wetland (Palustrine)

At the edge of the northern property boundary the northern stream emerges from the forest and alluvial fan to create a wetland prairie with an area of approximately 1.99 acres. The lower wetland area is connected to the wetland prairie above but the connecting channel is just north of the property line.

Water leaves the property from the forested wetland through two culverts under Humboldt Road that feed Crescent City Marsh Wildlife Area (**Figure 4**).

Central Ditch and Seep Complex (Palustrine Emergent)

Midway between the main access road on the Martin Ranch and the northern stream is a drainage ditch fed by seeps. The ditch conveys water to the west and joins a lateral ditch. The combined flow of both ditches diverts water to Humboldt Road and to the Crescent City Marsh Wildlife Area. The lateral ditch also supplies the main wetland to the south through a 24-inch diameter culvert under the Martin Ranch main access road (**Figure 4**).

Central Complex of Streams (Palustrine)

The central complex of streams is comprised of a north branch, northeastern branch, eastern branch, and main stem that convey runoff from Rellim Ridge to the east. As the central stream leaves the Sitka spruce forest it merges with two small alluvial seeps. It then reforms to become a definable creek where it passes under the main access road (via a 24-inch diameter culvert) to supply surface water to the main wetland (**Figure 4**).

South Central Stream (Palustrine)

The south central stream exits the Rellim Ridge forest, leaves its channel, and spreads out over the alluvial fan and into a swale to join the main wetland (**Figure 4**).

Main Wetland (Palustrine Emergent)

The main wetland is fed by the central complex of streams, south central stream, seeps, and artesian springs. The main wetland consists of both grass- and rush-dominated wetland prairie (palustrine emergent) and alder and willow-dominated scrub-shrub wetland types. Water from the main wetland seeps into the drainage ditch that running parallel to Humboldt Road. This wetland drains through a 36-inch diameter culvert under Humboldt Road to supply water to the Crescent City Marsh Wildlife Area (**Figure 4**).

Southern Stream and Wet Prairie (Palustrine)

A fourth stream emerges from the western flanks of Rellim Ridge and fans out into a broad swale to form a tongue of wet prairie. Water from this wetland seeps into a drainage ditch at the junction of Highway 101 and Humboldt Road (**Figure 4**).

Southeast Stream (Palustrine)

The southernmost stream on the Martin Ranch property is located in the southeastern portion of the property adjacent to private property and U.S. Highway 101. A 24-inch diameter culvert bisects Highway 101 that conveys water under the highway and to the Enderts Beach area where it eventually drains into the Pacific Ocean (**Figure 4**).

All water resources eventually drain off of the Martin Ranch into a roadside ditch that borders the southwestern property boundary. The water is then directed through culverts under Humboldt Road, Enderts Beach Road, and U.S. Highway 101, and ultimately discharges to the Pacific Ocean, which is less than one-half mile west of the study area.

A waters of the U.S. delineation map is presented as **Figure 4**. An acreage summary of the intermittent drainages by channel reach is presented in **Table 4** below.

TABLE 4
MARTIN RANCH RESERVATION WATERS

| Feature | Acreage |
|------------------------|---------------|
| Wetland Prairie | 25.5 |
| Riparian Wetland | 5.5 |
| Intermittent Drainages | 2.0 |
| TOTAL | 33.01± |

SOURCE: AES, 2005a.

5.3 GROUNDWATER

The Reservation and Tribal properties are located within the Smith River Plain Groundwater Basin (Basin 1-1). Coastal geology significantly affects the availability and quality of groundwater according to a recent study (MWH America, Inc., 2004a). Overlying strata include the St. George Formation consisting of 350 to 400-foot thick fine-grained sediments that are not conducive to recharge, which is necessary for a deep aquifer water supply. Sitting on top of the St. George Formation is the Battery Formation, which is 35 feet thick and consists of lenses of stream gravels conducive to high levels of water-water withdrawal and high recharge capacity (MWH America, Inc., 2004a). The region's extensive annual rainfall results in favorable groundwater recharge conditions. Therefore, in general, plentiful groundwater is available in the vicinity of the Stary Ranch. Well yields in the area range from a maximum of 500 gallons per minute ("gpm") to an average of 50 gpm. Several shallow groundwater wells exist on Martin Ranch that were excavated for agricultural and dairying purposes, but these yield water of poor quality, being rich in iron sulfates. The beneficial uses of waters within the Smith River Plain Groundwater Basin area have been determined by the NCRWQCB to be as follows:

- Domestic water supply
- Agricultural water supply
- Industrial water supply

5.4 WATER QUALITY

EXISTING WATER QUALITY

Surface Water

Water quality data has been collected under the Tribe's CWA Section 106 program beginning in October 13, 2011 at seven sampling locations on or near the Reservation Property: Stary Ranch W6 (SRW6),

Stary Ranch N7 (SRN7), Stary Ranch E8 (SRE8), EVR5, Martin Ranch NW3 (MRNW3), Martin Ranch NE4 (MRNE4), and Martin Ranch SW1 (MRSW1). Samples locations are presented in **Figures 6 and 7**. Between October 13, 2011 and March 24, 2015, a total of ten sampling sets were collected from the above listed locations. The following components were found to be present in at least one of the sampling locations:

| | |
|------------------------------|---|
| Alkalinity | Phosphates |
| Nitrates | Nickel |
| Chloride | Hardness (Calcium carbonate (CaCO ₃)) |
| Sulfate | Magnesium |
| Total Dissolved Solids (TDS) | Copper |
| Phosphorous | Lead |
| Barium | Chromium |

Various water samples were recorded for the following components to create a baseline data for comparative study of each sampling location and to monitor the overall health and quality of the sampled surface waters:

| |
|---------------------------|
| pH |
| Temperature |
| Conductivity |
| Turbidity |
| Dissolved Oxygen (DO) |
| Total Coliform |
| Escherichia coli (E-coli) |

Table 5 below depicts ranges for pH, Temperature, conductivity, Turbidity, DO, Coliform, and E-coli. Ranges were listed due to large variance in data points.

Table 5
BASELINE RANGES

| | pH | Temp | Conductivity | Turbidity | DO | Coliform | E-coli |
|--------|-----------|-------|--------------|-----------|------------|--------------|-------------|
| Sites | | (F) | (mS/cm) | (FNU) | (mg/L) | (MPN/100ml) | (MPN/100ml) |
| MRSW1* | 6.66-8.20 | 48-55 | 67-139 | 0.4-32.0 | 1.80-13.04 | 307-2,880 | 26-2,420 |
| MRNW3* | 6.59-7.40 | 47-59 | 85-185 | 0.4-46.0* | 2.43-19.61 | 1,986-11,200 | 33-1,730 |
| MRNE4* | 6.59-7.32 | 46-56 | 54-128 | 4.0-34.5 | 5.30-21.67 | 261-2,419 | 1-228* |
| EVR5 | 6.35-7.20 | 47-56 | 10-182 | 0.5-78.8 | 7.23-36.40 | 1,120-16,300 | 16-580 |
| SRW6 | 6.21-7.27 | 46-55 | 72-132 | 0.5-45.4 | 8.24-53.20 | 387-6,870 | 14-1,790 |
| SRN7 | 5.85-7.24 | 48-58 | 32-103 | 0.3-44.3 | 7.75-48.30 | 231-48,400 | 3-48,400 |
| SRE8 | 6.24-7.34 | 46-55 | 72-102 | 0.3-24.4 | 8.25-18.03 | 37-2,420 | 1-83 |

*Some Data may have had errors or missing data points.

EVR GROUNDWATER WELLS & WATER SAMPLE SITES - EVR & STARY RANCH

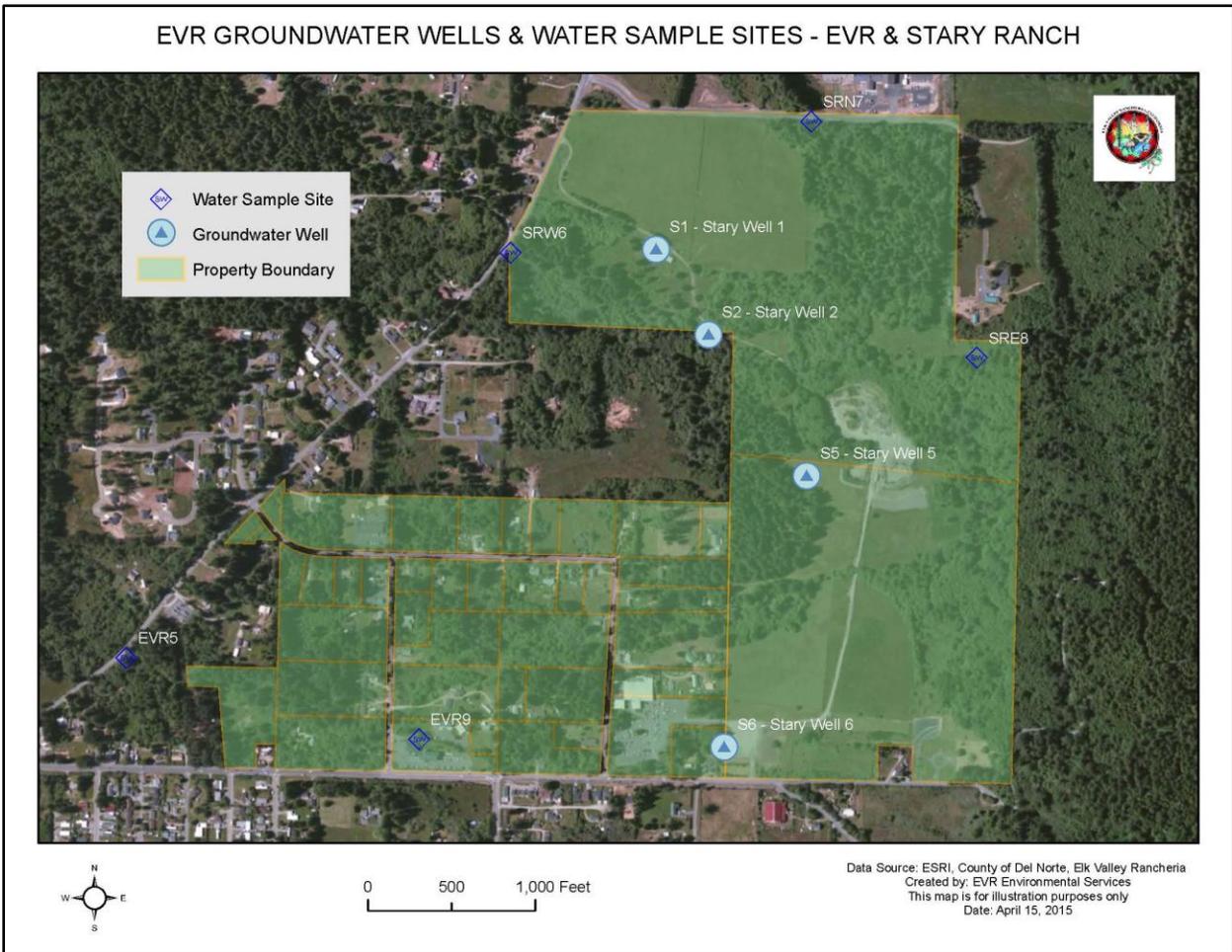


Figure 6: EVR & Stary Ranch Well & Sample Sites



Figure 7: Martin Ranch Wells & Sample Sites

Water quality parameters and contaminants such as alkalinity, nitrates, chloride, sulfates, TDS, phosphorous, barium, phosphates, calcium (Ca), manganese (Mg), nickel (Ni), copper (Cu), lead (Pb), and chromium (Cr) were detected at sampling sites as shown in **Table 6**. Detected levels range greatly for some of the components and thus the highest levels detected are provided in **Table 6**.

Table 6
MAXIMUM LEVELS DETECTED

| Sites | Units | MRSW1* | MRNW3* | MRNE4* | EVR5 | SRW6 | SRN7 | SRE8 |
|-------------|-------|--------|--------|--------|-------|-------|------|-------|
| Alkalinity | mg/l | 40 | 63 | 44 | 58 | 55 | 21 | 33 |
| Nitrates | mg/l | 2.5 | * | 17 | 0.94 | 0.69 | 0.86 | 0.83 |
| Chloride | mg/l | 15 | * | 12 | 17 | 13 | 12 | 13 |
| Sulfate | mg/l | 4.5 | | 4 | 5.7 | 3.3 | 1.9 | 2.8 |
| TDS | mg/l | 77 | 74 | 90 | 120 | 100 | 77 | 70 |
| Phosphorous | mg/l | 0.022 | 0.025 | * | 0.03 | 0.35 | * | 0.041 |
| Phosphates | mg/l | 0.049 | 0.026 | 0.039 | * | 0.026 | 0.03 | 0.032 |
| Barium | µg/l | 13.3 | 22 | 28 | 26 | 16 | 13 | 13 |
| Ca | ug/l | * | 9200 | 7300 | 11000 | 7300 | 3900 | 5800 |
| Mg | ug/l | * | 5700 | 3200 | 10000 | 7300 | 6100 | 2700 |
| Nickel | ug/l | * | 2.3 | 3.4 | 5.9 | 5.4 | 5.4 | 3 |
| Copper | ug/l | * | * | 1 | * | * | * | * |
| Lead | ug/l | * | * | 1.5 | * | * | * | * |
| Chromium | ug/l | * | * | * | 6.2 | 2.27 | 5.5 | * |

*Some Data may have had errors or missing data points.

Within the watershed, very few studies have been conducted concerning water quality. The following is a summary based on a review of existing data as discussed in **Section 3.1**. Water quality within the watershed surrounding the Reservation waters is currently subject to the jurisdiction of the State Water Resources Control Board (SWRCB) and the North Coast Regional Water Quality Control Board (NCRWQCB). The NCRWQCB has historically found slightly elevated levels of sediments in Elk Creek and concluded that, “further information regarding in stream sediment conditions is necessary to verify the (sediment) transport capacity for Elk Creek ... Staff recommends conducting additional in stream sediment assessments to determine whether spawning and rearing habitat of cold water fisheries and other beneficial uses are impaired due to sediments” (NCRWQCB, 2001). However, no further data regarding Elk Creek is readily available from the NCRWQCB. There are no water bodies within the Reservation that have been designated as impaired by the NCRWQCB.

Groundwater

Because the Tribe is connected to the local water purveyor (source water from the Smith River), no groundwater data for the Reservation is available; however, the Tribe is incorporating groundwater sampling into the current water quality sampling program conducted under Section 106 of the CWA. The Tribe is currently updating the QAPP to incorporate groundwater sampling into the program. A review of

Department of Water Resources (DWR) online well data indicates groundwater sampled within Crescent City (2005) identified the following constituents:

- Total aluminum – 0.86 micrograms per liter ($\mu\text{g/l}$)
- Total arsenic – 0.181 $\mu\text{g/l}$
- Cadmium – 0.005 $\mu\text{g/l}$
- Total copper – 5.11 $\mu\text{g/l}$
- Total nickel – 12.4 $\mu\text{g/l}$
- Nitrate – 8.2 mg/l
- Nitrate and Nitrite – 1.7 mg/l as N
- Selenium – 0.2 $\mu\text{g/l}$

Off-reservation, the state, through the California Department of Public Health, had established drinking water standards for public water systems. These standards are identified as Maximum Contaminant Levels (MCLs) and are codified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5). The Basin Plan for the NCRWQCB has incorporated the MCLs as the water quality objectives for groundwaters in the watershed. The contaminant levels identified in the sample results above are below the respective MCLs.

A review of agency data indicates two sites of historical groundwater contamination within the watershed from pesticide storage and wood treatment at a local sawmill.

Pesticide Storage (USEPA, 2011)

The Del Norte County Pesticide Storage Area site operated from 1970 until 1981, accepted containers from local agricultural and forestry related industries. The site is located approximately four miles northwest of the Reservation. The site was intended to be an interim or emergency storage area for pesticide containers, which previously had been triple-rinsed and punctured. Wastes and rinse water were improperly disposed of in an unlined sump. Approximately 1,600 drums that had held the wastes and rinse water were recovered and recycled by the County Agricultural Department. Groundwater and soil were found to be contaminated with various pesticides, herbicides, and volatile organic compounds (VOCs). The primary contaminant remaining is the pesticide 1,2-Dichloropropane (DCP), which had been used principally to control nematode worms on roots and bulbs. EPA determined that the levels of these chemicals identified in the contaminated soil and groundwater may pose a potential threat to human health. California EPA's Department of Toxic Substances Control is currently the lead at the site, with the US EPA responsible for a comprehensive review of the cleanup every five years while the cleanup objects are being reached. Del Norte County continues to monitor contaminant levels at the site until the USEPA is confident that the groundwater has attained the maximum contaminant level (MCL) of 5 parts per billion (ppb). Sampling conducted at the site through October 2009 indicates that contaminant levels are continuing to decline naturally in the final two monitoring wells where contamination is still detectable. Monitoring Well (MW) 104 had levels of DCP of 2.0 ppb, and MW 105 had levels of DCP of 6.5 ppb on October 12, 2009.

Wood Treatment (NCRWQCB, 2003)

The McNamara & Peepe Corporation operated a sawmill in Crescent City from 1940 to 1981. The sawmill site is approximately 1.4 miles west of the Reservation. The sawmill utilized wood treatment chemicals including pentachlorophenol (PCP) and maintained equipment onsite utilizing dioxins. Initial samples collected by the NCRWQCB in 1983 indicated sump and storm water runoff from the project site contained PCP levels of 7,500 ppb. The responsible party initiated cleanup of the site and subsequent environmental sampling was conducted over the decades to assess the progress of the remediation. The most recent information indicates that in 2003, groundwater and surface water samples indicated PCP and dioxin levels of 0.734 µg/l and 0.01093 nanograms per liter (ng/l), respectively. Surface water samples identified concentrations of PCP and dioxin levels of 0.606 µg/l and 0.00358 ng/l, respectively, indicating that ongoing discharges of PCP and dioxin from impacted soils were reaching groundwater and surface water resources.

SECTION 6.0

RESULTS

6.1 NPS POLLUTION SOURCES

The most influential source of exposure to NPS pollution are the grazing and mining operations on Tribal lands, which contribute to sedimentation, mineralization, and microorganism pollution. Of secondary concern are the effects from construction and associated hydrological changes (hydromodification) to the landscape and stockpiling on construction materials/debris. Lastly, urbanization and development leads to increased runoff rates and pollutant loading from deposition on roadways and impervious surfaces, as well as exposing the potential for pollution from trash and household hazardous waste.

6.2 STATUS OF RESERVATION/TRIBAL WATERS

Although preliminary information is available from the sampling program conducted under the Tribe's CWA Section 106 grant long-standing trends from NPS pollution cannot be determined concerning water quality on the Reservation and Tribal Properties. However, three of the four streams on the Stary Ranch are assumed not to meet all the beneficial uses for which they are designated (refer to **Section 5.2**) due to the proximity of NPS pollution sources (pasture lands, surface mining operations, construction debris stockpiles, and roadway and land development) and based on preliminary water quality results from the sampling conducted under CWA Section 106 grants (elevated nitrates and coliform). Therefore, the statuses of the Reservation waters range from minimally threatened to moderately threatened. There were no severely impaired waterways analyzed in this Report due to a lack of quantitative data. The Stary Ranch Northeastern Stream is assumed to exhibit no impairment to beneficial uses due to: the limited length of the watercourse running through the property; the isolated location of the reach within the property; and that specific portion of the Stary Ranch currently undeveloped. After further implementation of surface water sampling in accordance with the Tribe's surface water monitoring program under CWA Section 106, a more quantitative analysis of the status of the Reservation waters in relation to NPS pollution sources can be conducted and this NPS assessment will be updated. The threatened statuses of the waters of the Reservation and Tribal properties are summarized in **Table 7**.

TABLE 7
POTENTIAL IMPAIRMENTS OF RESERVATION WATERS

| Watershed | Waterbody Name | Area or Length | Pollutant | Impairment Cause¹ | Assumed Impairment | Water Quality Condition |
|---|--|--------------------------|--|---|---------------------------|--------------------------------|
| Kings Valley-Frontal Pacific Ocean subwatershed (HUC 18010101501) | Stary Ranch Northern Stream | 4,000 feet | Sediment, Minerals | Surface Mining, Roadway Development, Construction (Material Disposal) | Moderately Threatened | Satisfactory |
| | Stary Ranch Northeastern Stream | 700 feet | None | N/A | None | Satisfactory |
| | Tribal Administration Stream | 685 feet | Sediment, Oils and Grease | Surface Runoff | Moderately Threatened | Satisfactory |
| | Stary Ranch Southern Drainage | 3,900 feet | Microorganisms, Sediment | Agriculture (Pasture Land), Roadway Development | Moderately Threatened | Unknown |
| | Howland Hill Road Drainage | 5,000 feet | Sediment, Oils and Grease | Surface Runoff, Agriculture (Pasture Land) | Moderately Threatened | Unknown |
| | Reservation Roadside Ditches | 3,750 feet | Sediment, Oils and Grease, Solid Waste | Surface Runoff | Moderately Threatened | Unknown |
| Wilson Creek-Frontal Pacific Ocean subwatershed (HUC 18010101502) | Northern Stream, Wetland Prairie, and Forested Wetland | 3,000 feet 3.25 acres | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Satisfactory |
| | Central Ditch and Seep Complex | 1,500 feet | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Unknown |
| | Central Complex of Streams | 2,500 feet | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Unknown |
| | South Central Stream | 1,800 feet | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Unknown |
| | Main Wetland | 25 acres | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Unknown |
| | Southern Stream and Wet Prairie | 1,000 feet 3.30 acres | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Unknown |
| | Southeast Stream | 250 feet | Microorganisms, Sediment, | Agriculture (Pasture Land), Construction (Land Development) | Moderately Threatened | Satisfactory |
| Groundwater | 7 wells | | Agriculture (Pasture Land) | Agriculture (Pasture Land), Construction (Land Development) | Minimally Threatened | Unknown |

¹=Impairment is assumed based on visually identified NPS pollution sources and bacteria testing of certain streams. Bacteria test results as a part of the Tribes CWA 106 program since 2011 helped to inform the Impairment Cause.

Source: AES, 2011, Elk Valley Rancheria Environmental Services

SECTION 7.0

DISCUSSION

7.1 WATER QUALITY IMPAIRMENT FROM NONPOINT SOURCE POLLUTION

CATEGORIES OF NONPOINT SOURCE POLLUTION

Through visual observation of Reservation waters and drainage patterns and preliminary results from the Tribe's water quality program, the Tribe identified categories of NPS pollution on the Reservation that are likely impacting water quality, as shown below. The Tribe then ranked the identified categories of NPS pollution based on the percentage of Reservation waters potentially impaired from each category. For example, for Agriculture (Pasture Land), it is anticipated that the cattle grazing is impairing of 22% of the total identified Reservation waters.

Stary Ranch/Reservation:

- Agriculture (Pasture Land), Impairment Ranking = 22% of Reservation waters impaired.
- Urban runoff (Surface Runoff), Impairment Ranking = 22% of Reservation waters impaired.
- Resource Extraction (Surface Mining), Impairment Ranking = 5% of Reservation waters impaired.
- Construction (Roadway, Land Development, Construction Debris), Impairment Ranking = 5% of Reservation waters impaired.

Martin Ranch:

- Agriculture (Pasture Land), Impairment Ranking = 22% of Reservation waters impaired.
- Construction (Roadway and Land Development), Impairment Ranking = 5% of Reservation waters impaired.

Groundwater:

- Agriculture (Pasture Land), Impairment Ranking = 10% of Reservation waters impaired.

STARY RANCH/RESERVATION

Kings Valley-Frontal Pacific Ocean subwatershed (HUC 18010101501)

Agriculture (Pasture Lands), Impairment Ranking = 22%

Currently, the only ongoing agricultural operation practiced on the Stary Ranch/Reservation is cattle grazing and hay development. Cattle grazing remove the natural vegetation on the grazing site exposing soils leading to sedimentation. In addition, wastes from the cattle contain bacteria (fecal coliform) that enter the local drainages through runoff from the grazing site, impairing water bodies. Currently, agricultural operations being conducted on the Stary ranch include hay grass development. Crop-related

agricultural operations have the potential to impact water resources from sedimentation associated with tilling and planting as well as the introduction of agricultural chemicals including fertilizers and pesticides, if needed. These chemicals can enter the watershed through runoff from the planting area adversely impacting watershed water quality.

Pasture lands and associated runoff are likely threatening the beneficial uses of Stary Ranch Southern Drainage due to the close proximity of the cattle pen to the drainage (**Figure 3**). Pasture lands are also likely threatening the Howland Hill Road Drainage and downstream water resources. The pasture lands are located up gradient from the Howland Hill Road Drainage and cattle are commonly found outside of the pen, closer to Howland Hill Road.

Urban Runoff, Impairment Ranking = 22%

Pavement and buildings represent impervious surfaces that water cannot percolate through to the soil, and thus a tremendous amount of runoff is created over natural levels which pick up pollutants, cause erosion, and even contribute to flooding downstream. Ground that is disturbed but not paved, such as dirt roads, can contribute greatly to sediment loading downstream, and paths traveled by vehicles can have significant quantities of deposited oil, grease, heavy metals, and trash exposed to runoff. In addition, trash and pollutants can enter the storm water streams from innocuous sources such as the trash bin at the Elk Valley Casino-Parking Lot and Elk Valley Head Start/ Small Community Center parcel or maintenance of equipment at the Tribal governmental facilities.

Urban runoff is likely threatening the beneficial uses of the Howland Hill Road Drainage and Reservation roadside ditches that ultimately convey storm water to Elk Creek.

Resource Extraction (Surface Mining), Impairment Ranking = 5%

Mining operations result in loosening established soils and introducing minerals to surface waters. The existing mining operation on the Stary Ranch consists of rock extraction to develop building materials. Mining operations typically consist of extracting and stockpiling materials for processing and delivery. The existing mining operation consisting of stockpiles of soils extracted to reach rock materials and stockpiles of extracted rock materials. Uncovered stockpiles can lead to sedimentation and mineralization of storm water runoff if secondary containment measures are not installed to prevent runoff from reaching surface water resources.

The surface mining operation is likely threatening the beneficial uses of the Stary Ranch Northern Stream due to the proximity of the mine and location of the mining operation upstream of the site.

Construction (Land Development and Material Disposal), Impairment Ranking = 5%

Construction activities change the natural hydrology and in many cases remove the very natural systems for stormwater treatment in place before the development. Typical construction activities entail the alteration of the elevation of a site resulting in excavation of soil materials, exposing loose materials that can result in sedimentation of site runoff. Often, the excavated materials are stockpiled on site for reuse

of disposal. As with mining, uncovered stockpiles can lead to sedimentation of storm water runoff if secondary containment measures are not installed to prevent runoff from reaching surface water resources. In addition to ground disturbance and changes to the natural hydrology, construction activities typically result in discarded materials from demolishing existing structures or extraneous pieces of building materials. As with soils, these materials are often stockpiled at the site or in a central location, as is the case of the material stockpile on Stary Ranch adjacent to the rock quarry. These stockpile materials can introduce construction related chemicals and change the mineral content and water quality of surface water runoff if the stockpiles are not covered and no secondary containment provided.

Construction activities are likely threatening the streams and drainages of the Stary Ranch/Reservation, except for the Stary Ranch Northeastern Stream. At the time of the NPS Assessment, there were no ongoing construction activities. However, the Tribe will consider NPS impacts from future construction projects within the NPS Management Plan. The stockpiled construction materials at the mining operation are located near and up slope to the Stary Ranch Northern Stream and are likely threatening the associated beneficial uses.

MARTIN RANCH

Wilson Creek-Frontal Pacific Ocean subwatershed (HUC 18010101502)

Agriculture (Pasture Lands), Impairment Ranking = 22%

Pasture lands and associated runoff are likely threatening the beneficial uses of all the streams, wetlands, and seeps on the Martin Ranch. The cattle are not contained to a specific pen on the Martin Ranch and therefore it can be assumed that associated microorganism contaminants reach all the water resources on Martin Ranch via storm water runoff.

Construction (Land Development and Material Disposal), Impairment Ranking = 5%

Construction activities are likely threatening the streams and drainages on Martin Ranch. At the time of the NPS Assessment, there were no ongoing construction activities. However, various stockpiles and visible signs of site alteration were evident while conducting the NPS Assessment. In addition, future development planned for the study area (Tribal casino and resort), could threaten the beneficial uses of the waters on Martin Ranch.

REGIONAL GROUNDWATER

Groundwater quality within the watershed was noted as having localized impairments in relation to pesticide storage and operation of a sawmill. Based on the localization of the contaminant plume, there is no indication that off-reservation contamination from these sources impacts groundwater quality on the Reservation.

Agriculture (Pasture Lands , Impairment Ranking = 5%

Although there is a lack of existing data regarding water quality on the Martin Ranch, there are seeps located on the Martin Ranch near the pasture lands. Further assessment is needed to determine if cattle grazing has adversely impacted water quality.

SECTION 8.0

SELECTION OF MANAGEMENT PRACTICES

8.1 CORE PARTICIPANTS

Nonpoint source pollution prevention is the responsibility of all those who live and work in the watershed. As such, cooperation between the entities such as the Tribe, developers, and non-Tribal residents, as well as government agencies such as the City of Crescent City are vital to the health of the watershed. A great many nearby activities can influence water quality. Stakeholders are few, but each plays an important role.

TABLE 8
CORE PARTICIPANTS IN WATERSHED PLANNING

| Participant | Role |
|--|---|
| Elk Valley Rancheria Tribal Council | Provides regulatory policy guidance for resources on trust land. |
| Elk Valley Environmental Department | Provides monitoring and assessment capability for implementation of BMPs on trust land. |
| US Environmental Protection Agency | Provides regulatory and technical assistance as well as grant funding for tribal environmental projects. The Tribe has obtained Section 319 grant funding from EPA. |
| City of Crescent City | Provides regulatory policy guidance and monitoring and assessment capability for implementation of BMPs for resources off trust lands outside of the Reservation. |
| North Coast Regional Water Quality Control Board | Provides technical oversight and education for projects on land owned in fee by the Tribe. |
| California State Parks Department | Provides education to the public regarding NPS pollution within State Forests. |
| County of Del Norte | Provides regulatory policy guidance and monitoring and assessment capability for implementation of BMPs for resources off trust lands outside of the Reservation. |

8.2 PUBLIC PARTICIPATION

There are many opportunities for public participation both on and off the Reservation. First, the Tribal Council is accountable to all members of the Tribe, and robust intra-government relations between the various Departments are a critical step towards preventing NPS pollution and restoring the Reservation waters. In addition, significant public outreach opportunities exist between the Environmental Department and the residents of the Reservation, especially in volunteer activities and awareness. For large-scale NPS pollution control programs that affect watershed water quality, the Tribal Council will provide opportunities for public comment and review and may or may not grant approval as warranted.

Where other governments are involved, appropriate government to government protocols will be adhered to and will be an integral part of the process. Smaller proposals, such as low impact, inexpensive, site specific projects, or relatively minor publicity efforts that could be accomplished within our base funding level will typically undergo an internal review.

8.3 EXISTING BMPs

The Tribe is in the process of developing an integrated Tribal Environmental Program, which will provide water quality data in the future to develop NPS source-specific BMPs. Currently, naturally vegetated channels provide NPS pollution reduction mechanisms within the study areas waterways. Large-scale construction projects on the study areas that require construction permits from the USEPA comply with the Nation Pollutant Discharge Elimination System (“NPDES”) permitting process and associated use of pollution controls during construction, reducing construction-related NPS pollution on the Reservation and Tribal Properties. In addition, under Short-Term Task UR-2 of the 2011 NPS Management Program Plan, the Tribe has installed straw waddle along unpaved tribal roadways to reduce visible sedimentation into Reservation Waterways.

The 2011 version of the NPS Management Program Plan included a BMP to install cattle fencing on Stary Ranch to provide buffers and prevent access to the Reservation waters by cattle. However, after several attempt to initiate the program, including working with the Natural Resource Conservation Service to develop a fencing and trough plan, it was determined that cattle fencing wasn’t feasible for a variety of reasons including the obstruction of native elk corridors and was dismissed from inclusion into the Tribe’s ongoing NPS Management Program Plan. In addition, many of the BMPs presented in the 2011 NPS Assessment Report and Management Program Plan required additional assessment prior to implementation, which has resulted in a longer implementation schedule than anticipated. The Tribe has also experienced staff turnover within the Environmental Department resulting in additional delays to the implementation schedule.

8.4 POLLUTION REDUCTION

The strategy for selecting appropriate BMPs is to involve interested stakeholders as soon as possible during the scoping of Tribal projects. Stakeholders include Tribal members, the Tribal Council, and off-reservation interests such as residents and developers.

For example, residential development on the Reservation can involve the future residents, the Environmental Department, construction contractors, and even City or County officials if the development is on fee lands. Meetings between these parties face to face is the most effective strategy for determining the BMPs for selection, and often experienced contractors and regulators have a great many ideas to share regarding new and effective BMPs. The expert advice of consultants, contractors, and government officials should be taken advantage of to the maximum extent possible.

In addition, the Environmental Department should make every effort to secure volunteers within the community to serve a variety of functions that will improve water quality. NPS watchdogs can be appointed to observe waterways periodically in the course of regular pedestrian activities to ensure water quality problems are detected early. Teams of stewards can meet periodically to engage in education of other residents, and conduct cleanup and restoration efforts.

The methodology for selection of BMPs most suitable to address each category and subcategory of nonpoint source pollution identified in this NPS assessment is as follows:

1. Identify all BMPs that are appropriate to each type of NPS pollution through research and consultation.
2. Determine which of the BMPs identified during Step 1 are suitable for the Tribe in terms of scale, environment, cost, and existing infrastructure.
3. Determine likely effectiveness of locally appropriate BMPs in reducing NPS loading through research, modeling, and consultation. These will be ranked based upon likely performance.
4. Consult with other relevant agencies and jurisdictions to determine which of the BMPs may best be used in coordination with local off-reservation efforts.
5. Determine which BMPs will have the most favorable results per unit cost.
6. Present options to public meeting of Tribal Council to allow tribal leadership, tribal members and nontribal public an opportunity to consider options, provide comment, and shape the implementation of the proposal.
7. Implement BMP with adequate resources to perform necessary maintenance and monitor performance.
8. Provide regular updates on BMP status and effectiveness for Tribal Council and other relevant agencies.

8.5 FUNDING SOURCES

A summary of federal, state, and local assistance and funding are listed below. The program descriptions of cooperating agencies and how they relate to the abatement and control of NPS pollution on the Reservation/Tribal properties is as follows:

FEDERAL

USDA, Natural Resource Conservation Service

The NRCS is the technical agency responsible for providing technical, financial, and educational assistance to land users in planning and application of soil and water conservation measures. The NRCS works under memoranda of understanding with the soil and water conservation districts.

U.S. Department of the Interior, Bureau of Indian Affairs

The Bureau of Indian Affairs (BIA) is the government agency that has responsibility for land held in trust by the U.S. Government for Indian Tribes. These responsibilities are set forth in 25 CFR Part 150-250. The BIA will provide technical assistance and resources when possible. When BIA funds are available,

the Tribal NPS program can match funds. This allows greater flexibility when trying to fund projects that are expensive to implement because Tribal NPS funding is limited.

Indian Health Services

The Indian Health Service (IHS) has the responsibility of providing health services to federally recognized Indian tribes. IHS provides technical expertise and funding resources (when available) to insure sound public and environmental health services.

Tribal Programs

In all, the Tribal Council can assist the NPS program with their staff and expertise in assisting with implementing NPS projects.

SECTION 9.0

CONCLUSIONS

As described in this NPS assessment, Reservation waters are potentially impaired from various NPS pollution sources. On the Stary Ranch/Reservation, the NPS pollution categories in ranking of greatest concern are:

- Agriculture (cattle pasturelands),
- Urban runoff,
- Resource extraction (surface mining), and
- Construction (land development and material disposal).

On Martin Ranch, the NPS pollution categories in ranking of greatest concern are:

- Agriculture (cattle pasturelands), and
- Construction (land development and material disposal)

For groundwater, there is a lack of existing data regarding water quality on the Martin Ranch. However, there are seeps located on the Martin Ranch near the pasture lands. Further assessment is needed to determine if cattle grazing has adversely impacted water quality.

These NPS pollution categories may result in water quality impairments related to bacteria loading, oils and greases and commercial contaminants, erosion and sedimentation of drainages and surface waters, and nutrient enrichment. Sources and causes of these problems vary from cattle grazing near Reservation waters to surface mining activities including stockpiling of excavated materials and contamination from parking facilities and commercial/Tribal governmental operations. Each issue will be addressed through implementation of the CWA Section 319 Nonpoint Source Management Program, which outlines short-term and long-term BMPs that would be funded by various sources including, but not limited to, CWA Section 319(h) funding. Implementation of a CWA Section 319(b) Nonpoint Source Management Program Plan will provide the framework for selection and implementation of best management practices and nonpoint source pollution mitigation strategies.

SECTION 10.0

REFERENCES

- Analytical Environmental Services (AES), 2002. *Biological Resource Assessment: Stary Ranch Fee-to-Trust Project*. December, 2002.
- AES, 2003a. *Stary Ranch Fee-to-Trust Environmental Assessment*. Department of the Interior, Bureau of Indian Affairs. June, 2003.
- AES, 2003b. *Stary Ranch Phase I Environmental Site Assessment*. March, 2003.
- AES, 2003c. *9.63 Acre Fee-to-Trust Environmental Overview*. Department of the Interior, Bureau of Indian Affairs. January, 2003.
- AES, 2003d. *Casino Lease Environmental Assessment*. Department of the Interior, Bureau of Indian Affairs. January, 2003.
- AES, 2004. *Elk Valley Tribal Office Phase I Environmental Site Assessment*. November, 2004.
- AES, 2005a. *Delineation of Waters of the U.S. for the 203.50 ± Acre Elk Valley Rancheria, Martin Ranch Fee-to-Trust Casino Project*. August, 2005.
- AES, 2005b. *Gravel Mine Environmental Study*. May, 2005.
- AES, 2006. *Elk Valley Rancheria 203.5-Acre Fee-to-Trust Transfer and Casino/Resort Project Final Environmental Impact Statement*. Department of the Interior, Bureau of Indian Affairs. September, 2006.
- California Department of Water Resources (DWR). 1975. *California's Groundwater*. Department of Water Resources Bulletin No. 118. September, 1975. Reprinted January 1994.
- MWH, America, Inc., 2004. *Elk Valley Rancheria Water Supply Study Final Report*. Unpublished November 2004 technical report.
- Regional Water Quality Control Board, 2001. *303(d) List Update Recommendations*. State Water Resources Control Board, North Coast Regional Water Quality Control Board (Regional Water Board). November 16, 2001.

U.S. Department of Housing and Urban Development (HUD), 2008. *Indian Housing Block Grant Formula (IHBG)*. Available online at: <http://www.hud.gov/offices/pih/ih/codetalk/onap/ihtagformula/fy08fnlalc.xls>. Accessed July 17, 2009.

U. S. Department of Interior, Bureau of Indian Affairs (BIA), 2005. *2005 American Indian Population and Labor Force Report*. Available online at <http://www.bia.gov/WhatWeDo/Knowledge/Reports/index.htm>. Accessed July 14, 2011.

United States Environmental Protection Agency (USEPA), 2011. *Del Norte Pesticide Storage, Region 9: Superfund*. USEPA, Region 9. Available online at: <http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/Del+Norte+Pesticide+Storage?OpenDocument#threats>. Accessed July 13, 2011.

North Coast Regional Water Quality Control Board (NCRWQCB), 2003. *Cleanup and Abatement Order No. R1-2003-0131 for Former MacNamara & Peepe Corporation Appointed Trustee in Bankruptcy*. December 2003.

SECTION 11.0

ACRONYM LIST

AES – Analytical Environmental Services

amsl – Above Mean Sea Level

BMPs – Best Management Practices

Constitution – Elk Valley Rancheria Tribal Constitution

CWA – Clean Water Act

DCP – 1,2-Dichloropropane

DWR – Department of Water Resources

gpm – Gallons per Minute

HUC – USGS Hydrologic Unit Code

IHS – Indian Health Services

LPG – Liquid Propane Gas

MCLs – Maximum Contaminant Levels

mg/l – Milligrams per Liter

MW – Monitoring Well

NCRWQCB – North Coast Regional Water Quality Control Board

ng/l – Nanograms per Liter

NPDES – National Pollutant Discharge Elimination System

NPS – Nonpoint Source

NRCS – Natural Resource Conservation Service

Ordinance – Ordinance of the Elk Valley Rancheria #99-36, § 3.02.600

PCP – pentachlorophenol

PC Ordinance – Elk Valley Pollution Control Ordinance

ppb – Parts per Billions

QAPP – Quality Assurance Project Plan

Rancheria – Elk Valley Rancheria

SWPP Ordinance – Storm Water Pollution Prevention and Best Management Practices Ordinance

SWRCB – State Water Resources Control Board

TAS – Treatment as a State

µg/l – Micrograms per Liter

USEPA – United States Environmental Protection Agency

USGS – United States Geological Survey

VOCs – Volatile Organic Compounds