ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

Urrutia Site
Wadsworth, NV 89442

Prepared for the Pyramid Lake Paiute Tribe

Prepared by the Pyramid Lake Paiute Tribe's Tribal Response Program

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1. Introduction and Background

This Analysis of Brownfield Cleanup Alternatives (ABCA) was developed for the Pyramid Lake Paiute Tribe (PLPT) under grant RP99T78201, which was awarded by the U.S. Environmental Protection Agency (EPA) and authorized by Section 128(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The exact future use of the site is yet to be determined and dependent upon the PLPT Tribal Council's decision; however, future uses of the site will likely involve renovation or complete demolition of the onsite structures.

A Phase II Environmental Site Assessment (ESA) was previously conducted at the site to determine the presence and extent of environmental contamination. Based on the data collected during the assessment, cleanup must be performed prior to conducting any renovation or complete demolition of the onsite structures.

Overall, this ABCA will facilitate a more informed decision on the viability of the site for proposed redevelopment/reuse.

1.1. Site Location

The site is located at 110 Herman Avenue in Wadsworth, Nevada. The geographic coordinates in decimal degrees for the site are 39.6319 latitude and -119.2845 longitude. The site consists of a vacated single-family residence, a garage, a yard, and a field on a parcel of land that is approximately 1.462 acres. The buildings occupy a surface area of approximately 3,693 square feet. The site is bordered on the north by Herman Avenue, on the west by residential property, on the south by vegetation (trees), and on the east by bare land. A map of the site, titled Figure 1, is presented on page 14.

1.1.1. Forecasted Climate Conditions

Not applicable for this project.

1.2. Previous Site Uses and Any Previous Cleanup/Remediation

The site is owned by the PLPT and is currently developed with a residence. There is one vacant residential building and one detached garage to the west side of the site; both structures are constructed of brick masonry and collectively occupy a surface area of approximately 3,068 square feet.

As early as 1954, there was a small structure residing on the northeast corner of the site; it was presumably used in connection with residential activities. The current structures were constructed in 1977. By 1985, the structure on the northeast corner of the site was demolished by previous owners.

Prior to conducting a Phase II ESA, the current structures were presumably constructed with asbestos-containing materials (ACMs) and lead-based paint (LBP) due to their age of construction. In addition, mold was observed throughout the residence and the quality of the drinking water, the source of which is a private well, was unknown.

No cleanup/remediation has been performed at the site.

1.3. Site Assessment Findings

To prepare the site for future redevelopment/reuse, environmental site assessments were conducted at the site beginning in 2017.

By definition, no Recognized Environmental Conditions (RECs) were identified at the site during the Phase I ESA. However, because there is a strong likelihood that the structures—which were presumed to contain asbestos and lead in their building materials—would be disturbed during renovation or complete demolition, a Phase II ESA was warranted. As part of the Phase II ESA, the collection and analysis of mold spores and drinking water from the onsite well was also justified to determine the proper protocol for safely renovating or demolishing the structures and to reveal the drinking water quality, as there is a possibility that future site occupants may rely on the current drinking water source.

As part of the Phase II ESA, samples were collected at the site in 2018. Bulk building material samples, indoor bioaerosol air samples, and drinking water samples were collected and subsequently analyzed by certified laboratories. X-ray fluorescence (XFR) analyzer readings were also taken. Per EPA's lead-based paint sampling protocol, one composite soil sample was collected from each side of the structures (four total) and subsequently analyzed to determine whether exterior impacts from suspected lead-based paint were present along the roof drip line.

The results of bulk building material samples were used to determine whether the sampled building materials would be considered ACMs; State and Federal Occupational Safety and Health Administration (OSHA) define ACM as any material containing more than 1% asbestos. XRF analyzer readings were used to determine whether building surfaces contained lead-based paint, which the Department of Housing and Urban Development (HUD) and the EPA define as paint or other surface coating which contains lead equal to or greater than 1 milligram per square centimeter (1.0 mg/cm^2) using the XRF analyzer. No EPA or other federal exposure limits have been set for mold or mold spores; therefore, the results of indoor bioaerosol samples were not compared to any levels. Water sample test results were compared to primary and secondary drinking water standards and the Lead and Copper Rule action levels.

With the exception of the soil and drinking water sampling and analysis, the determination of the presence (or absence) of the hazardous substances above was primarily used to establish a protocol or standard for renovation or complete demolition that ensures worker health and safety protection. Conversely, the results of the soil and water sample analyses were primarily used to determine if any remedial plans would be warranted to protect the health and safety of future site occupants.

The following issues were discovered, and hence, should be considered prior to any redevelopment/reuse:

- Bulk building material samples collected from remnant sheet vinyl flooring, roof coating, and ceramic tile mortar contained asbestos greater than 1%.

- LBP was not found within the structures; however, ceramic tiles in the kitchen, laundry room, main hall, and one of the bathrooms contained lead levels greater than 1.0 mg/cm^2.

- Extensive mold growth and water damage were observed on surfaces throughout the structures.

- Water purged from the well contained levels of coliform, iron, calcium, and manganese above their respective action levels.

Since lead-based paint was not present within the structures, lead concentrations in soil were expected to be below the EPA standard of 400 ppm in play areas and 1,200 ppm in the rest of the yard prior to analysis. Indeed, concentrations of lead in soil were well below the aforementioned levels.

1.4. Project Goal

The exact future use of the site is currently unknown; although, the PLPT has suggested that it may want to utilize the site as an office for a tribal government program. Regardless, any redevelopment/reuse of onsite structures will likely involve renovation or complete demolition.

2. Applicable Regulations and Cleanup Standards

2.1. Cleanup Oversight Responsibility

Any cleanup/remediation will be overseen by the PLPT's Tribal Response Program (TRP). In addition, all documents prepared for this site are submitted to the TRP under Brownfield ID #BRN001.

2.2. Cleanup Standards for Major Contaminants

Cleanup will be considered complete when the following conditions are met:

- ACMs are removed prior to renovation or complete demolition of the onsite structures.

- Ceramic tiles containing lead levels greater than 1.0 mg/cm^2 are removed prior to renovation or engineering controls are established to control the lead hazard during complete demolition of the onsite structures.

- Total coliform is eliminated through the application of chlorine or the use of a UV water sterilization system, should the PLPT decide to continue to use the onsite well as a source of drinking water. Alternatively, this issue could be eliminated if the structures are connected to a public drinking water system.

- Engineering controls are established to control the mold hazard during renovation.

2.3. Laws and Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the Federal Occupational Safety and Health Act (for the removal of asbestos and lead-containing materials), Federal Safe Drinking Water Act, Nevada Administrative Code (NAC) Chapter 618 (Occupational Safety and Health; for the removal of asbestos and lead-containing materials), Nevada Revised Statutes (NRS) 618 (for the removal of asbestos and lead-containing materials), OSHA Lead Safety and Health Regulations for Construction 29 CFR 1926.62, OSHA Asbestos Safety and Health Regulations for Construction 29 CFR 1926.1101, NRS 618.775 (for the disposal and transportation of ACMs), NAC 444.965-444.976 (for the disposal of ACMs). Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will also be followed.

In addition, all appropriate permits (e.g., notify before you dig, soil transportation/disposal manifests) will be obtained prior to the work commencing.

3. Cleanup Alternatives

To address contamination at the site, three different alternatives to address each of the contaminants were considered.

3.1. Review of Cleanup Alternatives

Cleanup will be warranted if the future use of the site involves renovation or complete demolition of the onsite structures. Generally, three different alternatives—including Alternative #1: No Action, Alternative #2: Removal and Disposal Prior to Renovation, and Alternative #3: Removal and Disposal Prior to Complete Demolition—were considered to address each of the contaminated media. For practical reasons, Alternative #2 was formulated based on the expectation that renovation would involve a complete “gutting” of the onsite structures, due to their poor interior structural conditions.

To satisfy EPA requirements, the effectiveness, implementability, and cost of each alternative was considered prior to selecting a recommended cleanup alternative.

3.1.1. ACMs

Based on sampling results, the following ACMs were identified throughout the building: sheet vinyl (as part of the flooring remnant located in the kitchen, hallway, and laundry rooms), roof coating (on the roof located throughout the entire structures), and tile mastic/mortar (used as an adhesive for ceramic tiles located in two of the bathrooms).

Note: There is no guarantee that no further asbestos, beyond that which was suspected to be present (and sampled) during the Phase II ESA, is present at the site. Other ACMs may be uncovered during renovation or complete demolition. For a site map depicting locations where asbestos is present, please see Figure 2 on page 15.

3.1.1.1. Alternative 1

This option would involve leaving ACMs in place and not employing any engineering controls during renovation or complete demolition.

3.1.1.2. Alternative 2

Because ACMs would be disturbed during renovation and pose a health hazard, they should be removed prior to such an activity. Removal and disposal of ACMs should be undertaken by a licensed asbestos abatement contractor familiar with Nevada and federal regulations regarding asbestos.

3.1.1.3. Alternative 3

Because ACMs would also be disturbed during complete demolition and pose a health hazard, they should be removed prior to such an activity. Removal and disposal of ACMs should be undertaken by a licensed asbestos abatement contractor familiar with Nevada and federal regulations regarding asbestos.

3.1.2. Lead-Containing Materials

XFR analyzer readings taken throughout the structures revealed that lead above health-based standards is present in ceramic tiles located in the kitchen and laundry room countertops, main hall floor, and Bathroom #1 and Bathroom #2 walls.

Note: Lead was found in ceramic tiles and not in paint (i.e., no LBP was found). This is important to consider as the action level for lead in paint differs from the action level for lead in other materials, such as tiles. For a site map depicting locations where lead is present, please see Figure 3 on page 16.

3.1.2.1. Alternative 1

This option would involve leaving lead-containing materials in place and not employing any engineering controls during renovation or complete demolition.

3.1.2.2. Alternative 2

Because lead-containing materials would be disturbed during renovation and pose a health hazard, they should be removed prior to such an activity. Removal and disposal of lead-containing materials should be undertaken by a licensed lead abatement contractor familiar with Nevada and federal regulations regarding lead.

Note: The lead-containing ceramic tiles in Bathroom 1 and Bathroom 2 will be removed during ACM abatement. There should not be a need to handle such lead-containing ceramic tiles separately, as they may be disposed of along with the ACMs.

3.1.2.3. Alternative 3

If a demolition firm with OSHA hazardous waste-trained personnel is used for complete demolition, dust suppression, particulate monitoring, personal protective equipment, and medical monitoring can be employed to eliminate the need to remove lead-containing ceramic tiles as a separate activity from complete demolition.

3.1.3. Water Intrusion and Mold

The total area affected by water intrusion and mold is unknown at this time; it is dependent on how severe the damage is and how long the water has been intruding.

3.1.3.1. Alternative 1

This option would involve not addressing the water intrusion and mold issue during renovation.

3.1.3.2. Alternative 2

If mold-impacted surfaces and materials are located in areas of the building that will be renovated, then such materials should not need to be removed prior to such an activity due to the overall volume of debris that would be generated. However, a certified mold remediation contractor should be retained to assist in renovation to control the potential hazard from mold and to remedy the water intrusion issue. The PLPT Tribal Response Program recommends air sampling and monitoring for mold during renovation.

3.1.3.3. Alternative 3

Mold-impacted surfaces and materials should not need to be removed prior to complete demolition due to the overall volume of debris that will be generated from the activity.

3.1.4. Drinking Water Contamination

The analyses of drinking water samples demonstrate that the drinking water currently present in the well contains levels of total coliform, iron, calcium, and manganese above their respective health-based standards.

Drinking water standards for iron and manganese are considered national secondary drinking water standards and are not enforceable by any federal law; they were established by the U.S. EPA for aesthetic purposes only. There is neither a national primary or secondary drinking water standard for calcium.

Conversely, the drinking water standard for total coliform is considered a national primary drinking water standard and is enforceable by the Federal Safe Drinking Water Act (SDWA) when drinking water is supplied by a public drinking water system only. Although water quality in private wells is not currently regulated by any law, it should meet the national primary drinking standards to protect the health and safety of consumers. Thus, the following alternatives are considered to eliminate total coliform from the drinking water at the site.

3.1.4.1. Alternative 1

This option would involve not addressing the contaminated drinking water issue.

3.1.4.2. Alternative 2

The use of a chlorination or UV water sterilizer system would eliminate total coliform in the drinking water.

It should be mentioned, however, that if the existing plumbing system will be reused, further testing may be required since samples were collected at the source and not from the tap (i.e., test results revealed the conditions of the drinking water at the source).

Furthermore, due to the proximity of the private well to the Truckee River, the contamination issue could reoccur (due to potential flooding and surface water pumping). It is likely that frequent testing and/or chlorination will be required if the private well is reused for drinking water.

3.1.4.3. Alternative 3

Abandoning the well and connecting the structures to a public drinking water supply would eliminate the contaminated drinking water issue. According to the PLPT Public Utilities District, properties on Herman Avenue, including the subject site, are expected to be connected to the public drinking water system at the end of 2019.

3.2. Evaluation of Cleanup Alternatives

3.2.1. Effectiveness

3.2.1.1. ACMs & Lead-Containing Materials

3.2.1.1.1. Alternative 1

This option would not be effective because redevelopment planning includes disturbing building materials, thereby exposing workers and future patrons to asbestos at the site.

3.2.1.1.2. Alternative 2

This option would be effective since workers would not be exposed to asbestos if ACMs are removed prior to renovation.

3.2.1.1.3. Alternative 3

This option would be effective since workers would not be exposed to asbestos if ACMs are removed prior to complete demolition.

3.2.1.2. Lead-Containing Materials

3.2.1.2.1. Alternative 1

This option would not be effective because redevelopment planning includes disturbing building materials, thereby exposing workers and future patrons to lead at the site.

3.2.1.2.2. Alternative 2

This option would be effective since workers would not be exposed to lead if lead-containing materials are removed prior to renovation.

3.2.1.2.3. Alternative 3

This option would be effective since the employment of necessary engineering controls during complete demolition would help control the lead hazard.

3.2.1.3. Water Intrusion and Mold

3.2.1.3.1. Alternative 1

This option would not be effective since the disturbance of mold-impacted surfaces and materials and a lack of oversight during renovation could render the level of protection for workers inadequate and could cause mold to further spread.

3.2.1.3.2. Alternative 2

This option would be effective because, if hired, a certified mold remediation contractor would ensure that mold-impacted surfaces and materials are removed and disposed of in a way that they do not pose any health and safety hazards to workers during renovation. In addition, a certified mold remediation contractor possesses the necessary resources to determine whether water intrusion and mold remediation has been effective to prevent mold regrowth.

3.2.1.3.3. Alternative 3

This option would be effective since leaving mold-impacted surfaces and materials in place should not pose a health and safety hazard to workers during complete demolition.

3.2.1.4. Drinking Water Contamination

3.2.1.5. Alternative 1

This option would not be effective since there would be no remedy in place to control or prevent future patrons from consuming contaminated drinking water.

3.2.1.6. Alternative 2

This option would be effective since a chlorination or UV water sterilizer system would eliminate total coliform from the drinking water. However, due to the proximity of the private well to the Truckee River, the contamination issue could reoccur. It is likely that frequent testing and/or chlorination will be required if the private well is reused for drinking water.

3.2.1.7. Alternative 3

This option would be effective since abandoning the well to rely on an alternate source of drinking water would eliminate the contaminated drinking water issue.

3.2.2. Implementability

3.2.2.1. ACMs

3.2.2.1.1. Alternative 1

This option would be relatively easy to implement since no action would be involved.

3.2.2.1.2. Alternative 2

This option would be relatively easy to implement since a licensed asbestos abatement contractor possesses the necessary resources to remove ACMs without difficulty.

3.2.2.1.3. Alternative 3

This option would be relatively easy to implement since a licensed asbestos abatement contractor possesses the necessary resources to remove ACMs without difficulty.

3.2.2.2. Lead-Containing Materials

3.2.2.2.1. Alternative 1

This option would be relatively easy to implement since no action would be involved.

3.2.2.2.2. Alternative 2

This option would be relatively easy to implement since a licensed lead abatement contractor possesses the necessary resources to remove lead-containing materials without difficulty.

3.2.2.2.3. Alternative 3

This option would be relatively easy to implement since OSHA hazardous waste-trained personnel possesses the necessary resources to employ dust suppression, particulate monitoring, personal protective equipment, and medical monitoring without substantial difficulty.

3.2.2.3. Water Intrusion and Mold

3.2.2.3.1. Alternative 1

This option would be relatively easy to implement since no action would be involved.

3.2.2.3.2. Alternative 2

Although this option would be feasible, implementing it could be time-consuming since the total area affected by water intrusion and mold is unknown at this time; therefore, the extent of renovation as it would relate to water intrusion and mold remediation is unknown.

3.2.2.3.3. Alternative 3

This option would be relatively easy to implement since mold-impacted surfaces and materials may remain in place during complete demolition. Additionally, there would not be a need to remedy the water intrusion issue if this option is implemented.

3.2.2.4. Drinking Water Contamination

3.2.2.4.1. Alternative 1

This option would be relatively easy to implement since no action would be involved.

3.2.2.4.2. Alternative 2

This option could be relatively easy to implement since a chlorination or UV water sterilizer system could be easily procured and installed. However, due to the proximity of the private well to the Truckee River, the contamination issue could reoccur. It is likely that frequent testing and/or chlorination will be required if the private well is reused for drinking water.

3.2.2.4.3. Alternative 3

This option would be relatively easy to implement once the necessary resources to connect the structures to the public drinking water system are in place.

3.2.3. Cost

3.2.3.1. ACMs

3.2.3.1.1. Alternative 1

It would cost nothing to implement this option since no action would be involved.

3.2.3.1.2. Alternative 2

The estimated costs provided by a contractor for the removal and disposal of ACMs from the onsite structures are as follows:

- 235 square feet of sheet vinyl removal and disposal: $2,688.00
- 2,600 square feet of roof coating removal and disposal: $9,360.00
- 200 square feet of tile mastic/mortar removal and disposal: $2,895.00

The estimated total for the removal and disposal of ACMs is approximately $14,943.00.

3.2.3.1.3. Alternative 3

See Section 3.2.3.1.2. above.

3.2.3.2. Lead-Containing Materials

3.2.3.2.1. Alternative 1

It would cost nothing to implement this option since no action would be involved.

3.2.3.2.2. Alternative 2

The estimated cost for the removal and disposal of 300 square feet of lead-containing ceramic tiles is approximately $5,825.00. This option is considered the relatively expensive option.

3.2.3.2.3. Alternative 3

The cost to implement this option should be included in the cost to completely demolish the structures. The cost to implement this option is not expected to substantially increase the cost to completely demolish the structures and should be less than the cost to implement Alternative 2 in Section 3.2.3.2.2. above. Consequently, the cost to implement this option would be considered the relatively affordable option.

3.2.3.3. Water Intrusion and Mold

3.2.3.3.1. Alternative 1

It would cost nothing to implement this option since no action would be involved.

3.2.3.3.2. Alternative 2

It would cost approximately $112.50-125.00 per hour for oversight (including the collection of area air samples) during renovation involving water intrusion and mold abatement/remediation.

3.2.3.3.3. Alternative 3

It would cost nothing to implement this option since mold-impacted surfaces and materials could remain in place during complete demolition.

3.2.3.4. Drinking Water Contamination

3.2.3.4.1. Alternative 1

It would cost nothing to implement this option since no action would be involved.

3.2.3.4.2. Alternative 2

The cost to purchase an ultraviolet (UV) water sterilizer system ranges from $500.00 to $6,000.00 depending on the level of protection and flow rate of the drinking water. The hiring of a plumber to install such a system would add to the cost of implementing this option.

3.2.3.4.3. Alternative 3

The cost to connect the structures to the public drinking water system would cost approximately $1,500.00 once the infrastructure is installed. Abandoning the well, which would eventually be required, would add to the cost of implementing this option (about $1,000.00-$1,500.00 more).

3.3. Comparison of Cleanup Alternatives

3.3.1. ACMs

Alternative 1 would meet none of the protective criteria for redevelopment/reuse planning and is therefore dismissed without additional evaluation.

Alternative 2 and Alternative 3 would be equally protective and easy to implement. The two alternatives would cost the same to implement.

3.3.2. Lead-Containing Materials

Alternative 1 would meet none of the protective criteria for redevelopment/reuse planning and is therefore dismissed without additional evaluation.

Alternative 2 and Alternative 3 would be equally protective and easy to implement. In terms of cost, Alternative 2 would cost more than Alternative 3 to implement.

3.3.3. Water Intrusion and Mold

Alternative 1 would meet none of the protective criteria for redevelopment/reuse planning and is therefore dismissed without additional evaluation.

Alternative 2 and Alternative 3 would be equally protective. In terms of implementability, Alternative 2 could be more difficult to implement than Alternative 3. With regards to cost, Alternative 2 would cost more than Alternative 3 to implement.

3.3.4. Contaminated Drinking Water

Alternative 1 would meet none of the protective criteria for redevelopment/reuse planning and is therefore dismissed without additional evaluation.

Alternative 2 and Alternative 3 would be equally protective and easy to implement. With regards to cost, the two alternatives could cost approximately the same to implement, depending on the factors mentioned in previous sections.

3.4. Recommended Cleanup Alternative

If the PLPT decides to renovate the onsite structures, the recommended cleanup alternative to address ACMs, lead-containing materials, and water intrusion and mold would be Alternative 2. Conversely, if the PLPT decides to completely demolish the onsite structures, the recommended cleanup alternative to address ACMs, lead-containing materials, and water intrusion and mold would be Alternative 3. A separate estimate of $90,000.00 was obtained from a local vendor for completely demolishing the onsite structures and disposing of resulting C&D debris.

The recommended cleanup alternative to address the contaminated drinking water issue is Alternative 3 since connecting the structures to the public water system would help ensure the provision of safe drinking water to the structures without further testing. This is important to consider since the contamination issue can reoccur due to the proximity of the private well to the Truckee River. This option could be readily and easily implemented. Moreover, the cost to implement it would not vary significantly from the cost to implement Alternative 2.

Appendix

Figure 1:

Figure 2:

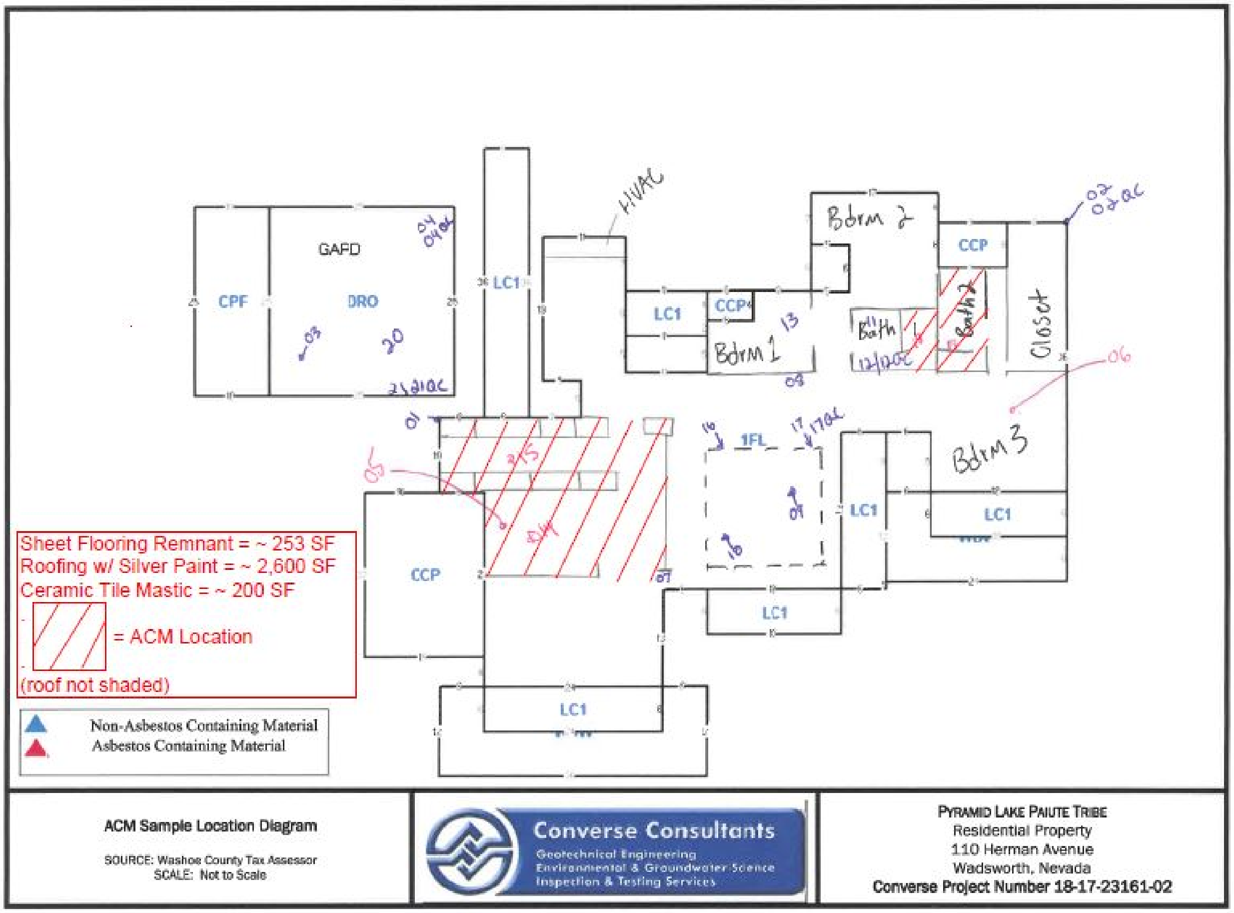
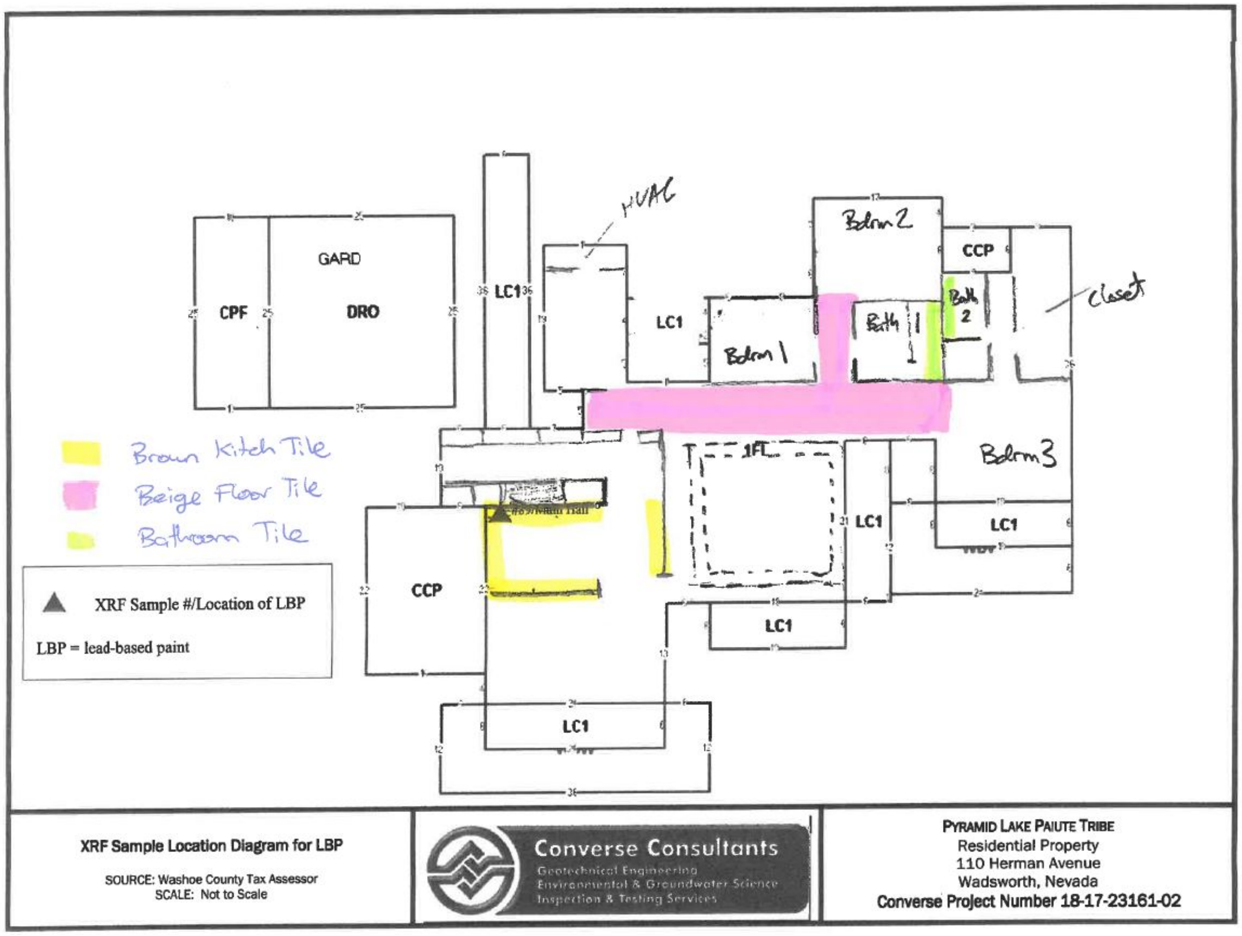

GAFD
CPF
DRO
LC1
CCP
Bdrm 2
Bdrm 1
Bdrm 3
Bath
Closet
HVAC
1FL
Sheet Flooring Remnant = ~ 253 SF
Roofing w/ Silver Paint = ~ 2,600 SF
Ceramic Tile Mastic = ~ 200 SF
= ACM Location
(roof not shaded)
Non-Asbestos Containing Material
Asbestos Containing Material
ACM Sample Location Diagram
SOURCE: Washoe County Tax Assessor
SCALE: Not to Scale
Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services
PYRAMID LAKE PAIUTE TRIBE
Residential Property
110 Herman Avenue
Wadsworth, Nevada
Converse Project Number 18-17-23161-02

Figure 3:



HVAC
Bdrm 2
CCP
GARD
LC1
CPF
DRO
LC1
Bdrm 1
Bath 1
Bath 2
closet
Brown Kitch Tile
Beige Floor Tile
Bathroom Tile
1FL
Bdrm 3
LC1
LC1
CCP
XRF Sample #/Location of LBP
LBP = lead-based paint
LC1
LC1
XRF Sample Location Diagram for LBP
SOURCE: Washoe County Tax Assessor
SCALE: Not to Scale
Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services
PYRAMID LAKE PAIUTE TRIBE
Residential Property
110 Herman Avenue
Wadsworth, Nevada
Converse Project Number 18-17-23161-02