Ahtna
Facility Services, Inc.

December 9, 2016

Mr. William Cornelius
Tribal Administrator
Cahto Tribe
300 Cahto Drive
Laytonville, CA 95454

Subject: Environmental Assessment Proposal

Dear Mr. Cornelius,

Ahtna Facility Services, Inc. (AFSI) is pleased to have the opportunity to submit the attached Scope of Work (SOW) for a comprehensive Environmental Assessment to address the data gaps identified in the 2005 California Department of Health Services Public Health Assessment (PHA). The SOW includes a discussion of the findings of the PHA and previous investigations, and presents the results of the October and November 2016 soil and groundwater sampling efforts conducted by AFSI.

A detailed cost estimate is provided for the implementation of the proposed actions.

AFSI appreciates the opportunity to provide this SOW and Cost Estimate to the Cahto Tribe. Please let me know if you require any additional information. We look forward to providing continued services to the Cahto Tribe.

Respectfully,

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Ahtna
Facility Services, Inc.

Laytonville Rancheria
Cahto Tribe

ENVIRONMENTAL ASSESSMENT SCOPE OF WORK

Cahto Tribe
300 Cahto Drive
Laytonville, CA 95454

Prepared by
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December 9, 2016

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AFSI	Ahtna Facility Services, Inc.
ATSDR	Agency for Toxic Substances and Disease Registry
BIA	Bureau of Indian Affairs
CDHS	California Department of Health Services
CIWMB	California Integrated Waste Management Board
CMDEH	County of Mendocino Department of Environmental Health
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CSM	Conceptual Site Model
DQO	Data Quality Objective
ft.	feet
FEMA	Federal Emergency Management Agency
HERO	Human and Ecological Risk Office
HHRA	Human Health Risk Assessment
HUD	Housing and Urban Department
IDW	Investigation Derived Waste
MCL	Maximum Contaminant Level
MCSWMD	Mendocino County Solid Waste Management District
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
msl	mean sea level
MTBE	methyl tert-butyl ether
NCRWQCB	North Coast Regional Water Quality Control Board
PCBs	polychlorinated biphenyls
PHA	Public Health Assessment
QA	Quality assurance
QC	Quality control
RBSL	risk-based screening level
SOW	Scope of Work
SVOC	Semi volatile organic compound
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

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1.0 INTRODUCTION

The Laytonville Rancheria (Rancheria) of the Cahto Tribe is located near the center of Long Valley in the Pacific Coast Mountain Range. The Rancheria is approximately 1.5 miles southwest of the Laytonville, California city center in Mendocino County at an elevation of approximately 1,700 feet (ft.) above mean sea level (msl). The site is situated 15 miles east of the California coast and 20 miles north-northwest of Willits (Figure 1). The Rancheria is adjacent to a parcel of property owned by Mendocino County and used as an equipment yard and former waste dump that was converted by the county to a municipal landfill. The Laytonville landfill is located near the town of Laytonville and next to the Laytonville Rancheria. The landfill operated as a municipal waste landfill between 1974 and 1993. Prior to 1974, the landfill was used as a "burn dump" and site for disposal of household and municipal waste. During operation there were reports of foul odors, litter, and surface water runoff from the landfill along with other issues including violations issued by the North Coast Regional Water Quality Control Board (NCRWQCB) (CDHS, 2005).

While the landfill was operating, it received about 18,000 tons of waste. The specific contents of the landfill are unknown and were unregulated. Reports by community members and others claim that unlawful dumping of hazardous wastes occurred often. Burning of waste frequently occurred and leachate was observed. The landfill was closed in 1993 and capped in 1997. The landfill is not lined. Slope stability has been an issue. The cap has failed and required repair several times. The most recent failure was this summer (2016).

Rancheria residents have had health concerns about exposure to contaminants originating from the Landfill since it began operation as a municipal waste site. Access to the Landfill was unrestricted with Tribal members playing and scavenging material. During operation of the Landfill, complaints from Tribal and nearby residents included strong odors, burning of trash, and possible runoff of leachate from the Landfill. Nearby residents also complained of numerous health issues, developmental disabilities, and reproductive difficulties.

2.0 EXISTING INFORMATION

Although a number of assessments and studies related to the Landfill and County property have been carried out by others, the scopes of those assessments and studies were limited by available data and area of interest. For example, groundwater monitoring at the Laytonville Landfill has been on-going since the early 1990's on a quarterly basis but the focus was on the deeper aquifer. There was very limited analyses done to identify organic constituents including volatile organic compounds (VOCs) and semi-volatile compounds (SVOCs), organochlorine pesticides and polychlorinated biphenyls (PCB's), chlorinated herbicides, and dioxins and furans that may have been released to the shallow groundwater aquifer. Also, a separate investigation was conducted to evaluate the presence of contaminants from leaking underground gasoline storage tanks at the county equipment yard located in the northeast corner of the county property. When the tanks were removed, holes were found in one of the tanks and further investigation identified gasoline constituents, including methyl tert-butyl ether (MTBE), in the groundwater at the

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equipment yard. However, the investigation did not identify the extent of the contamination or extend to Rancheria property immediately east of and downgradient from the equipment yard.

In 2005, the California Department of Health Services (CDHS) prepared a public health assessment (PHA) under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR) (CDHS, 2005)[1]. After reviewing available information, CDHS could not conclude that any of the Tribe's perceived adverse health effects were caused by the landfill. However, there were information gaps that limited the conclusions. The significant information gaps identified were 1) nature and extent of surface soil contamination in areas adjacent to the landfill and 2) the nature and extent of contamination in groundwater.

The PHA made twelve recommendations for addressing the health concerns of the Tribe and other residents. Six of the recommendations are directed at NCRWQCB and California Integrated Waste Management Board (CIWMB) and it is not feasible for the Tribe to implement them due to lack of access to the landfill property. These recommendations are to 1) investigate the integrity of the cap, and whether it can be improved, 2) investigate passive gas vents for adequacy in preventing migration of landfill gases, 3) oversee additional sampling and characterization of landfill hydrology and placing one or two more monitoring wells in the central and northwest portion of the landfill's northern boundary at the depth of private domestic wells, 4) improve the communication between Mendocino County Solid Waste Management Division (MCSWMD) and community residents, 5) continue to test all "leachate" that appears around the landfill for VOCs, SVOCs, and metals, and 6) identify the areas of the landfill that were used for open burning and are still exposed, and sample soil in these areas (CDHS, 2005).

The remaining recommendations, modified for the Tribe to potentially implement, are listed below:

1. In order to best understand the wells that should be monitored, undertake a well usage survey within a half-mile of the landfill.
2. Conduct yearly monitoring of the private drinking water wells located on adjacent and nearby properties to the landfill. The analysis of the well water samples should have low enough detections limits so the data can be used to help ensure that it is safe to drink or use the water. The analyses should include the basic constituents associated with landfill groundwater characteristics such as specific conductance, pH, total organic carbon, total dissolved solids, ammonia, chloride, as well as a metal survey that includes barium, manganese, boron, and vanadium. If any of these constituents are found in the private well water at levels that indicate migration of contamination from the landfill then additional analyses for a wider suite of chemicals including VOCs should then be

[1] CDHS, 2005. *Laytonville Landfill Public Health Assessment*. Prepared in cooperation with ATSDR.

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conducted. ***(It is our understanding, based on conversations with Tribal Administration, that there are no private wells currently in use at residences on the Laytonville Rancheria).***

3. Conduct periodic split-sample sampling of the same private wells, also using analysis techniques with low enough detection limits to be able to use the information for human health interpretation. ***(It is our understanding, based on conversations with Tribal Administration, that there are no private wells currently in use at residences on the Laytonville Rancheria).***
4. Restore the Cahto Creek within the Laytonville Rancheria property.
5. Test surface soil on surrounding properties where surface water runoff occurred most frequently before the cap was constructed. Those include the Rancheria to the east, the ranch immediately to the west, and the three private properties immediately adjacent to the landfill to the north. Testing should proceed with the input of inhabitants of each location, in at least three sampling sites in each direction. The analyses should be for chemicals such as metals and certain organic chemicals that persist for a long time in the surface soil.
6. Find an alternative to open burning to deal with vegetation waste on the landfill and elsewhere, including on tribal land. CDHS recommended that the air district and the tribes raise the awareness within their communities of the environmental effects of garbage burning, the air district strictly enforce the current prohibition of garbage burning, and the tribes regulate such activity.

The Tribe requested this statement of work (SOW) from Ahtna Facility Services, Inc. (AFSI) to address the continuing concerns of Rancheria residents regarding exposure to environmental contaminants that may have migrated or be migrating through surface transport routes or groundwater onto the Rancheria from the Mendocino County property located west of the Rancheria. AFSI developed this SOW using the relevant PHA recommendations to sample private drinking water wells (if any are identified) and to sample surface soil and surface water runoff from the landfill in likely transport pathways. Furthermore, because existing monitoring wells on the Rancheria are not adequate to define the areal extent of a potential contaminated groundwater plume, and the wells completion information are in question, AFSI proposes collection of in-situ groundwater samples from temporary well points along the perimeters of the landfill. Groundwater monitoring wells will subsequently be installed and sampled utilizing the temporary well point analytical data to establish the location of the wells. The groundwater wells will be sampled on a bi-annual basis to evaluate seasonal trends.

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2.2 Current Environmental Data

In August and September 2016, the Cahto Tribe collected soil and plant samples near the southern boundary of the landfill. The analytical results for these samples are provided in Appendix A. Soil samples were analyzed for metals, including hexavalent chromium and mercury, and PCBs. The detected concentrations of all the analytes were below residential risk-based screening levels (RBSLs)[2]; however, the reporting limits of arsenic, thallium, hexavalent chromium, and PCB-1016 were equal to or greater than the residential RBSLs for these analytes. The reporting limits for arsenic were above the commercial RSBL as well.

The plant samples were analyzed for arsenic, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, and mercury. Of these analytes, mercury has the potential to bioaccumulate in animals[3]. Mercury was not detected in the plant samples. No human health screening levels for plant tissues were identified at this time; and a risk evaluation was not performed for the other detected metals. These data are also provided in Appendix A.

In October 2016, AFSI collected soil samples from the same locations as the Cahto samples (See Figure 2) and analyzed them for metals, including (mercury and hexavalent chromium) and PCBs. Samples CIN1-001B and CIN1-004B were also analyzed for organochlorine pesticides and dioxins/furans because of the presence of stressed vegetation. Arsenic was detected in concentrations greater than both residential and commercial RBSLs in all the samples, including CIN1-005B, which is considered a background sample (See Figure 2). The concentration of lead was greater than the residential RBSL in CIN1-003B. The concentration of hexavalent chromium was greater than residential and commercial RBSLs in CIN1-002B and greater than the residential RBSL in CIN1-005B. Summarized results of detected analytes in soil samples are provided in Table 1. All results including analyte detection limits and qualified data are provided in Appendix A.

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[2] RBSLs are based on Human and Ecological Risk Office (HERO). 2013. Human Health Risk Assessment (HHRA) Note Number 3. Retrieved from DTSC recommended methodology for the use of U.S. EPA Regional Screening Levels (RSLs) in the Human Health Risk Assessment process at hazardous waste sites

3 https://www.epa.gov/mercury/health-effects-exposures-mercury

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Table 1. Soil Analyte Concentrations Exceeding Residential RBSLs

Detected Analyte	Residential RBSL (mg/kg)	Detected Concentration (mg/kg)	Locations where detected concentration is greater than RBSL
Arsenic	0.07	2.8 3.8 2.0 6.3 2.0	CIN1-001B CIN1-002B CIN1-003B CIN1-004B CIN1-005B
Lead	80	140	CIN1-003B
Hexavalent Chromium	0.3	6.6 3.6	CIN1-002B CIN1-005B

mg/kg = milligrams per kilogram

In November, AFSI collected groundwater samples from the three existing monitoring wells on the Rancheria and two surface water samples at the boundary of the Mendocino landfill property (See Figure 2). Surface water sample SW1 was collected along the eastern boundary of the Mendocino County property from a flowing stream emanating from near the capped landfill cell. SW2 was collected from a seep observed south of the capped landfill cell and downslope of it. The seep did not have adequate water flow to collect the volume of water necessary to perform all the analyses. This sample, SW2 was only analyzed for VOCs, Title 22 metals, mercury, and hexavalent chromium. The three groundwater samples and surface water sample SW1 were analyzed for Title 22 metals, mercury, hexavalent chromium, VOCs including MTBE, SVOCs, organochlorine pesticides, herbicides, PCBs, and dioxins and furans. Hexavalent chromium, arsenic and chloroform were detected in individual monitoring wells (Table 2). No other contaminants of potential concern (COPCs) were detected above the Maximum Contaminants Levels (MCLs) or the RBSLs for human health. Complete groundwater and surface water data are provided in Appendix A.

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Table 2. Groundwater Analyte Concentrations Exceeding Residential RBSLs

Detected Analyte	Residential tap water RBSL (mg/L)	Maximum Concentration (mg/L)	Locations where detected concentration is greater than RBSL
Arsenic	0.000052	0.0015J	MW3
Hexavalent Chromium	0.000035	0.018	MW3
Chloroform	0.00022	0.00042J	MW1

mg/L = milligrams per liter
J = estimated value

3.0 OBJECTIVE

The objective of this SOW is to use the data gaps identified in the PHA to refine a conceptual site model (CSM) for exposure, and collect environmental samples that will determine whether harmful chemicals are currently present in soil, shallow groundwater, and drinking water in the vicinity of the Rancheria closest to the landfill.

To meet this objective, AFSI proposes a phased approach based on discussions and concerns expressed by the Tribe and the recommendations of the PHA. It is our understanding that this SOW will be submitted to the Bureau of Indian Affairs (BIA) for review and consideration for funding. Work conducted will be in general accordance with current state and federal guidelines for conducting environmental assessments.

3.1 Phased Approach

AFSI proposes a phased approach focused on identifying and addressing existing data gaps. In this phased approach, collection of data will be based on results from previously collected data, as well as the recommendations of the PHA.

- Phase 1 will be to research available data and conduct interviews with Tribal Members on potential exposure to contaminated media. Additional soil, sediment and surface water locations will be identified and sampled to assess whether contaminants are migrating to the Rancheria property directly from the adjacent landfill or other surface water diversions from the landfill.
- Phase 2 will assess drinking water quality in the Rancheria homes. The residences are all connected to the Laytonville municipal drinking water system, and therefore drinking water should not be impacted by the landfill. This drinking water assessment is designed to evaluate any water quality impacts from home and water distribution system

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construction. If any private drinking water wells are identified that are still in use then tap water samples will be collected from these residences and substituted for the samples from homes connected to the municipal water system.

- Phase 3 will further assess both soil and groundwater impacts from the landfill. Temporary well points will be installed to sample shallow groundwater quality. The well point locations will be based on observations and analytical results obtained from Phase 1, as well as results from previous investigations. Subsurface soil and vadose zone soil will be sampled at the well point locations as well.
- Phase 4 will use the previous phases' information to determine appropriate locations to install permanent monitoring wells for long-term monitoring. Subsurface soil and vadose zone soil will be sampled at the monitoring well locations as well.
- Phase 5 is performing long-term monitoring of established well locations. Based on the results of the soil, surface water, and groundwater sampling efforts conducted under this SOW, recommendations for long-term monitoring frequency and target analytes will be developed.

The first step of the phased approach is to define a CSM that illustrates the present and future ways people, plants, or animals may be exposed to contamination (exposure pathways). It describes the routes the contaminants may take as they move through the environment - migration routes (through soil, groundwater, and/or surface water, or plants and animals (biota), and identifies the possible types of people, plants, and animals that could be exposed to contamination (potential receptors), and the ways receptors are exposed for further analysis at a site.

Prior to collection of any data or information, it is assumed that the following routes and media of exposure are potentially applicable:

- Inhalation—Airborne dust and organic vapors from subsurface soil and groundwater;
- Ingestion—Surface water, sediment, groundwater and ingestion of soil;
- Dermal absorption—Direct contact with soil, surface water, sediment and groundwater; and
- Biota – ingestion of fish and eel in Cahto Creek and other surface water bodies, foraged food such as tea, berries and mushrooms, and herbivores such as elk.

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Based on the results of the PHA and the recent site data, a preliminary CSM was prepared and is provided in Figure 3, showing all the potentially complete exposure pathways at the Rancheria.

The preliminary CSM justifies the collection of environmental samples proposed in this SOW. Previous reports identified the lack of groundwater and surface soil samples as a data gap; therefore, those pathways are potentially complete. The results of soil and groundwater sampling will identify whether there is potential for other exposure media to be contaminated. For example, if VOCs such as vinyl chloride are detected above screening levels in groundwater or subsurface soil, there is potential for VOCs to migrate to indoor air; therefore, inhalation of indoor and outdoor air would be a complete pathway. In addition, if chemicals that potentially bioaccumulate such as mercury or certain pesticides are detected in soil, there is potential for ingestion of biota to be a complete pathway.

Identification of a pathway as complete does not automatically mean there is actual harm or risk to humans or the environment. It means that exposure across the pathway needs further evaluation to determine if it presents a risk. There may be multiple routes of exposure to contaminants in a single media, so contamination in the media should not be considered insignificant until all pathways are evaluated and potentially cumulative risk is calculated or assessed qualitatively.

Further evaluation of each exposure pathway will be conducted by looking at the analytical results of the environmental samples and evaluating the potential for any given pathway to be complete. As part of the Data Quality Objectives (DQOs) the detection limits for each COPC must be below the respective screening level for that COPC.

4.0 SCOPE OF WORK (SOW)

The SOW is outlined in six separate tasks described in this section. The question to be answered by each described task and the scope (question) and rationale (decision point) for collection of this data is described here.

The investigation area will be limited to a north-south and east-west corridor adjacent to the east and south County property lines to a distance of approximately 500 ft., an area of approximately 40 acres. Prior to the initiation of field activities, residents will be notified of the schedule and type of activities to be conducted and required permits will be obtained from responsible agencies.

Soil, sediment, surface water and groundwater samples will be analyzed for chemical compounds detected from previous investigations and will monitor for contaminants from likely wastes disposed of in the unregulated landfill, including PCBs from transformer oil, dioxins and furans from the burning of wastes, heavy metals including hexavalent chromium, VOCs, SVOCs, pesticides, and herbicides.

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4.1 Task 1 Information and Data Review/Evaluation of Fate and Transport

Task 1 consists of a detailed evaluation of existing data. AFSI will evaluate all existing data, confirm data gaps, and review records from USEPA, CalRecycle, NCRWQCB, and San Francisco Army Corps of Engineers. Among the data to be evaluated are references to previous environmental investigations conducted for USEPA and information relating to the construction details of existing monitoring wells on Rancheria property. Information and reports of the type of waste that may have been placed in the landfill will also be evaluated, however, it is our understanding that waste types and amounts were generally undocumented. The AFSI project manager will conduct records review at the above reference agencies, therefore travel costs are included in the proposed cost estimate for this task (Task 1), as well as lodging and per diem for two days for San Francisco where several agency offices are located.

AFSI will conduct interviews with Tribe-selected Members and tour the Rancheria and landfill boundary to identify potential locations for contaminant transport such as ponding water, drainages, and diverted culverts for evidence that contaminants originating from the County property are carried by erosion and runoff onto the Rancheria. Additionally, in accordance with the recommendations of the PHA, locations will be identified where surface water runoff occurred most frequently before the cap was constructed. Soil or sediment and surface water samples will be collected wherever conditions indicate a likely location for contamination. The AFSI Risk Assessor will be traveling to Laytonville from our Seattle Office, therefore an airfare is included in the costs for this task (Task 1).

It is estimated that up to ten surface soil/sediment and ten surface water samples will be collected from low areas and drainages near or adjacent to the County property that may have been impacted by surface water runoff and seepage. Samples will be obtained based on USEPA guidelines (R9QA/05.2) for accurately determining analyte concentrations in soil and solid matrices (USEPA, 2005).

Soil/sediment and surface water samples will be analyzed for VOCs, SVOCs, metals (including hexavalent chromium and mercury), pesticides, and herbicides. Soil/sediment samples will additionally be analyzed for PCBs, dioxins and furans.

During the field tour and soil and surface water sampling efforts, locations for collection of in-situ groundwater samples using a Hydropunch™ will be identified based on the likelihood of groundwater transport based on topography and surface water hydrology.

All metals are found naturally in the environment and metal concentrations in soil can vary significantly depending on local conditions and geology. In particular, arsenic can be found naturally in soil and groundwater at concentrations above health-based screening levels or regulatory criteria. Ten soil samples will be collected in locations outside the influence of the landfill and analyzed for metals in order for a baseline "background" concentration of metals to be identified.

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The purpose of this task is to answer the question:

> *Are contaminants present in soil and surface water that has potentially migrated from the landfill?*

To answer this question, soil and surface water samples are collected from likely transport routes and analyzed for COPCs.

Decision Point: Are COPCs present in concentrations greater than screening levels in surface soil and surface water?

> **Yes:** Contaminants are migrating or have migrated to soil and surface water on the Rancheria in concentrations potentially harmful to human health. Further evaluation is warranted. Look at contaminants of concern (COC). Do they bioaccumulate? Do they cause cancer or adverse health effects? Perform preliminary risk calculations based on site-specific exposure assumptions. Recommend additional data collection?
>
> **No**: Contaminants are not present in samples taken along likely transport routes from the landfill. No further evaluation of soil and surface water along transport routes are warranted

4.2 Task 2 Drinking Water Assessment

There are 33 Housing and Urban Department (HUD) homes built in late 1980's and 55 Federal Emergency Management Agency (FEMA) Trailers placed at an earlier date. Based on conversation with the Tribe representative, AFSI proposes to collect drinking water samples from residential taps of homes at the Rancheria.

This task includes collecting drinking water samples from ten representative homes of each type, for a total of 20 tap water samples, along with required Trip Blank and Quality Control (QC) duplicate samples. In addition, a sample will be collected from the municipal source of drinking water (if feasible). The task is designed to obtain data to assess the potential for drinking water to be impacted by contaminants such as lead in the storage and/or distribution system serving the Rancheria. If any homes are identified with private wells, these homes will be sampled also.

The following activities will be conducted:

Drinking water samples will be obtained from 20 residential homes within the Rancheria and evaluated for heavy metals, SVOCs, and VOCs. One water sample will be collected from the inlet to the Rancheria storage tank to be used as a control sample.

The purpose of this task is to answer the question:

> *Are contaminants of concern present in residential drinking water?*

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To answer this question, tap water samples will be collected in typical homes at the Rancheria and analyzed for COPCs.

Decision Point A: Are COPCs present in concentrations greater than screening levels in the water at the drinking water source (excluding metals that are naturally high in that water system)?

> **Yes**: Notify regulatory agency responsible for maintenance of the water supply.
>
> **No**: Provide data to the Cahto tribe as confirmation of the water quality of the drinking water source.

Decision Point B: Are COPCs present in concentrations greater than screening levels in water at the resident's taps?

> **Yes**: Tap water in one or more homes contains COPCs not found in the source water in concentrations greater than screening levels. Further evaluation will be warranted. AFSI will provide a report describing the COC. The report will evaluate potential causes of elevated levels of contaminants (such as lead piping) and provide recommendations for residents with pipe delivery systems that are contaminating drinking water.
>
> **No**: Contaminants are not present in tap water at the Rancheria. No further evaluation of residential tap water is warranted

4.3 Task 3 Hydropunch™ Sample Collection and Existing Well Re-Development

Improperly designed landfills and landfills without liners under the waste have the potential to contaminate groundwater. Hazardous materials, such as PCBs, hexavalent chromium, or mercury may have been disposed in the landfill. Herbicides and pesticides have been heavily used in Mendocino County for decades. Wastes associated with the use of these chemicals may have been disposed of at the landfill. Reportedly, wastes were frequently burned at the landfill. Burning of waste results in the formation of dioxins and furans. The degradation of tires and plastics can cause vinyl chloride and other VOCs to be released to groundwater. The lack of groundwater monitoring data at the Rancheria is a significant data gap.

In-situ groundwater samples will be collected using a track-mounted drilling rig with push-technology capabilities. This first phase of groundwater sampling will be collected using the Hydropunch™. The Hydropunch™ tool is a fast, inexpensive alternative for collecting ground water samples from a discrete interval. It is excellent for vertical profiling or estimating the areal extent of a contaminant plume and will allow collection of groundwater samples without installation of groundwater monitoring wells. The groundwater sample is collected through tubing placed in the Hydropunch™ well point that is driven or pushed to the desired sample depth using the track-mounted rig.

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Collection of in-situ samples will provide a measure of the depth to the unconfined aquifer (the aquifer potentially impacted by leachate from the landfill) and show whether contamination is present. In-situ samples will also provide information for identifying locations for new groundwater monitoring wells.

There are three existing groundwater monitoring wells on Rancheria property (See Figure 2). Recent sampling of these monitoring wells demonstrated poor recharge when purging during sampling. We propose to redevelop these wells using a drill rig by surging and purging to facilitate improved hydraulic communication with the aquifer. Once these monitoring wells have been redeveloped and their integrity confirmed, these wells will be sampled for COPCs again.

This task includes collecting additional data to characterize the hydrogeology of the unconfined sedimentary aquifer and assess if contaminants originating on the County property may have impacted the groundwater under the Rancheria. The task is designed to obtain data to estimate the gradient and flow direction of the unconfined aquifer and provide a means of evaluating water quality. The following activities will be conducted:

1. Collect Hydropunch™ groundwater samples from 10 locations at a depth of approximately 15 ft., as well as collecting three soil samples (projected from 2.5, 5.5, and 9.5 ft. depths) from each hydro punch boring.
2. The three existing groundwater monitoring wells (approximately 20 ft. deep with 2-inch PVC well casing) will be redeveloped (surge and purge) by driller and the integrity of the monitoring wells will be assessed.
3. Soil and groundwater samples will be analyzed for VOCs, SVOCs, metals (including hexavalent chromium and mercury), pesticides, and herbicides. Soil samples will additionally be analyzed for PCBs, dioxins and furans in surface soils at the well point locations. Pesticide and herbicide samples will only be collected from the surface and vadose zone soil samples at the well point locations.

A Work Plan will be prepared describing the location for collection of groundwater samples using the Hydropunch™. The Work Plan will outline the chemical analyses, quality assurance (QA) and data evaluation. The Work Plan will describe the procedures to be used in the performance of the investigation and assure regulatory guidelines will be followed. The Work Plan will be provided as part of the permitting process for the invasive portion of the investigation. Samples will be obtained based on USEPA guidelines (R9QA/05.2) for accurately determining analyte concentrations in soil and solid matrices (USEPA, 2005)

Investigation Derived Waste (IDW) will be containerized at designated collection points and transported off-site for proper disposal at the completion of the investigation.

The purpose of this task is to answer the question:

Are contaminants potentially migrating from the landfill in groundwater?

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To answer this question, groundwater samples will be collected from the shallow unconfined aquifer and analyzed for COPCs.

Decision Point: Are COPCs present in concentrations greater than screening levels in groundwater at the Hydropunch™ locations?

> **Yes**: Contaminants are present in groundwater at the Rancheria in concentrations potentially harmful to human health. Further evaluation is warranted. AFSI will perform a risk evaluation based on site-specific exposure assumptions and recommend locations for additional monitoring wells.
>
> **No:** Contaminants are not present in groundwater that was sampled. Evaluate different sample locations or, with input from the Tribe, determine that groundwater transport pathway as evaluated by Hydropunch™ sampling has been adequately evaluated.

4.4 Task 4 Installation of Permanent Groundwater Monitoring Wells

Based on the data review and groundwater analytical results from the existing monitoring wells and the Hydropunch™ sampling that will be completed under this SOW, AFSI will locate and install five new monitoring wells. The following activities will be conducted:

1. Install and sample five 2-inch PVC monitoring wells. Soil samples will be collected from each borehole (projected from 2.5, 5.5, and 9.5 ft. depths). Monitoring wells will be completed above ground with steel protective covers.
2. Soil and groundwater samples will be analyzed for VOCs, SVOCs, metals (including hexavalent chromium and mercury), pesticides, and herbicides. Soil samples will additionally be analyzed for PCBs, dioxins and furans in surface soils at the well point locations. Pesticide and herbicide samples will only be collected from the surface and vadose zone soil samples at the well point locations.

A supplement to the Work Plan will be prepared describing the rationale for selecting the location of the proposed new monitoring wells. The procedures to be used in the installation, completion and sampling of the monitoring wells will be detailed in the Work Plan submitted prior to the previous tasks. Samples will be obtained based on USEPA guidelines (R9QA/05.2) for accurately determining analyte concentrations in soil and solid matrices (USEPA, 2005). The Driller will obtain drilling permits as required for the above investigation, from the appropriate regulatory agency.

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The purpose of this task is to answer the question:

> *Is there a contaminated groundwater plume and if so, what is the nature and extent of the contamination and how are residents exposed?*

To answer this question, groundwater samples will be collected from the shallow unconfined aquifer and analyzed for COPCs.

Decision Point: Are COPCs detected in concentrations greater than screening levels in groundwater. If so, does the extent of the contamination impact residents at the Rancheria and have the potential to cause adverse health effects?

> **Yes**: Contaminants are present in groundwater at the Rancheria in concentrations potentially harmful to human health. Further evaluation is warranted. AFSI will perform a risk evaluation based on site-specific exposure assumptions and recommend long-term monitoring requirements (frequency and analyses), as well as evaluate options to mitigate impacts to human health.
>
> **No:** Contaminants are not present in groundwater that was sampled. Evaluate requirements for long-term monitoring for potential future releases from the landfill and subsequent impacts to human health, or with input from the Tribe, determine that pathway has been adequately evaluated.

4.5 Task 5 Annual Groundwater Monitoring

The PHA recommends quarterly groundwater monitoring. This task includes collecting groundwater samples from monitoring wells completed in the unconfined sedimentary aquifer within the Rancheria. The task is designed to obtain data to assess if seasonal variations in water levels affects water quality. The following activities will be conducted:

The elevation or potentiometric surface of the unconfined aquifer will be measured during each sampling event for up to three years to assess changes in groundwater recharge or storage. The elevation of the groundwater within the monitoring wells will be established and the well will then be purged and allowed to recharge and reach equilibrium. The groundwater will then be sampled and analyzed for COPC's.

Data will also be used to assess groundwater flow direction and potential groundwater/surface water interactions. AFSI proposes that the analytical program be assessed at the end of the first year of sampling and reduced to only COPCs previously detected for the subsequent sampling. The proposed cost estimate assumes the full analytical suite will not be required each monitoring event.

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If a contaminated groundwater plume is detected in the unconfined aquifer, AFSI will recommend installation of additional wells to further define the plume. Three years of bi-annual sampling are proposed in the cost estimate, however the number of annual sampling events may be adjusted depending on the results of the initial well sampling event.

The purpose of this task is to answer the question:

> *Is there a contaminated groundwater plume and if so, what is the nature and extent of the contamination and how are residents exposed?*

To answer this question, a quarterly groundwater monitoring program will be implemented to understand groundwater quality and assess for the presence of COPC's at the Rancheria and a risk evaluation for exposure to contaminated groundwater will be prepared.

Decision Point: Are COPCs detected in concentrations greater than screening levels in groundwater. If so, does the extent of the contamination impact residents at the Rancheria and have the potential to cause adverse health effects?

> **Yes**: Contaminants are present in groundwater at the Rancheria in concentrations potentially harmful to human health. Further evaluation is warranted. AFSI will perform a risk evaluation based on site-specific exposure assumptions and recommend locations for additional monitoring wells.
>
> **No:** Contaminants are not present in groundwater that was sampled. Evaluate different sample locations or, with input from the Tribe, determine that pathway has been adequately evaluated.

4.6 Task 6 Reporting

Document production and reporting activities will be performed under this task. Prior to any sampling activities on site, a detailed Work Plan will be prepared and submitted for client and agency review and comment. Reports will be generated and submitted summarizing actions conducted under this SOW and detailing the results and conclusions of actions. The specific task reports are listed below:

1. A Work Plan consisting of a Sampling and Analysis Plan, a Quality Assurance Project Plan, and Health and Safety Plan will be prepared prior for conducting the sampling activities; soil and water sampling, well point installation and sampling, monitor well installation and sampling. The results of the Task 1 records search and the Tribal Members interviews will be discussed and summarized in the Work Plan.
2. A letter report will be submitted after each phase of field work, documenting the field activities and presenting the results of any sample analysis. After completion of Tasks 1,

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2, 3, and 4 a comprehensive report will be compiled presenting the results of this tasks and recommending a proposed groundwater monitoring program.

3. Groundwater monitoring reports will be prepared and submitted after each groundwater monitoring event. Groundwater monitoring reports will include at minimum, tabulated analytical and monitoring data, a potentiometric surface map, certified analytical results, and reports of significant observations.

The analytical reports for this investigation will provide a summary of analyses including method detection limits, reporting limits, and an evaluation of the analytical data for conformance with the DQOs and preliminary site conceptual model. Unexpected or conflicting results, unusable data, and field and/or laboratory interferences will be identified and a discussion provided for potential rationale. Appropriate figures or tables will be included in the reports and used to support the discussion.

Data collected in this SOW is limited to present exposure and does not address adverse health effects from past exposure to waste in the landfill prior to installation of the landfill cap during the 1990's.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

Field activities will comply with current Federal and State regulations and guidelines for conducting site assessments and obtaining environmental data through measurement and data collection of chemical factors in the near surface soil, sediment, surface water, and groundwater. Appropriate protocols will be utilized for handling, transporting, and analyzing samples for evaluation of volatile organic compounds.

QA and QC measures necessary to ensure data of known quality will be implemented for both field and laboratory procedures. QA/QC samples will be collected for analysis and will include co-located samples, split replicates, trip blanks, equipment blanks, and field blanks. The QA/QC samples will be collected, handled, transported, stored, and analyzed in the same manner as investigation samples. Additional QA/QC measures will be employed throughout the investigation to assure quality results. These include such activities as technical oversight, properly trained personnel, proper equipment decontamination, and utilization of approved procedures such as project plans for sampling and field operations. In addition, DQOs will be developed prior to the initiation of field activities. The DQOs will identify the type, quantity, and quality of date needed to achieve the goal of this investigation.

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FIGURES

Figure 1. Site Map

Figure 2. Sample Location Map

Figure 3. Conceptual Site Model

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3100 Beacon Boulevard
West Sacramento, CA 95691

Legend

- Moitoring Well
- Moitoring Well - Not Sampled
- Surface Soil Sample Site
- Surface Water Sample Site
- Creek
- Landfill Cap
- Landfill Boundary
- Laytonville Rancheria
- Mendocino County Parcel

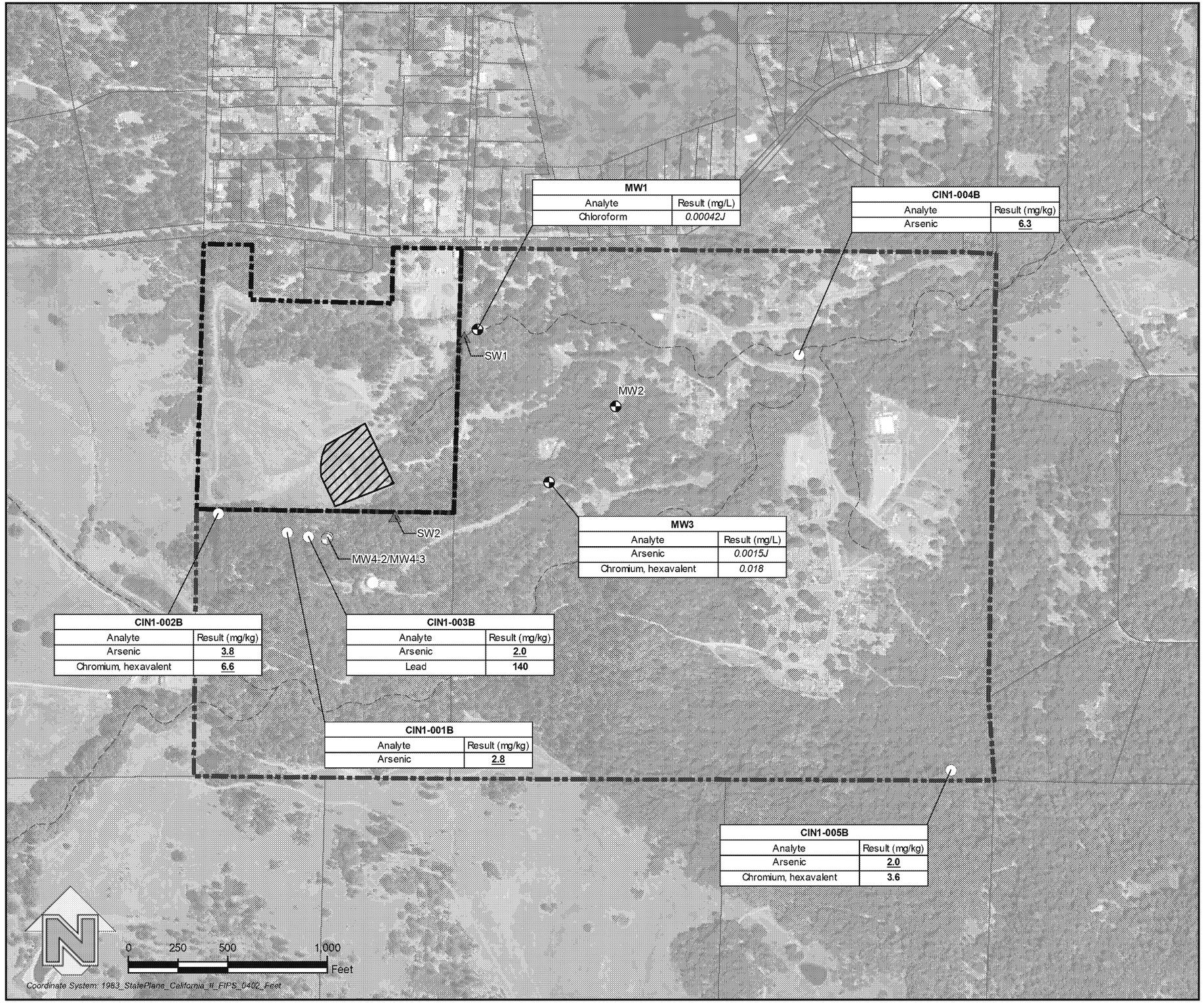
Notes:
1. Aerial photography provided ESRI, 2016.
2. GIS data provided by HIS Design Planning and Drafting, 2016.

SITE MAP

CAHTO TRIBE OF THE LAYTONVILLE RANCHERIA

MENDOCINO COUNTY, CALIFORNIA

Drafter	Date	Figure No.
J.D.C.	12/09/2016	1



MW1	
Analyte	Result (mg/L)
Chloroform	*0.00042J*

CIN1-004B	
Analyte	Result (mg/kg)
Arsenic	**6.3**

MW3	
Analyte	Result (mg/L)
Arsenic	*0.0015J*
Chromium, hexavalent	*0.018*

CIN1-002B	
Analyte	Result (mg/kg)
Arsenic	**3.8**
Chromium, hexavalent	**6.6**

CIN1-003B	
Analyte	Result (mg/kg)
Arsenic	**2.0**
Lead	**140**

CIN1-001B	
Analyte	Result (mg/kg)
Arsenic	**2.8**

CIN1-005B	
Analyte	Result (mg/kg)
Arsenic	**2.0**
Chromium, hexavalent	**3.6**

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Legend

- Moitoring Well
- Moitoring Well - Not Sampled
- Surface Soil Sample Site
- Surface Water Sample Site
- Creek
- Landfill Cap
- Landfill Boundary
- Laytonville Rancheria
- Mendocino County Parcel

Screening Criteria

Analyte (Water)	Tap Water (mg/L)	MCL (mg/L)
Arsenic-Total	0.000052	0.01
Chloroform	0.00022	NA
Chromium, hexavalent	0.000035	NA
Analyte (Soil)	**Residential RBSL (mg/kg)**	**Commercial RBSL (mg/kg)**
Arsenic	0.07	0.24
Lead	80	320
Chromium, hexavalent	0.3	6.3

Notes:

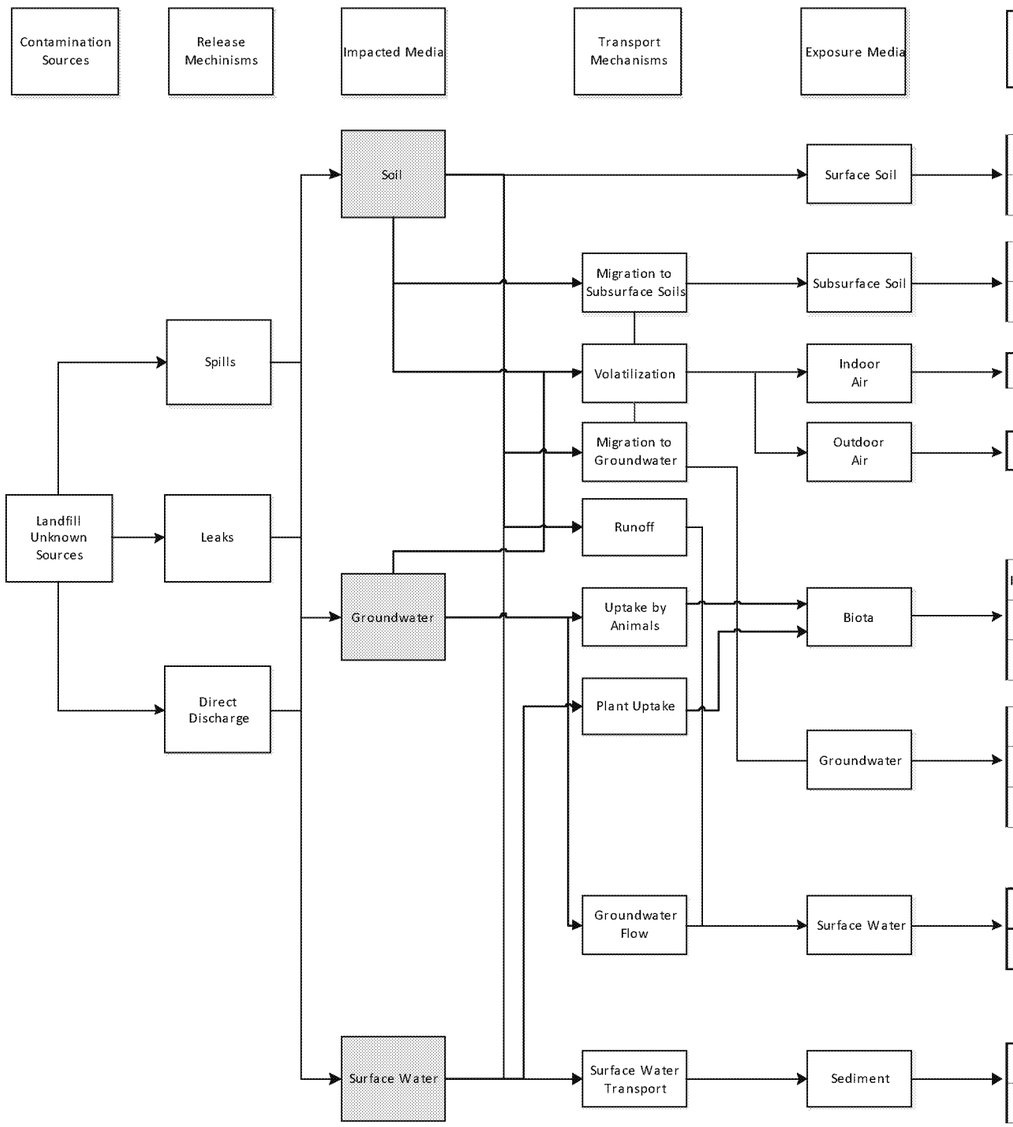
1. Aerial photography provided ESRI, 2016.
2. GIS data provided by HIS Design Planning and Drafting, 2016.
3. *Italicized* value indicates exceedance ofTap Water Risk Based Screening Levels (RBSL).
4. **Bolded** value indicates exceedance of Residential Risk Based Screening Levels (RBSL).
5. **Bolded and Underlined** value indicates exceedance of Commercial Risk Based Screening Levels (RBSL).

OCTOBER/SEPTEMBER 2016 SAMPLING EVENT CHEMICAL COMPOUNDS THAT EXCEED CRITERA

CAHTO TRIBE OF THE LAYTONVILLE RANCHERIA

MENDOCINO COUNTY, CALIFORNIA

Drafter	Date	Figure No.
J.D.C.	12/09/2016	2



EXPOSURE ROUTE	Human Receptors: Residential	Rationale for Inclusion or Exclusion
Ingestion	X	The presence of contamination in soil is a data gap. If COPCs are detected in surface soil, this pathway is potentially complete.
Direct Contact	X	The presence of contamination in soil is a data gap. If COPCs are detected in surface soil, this pathway is potentially complete.
Ingestion	X	If COPCs migrated in groundwater and contaminated subsurface soil, AND if there is way for people to ingest this soil, this pathway is potentially complete.
Direct Contact	X	If COPCs migrated in groundwater and contaminated subsurface soil, AND if there is a way for people to get this soil on their skin, this pathway is potentially complete.
Inhalation	X	If VOCs are detected in subsurface soil or groundwater, this pathway is potentially complete.
Inhalation	X	If VOCs are detected in subsurface soil or groundwater, this pathway is potentially complete.
Ingestion of Fish	X	If COPCs that are known to accumulate in animal tissue are detected in surface water or sediment, this pathway is potentially complete.
Ingestion of Meat	X	If COPCs that are known to accumulate in plant tissue are detected in surface soil, this pathway is potentially complete.
Plant Ingestion	X	If COPCs that are known to accumulate in plant tissue are detected in surface soil, this pathway is potentially complete.
Ingestion	X	The presence of contamination in groundwater is a data gap. If COPCs are detected in groundwater, this pathway is potentially complete.
Direct Contact	X	The presence of contamination in groundwater is a data gap. If COPCs are detected in groundwater, this pathway is potentially complete.
Inhalation	X	If VOCs are detected in groundwater, this pathway is potentially complete for showering or bathing.
Ingestion		The PHA concluded that COPCs were not present in surface water and that even bathing in leachate would not have caused adverse health effects.
Direct Contact		The PHA concluded that COPCs were not present in surface water and that even bathing in leachate would not have caused adverse health effects.
Ingestion	X	If COPCs have migrated to sediment from erosion and runoff from the landfill, AND if people swim, wade or bathe in this area, this pathway is potentially complete.
Direct Contact	X	If COPCs have migrated to sediment from erosion and runoff from the landfill, AND if people swim, wade or bathe in this water, this pathway is potentially complete.

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Notes:

X Pathway is potentially complete

CONCEPTUAL SITE MODEL

CAHTO TRIBE OF THE LAYTONVILLE RANCHERIA

MENDOCINO COUNTY, CALIFORNIA

Drafter	Date	Figure No.
J.D.C.	12/09/2016	3

APPENDIX A

Tabulated Analytical Results 2016 Sampling Efforts

Tabulated Data – Tables A-1

Chemical Compounds Detected Above Reporting Limits

TABLE A-1.1: Laytonville Rancheria Soil and Plant Analytical Results (collected by Cahto Tribe)

			Sample ID	CIN1-001			CIN1-002a			CIN1-003a			CIN1-004a			CIN1-005a		
			Matrix	Soil			Soil			Soil			Soil			Soil		
			Date	7/26/2016			8/17/2016			8/18/2016			8/18/2016			8/18/2016		
Analyte	**Unit**	**RSL for Residential Soil**	**Commercial/ Industrial RSL**															
Metals EPA 6010B																		
Arsenic-Total	mg/kg	0.07	0.24	**<**	**2.0**	**ND**		**3.3**		**<**	**2.0**	**ND**		**2.0**		**<**	**2.0**	**ND**
Cadmium-Total	mg/kg	1.7	7.5	<	1.0	ND	<	1.0	ND	<	1.0	ND	<	1.0	ND	<	1.0	ND
Thallium	mg/kg	5	63	**<**	**7.0**	**ND**	**<**	**7.0**	**ND**	**<**	**7.0**	**ND**	**<**	**7.0**	**ND**	**<**	**7.0**	**ND**
SW7199																		
Hexavalent Chromium	mg/kg	0.3	6.3	**<**	**4.0**	**ND**	**<**	**4.0**	**ND**	**<**	**4.0**	**ND**	**<**	**4.0**	**ND**	**<**	**4.0**	**ND**
Polychlorinated Biphenyls EPA 8082																		
PCB-1016	mg/kg	0.089	0.3	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**
PCB-1221	mg/kg	0.2	0.83	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**
PCB-1232	mg/kg	0.17	0.72	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**
PCB-1242	mg/kg	0.23	0.95	<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND
PCB-1248	mg/kg	0.23	0.95	<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND
PCB-1254	mg/kg	0.12	0.97	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**
PCB-1260	mg/kg	0.24	0.99	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**	**<**	**0.2**	**ND**
PCB-1262	mg/kg			<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND	<	0.2	ND

TABLE A-1.1 continued: Laytonville Rancheria Soil and Plant Analytical Results (collected by Cahto Tribe)

			Sample ID	P1ABCD	P2ABCD	P3ABCD
			Matrix	Plant Sample	Plant Sample	Plant Sample
			Date	9/19/2016	9/19/2016	9/19/2016
Analyte	**Unit**	**RSL for**	**Commercial/**	**mg/kg**	**mg/kg**	**mg/kg**
Metals EPA 6010B				**EPA SW846-3050 B**		
Arsenic-Total	mg/kg	0.07	0.24	< **0.25** **ND**	< **0.25** **ND**	< **0.25** **ND**
Cadmium-Total	mg/kg	1.7	7.5	0.04	0.04	0.04
Thallium	mg/kg	5	63	--	--	--
SW7199						
Hexavalent Chromium	mg/kg	0.3	6.3	--	--	--
Polychlorinated Biphenyls EPA 8082						
PCB-1016	mg/kg	0.089	0.3	--	--	--
PCB-1221	mg/kg	0.2	0.83	--	--	--
PCB-1232	mg/kg	0.17	0.72	--	--	--
PCB-1242	mg/kg	0.23	0.95	--	--	--
PCB-1248	mg/kg	0.23	0.95	--	--	--
PCB-1254	mg/kg	0.12	0.97	--	--	--
PCB-1260	mg/kg	0.24	0.99	--	--	--
PCB-1262	mg/kg			--	--	--

TABLE A-1.1: Cahto Tribe Analytical Results Notes

Notes:
Residential and Commercial/Industrial Risk-Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLS) established by USEPA.
BOLDED value indicates exceedance of Residential RBSLs.
BOLDED and Underlined value indicates exceedance of Commercial/Industrial RBSLs.
< = Less than
-- = Not analyzed
NA = Not applicable
ft = Feet
mg/kg = milligrams per kilogram
ND = Analyte not detected at or above the reporting limit

References:
California Environmental Protection Agency. (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
HERO. 2013. Human Health Risk Assessment (HHRA) Note Number 3. Retrieved from DTSC recommended methodology for the use of U.S. EPA Regional Screening Levels (RSLs) in

TABLE A-1.2: Laytonville Rancheria Soil Analytical Results

			Sample ID	CIN1-001B	CIN1-002B	CIN1-003B	CIN1-004B	CIN1-005B
			Location ID					
			Matrix	Soil	Soil	Soil	Soil	Soil
			Date	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Analyte	Unit	RSL for Residential Soil	Commercial/ Industrial RSL					
Metals								
EPA6020A								
Antimony	mg/kg	30	380	ND	ND	0.72 F1	0.14J	ND
Arsenic	mg/kg	0.07	0.24	**2.8**	**3.8**	**2.0**	**6.3**	**2.0**
Barium	mg/kg	5200	63000	370	510	51 F1	210	170
Beryllium	mg/kg	16	200	0.77	0.91	0.26	0.55	0.35
Cadmium	mg/kg	4.0	5.1	0.084J	0.17J	0.12J	0.14	ND
Chromium	mg/kg	100000	100000	46	41	630	62	30
Cobalt	mg/Kg	660	3200	16	14	72	14	6.4
Copper	mg/kg	3000	38000	27	30	57	29	9.7
Lead	mg/kg	80	320	9.1	12	**140**	13	5.2
Molybdenum	mg/kg	380	4800	0.29	0.31J	0.24J	0.54	0.11J
Nickel	mg/kg	1600	16000	45	52	1200	60	23
Selenium	mg/kg	380	4800	0.12J	0.40	ND	0.16J	ND
Silver	mg/kg	380	4800	0.045J	0.086J	ND	0.044J	ND
Thallium	mg/kg	5.0	63	0.19	0.12J	0.066J	0.082J	ND
Vanadium	mg/kg	530	6700	87	62	70	59	35
Zinc	mg/kg	23000	100000	87	77	61	110	41
EPA7470A								
Mercury-Total	mg/kg	18	180	0.044	0.099	0.043	0.045	0.036
EPA7196A								
Chromium, hexavalent	mg/kg	0.30	6.3	0.17J	**6.6**	0.24J	0.18J	**3.6**
OCL Pesticides								
EPA8081B								
4,4'-DDD	ug/kg	NA	NA	0.49J p	--	--	0.73J	--
4,4'-DDE	ug/kg	NA	NA	ND	--	--	0.32J	--
4,4'-DDT	ug/Kg	NA	NA	4.1 p	--	--	0.64J	--
beta-BHC	ug/Kg	NA	NA	ND	--	--	0.78J p	--
Endosulfan II	ug/Kg	NA	NA	1.1J p F1	--	--	0.16J p	--
Endrin aldehyde	ug/Kg	NA	NA	1.1J p	--	--	0.25J p	--
gamma-BHC (Lindane)	ug/Kg	NA	NA	0.64J	--	--	ND	--
gamma-Chlordane	ug/Kg	NA	NA	ND	--	--	670 E	--
Methoxychlor	ug/Kg	NA	NA	5.8 F1	--	--	ND	--
PCBs								
EPA8082A								
PCB-1221	mg/kg	0.2	0.83	ND	ND	ND	ND	0.044U
PCB-1232	mg/kg	0.17	0.72	ND	ND	ND	ND	0.044U
PCB-1242	mg/kg	0.23	0.95	ND	ND	ND	ND	0.044U
PCB-1248	mg/kg	0.23	0.95	ND	ND	ND	ND	0.044U
PCB-1254	mg/kg	0.12	0.97	ND	ND	ND	ND	0.044U
PCB-1260	mg/kg	0.24	0.99	ND	ND	ND	ND	0.044U
Dioxins and Furans								
EPA8290A								
1,2,3,4,6,7,8-HpCDD	pg/g	NA	NA	0.79J B	--	--	16 B	--
1,2,3,4,6,7,8-HpCDF	pg/g	NA	NA	0.26J q B	--	--	4.7J q B	--
1,2,3,4,7,8,9-HpCDF	pg/g	NA	NA	ND	--	--	0.53J q	--
1,2,3,4,7,8-HxCDD	pg/g	NA	NA	ND	--	--	0.51J q	--
1,2,3,4,7,8-HxCDF	pg/g	NA	NA	0.11J q B	--	--	1.6J q B	--
1,2,3,6,7,8-HxCDD	pg/g	NA	NA	ND	--	--	1.2J B	--
1,2,3,6,7,8-HxCDF	pg/g	NA	NA	0.13J	--	--	0.75J	--
1,2,3,7,8,9-HxCDD	pg/g	NA	NA	0.22J B	--	--	1.3J B	--
1,2,3,7,8,9-HxCDF	pg/g	NA	NA	ND	--	--	0.41J	--
1,2,3,7,8-PeCDD	pg/g	NA	NA	ND	--	--	0.40J q	--
1,2,3,7,8-PeCDF	pg/g	NA	NA	ND	--	--	0.91J	--
2,3,4,6,7,8-HxCDF	pg/g	NA	NA	0.13J q	--	--	1.2J	--
2,3,4,7,8-PeCDF	pg/g	NA	NA	ND	--	--	0.91J	--
2,3,7,8-TCDD	pg/g	NA	NA	ND	--	--	ND	--
2,3,7,8-TCDF	pg/g	NA	NA	0.11J	--	--	0.41J	--
OCDD	pg/g	NA	NA	2.7J q B	--	--	120 B	--
OCDF	pg/g	NA	NA	ND	--	--	8.7J B	--
Total HpCDD	pg/g	NA	NA	1.7J B	--	--	16 B	--
Total HpCDF	pg/g	NA	NA	0.26J q B	--	--	9.4 q B	--
Total HxCDD	pg/g	NA	NA	0.38J q B	--	--	7.9 q B	--
Total HxCDF	pg/g	NA	NA	0.37J q B	--	--	5.3J q B	--
Total PeCDD	pg/g	NA	NA	ND	--	--	1.1J q B	--
Total PeCDF	pg/g	NA	NA	ND	--	--	7.1 q	--
Total TCDD	pg/g	50	200	ND	--	--	1.0J q	--
Total TCDF	pg/g	NA	NA	0.11J	--	--	6.1 q	--

TABLE A-1.2: Soil Analytical Results Notes

Notes:
Residential and Commercial/Industrial Risk-Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLS) established by USEPA.
BOLDED value indicates exceedance of Residential RBSLs.
BOLDED and Underlined value indicates exceedance of Commercial/Industrial RBSLs.
-- = Not analyzed
NA = Not applicable
mg/kg = milligrams per kilogram
J = Estimated value.
E = Result exceeded calibration range.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery exceeds the control limits.
q= The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
p= = The % RPB between the primary and confirmation column/detector is >40%. The lower value has been reported
ND= Not detected

References:
California Environmental Protection Agency. (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
HERO. 2013. Human Health Risk Assessment (HHRA) Note Number 3. Retrieved from DTSC recommended methodology for the use of U.S. EPA Regional Screening Levels (RSLs) in the Human Health Risk Assessment process at hazardous waste sites and permitted facilities: http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3.pdf
USEPA. 2016. Regional Screening Levels (RSLs). May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

TABLE A-1.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**RSL for Tap Water**	**MCL**					
Metals								
EPA6020A								
Arsenic	mg/L	0.000052	0.010	ND	ND	***0.0015J***	ND	ND
Barium	mg/L	3.8	1.0	0.056	0.022	0.18	0.029	0.026
Chromium	mg/L	NA	0.10	ND	ND	0.015	ND	ND
Copper	mg/L	0.80	1.3	ND	ND	ND	0.0020J	ND
Molybdenum	mg/L	0.10	NA	ND	ND	0.0011J	ND	ND
Nickel	mg/L	0.39	0.10	ND	0.0010J	ND	0.0014J	0.0013J
Vanadium	mg/L	0.086	NA	ND	ND	0.0055J	ND	0.0015J
Zinc	mg/L	6.0	NA	ND	ND	ND	0.0063J	0.0064J
EPA7470A								
Mercury-Total	mg/L	0.00063	0.0020	ND	ND	0.00014J	ND	ND
EPA7196A								
Chromium, hexavalent	mg/L	0.000035	NA	ND	ND	***0.018***	ND	ND
Dioxins and Furans								
EPA8290A								
1,2,3,4,6,7,8-HpCDD	pg/L	NA	NA	1.2JB	2.0JB	1.9JB	0.94JB	--
1,2,3,4,6,7,8-HpCDF	pg/L	NA	NA	1.4J	1.3J	1.0J	ND	--
1,2,3,4,7,8,9-HpCDF	pg/L	NA	NA	ND	1.4J	1.0J	ND	--
1,2,3,4,7,8-HxCDD	pg/L	NA	NA	ND	0.87Jq	ND	ND	--
1,2,3,4,7,8-HxCDF	pg/L	NA	NA	ND	1.1Jq	0.41Jq	ND	--
1,2,3,6,7,8-HxCDD	pg/L	NA	NA	ND	0.87J	1.3Jq	ND	--
1,2,3,6,7,8-HxCDF	pg/L	NA	NA	ND	0.99J	0.54Jq	ND	--
1,2,3,7,8,9-HxCDD	pg/L	NA	NA	ND	1.1JB	1.1JB	ND	--
1,2,3,7,8,9-HxCDF	pg/L	NA	NA	ND	1.1J	0.96J	ND	--
2,3,4,6,7,8-HxCDF	pg/L	NA	NA	ND	1.1J	ND	ND	--
OCDD	pg/L	NA	NA	8.0JB	9.6JB	5.9JqB	5.0JB	--
OCDF	pg/L	NA	NA	2.9JB	2.8JqB	2.8JB	ND	--
Total HpCDD	pg/L	NA	NA	2.1JqB	3.3JqB	2.7JqB	1.7JqB	--
Total HpCDF	pg/L	NA	NA	1.4J	2.7J	2.0J	ND	--
Total HxCDD	pg/L	NA	NA	ND	2.9JqB	2.4JqB	ND	--
Total HxCDF	pg/L	NA	NA	ND	4.2Jq	1.9Jq	ND	--
VOCs								
EPA8260B								
Acetone	mg/L	14	NA	ND	ND	ND	ND	0.0028J
Chloroform	mg/L	0.00022	NA	***0.00042J***	ND	ND	ND	0.00013J

TABLE A-1.3: Water Analytical Results Notes

Notes:
Risk-Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLs) established by USEPA.
BOLDED value indicates exceedance of the RSL for Tap Water
BOLDED and Underlined value indicates exceedance of the Maximum Contaminant Level
-- = Not analyzed
NA = Not applicable
mg/kg = milligrams per kilogram
J = Estimated value.
B = Compound was found in the blank and sample.
q= The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
ND= Not detected

References:

HERO. 2016. Maximum Contaminant Levels (MCLs). June
https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA_Note_3_-2016-06.pdf
USEPA. 2016. Maximum Contaminant Levels (MCLs). May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016
USEPA. 2016. Regional Screening Levels (RSLs) for tap water. May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

Tabulated Data – Tables A-2

Analytical Results for All Analyzed Chemical Compounds

TABLE A-2.1: Laytonville Rancheria Soil and Plant Analytical Results (collected by Cahto Tribe)

			Sample ID	CIN1-001	CIN1-002a	CIN1-003a	CIN1-004a	CIN1-005a	P1ABCD	P2ABCD	P3ABCD
			Matrix	Soil	Soil	Soil	Soil	Soil	Plant Sample	Plant Sample	Plant Sample
			Date	7/26/2016	8/17/2016	8/18/2016	8/18/2016	8/18/2016	9/19/2016	9/19/2016	9/19/2016
Analyte	**Unit**	**RSL for Residential Soil**	**Commercial/ Industrial RSL**						**mg/kg Dry weight**	**mg/kg Dry weight**	**mg/kg Dry weight**
Metals EPA 6010B									**EPA SW846-3050 B**		
Antimony-Total	mg/kg	30	380	< 15.0 ND	< 15.0 ND	< 15.0 ND	< 15.0 ND	< 15.0 ND	--	--	--
Arsenic-Total	mg/kg	0.07	0.24	**< 2.0 ND**	**3.3**	**< 2.0 ND**	**2.0**	**< 2.0 ND**	**< 0.25 ND**	**< 0.25 ND**	**< 0.25 ND**
Barium-Total	mg/kg	5200	63000	220.0	180.0	130.0	82.0	130.0	--	--	--
Beryllium	mg/kg	16	190	< 0.75 ND	< 0.75 ND	< 0.75 ND	< 0.75 ND	< 0.75 ND	--	--	--
Cadmium-Total	mg/kg	1.7	7.5	< 1.0 ND	< 1.0 ND	< 1.0 ND	< 1.0 ND	< 1.0 ND	0.04	0.04	0.04
Chromium-Total	mg/kg	100000	100000	24.0	29.0	25.0	40.0	21.0	1.5	0.7	0.8
Cobalt-Total	mg/kg	660	3200	10.0	10.0	13.0	10.0	< 10.0 ND	--	--	--
Copper-Total	mg/kg	3000	38000	19.0	18.0	15.0	20.0	< 10.0 ND	5.5	7.1	6.7
Lead-Total	mg/kg	80	320	7.6	11.0	8.5	8.6	6.2	< 0.5 ND	< 0.5 ND	< 0.5 ND
Molybdenum	mg/kg	380	4800	< 5.0 ND	< 5.0 ND	< 5.0 ND	< 5.0 ND	< 5.0 ND	0.1	0.1	0.1
Nickel-Total	mg/kg	1600	16000	24.0	28.0	28.0	51.0	16.0	2.5	4.1	5.0
Selenium	mg/kg	380	4800	7.5	< 2.0 ND	< 2.0 ND	< 2.0 ND	< 2.0 ND	0.8	1.1	1.3
Silver-Total	mg/kg	380	4800	< 5.0 ND	< 5.0 ND	< 5.0 ND	< 5.0 ND	< 5.0 ND	--	--	--
Thallium	mg/kg	5	63	**< 7.0 ND**	**< 7.0 ND**	**< 7.0 ND**	**< 7.0 ND**	**< 7.0 ND**	--	--	--
Vanadium-Total	mg/kg	530	6700	48.0	42.0	30.0	32.0	26.0	--	--	--
Zinc-Total	mg/kg	23000	100000	56.0	44.0	40.0	46.0	33.0	27.7	27.7	32.6
EPA 7471A									**EPA SW846-7471B**		
Mercury-Total	mg/kg	18	180	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.05 ND	< 0.05 ND	< 0.05 ND
SW7199											
Hexavalent Chromium	mg/kg	0.3	6.3	**< 4.0 ND**	**< 4.0 ND**	**< 4.0 ND**	**< 4.0 ND**	**< 4.0 ND**	--	--	--
Polychlorinated Biphenyls EPA 8082											
PCB-1016	mg/kg	0.089	0.3	**< 0.2 ND**	**< 0.2 ND**	**< 0.2 ND**	**< 0.2 ND**	**< 0.2 ND**	--	--	--
PCB-1221	mg/kg	0.2	0.83	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1232	mg/kg	0.17	0.72	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1242	mg/kg	0.23	0.95	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1248	mg/kg	0.23	0.95	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1254	mg/kg	0.12	0.97	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1260	mg/kg	0.24	0.99	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--
PCB-1262	mg/kg			< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	< 0.2 ND	--	--	--

TABLE A-2.1: Cahto Tribe Analytical Results Notes

Notes:
Residential and Commercial/Industrial Risk-Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLS) established by USEPA.
BOLDED value indicates exceedance of Residential RBSLs.
BOLDED and Underlined value indicates exceedance of Commercial/Industrial RBSLs.
< = Less than
-- = Not analyzed
NA = Not applicable
ft = Feet
mg/kg = milligrams per kilogram
ND = Analyte not detected at or above the reporting limit

References:
California Environmental Protection Agency. (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
HERO. 2013. Human Health Risk Assessment (HHRA) Note Number 3. Retrieved from DTSC recommended methodology for the use of U.S. EPA Regional Screening Levels (RSLs) in th

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TABLE A-2.2: Laytonville Rancheria Soil Analytical Results

			Sample ID	CIN1-001B	CIN1-002B	CIN1-003B	CIN1-004B	CIN1-005B
			Location ID					
			Matrix	Soil	Soil	Soil	Soil	Soil
			Date	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Analyte	**Unit**	**Residential RSL**	**Commercial/ Industrial RSL**					
Metals								
EPA6020A								
Antimony	mg/Kg	30	380	<0.25U	<0.37U	0.72 F1	0.14J	<0.26U
Arsenic	mg/Kg	0.07	0.24	**2.8**	**3.8**	**2.0**	**6.3**	**2.0**
Barium	mg/Kg	5200	63000	370	510	51 F1	210	170
Beryllium	mg/Kg	16	200	0.77	0.91	0.26	0.55	0.35
Cadmium	mg/Kg	4.0	5.1	0.084J	0.17J	0.12J	0.14	<0.13U
Chromium	mg/Kg	100000	100000	46	41	630	62	30
Cobalt	mg/Kg	660	3200	16	14	72	14	6.4
Copper	mg/Kg	3000	38000	27	30	57	29	9.7
Lead	mg/Kg	80	320	9.1	12	**140**	13	5.2
Molybdenum	mg/Kg	380	4800	0.29	0.31J	0.24J	0.54	0.11J
Nickel	mg/Kg	1600	16000	45	52	1200	60	23
Selenium	mg/Kg	380	4800	0.12J	0.40	<0.26U F1	0.16J	<0.26U
Silver	mg/Kg	380	4800	0.045J	0.086J	<0.13U	0.044J	<0.13U
Thallium	mg/Kg	5.0	63	0.19	0.12J	0.066J	0.082J	<0.13U
Vanadium	mg/Kg	530	6700	87	62	70	59	35
Zinc	mg/Kg	23000	100000	87	77	61	110	41
EPA7470A								
Mercury-Total	mg/Kg	18	180	0.044	0.099	0.043	0.045	0.036
EPA7196A								
Chromium, hexavalent	mg/Kg	0.30	6.3	0.17J	**6.6**	0.24J	0.18J	**3.6**

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TABLE A-2.2: Laytonville Rancheria Soil Analytical Results

			Sample ID	CIN1-001B	CIN1-002B	CIN1-003B	CIN1-004B	CIN1-005B
			Location ID					
			Matrix	Soil	Soil	Soil	Soil	Soil
			Date	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Analyte	Unit	Residential RSL	Commercial/ Industrial RSL					
Herbicides								
EPA8151A								
2,4,5-T	ug/Kg	NA	NA	<25U *	--	--	<25U *	--
2,4-D	ug/Kg	NA	NA	<99U *	--	--	<100U *	--
2,4-DB	ug/Kg	NA	NA	<99U *	--	--	<100U *	--
Dalapon	ug/Kg	NA	NA	<50U	--	--	<50U	--
Dicamba	ug/Kg	NA	NA	<50U	--	--	<50U	--
Dichlorprop	ug/Kg	NA	NA	<99U	--	--	<100U	--
Dinoseb	ug/Kg	NA	NA	<31U *	--	--	<31U *	--
MCPA	ug/Kg	NA	NA	<9900U *	--	--	<10000U *	--
MCPP	ug/Kg	NA	NA	<9900U	--	--	<10000U	--
Silvex (2,4,5-TP)	ug/Kg	NA	NA	<25U	--	--	<25U	--
OCL Pesticides								
EPA8081B								
4,4'-DDD	ug/Kg	NA	NA	0.49J p	--	--	0.73J	--
4,4'-DDE	ug/Kg	NA	NA	<2.1U	--	--	0.32J	--
4,4'-DDT	ug/Kg	NA	NA	4.1 p	--	--	0.64J	--
Aldrin	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
alpha-BHC	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
alpha-Chlordane	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
beta-BHC	ug/Kg	NA	NA	<2.1U	--	--	0.78J p	--
delta-BHC	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
Dieldrin	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
Endosulfan I	ug/Kg	NA	NA	<2.1U F1	--	--	<2.2U	--
Endosulfan II	ug/Kg	NA	NA	1.1J p F1	--	--	0.16J p	--
Endosulfan sulfate	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
Endrin	ug/Kg	NA	NA	<2.1U F1	--	--	<2.2U	--
Endrin aldehyde	ug/Kg	NA	NA	1.1J p	--	--	0.25J p	--
Endrin ketone	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
gamma-BHC (Lindane)	ug/Kg	NA	NA	0.64J	--	--	<2.2U	--
gamma-Chlordane	ug/Kg	NA	NA	<2.1U	--	--	670 E	--
Heptachlor	ug/Kg	NA	NA	<2.1U	--	--	<2.2U	--
Heptachlor epoxide	ug/Kg	NA	NA	<2.1U F1	--	--	<2.2U	--
Methoxychlor	ug/Kg	NA	NA	5.8 F1	--	--	<4.3U	--
Toxaphene	ug/Kg	NA	NA	<85U	--	--	<85U	--

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TABLE A-2.2: Laytonville Rancheria Soil Analytical Results

			Sample ID	CIN1-001B	CIN1-002B	CIN1-003B	CIN1-004B	CIN1-005B
			Location ID					
			Matrix	Soil	Soil	Soil	Soil	Soil
			Date	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Analyte	Unit	Residential RSL	Commercial/ Industrial RSL					
PCBs								
EPA8082A								
PCB-1016	mg/kg	0.089	0.3	<0.042U	<0.063U	<0.044U	<0.042U	<0.044U
PCB-1221	mg/kg	0.2	0.83	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
PCB-1232	mg/kg	0.17	0.72	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
PCB-1242	mg/kg	0.23	0.95	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
PCB-1248	mg/kg	0.23	0.95	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
PCB-1254	mg/kg	0.12	0.97	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
PCB-1260	mg/kg	0.24	0.99	<0.042U	<0.063U	<0.044U	<0.042U	0.044U
Dioxins and Furans								
EPA8290A								
1,2,3,4,6,7,8-HpCDD	pg/g	NA	NA	0.79J B	--	--	16 B	--
1,2,3,4,6,7,8-HpCDF	pg/g	NA	NA	0.26J q B	--	--	4.7J q B	--
1,2,3,4,7,8,9-HpCDF	pg/g	NA	NA	<6.7U	--	--	0.53J q	--
1,2,3,4,7,8-HxCDD	pg/g	NA	NA	<6.7U	--	--	0.51J q	--
1,2,3,4,7,8-HxCDF	pg/g	NA	NA	0.11J q B	--	--	1.6J q B	--
1,2,3,6,7,8-HxCDD	pg/g	NA	NA	<6.7U	--	--	1.2J B	--
1,2,3,6,7,8-HxCDF	pg/g	NA	NA	0.13J	--	--	0.75J	--
1,2,3,7,8,9-HxCDD	pg/g	NA	NA	0.22J B	--	--	1.3J B	--
1,2,3,7,8,9-HxCDF	pg/g	NA	NA	<6.7U	--	--	0.41J	--
1,2,3,7,8-PeCDD	pg/g	NA	NA	<6.7U	--	--	0.40J q	--
1,2,3,7,8-PeCDF	pg/g	NA	NA	<6.7U	--	--	0.91J	--
2,3,4,6,7,8-HxCDF	pg/g	NA	NA	0.13J q	--	--	1.2J	--
2,3,4,7,8-PeCDF	pg/g	NA	NA	<6.7U	--	--	0.91J	--
2,3,7,8-TCDD	pg/g	NA	NA	<1.3U	--	--	<1.3U	--
2,3,7,8-TCDF	pg/g	NA	NA	0.11J	--	--	0.41J	--
OCDD	pg/g	NA	NA	2.7J q B	--	--	120 B	--
OCDF	pg/g	NA	NA	<13U	--	--	8.7J B	--
Total HpCDD	pg/g	NA	NA	1.7J B	--	--	16 B	--
Total HpCDF	pg/g	NA	NA	0.26J q B	--	--	9.4 q B	--
Total HxCDD	pg/g	NA	NA	0.38J q B	--	--	7.9 q B	--
Total HxCDF	pg/g	NA	NA	0.37J q B	--	--	5.3J q B	--
Total PeCDD	pg/g	NA	NA	<6.7U q	--	--	1.1J q B	--
Total PeCDF	pg/g	NA	NA	<6.7U	--	--	7.1 q	--
Total TCDD	pg/g	50	200	<1.3U	--	--	1.0J q	--
Total TCDF	pg/g	NA	NA	0.11J	--	--	6.1 q	--

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TABLE A-2.2: Soil Analytical Results Notes

Notes:

Residential and Commercial/Industrial Risk-Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLS) established by USEPA.

Bolded value indicates exceedance of Residential RBSLs.

BOLDED and Underlined value indicates exceedance of Commercial/Industrial RBSLs.

< = Less than

-- = Not analyzed

NA = Not applicable

mg/kg = milligrams per kilogram

U = Analyte not detected at or above the reporting limit.

J = Estimated value.

E = Result exceeded calibration range.

B = Analyte detected in QC blank and sample.

Z = Internal standard response or retention time outside acceptable limits.

F1 = MS and/or MSD Recovery exceeds the control limits.

Q = Estimated maximum possible concentration.

L = A negative instrument reading had an absolute value greater than the reporting limit.

p= = The % RPB between the primary and confirmation column/detector is >40%. The lower value has been reported

References:

California Environmental Protection Agency. (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.

HERO. 2013. Human Health Risk Assessment (HHRA) Note Number 3. Retrieved from DTSC recommended methodology for the use of U.S. EPA Regional Screening Levels (RSLs) in the Human Health Risk Assessment process at hazardous waste sites and permitted facilities: http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3.pdf

USEPA. 2016. Regional Screening Levels (RSLs). May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

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TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
Metals								
EPA6020A								
Antimony	mg/L	0.0078	0.0060	<0.0060U	<0.0060U	<0.0060U	<0.0060U	<0.0060U
Arsenic	mg/L	0.000052	0.010	*<0.0030U*	*<0.0030U*	***0.0015J***	*<0.0030U*	*<0.0030U*
Barium	mg/L	3.8	1.0	0.056	0.022	0.18	0.029	0.026
Beryllium	mg/L	0.025	0.004	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Cadmium	mg/L	0.0092	0.0050	<0.0015U	<0.0015U	<0.0015U	<0.0015U	<0.0015U
Chromium	mg/L	NA	0.10	<0.0050U	<0.0050U	0.015	<0.0050U	<0.0050U
Cobalt	mg/L	0.0060	NA	<0.0030U	<0.0030U	<0.0030U	<0.0030U	<0.0030U
Copper	mg/L	0.80	1.3	<0.0030U	<0.0030U	<0.0030U	0.0020J	<0.0030U
Lead	mg/L	0.015	0.015	<0.0025U	<0.0025U	<0.0025U	<0.0025U	<0.0025U
Molybdenum	mg/L	0.10	NA	<0.0030U	<0.0030U	0.0011J	<0.0030U	<0.0030U
Nickel	mg/L	0.39	0.10	<0.0030U	0.0010J	<0.0030U	0.0014J	0.0013J
Selenium	mg/L	0.10	0.050	<0.0030U	<0.0030U	<0.0030U	<0.0030U	<0.0030U
Silver	mg/L	0.094	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Thallium	mg/L	0.00020	0.0020	*<0.0015U*	*<0.0015U*	*<0.0015U*	*<0.0015U*	*<0.0015U*
Vanadium	mg/L	0.086	NA	<0.012U	<0.012U	0.0055J	<0.012U	0.0015J
Zinc	mg/L	6.0	NA	<0.012U	<0.012U	<0.012U	0.0063J	0.0064J
EPA7470A								
Mercury-Total	mg/L	0.00063	0.0020	<0.00025U	<0.00025U	0.00014J	<0.00025U	<0.00025U
EPA7196A								
Chromium, hexavalent	mg/L	0.000035	NA	*<0.010U*	*<0.010U*	***0.018***	*<0.010U*	*<0.010U*
SVOCs								
EPA8270D								
Acenaphthene	mg/L	0.53	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Acenaphthylene	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Anthracene	mg/L	1.8	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
Benzo(a)anthracene	mg/L	0.000012	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Benzo(a)pyrene	mg/L	0.0000034	0.00020	***<0.0095U***	***<0.0095U***	***<0.0094U***	***<0.010U***	--
Benzo(b)fluoranthene	mg/L	0.000034	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Benzo(g,h,i)perylene	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Benzo(k)fluoranthene	mg/L	0.00034	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Chrysene	mg/L	0.0034	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Dibenz(a,h)anthracene	mg/L	0.0000034	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Fluoranthene	mg/L	0.80	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Fluorene	mg/L	0.29	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Indeno(1,2,3-cd)pyrene	mg/L	0.000034	NA	*<0.014U*	*<0.014U*	*<0.014U*	*<0.015U*	--
Naphthalene	mg/L	0.00017	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Phenanthrene	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Pyrene	mg/L	0.12	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
1,2,4-Trichlorobenzene	mg/L	0.0012	0.070	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
1,2-Dichlorobenzene	mg/L	0.30	0.60	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
1,3-Dichlorobenzene	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
1,4-Dichlorobenzene	mg/L	0.00048	0.075	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
2,2'-oxybis[1-chloropropane]	mg/L	0.71	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2,4,5-Trichlorophenol	mg/L	1.2	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2,4,6-Trichlorophenol	mg/L	0.0041	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
2,4-Dichlorophenol	mg/L	0.046	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2,4-Dimethylphenol	mg/L	0.36	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2,4-Dinitrophenol	mg/L	0.039	NA	*<0.057U*	*<0.057U*	*<0.057U*	*<0.060U*	--
2,4-Dinitrotoluene	mg/L	0.00024	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
2,6-Dinitrotoluene	mg/L	0.000049	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
2-Chloronaphthalene	mg/L	0.75	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2-Chlorophenol	mg/L	0.091	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2-Methylnaphthalene	mg/L	0.036	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
2-Methylphenol	mg/L	0.93	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
2-Nitroaniline	mg/L	0.19	NA	<0.048U	<0.047U	<0.047U	<0.05U	--
2-Nitrophenol	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
3 & 4 Methylphenol	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
3,3'-Dichlorobenzidine	mg/L	NA	NA	<0.048U	<0.047U	<0.047U	<0.050U	--
3-Nitroaniline	mg/L	NA	NA	<0.048U	<0.047U	<0.047U	<0.050U	--
4,6-Dinitro-2-methylphenol	mg/L	NA	NA	<0.057U	<0.057U	<0.057U	<0.060U	--
4-Bromophenyl phenyl ether	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
4-Chloro-3-methylphenol	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
4-Chloroaniline	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
4-Chlorophenyl phenyl ether	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
4-Nitroaniline	mg/L	NA	NA	<0.048U	<0.047U	<0.047U	<0.05U	--
4-Nitrophenol	mg/L	NA	NA	<0.057U	<0.057U	<0.057U	<0.060U	--
Azobenzene	mg/L	0.00012	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Benzoic acid	mg/L	75	NA	<0.071UZ	<0.071UZ	<0.071UZ	<0.075UZ	--
Benzyl alcohol	mg/L	2.0	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Bis(2-chloroethoxy)methane	mg/L	0.059	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Bis(2-chloroethyl)ether	mg/L	0.000014	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Bis(2-ethylhexyl) phthalate	mg/L	0.0056	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Butyl benzyl phthalate	mg/L	0.016	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Carbazole	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Dibenzofuran	mg/L	0.0079	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Diethyl phthalate	mg/L	15	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Dimethyl phthalate	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Di-n-butyl phthalate	mg/L	0.90	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Di-n-octyl phthalate	mg/L	0.20	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Hexachlorobenzene	mg/L	0.0000098	0.0010	***<0.0095U***	***<0.0095U***	***<0.0094U***	***<0.010U***	--
Hexachlorobutadiene	mg/L	0.00014	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
Hexachloroethane	mg/L	0.00033	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
Isophorone	mg/L	0.078	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Nitrobenzene	mg/L	0.00014	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
N-Nitrosodimethylamine	mg/L	0.00000011	NA	*<0.014U*	*<0.014U*	*<0.014U*	*<0.015U*	--
N-Nitrosodi-n-propylamine	mg/L	0.000011	NA	*<0.0095U*	*<0.0095U*	*<0.0094U*	*<0.010U*	--
N-Nitrosodiphenylamine	mg/L	0.012	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Pentachlorophenol	mg/L	0.000041	0.0010	***<0.057U***	***<0.057U***	***<0.057U***	***<0.060U***	--
Phenol	mg/L	NA	NA	<0.0095U	<0.0095U	<0.0094U	<0.010U	--
Herbicides								
EPA8151A								
2,4,5-T	mg/L	0.16	NA	<0.00095U	<0.00095U	<0.00095U	<0.001U	--
2,4-D	mg/L	0.17	0.070	<0.0048U	<0.0047U	<0.0047U	<0.005U	--
2,4-DB	mg/L	0.12	NA	<0.0048U	<0.0047U	<0.0047U	<0.005U	--
Dalapon	mg/L	0.60	0.20	<0.011U	<0.011U	<0.011U	<0.012U	--
Dicamba	mg/L	0.57	NA	<0.0019U	<0.0019U	<0.0019U	<0.002U	--
Dichlorprop	mg/L	NA	NS	<0.0086U	<0.0085U	<0.0085U	<0.009U	--
Dinoseb	mg/L	0.015	0.0070	<0.0019U	<0.0019U	<0.0019U	<0.002U	--
MCPA	mg/L	*0.0075*	NA	*<0.38UZ*	*<0.38UZ*	*<0.38UZ*	*<0.4UZ*	--
MCPP	mg/L	*0.016*	NA	*<0.38U*	*<0.38U*	*<0.38U*	*<0.4U*	--
Silvex (2,4,5-TP)	mg/L	0.11	0.050	<0.00095UZ	<0.00095UZ	<0.00095UZ	<0.001UZ	--
OCL Pesticides								
EPA8081B								
4,4'-DDD	mg/L	0.000032	NA	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
4,4'-DDE	mg/L	0.000046	NA	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
4,4'-DDT	mg/L	0.00023	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Aldrin	mg/L	0.00000092	NA	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
alpha-BHC	mg/L	0.0000072	NA	*<0.000072U*	*<0.000052U*	*<0.000052U*	*<0.000063U*	--

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
alpha-Chlordane	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
beta-BHC	mg/L	0.000025	NA	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
delta-BHC	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Dieldrin	mg/L	0.0000018	NA	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
Endosulfan I	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Endosulfan II	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Endosulfan sulfate	mg/L	NA	NA	<0.000072U	<0.000052U	<0.000052U	<0.000063U	--
Endrin	mg/L	0.0023	0.0020	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Endrin aldehyde	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Endrin ketone	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
gamma-BHC (Lindane)	mg/L	0.000042	0.00020	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
gamma-Chlordane	mg/L	NA	NA	<0.000066U	<0.000047U	<0.000047U	<0.000057U	--
Heptachlor	mg/L	0.0000014	0.00040	*<0.00013U*	*<0.000095U*	*<0.000094U*	*<0.00011U*	--
Heptachlor epoxide	mg/L	0.0000014	0.00020	*<0.000066U*	*<0.000047U*	*<0.000047U*	*<0.000057U*	--
Methoxychlor	mg/L	0.037	0.040	<0.00013U	<0.000095U	<0.000094U	<0.00011U	--
Toxaphene	mg/L	0.000071	0.0030	*<0.0026U*	<0.000019U	*<0.0019U*	*<0.0023U*	--
PCBs								
EPA8082A								
PCB-1016	mg/L	0.00022	NA	<0.00096U	<0.00095U	<0.00095U	<0.0013U	--
PCB-1221	mg/L	0.0000047	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
PCB-1232	mg/L	0.0000047	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
PCB-1242	mg/L	0.0000078	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
PCB-1248	mg/L	0.0000078	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
PCB-1254	mg/L	0.0000078	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
PCB-1260	mg/L	0.0000078	NA	*<0.00096U*	*<0.00095U*	*<0.00095U*	*<0.0013U*	--
Dioxins and Furans								
EPA8290A								

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
1,2,3,4,6,7,8-HpCDD	pg/L	NA	NA	1.2JB	2.0JB	1.9JB	0.94JB	--
1,2,3,4,6,7,8-HpCDF	pg/L	NA	NA	1.4J	1.3J	1.0J	<50U	--
1,2,3,4,7,8,9-HpCDF	pg/L	NA	NA	<50U	1.4J	1.0J	<50U	--
1,2,3,4,7,8-HxCDD	pg/L	NA	NA	<50U	0.87Jq	<47U	<50U	--
1,2,3,4,7,8-HxCDF	pg/L	NA	NA	<50U	1.1Jq	0.41Jq	<50U	--
1,2,3,6,7,8-HxCDD	pg/L	NA	NA	<50U	0.87J	1.3Jq	<50U	--
1,2,3,6,7,8-HxCDF	pg/L	NA	NA	<50U	0.99J	0.54Jq	<50U	--
1,2,3,7,8,9-HxCDD	pg/L	NA	NA	<50U	1.1JB	1.1JB	<50U	--
1,2,3,7,8,9-HxCDF	pg/L	NA	NA	<50U	1.1J	0.96J	<50U	--
1,2,3,7,8-PeCDD	pg/L	NA	NA	<50UZ	<47UqZ	<47UZ	<50UZ	--
1,2,3,7,8-PeCDF	pg/L	NA	NA	<50U	<47U	<47U	<50U	--
2,3,4,6,7,8-HxCDF	pg/L	NA	NA	<50U	1.1J	<47U	<50U	--
2,3,4,7,8-PeCDF	pg/L	NA	NA	<50U	<47U	<47U	<50U	--
2,3,7,8-TCDD	pg/L	0.12	30	*<10U*	*<9.4U*	*<9.4U*	*<10U*	--
2,3,7,8-TCDF	pg/L	NA	NA	<10U	<9.4U	<9.4U	<10U	--
OCDD	pg/L	NA	NA	8.0JB	9.6JB	5.9JqB	5.0JB	--
OCDF	pg/L	NA	NA	2.9JB	2.8JqB	2.8JB	<100U	--
Total HpCDD	pg/L	NA	NA	2.1JqB	3.3JqB	2.7JqB	1.7JqB	--
Total HpCDF	pg/L	NA	NA	1.4J	2.7J	2.0J	<50U	--
Total HxCDD	pg/L	NA	NA	<50U	2.9JqB	2.4JqB	<50U	--
Total HxCDF	pg/L	NA	NA	<50U	4.2Jq	1.9Jq	<50U	--
Total PeCDD	pg/L	NA	NA	<50U	<47Uq	<47U	<50U	--
Total PeCDF	pg/L	NA	NA	<50U	<47U	<47U	<50U	--
Total TCDD	pg/L	NA	NA	<10U	<9.4U	<9.4U	<10U	--
Total TCDF	pg/L	NA	NA	<10U	<9.4U	<9.4U	<10U	--
VOCs								
EPA8260B								
1,1,1,2-Tetrachloroethane	mg/L	0.00057	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*

Ahtna Facility Services, Inc.

TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
1,1,1-Trichloroethane	mg/L	8.0	0.20	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,1,2,2-Tetrachloroethane	mg/L	0.000076	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/L	55	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.0020U
1,1,2-Trichloroethane	mg/L	0.00028	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
1,1-Dichloroethane	mg/L	0.0028	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,1-Dichloroethene	mg/L	0.28	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,1-Dichloropropene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,2,3-Trichlorobenzene	mg/L	0.0070	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,2,3-Trichloropropane	mg/L	0.00000075	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
1,2,4-Trichlorobenzene	mg/L	0.0012	0.070	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,2,4-Trimethylbenzene	mg/L	0.015	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,2-Dibromo-3-Chloropropane	mg/L	0.00000033	0.00020	***<0.0020U***	***<0.0020U***	***<0.0020U***	***<0.0020U***	***<0.0020U***
1,2-Dichlorobenzene	mg/L	0.30	0.60	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,2-Dichloroethane	mg/L	0.00017	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
1,2-Dichloropropane	mg/L	0.00044	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
1,3,5-Trimethylbenzene	mg/L	0.12	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,3-Dichlorobenzene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,3-Dichloropropane	mg/L	0.37	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
1,4-Dichlorobenzene	mg/L	0.00048	0.075	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
2,2-Dichloropropane	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
2-Butanone (MEK)	mg/L	5.6	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.002U
2-Chlorotoluene	mg/L	0.24	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
2-Hexanone	mg/L	0.038	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.0020U
4-Chlorotoluene	mg/L	0.25	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
4-Isopropyltoluene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
4-Methyl-2-pentanone (MIBK)	mg/L	6.3	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.0020U
Acetone	mg/L	14	NA	<0.010U	<0.010U	<0.010U	<0.010U	0.0028J
Benzene	mg/L	0.00046	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*

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TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
Bromobenzene	mg/L	0.062	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Bromoform	mg/L	0.0033	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Bromomethane	mg/L	0.0075	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Carbon disulfide	mg/L	0.81	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.002U
Carbon tetrachloride	mg/L	0.00046	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Chlorobenzene	mg/L	0.078	0.10	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Chlorobromomethane	mg/L	0.083	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Chlorodibromomethane	mg/L	0.00087	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Chloroethane	mg/L	21	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Chloroform	mg/L	0.00022	NA	*0.00042J*	*<0.0010U*	*<0.0010U*	*<0.0010U*	0.00013J
Chloromethane	mg/L	0.19	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
cis-1,2-Dichloroethene	mg/L	0.036	0.070	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
cis-1,3-Dichloropropene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Dibromomethane	mg/L	0.0083	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Dichlorobromomethane	mg/L	0.00013	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Dichlorodifluoromethane	mg/L	0.20	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Ethylbenzene	mg/L	0.0015	0.70	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Ethylene Dibromide	mg/L	0.0000075	0.000050	***<0.0020U***	***<0.0020U***	***<0.0020U***	***<0.0020U***	***<0.0020U***
Hexachlorobutadiene	mg/L	0.00014	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Isopropylbenzene	mg/L	0.45	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Methyl tert-butyl ether	mg/L	0.014	NA	<0.0020U	<0.0020U	<0.0020U	<0.0020U	<0.0020U
Methylene Chloride	mg/L	0.011	0.0050	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
m-Xylene & p-Xylene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Naphthalene	mg/L	0.00017	NA	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
n-Butylbenzene	mg/L	1.0	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
N-Propylbenzene	mg/L	0.66	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
o-Xylene	mg/L	0.19	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
sec-Butylbenzene	mg/L	2.0	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U

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TABLE A-2.3: Laytonville Rancheria Water Analytical Results

			Sample ID	MW1	MW2	MW3	SW1	SW2
			Location ID					
			Matrix	Water	Water	Water	Water	Water
			Date	11/2/2016	11/2/2016	11/2/2016	11/2/2016	11/2/2016
Analyte	**Unit**	**Tap Water**	**MCL**					
Styrene	mg/L	1.2	0.10	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
tert-Butylbenzene	mg/L	0.69	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Tetrachloroethene	mg/L	0.011	0.0050	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Toluene	mg/L	1.1	1.0	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
trans-1,2-Dichloroethene	mg/L	0.36	0.10	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
trans-1,3-Dichloropropene	mg/L	NA	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
trans-1,4-Dichloro-2-butene	mg/L	0.0000013	NA	*<0.0030U*	*<0.0030U*	*<0.0030U*	*<0.0030U*	*<0.0030U*
Trichloroethene	mg/L	0.00049	0.0050	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Trichlorofluoromethane	mg/L	5.2	NA	<0.0010U	<0.0010U	<0.0010U	<0.0010U	<0.0010U
Vinyl acetate	mg/L	0.41	NA	<0.0020UZ	<0.0020UZ	<0.0020UZ	<0.0020UZ	<0.0020UZ
Vinyl chloride	mg/L	0.000019	0.0020	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*	*<0.0010U*
Xylenes, Total	mg/L	0.19	10	<0.0015U	<0.0015U	<0.0015U	<0.0015U	<0.0015U

TABLE A-2.3: Water Analytical Results Notes

Notes:
Risk Based Screening Levels (RBSLs) are based on Regional Screening Levels (RSLs) established by USEPA.
Bold value indicates exceedance of the RSL for Tap Water
BOLDED and Underlined value indicates exceedance of the Maximum Contaminant Level
< = Less than
-- = Not analyzed
NA = Not applicable
mg/kg = milligrams per kilogram
SVOC = Semi-volatile organic compounds
U = Analyte not detected at or above the reporting limit.
J = Estimated value.
B = Analyte detected in QC blank and sample.
Z = Internal standard response or retention time outside acceptable limits.
q= The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
L = A negative instrument reading had an absolute value greater than the reporting limit.

References:

HERO. 2016. Maximum Contaminant Levels (MCLs). June
https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA_Note_3_-2016-06.pdf
USEPA. 2016. Maximum Contaminant Levels (MCLs). May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016
USEPA. 2016. Regional Screening Levels (RSLs) for tap water. May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

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APPENDIX B

Complete Analytical Data Packages

Provided in Electronic Format (CD)