

**LEAVENWORTH CITY COUNCIL
Study Session Agenda
City Hall – Council Chambers & Zoom
August 11, 2026 | 5:30 – 6:50 PM**

5:30-5:40 Chamber Report

This time is provided for a Chamber of Commerce representative to provide an update to the City Council on items of interest to the Chamber and City.

There are no items included under **TAB B**.

5:40-5:45 Block Party – Air Quality Contingency Planning

With increased wildfire activity affecting air quality throughout the valley, staff is requesting Council's guidance on air quality thresholds for the 2026 Community Block Party. Establishing these decision points in advance will allow staff to respond quickly and communicate any changes in a timely manner.

Staff is requesting Council's direction on the following:

1. Plan A – Outdoor Event

What is the highest acceptable Air Quality Index (AQI) at which the Community Block Party should proceed as planned outdoors at Osborn Playfield and Orchard Street, with no changes to the program?

2. Plan B – Relocate Indoors

At what AQI should the event be relocated to Cascade High School, utilizing the two gyms for booths and activities and the outdoor courtyard for grilling?

3. Plan C – Cancel the Event

At what AQI should the Community Block Party be canceled?

Staff propose making the final determination based on the AQI forecast available at 7:30 a.m. on Thursday, August 20. If a relocation or cancellation is necessary, staff would immediately notify the community, participating organizations, vendors, volunteers, and other stakeholders.

The following items are included under **TAB C**.

- Working Safely in Poor Air Quality (City of Leavenworth)
- Wildfire Smoke Guidance Summary: Canceling Outdoor Events and Activities (Washington State Department of Health and Department of Ecology)
- Washington Air Quality Guide for Particle Pollution (Washington State Department of Health and Department of Ecology)

5:45-6:15 Alley Level of Service Discussion

This time is provided for the Council to review the 2022 Residential Alley Study Technical Memo and have an open discussion about alleys within the City.

The following items are included under **TAB D.**

- Residential Alley Study Technical Memo

6:15-6:35 Code Revision to LMC 14.14.100 – Water Supply Standards Discussion

This time is provided for the Council to continue its discussion regarding amendments to LMC 14.14.100 that began during the July 28, 2026 Council meeting. The Council is being asked to consider adopting Ordinance 1724 during the Council meeting immediately following this study session to provide immediate clarification needed by City staff when reviewing requests for water service outside the Urban Growth Area (UGA). As discussed on July 28th, the Council also expressed interest in pursuing additional amendments beyond those included in Ordinance 1724.

The discussion on July 28th focused on adding greater specificity regarding the hardship circumstances under which the Council may authorize water service outside the UGA. The Council also requested removal of the current limit of three Equivalent Residential Units (ERUs) per calendar year so that the code does not unintentionally restrict applicants with legitimate hardships. This study session is intended to provide an opportunity for the Council to continue workshopping potential revisions to this section of the Leavenworth Municipal Code. City staff has drafted revised language as a starting point for this discussion.

The following items are included under **TAB E.**

- Draft revisions to LMC 14.14.100

6:35-6:45 Bed & Breakfast Moratorium Discussion

This time is provided for the Council to discuss the six-month Bed & Breakfast Moratorium established by Ordinance 1722 on April 14, 2026 and provide staff with direction on how to proceed with the regulation of homes constructed using pre-approved plans. In addition, staff will provide an update from the August 5, 2026 Planning Commission meeting related to this matter.

There are no items included under **TAB F.**

6:45-6:50 Council Updates / Suggestions for Future Agenda Items

There are no items included under **TAB G.**

Wildfire Smoke Guidance Summary: Canceling Outdoor Events and Activities



This is a summary of the Washington State Departments of Health and Ecology guidance for canceling or moving outdoor events or activities when smoke may be a health threat. **For more information:** [Wildfire Smoke Guidance for Canceling Outdoor Events or Activities and Closing Schools](#). While this document is written for wildfire smoke, it can be informative for other sources of PM_{2.5}.

Health effects from smoke

Symptoms of wildfire smoke exposure range from minor irritation, such as burning eyes, runny nose and coughing, to life threatening.

People with increased health risks from wildfire smoke include people with heart and lung diseases (like asthma and COPD), people with respiratory infections, people with diabetes, people 18 and younger or older than 65, pregnant people, people who smoke, outdoor workers, people of color, Tribal and Indigenous people, people with access and functional needs, people who are unhoused, and people with low income.

Factors to consider for canceling outdoor activities and events

- What is the forecast for how long wildfire smoke levels will remain high?
- Are smoke conditions getting worse, getting better, or staying about the same?
- Is there an option to relocate to an area with cleaner air?
- Is the visibility safe for driving?
- Will the event include people at increased risk of health impacts?

(More in full guidance report)

Measuring wildfire smoke levels

The concentration of PM_{2.5} – particles less than 2.5 micrometers in diameter – is the most useful measurement of smoke levels to protect health. PM_{2.5} concentrations are reported across six health hazard levels in the Air Quality Index (AQI).

Current outdoor PM_{2.5} levels from agency monitors are available as AQI values that are updated hourly on the [WA Smoke Blog](#), [EPA's AirNow App](#), and

[Ecology's Air Quality Map](#). Forecasts are often available during wildfire season on the WA Smoke Blog and Ecology's [Air Quality Map](#). Low-cost sensors can measure PM_{2.5} outside when there is not a nearby agency monitor, though these are less accurate than agency monitors and uncorrected sensor data should not be directly compared to PM_{2.5} action levels. Publicly reporting PM_{2.5} outdoor sensor measurements with an applied smoke correction factor are available on the WA Smoke Blog. (More in full guidance report)

When outdoor forecasted 24-hour or NowCast PM_{2.5} concentrations:

- Equal or exceed AQI value 151 ("Unhealthy" category or worse), consider canceling outdoor public events and activities.
- Equal or exceed AQI value 201 ("Very Unhealthy" category or worse), cancel outdoor public events and activities.

For more information about the health impacts of wildfire smoke, visit

DOH.WA.GOV/SMOKEFROMFIRES



DOH 334-430 May 2026 CS

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email doh.information@doh.wa.gov.

Air Quality Index: PM2.5	Recommended Public Health Actions Check current and forecasted air quality at wasmoke.blogspot.com
Good (0-50)	Prior to wildfire season: • Coordinate a local plan for public health actions and distribute preparedness information to the public. • Identify indoor spaces where individuals will seek cleaner air during wildfire smoke events and develop plans to protect indoor air quality, including filtration. • Indoor spaces used by sensitive groups, such as schools, child care facilities, and long-term care facilities. • Community cleaner air settings, such as libraries. • Temporary cleaner air shelters. During wildfire season (late spring, summer, early fall): • Monitor wildfires, smoke forecasts, and air quality at WA Smoke Blog. • If forecasts predict smoke in your area, review the Washington Wildfire Response document for Severe Smoke Episodes and the Wildfire Smoke Guide for Public Health Officials.
Moderate (51-100)	Above recommendations, plus: • Distribute health information to the public, including steps to take with health advisory categories: Washington Air Quality Guide for Particle Pollution. • Refer to the WA Smoke Blog for information about wildfires, smoke forecasts, and air quality. • Identify and focus outreach efforts for sensitive groups. • Coordinate with public health partners to follow recommended public health actions. • Recommend following the Washington Children and Youth Activities Guide for Air Quality. • For outdoor workers, start following WA Department of Labor and Industries' requirements.
Unhealthy for Sensitive Groups (101-150)	Above recommendations, plus: • Recommend sensitive groups take steps to reduce exposure (limit time outside, avoid high intensity outdoor activity, and follow tips for cleaner indoor air). • Recommend sensitive groups spend time in a cleaner air setting in the community, such as a library, if they cannot maintain cleaner air at home. • Cancel children's outdoor athletic events and practices or move them to an area with safe air quality, either indoors or at a different outside location: Washington Children and Youth Activities Guide for Air Quality. • For an extended duration of smoke, consider opening a cleaner air shelter for sensitive groups.

Air Quality Index: PM2.5	Recommended Public Health Actions Check current and forecasted air quality at wasmoke.blogspot.com
Unhealthy (151-200)	Above recommendations, plus: • Recommend everyone take steps to reduce exposure (limit time outside, avoid strenuous outdoor activity, and follow tips for cleaner indoor air). • Recommend everyone spend time in an identified cleaner air setting in the community, such as a library, if they cannot maintain cleaner air in their residence. • Consider canceling outdoor public events and activities: Wildfire Smoke Guidance for Canceling Outdoor Events or Activities and Closing Schools. • For an extended duration of smoke, consider opening a cleaner air shelter for the public.
Very Unhealthy (201-300)	Above recommendations, plus: • Strongly recommend everyone take steps to reduce exposure (stay inside and filter indoor air to keep it cleaner; go elsewhere for cleaner air if needed and possible). • Cancel outdoor public events and activities: Wildfire Smoke Guidance for Canceling Outdoor Events or Activities and Closing Schools. • If school is in session, discuss school closure with administrators if indoor air cannot be kept lower than $PM_{2.5}$ 125.5 $\mu g/m^3$ (AQI value of 201): Wildfire Smoke Guidance for Canceling Outdoor Events or Activities and Closing Schools. • Distribute NIOSH-approved particulate respirators, such as N95 masks, as available, for limited use outside. Include training material for proper fit and use. • For an extended duration of smoke, consider recommending that sensitive groups voluntarily relocate to an unimpacted area.
Hazardous (>300)	Above recommendations, plus: • For an extended duration of smoke, consider recommending that everyone voluntarily relocate to an unimpacted area.



Washington Air Quality Guide for Particle Pollution

Vehicle exhaust, woodstove emissions, industrial emissions, wildfire smoke, windblown dust, and other sources contain fine particles with diameters 2.5 micrometers or smaller (PM_{2.5}) that can be dangerous to your health.

Check current and forecast conditions at airqualitymap.ecology.wa.gov

The Air Quality Index (AQI) reports the level of air quality and health concern across six categories:

Air Quality Index	What Should I Do?	Know the symptoms! Burning eyes Coughing Throat and nose irritation Headaches Fatigue Wheezing and shortness of breath Irregular heartbeat Chest pain  If your symptoms become serious, seek medical attention. High exposure to PM_{2.5} can lead to hospitalizations and increase the risk of death.
Good 0–50	 It's a great day to be active outside and a good time to make a plan if worse air quality is in the forecast.	
Moderate 51–100	 Some people are especially sensitive to lower levels of particle pollution and should reduce exposure. For example, limit time outside and avoid strenuous outdoor activity. All sensitive groups should watch for symptoms.	
Unhealthy for Sensitive Groups 101–150	 Sensitive groups should take steps to reduce exposure. Limit time outside, avoid strenuous outdoor activity, and follow tips for cleaner indoor air. Everyone should watch for symptoms as a sign to reduce exposure.	
Unhealthy 151–200	 Everyone should reduce exposure. Limit time outside, avoid strenuous outdoor activity, and follow tips for cleaner indoor air.	
Very Unhealthy 201–300	 Everyone should reduce exposure. Stay inside and filter indoor air to keep it cleaner. Go elsewhere for cleaner air, if needed.	
Hazardous >300	 Everyone should reduce exposure. Stay inside and filter indoor air to keep it cleaner. Go elsewhere for cleaner air, if needed.	

See back page for steps to reduce exposure and a list of sensitive groups with increased risk.

For information on wildfire smoke and protecting health, go to doh.wa.gov/smokefromfires.

For information on wildfire smoke and outdoor worker safety, see [WA State Department of Labor and Industries requirements](#).

Steps to Reduce Exposure



Limit duration and intensity of outside physical activity.



Stay inside with cleaner indoor air:



Close windows and doors, unless it is too hot to maintain safe temperatures.



Don't add to indoor air pollution, such as cigarette smoking or burning candles.



Filter indoor air through an HVAC system, HEPA portable air cleaner, or DIY box fan filter.



Set air conditioning to recirculate.



If unable to maintain clean air at home, go elsewhere for cleaner air such as a friend's place, public space, or unimpacted area.



If you must be outside, wear a properly fitted, NIOSH-approved particulate respirator, such as an N95 mask.



Sensitive Groups with Increased Risk

- › People with health conditions
 - » Lung diseases, such as asthma and COPD
 - » Heart diseases
 - » Respiratory illnesses
 - » Diabetes
- › People 18 and younger or older than 65
- › Pregnant people
- › Outdoor workers
- › People of color
- › Tribal and indigenous people
- › People with low income



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City of Leavenworth – Public Works

Toolbox Talk: Working Safely in Poor Air Quality (Wildfire Smoke)

Why This Matters

Wildfire smoke contains fine particles (PM2.5) that can irritate eyes and lungs and increase the risk of breathing problems—especially during physical outdoor work.

Air Quality Index (AQI) Basics

AQI Range	What It Means	Required Actions
0–50 (Good)	Air is satisfactory.	Normal work; no extra actions.
51–100 (Moderate)	Air quality is acceptable; some people may feel mild effects.	Monitor conditions; adjust tasks for sensitive workers if needed.
101–150 (Unhealthy for Sensitive Groups)	Members of sensitive groups may experience health effects; general public less likely.	Notify employees; reduce exposure where feasible; make N95s available for voluntary use.
151+ (Unhealthy for All)	Everyone may begin to experience health effects.	Notify employees; implement exposure controls (reschedule/relocate/rotate/reduce intensity); make N95s available.

What the City Will Do

- Monitor AQI/PM2.5 and communicate updates during the shift.
- Provide **N95 respirators** at no cost for voluntary use at AQI ≥ 101.
- Implement exposure controls when AQI is high: reschedule, relocate to cleaner air, rotate crews, or reduce intensity/duration of tasks.

What You Should Do

- Follow supervisor updates on AQI and task changes.
- Wear an N95 if you want extra protection, especially at AQI ≥ 101.
- Report symptoms immediately: chest tightness, shortness of breath, dizziness, severe cough.
- Look out for coworkers and speak up—no retaliation for reporting health concerns.

Key Reminder

At **AQI 150**, air is **unhealthy for everyone**. Take more breaks, use an N95 if desired, and notify your supervisor if you feel unwell.

RH2 TECHNICAL MEMORANDUM

Client: City of Leavenworth

Project: Residential Alley Planning

Project File: LEAV 22.0072.00.0004 Project Manager: Devon Petit, PE

Composed by: Jennifer Kent, Staff Engineer

Reviewed by: Devon Petit, PE

Subject: Residential Alley Planning

Date: September 23, 2022



Signed:
9/23/2022

Introduction

The purpose of this technical memorandum is to document existing alleys within the city limits of Leavenworth, Washington. This analysis will include recording the existing conditions of the alleys, defining problem areas, and providing recommendations for improvements and maintenance costs based on the City of Leavenworth's (City) standard alley design, as described in this technical memorandum. The City retained RH2 Engineering, Inc., (RH2) to perform and analyze this work.

This analysis defines alleys per Revised Code of Washington (RCW) 46.04.020. It states that alleys are not meant for general travel, but only for local residences and business access.

Background

This technical memorandum is expanding upon a previous whitepaper written by TD&H Engineering in April 2021, titled *Alley Whitepaper*. The whitepaper briefly summarizes the size and location of existing

residential alleys, legal and actual usage of the alleys, alley comparables from other municipalities, and upgrades and maintenance costs. Refer to **Appendix A** for a copy of the *Alley Whitepaper*.

Goals and Objectives

The City of Leavenworth prides itself on having a small-town atmosphere. This, along with the city-wide German Bavaria theme, makes Leavenworth a top tourist destination in the Pacific Northwest. With existing residential traffic and increasing tourist traffic throughout the entire year, it is essential to maintain the small town feel.

To achieve this, the City plans to bring its alleys up to a proposed standard, as defined later in this technical memorandum. These proposed standards will allow residential access to abutting alleys as opposed to street access. This will help reduce the amount of on-street parking and maneuvers in and out of driveways, which will promote a less congested street frontage and provide more biker and pedestrian friendly corridors.

This proposed standard also will benefit neighboring residents. Once the alleys are developed to meet the minimum standard requirements, possible services for each alley include snow removal, and recycle, garbage, and postal services.

Process

Field reconnaissance conducted by RH2, as well as data and materials provided by the City, were used to define the existing conditions of each alley within the scope of work. Refer to **Appendix B** for each alley location. This analysis covers a total of 40 alleys within the city limits, ranging from 135 feet in length to 1,275 feet in length. RH2 gave each alley a ranking based on the Pavement Surface Evaluation Rating (PASER) scale developed by the Transportation Information Center at the University of Wisconsin-Madison. **Figure 1** is a summary of the PASER scale for gravel roads.

Ranking	Condition	Visible Distress	General Condition/Treatment Measures
5	Excellent	No distress. Dust controlled. Excellent surface condition and ride.	New construction or total reconstruction. Excellent drainage. Little or no maintenance needed.
4	Good	Dust under dry conditions. Moderate loose aggregate. Slight washboarding	Recently graded. Good crown and drainage throughout. Adequate gravel for traffic. Routine grading and dust control may be needed.
3	Fair	Good crown (3"-6"). Adequate ditches on more than 50% of roadway. Gravel layer mostly adequate. Some culvert cleaning needed. Moderate washboarding (1"-2" deep) over 10%-25% of area. Moderate dust. None or slight rutting (< 1" deep). An occasional small pothole (< 2" deep). Some loose aggregate (2" deep).	Shows traffic effects. Regrading (reworking) necessary to maintain. Needs some ditch improvement and culvert maintenance. Some areas may need additional gravel.
2	Poor	Little or no roadway crown (< 3"). Adequate ditches on less than 50% of roadway. Portions of the ditches may be filled and/or show erosion. Culverts partially full of debris. Moderate to severe washboarding (> 3" deep) over 25% of area. Moderate rutting (1"-3") over 10%-25% of area. Moderate potholes (2"-4") over 10%-25% of area. Severe loose aggregate (> 4" thick).	Travel at slow speeds (less than 25 mph) is required. Needs additional new aggregate. Major ditch construction and culvert maintenance also required.
1	Failed	No roadway crown or road is bowl shaped with extensive ponding. Little if any ditching. Filled or damaged culverts. Severe rutting (> 3" deep), over 25% of area. Severe potholes (> 4" deep), over 25% of area. Many areas (> 25%) with little or no aggregate.	Travel is difficult and road may be closed at times. Needs complete rebuilding and/or new culverts.

Figure 1: PASER Scale

Once all alley observations and ratings were completed, correspondence between the City and RH2, as well as public insight, was used to find the best course of action for existing site improvements and maintenance options. This technical memorandum documents the comprehensive design conclusions based on the findings.

Assessment of Existing Conditions

Categories Observed

This analysis documented the details of the existing site based on various categories, including the following.

1. Measured Usable Width
2. Surface Description
3. Surface Rating (PASER scale)
4. City Drainage Systems
5. Adjacent Property Drainage
6. General Drainage Pattern and Direction
7. Alley Usage
 - a. Parking, Thoroughfare, Utilities
8. Available Snow Storage Potential
9. Number of Parking Stalls
10. Number of Adjacent Structures with Potential for Snow Shedding
11. Number of Adjacent Fences
12. Number of Adjacent Driveways
13. Number of Parcels with Garbage or Recycle Receptacles
14. Vegetation Intrusion (within Alley)
15. Vegetation Overgrowth (Above Alley)
16. Summary of Vegetation Overgrowth

A summary matrix of the categories observed at each site can be found in **Appendix C**.

Existing Conditions

The extents of the alley analysis are quite large and cover the residential alleys within the city limits. Approximately 9 of the 40 alleys provide a thoroughfare, with the remaining alleys providing access to residential housing, utilities, or parking. Most of the alley surfaces are aggregate based with potholing and washboarding, and many weeds and grasses were growing between the wheel paths. The surface rating for the observed alleys ranged from 2 to 5 on the PASER scale, with 2 being poor and 5 representing an excellent roadway surface.

The alleys range from 8 feet to 17 feet wide; however, some alleys were inaccessible for measurements. Some of the inaccessibility is due to residential fencing, private use, and vegetation overgrowth. Most of the alleys have vegetation overgrowth along the sides of the right-of-way and

tree overgrowth above the alley. Overgrowth can pose risk factors such as fire, rodent/pest infestation, interference with overhead power lines and other utilities, reduced accessibility for refuse service, maintenance vehicles, and City equipment for regrading efforts or snow removal, and obscured driver views.

Existing drainage structures and runoff conveyance systems in the alleys are minimal to none. Catch basins were observed at 7 of the 40 alleys, 2 of which are clogged and unable to see inside. The majority of the observed drainage patterns tend to flow offsite or puddle and infiltrate into the ground.

A detailed matrix for each alley site, found in **Appendix C**, describes these existing conditions. This matrix will assist with prioritization for alley upgrades and implementation of maintenance standards.

Enhancement Concepts

The collected data is intended to provide baselines for what is and is not functioning well for each alley. Based on the results and correspondence with the City, a standard alley design has been created for use in upgrading existing alleys and for future alley development. This design includes upgrading all alleys to a PASER rating of 4. A PASER rating of 4 provides a good, drivable gravel roadway. This includes an adequate amount of gravel for vehicle traffic and a sufficient roadway crown with drainage throughout. Secondly, the design will require minimal vegetation intrusion to prevent inaccessibility, fire danger, utility interference, and obscured driver views. Lastly, the City has required a minimum roadway width of 10 to 12 feet.

These design recommendations aim to enhance public safety, future development, permitted use, maintenance and snow removal, and parking availability based on the City's vision. Using these details, an elevation view of the proposed surfacing and above-grade alley components was created to further specify the standard alley design (**Appendix D**).

Abutting Development

With current development in the city and the addition of Accessory Dwelling Units (ADUs) increasing, timing is becoming more critical to meet the proposed alley standards. These developments likely will bring an increased amount of residential and tourist traffic. Therefore, the City will encourage the contractors on these projects to contribute to updating the alleys to the proposed standard. Right-of-way permits will be required for private contractors to construct the alley upgrades. Once the full length of a specific alley meets the specified standard, the City could take over and continue to maintain the alleys per the new maintenance standards described in the following section.

Maintenance

There are many factors in maintaining a gravel roadway. The first and foremost factor is understanding the proper shape of the roadway cross-section. Gravel roads shall have an approximate slope of 4 percent from the crown, with a shoulder and ditch along the roadside. This is imperative for adequate drainage. Without proper drainage, stormwater runoff can puddle in the roadway, creating potholes and rutting.

Other issues may arise that prevent proper drainage. High shoulders can be created by heavy trucks, fast traffic, and ice and snow removal methods, such as sanding and plowing. When these heavy and/or fast-moving vehicles travel along a gravel roadway, gravel gets pushed up along the shoulders, creating a berm. These berms do not allow for suitable drainage. By knowing the proper shape of the cross-section, City crews can maintain the alleys through routine blading and adding gravel as needed. If gravel is needed, reshaping of the existing roadway shall occur first.

Another important factor in maintaining gravel roads is the use of good quality gravel. When adding or replacing gravel, City crews shall use an approved aggregate source as defined by the Washington State Department of Transportation's (WSDOT) Aggregate Source Approval portal. Along with good quality gravel, good compaction is needed during placement to lengthen the survivability of the roadway.

The quality of the gravel affected the amount of dust produced by placement and everyday driving. Along with an approved aggregate source, it is recommended that a dust abatement and stabilizing product be used to reduce dust, gravel loss, and blade maintenance. These products include, but are not limited to, chlorides, resins, and natural clays.

By maintaining the proper roadway shape and adding good quality gravel with a stabilizer, City crews will be able to maintain the alleys without the need for major rehabilitation. The City should expect to conduct herbicide control and pruning on a yearly basis for each alley to limit the recurrence of vegetation intrusion.

Snow Shedding

The City's maintenance crew is responsible for snow removal on City-owned streets and properties, including alleys. However, it is the responsibility of the property owner to prevent massive buildup of snow shed from roofs onto City-owned alleys. Per Leavenworth Municipal City Code 12.20.030, "It shall be a violation ... for any person to throw or put, or cause to be thrown or put, any snow or ice into any street, avenue or other public place in the city unless the same shall be broken up and spread evenly over the surface of such street, avenue or other public place...". Therefore, it is the responsibility of the property owner to evenly spread all roof snow shed throughout the alley for City maintenance crews to remove. It is recommended any new buildings with a potential to shed snow onto abutting alleys install snow brakes to prevent major snow movements from roofs.

Cost Implication

Existing Alley Improvement Costs

For the purposes of this technical memorandum, approximate costs for existing alley improvements were based on three factors: PASER rating; vegetation overgrowth rating; and the existing measurable width of the alley. More detailed cost estimates will need to be implemented as the City begins improvements on each alley.

PASER Rating

Multiple PASER ratings were assigned throughout the length of each alley, and an average of these ratings was taken. Each PASER rating was then assigned a cost per square foot based on factors including, but not limited to, mobilization, excavating potholes and washboarding areas, and adding new gravel surfacing. Based on this cost and the square footage (sf) of each alley, a cost for improving the surface of the alley was estimated. **Table 1** shows the costs per square foot assigned to the PASER ratings.

Table 1
PASER Rating Cost Per Square Foot

PASER Rating	Estimated Cost (Per sf of Alley)
5	\$0
4	\$3
3	\$7
2	\$10
1	N/A

Although a PASER rating of 4 meets the City standard, the estimated costs associated with **Table 1** are based off an average PASER rating. Therefore, an alley with a PASER rating of 4 may still need minor grading and surfacing improvements along certain areas of the alley, hence, the correlated cost.

Vegetation Overgrowth Rating

A vegetation overgrowth rating also was assigned to each alley based on the findings from the observations of the existing conditions, and each rating was assigned a cost per linear foot (LF) (**Table 2**). Based on this cost and the length of the alley, a cost for reducing overgrowth to minimal intrusion was estimated. Alleys showing minimal intrusion are still provided a baseline cost to account for weed control and clearing and grubbing required to maintain the minimal intrusion level into the following year.

Table 2

Vegetation Overgrowth Rating	Vegetation Overgrowth Description	Estimated Cost (Per LF of Alley)
	Overgrown	\$14
	Significant	\$10
	Moderate	\$6
	Minimal	\$2

Measurable Width

A universal cost of \$3 per square foot of roadway widening was used to estimate the cost to extend the roadway to a minimum width of 10 feet. This \$3 per sf was multiplied by the additional square footage needed to meet the City's requirements.

RH2 estimated a project cost for each of the existing alleys based on the three elements described. These costs were then broken into five groups to help visualize the magnitude of each project by cost. **Table 3** shows a breakdown of the five cost groups. Refer to **Table 5** to see the cost groups per project.

Table 3
Cost Range Breakdown

Cost Group	Cost Range
\$\$\$\$\$	\$180,000 - \$200,000
-	\$90,000 - \$180,000*
\$\$\$\$	\$70,000 - \$90,000
\$\$\$	\$50,000 - \$70,000
\$\$	\$30,000 - \$50,000
\$	\$10,000 - \$30,000

*No alley fell within this cost range, therefore, it was not assigned a cost group symbol.

Maintenance Costs

An approximate maintenance cost of \$6 per LF of alley was established for the purposes of this technical memorandum. The items considered as part of this cost include equipment rental, labor, and an assumed 10-percent gravel replacement. With a total alley length of approximately 17,375 feet, a complete yearly maintenance cost of \$104,250 was established. This cost is assuming all analyzed alleys have been brought up to the proposed standard and are receiving full maintenance care throughout the year. Inflation costs also have been considered as part of this analysis. **Table 4** shows estimated maintenance costs based on a 5.0-percent inflation rate for the next 5 years.

Table 4
Estimated Inflation Maintenance Costs

Proposed Year Built	Inflation*	Total Estimated Cost with Inflation*
2022	-	\$104,250
2023	\$5,213	\$109,463
2024	\$10,686	\$114,936
2025	\$16,433	\$120,683
2026	\$22,467	\$126,717
2027	\$28,803	\$133,053

*Values are rounded up to the nearest dollar.

Prioritization and Recommendations

Based on the findings of this assessment of existing conditions, and considering the recorded alley locations and primary usages, RH2 created a prioritized list to determine which alleys provide the highest cost benefit for the City to complete based on these factors.

RH2 used the top seven paramount categories to prioritize the alleys. Within these categories, each was ranked on a scale between 1 and 10 with 10 being the highest, most desired category. Refer to **Table 5** for the categories and assigned rankings. Each alley also was given a ranking for these categories. The sum of the product between the category ranking and the alley ranking was produced to create the prioritized list.

Table 5
Alley Category Ranking

Category	Ranking (1-10)
Thoroughfare	10
Adjacent Number of Parcels Served	5
Proximity to Downtown	3
Useable Width Standard	3
Vegetation Intrusion Standard	3
PASER Rating Standard	2
Snow Shedding Standard	2

Table 6 sorts and prioritizes the alleys with recommended upgrades and enhancements to bring the existing alley up to the new standards described in this technical memorandum. Refer to Appendix B for Alley Section No. reference location. This table also includes the estimated cost as described in the previous section. This table orders the alleys numerically, with “1” being the highest priority and “41” the lowest priority. The list contains alleys with the same ranking that are shown as duplicates. The order of prioritization for duplicates will be determined by the City. These are only recommendations based on the current state and use of the alleys; however, this list is subject to changes as new development occurs in the City.

Table 6 – Alley Priority List

Prioritization Ranking No.	Alley Section No.	Description of Improvements	Cost Group*
1	36	Pothole and surfacing repair.	\$\$
2	35	Pothole, washboarding, and surfacing repair. Minimal vegetation removal.	\$
3	34	Pothole and surfacing repair.	\$
3	37	Pothole and surfacing repair. Minimal vegetation removal.	\$\$
5	13	Pothole washboarding, and surfacing repair.	\$\$
5	19	Pothole and surfacing repair. Minimal vegetation removal.	\$\$
5	40	Minor washboarding repair.	\$
8	38	Pothole, washboarding, and surfacing repair. Minimal vegetation removal.	\$\$
9	10	Widen to minimum 10' width. Minimal pothole, washboarding, and surfacing repair. Minimal vegetation removal.	\$
9	24	Pothole and surfacing repair. Minimal vegetation removal.	\$\$
9	29	Pothole, washboarding, and surfacing repair. Minimal vegetation removal.	\$\$
12	32	Pothole, washboarding, and surfacing repair. Moderate vegetation removal.	\$
12	39	Minor surfacing repair.	\$\$
14	25	Washboarding and surfacing repair. Minimal vegetation removal.	\$
14	28	Washboarding and surfacing repair. Moderate vegetation removal.	\$
16	31	Surfacing repair. Moderate vegetation removal.	\$
17	5	Minor surfacing repair. Minor vegetation removal.	\$\$\$
17	6	Surfacing repair. Significant vegetation removal.	\$
19	17	Minor pothole and surfacing repair.	\$\$\$\$
19	21	Surfacing repair. Minor vegetation removal.	\$
19	33A	Surfacing repair. Minor vegetation removal.	\$
22	33B	Surfacing repair. Minor vegetation removal.	\$
23	11	Significant pothole, washboarding, and surfacing repair. Moderate vegetation removal.	\$\$\$\$
24	18	Pothole and surfacing repair. Moderate vegetation removal.	\$\$\$\$
25	7	Widen to minimum 10' width. Pothole and surfacing repair. Moderate vegetation removal.	\$
25	20	Surfacing repair. Moderate vegetation removal.	\$
25	26	Pothole, washboarding, and surfacing repair. Minimal vegetation removal.	\$\$\$\$
28	3	Pothole and surfacing repair. Minimal vegetation removal.	\$\$\$
29	8	Widen to minimum 10' width. Surfacing repair. Minimal vegetation removal.	\$
30	12	Pothole, washboarding, and surfacing repair. Moderate vegetation removal.	\$\$\$\$\$
30	27	Surfacing repair. Significant vegetation removal.	\$\$\$
32	22	Widen to minimum 10' width. Surfacing repair. Overgrown vegetation removal.	\$
33	23	Widen to minimum 10' width. Surfacing repair. Significant vegetation removal.	\$
34	14	Widen to minimum 10' width. Surfacing repair. Significant vegetation removal.	\$\$\$
35	1	Inaccessible.	\$
35	16	Inaccessible.	\$
37	30	Inaccessible.	\$
38	15	Inaccessible.	\$\$
39	4	Inaccessible.	\$\$
40	9	Inaccessible.	\$\$
41	2	Inaccessible.	\$\$

*Refer to **Table 3** for Cost Group definitions.

Conclusions

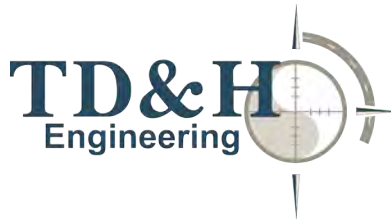
The primary purpose of this technical memorandum was to record the existing conditions of 40 alleys throughout the Leavenworth City limits, to provide improvement opportunities for these existing alleys, and to set standards for future development. A significant amount of data was collected, and with this data, a prioritized list of alley improvements was sorted to determine which provide the highest cost benefit to improve. A standard alley design was also created. This design is the basis of improvement needs for the existing alleys and will serve as the design for future alleys. Along with this design, an estimated cost was calculated to assist the City with financial planning for these upgrades. By upgrading existing alleys and setting a basis of design for future alley development, the City is creating corridors to provide stakeholders with accessible and maintained alleyways within the right-of-way.

Attachments

1. Appendix A: Alley Whitepaper
2. Appendix B: Alley Mapping
3. Appendix C: Existing Site Summary Matrix
4. Appendix D: Alley Design Exhibit

Appendix A: Alley Whitepaper

303 East 2nd Avenue
Spokane, WA 99202



509.622.2888
tdhengineering.com

April 20, 2021

Ms. Lilith Vespier, AICP
City of Leavenworth
700 Highway 2
Leavenworth, WA 98826

RE: ALLEY WHITEPAPER
TD&H ENGINEERING JOB NO. S21-008

Dear Lilith,

The purpose of this letter is to provide the City of Leavenworth (City) information regarding the alleys within City Limits.

This letter is divided into nine sections:

- 1) Inventory of Leavenworth's existing alleys
- 2) Determine the legal use of the alleys in the City
- 3) Determine the actual use of the alleys in everyday life.
- 4) Discussion of any missing information and why it is important.
- 5) Consult with other municipalities of similar size to determine how they govern alleys.
- 6) Determine the positive and negative effects of expanding alley use for multi-family, bed and breakfast, and commercial uses.
- 7) Provide a recommendation for typical sections for alleys.
- 8) Determine maintenance and upgrade cost per 100 linear feet of alley.
- 9) Provide information on alley improvement cost sharing.

Inventory of Leavenworth's Alleys

Please note this list includes only the developed alleys. There are several more undeveloped alleys within the City that may be considered for development or vacated.

Alleys		
Alley Between & Running With...	Approximate Length (ft)	Approximate Width (ft)
W. Commercial & SR-2	630	15
W. Commercial & Scholze	700	12
E. Commercial & Front	370	15
Front & Commercial	1,100	12
Cedar & Pine	2,030	12
Birch & Ash	950	12
Birch & Cedar	970	12
Evans & Ash	290	15
Whitman & Benton	1,470	12
West & Park	1,320	12
Center & West	660	12

Park & Prospect	580	12
W. Whitman & SR-2	1,320	15
W. Whitman & W. Benton	990	12
W. Benton & Mine & Mill	330	12
Benton & Center	820	15
Commercial & Main	820	15
Commercial & Waterfront	390	12
Total	15,740 (2.9 miles)	

Legal Use of Alleys

An “Alley” is defined as follows per the Leavenworth Municipal Code (LMC) §21.90.030:

“...a public thoroughfare or right-of-way used primarily for utility installation, service or delivery access, or for a secondary means of vehicular access for abutting properties that are adjacent to a street.”

As a comparison, a “Street” is defined as follows:

“...a public right-of-way which affords the principal means of access to abutting property, including avenue, place, way, drive, lane, boulevard, highway, road, and any other thoroughfare except an alley.”

The current City policy states alleys can be used for:

- Single Family Residential Zoning – Alleys can be used as a secondary access point.
- Multi-Family Residential Zoning – Not permitted as an access.
- Bed and Breakfast in Residential Zoning – Not permitted as an access.
- Commercial Zoning – Unwritten policy that alleys can be used for residential and commercial uses as a primary and/or secondary access.
- Snow Plowing – The Public Works Department removes snow from the alleys using a “V-blade” plow, when crews are available.

Actual Use of the Alleys in Everyday Life

A preliminary visual assessment of alley uses appear to be consistent with the above criteria. There are a few places where vehicles are parked “illegally” in the back yard setback area.

Additionally, people tend to use the alleys as a way to navigate through traffic during heavy traffic loads when vehicles are stacked up. This is especially true in the downtown core area.

Discussion of Missing Information

The City of Leavenworth is a very unique town. Even though the official population is approximately 2,400, the City can balloon up to 21,000 people during certain weekends and festivals. This obviously creates traffic flow, pedestrian flow, and parking issues that most municipalities do not typically experience.

Secondly, the average snowfall is approximately 96-inches, which is well above the normal for the US and the State of Washington. It is extremely difficult to find another municipality with approximately 2,400 people that can balloon up to ten times the population and have 96-inches inches of snow per year. Below are a few examples:

- Telluride, CO – 167 inches (population 2,000)
- Jackson, WY – 109 inches (population 10,500)
- *Leavenworth, WA – 96 inches (population 2,400)*
- Whitefish, MT – 73 inches (population 7,700)
- Twisp, WA – 71 inches (population 1,000)
- Bozeman, MT – 63 inches (population 46,700)
- Sandpoint, ID – 61 inches (population 8,400)
- Chelan, WA – 34 inches (population 4,100)
- Spokane, WA – 28 inches (City of Spokane population 217,400)

The closest comparison is Jackson, WY with a population of 10,500 that receives 109 inches of snow and functions similarly as a resort town with big influxes of people during certain times of the year.

In our opinion, this piece of information is important when discussing how the City addresses snow plowing. As you will see later in this white paper, the City of Spokane and City of Spokane Valley do not plow the alleys; however, the Spokane area only gets 28 inches of snow a year compared to the 96 inches in Leavenworth.

Other Municipalities Policies

We contacted several municipalities but only heard back from a few, City of Spokane and City of Spokane Valley. Although these cities border each other, their alley policies are polar opposites.

City of Spokane (Spokane)

Spokane has several miles of narrow streets. Spokane's philosophy is to pull as much traffic off of the main streets as possible to keep traffic flowing. Therefore, Spokane encourages the use of alleys as a primary access point in residential and commercial areas whenever feasible.

- Alley Surfacing: Asphalt, gravel, and dirt
- Alley Width: 10 to 12 feet wide.
- Fire Department Access: No, the alleys are less than 20-feet wide as required by fire code.
- Utilities: Spokane utilizes the alleys for wet and dry utilities
- Garbage: The alleys are the main route for garbage pickup.
- Residential Use: Prefer garages face alleys as opposed to the street frontage.
 - Garages in the alleys result in fewer driveway entrances onto the street to make a safer and more pedestrian friendly neighborhood.
 - Fewer driveway entrances onto the street also allows for more on-street parking.
 - The use of alleys as a primary access point for homes will become more and more important as infill development continues to occur in Spokane.
- Commercial: Prefer all deliveries be made in alleys to prevent delivery trucks from double parking on the street. This also places drivers and commercial employees off of the street in a safer area.
- Maintenance: Spokane has done very little maintenance on the alleys. What little maintenance they have done is "complaint driven" maintenance by the Spokane's solid waste department.
- Snow Plowing: None.
- Development: Spokane requires the developer to pave the alley

for multi-family and commercial developments. Paving the alley for a single family residential home would be cost prohibitive.

City of Spokane Valley (Valley)

Valley only has a handful of narrow streets. Valley's philosophy is to put all of the traffic on the wide streets and keep the number and length of alleys to a minimum. If alleys are necessary, then they need to be constructed to comply with the fire code, which is a minimum of 20-feet wide.

- Alley Surfacing: Gravel and dirt.
- Alley Width: Minimum of 20 feet wide.
- Fire Department Access: Yes.
- Utilities: In streets, not in the alleys.
- Garbage: On-street, not in the alleys.
- Residential Use: Prefer garages face the street and use alleys only as a secondary access.
- Commercial: Same concept as residential use.
- Maintenance: No maintenance. Valley's road maintenance superintendent has been with the Valley for five years and has never done any maintenance on the alleys.
- Snow Plowing: None.
- Development: Valley makes the developer install a minimum 20-foot wide alley and surfacing to comply with fire code.

Positive and Negative Effects of Expanding Alley Use

The positive and negative effects of expanding the alley use to multi-family, bed and breakfast, and commercial uses are explained in the section below.

Positives

- Pull more traffic off of Leavenworth streets into the alleys that results in one controlled entrance onto the streets as opposed to several driveway entrances.
- Deliveries could be moved into alleys to remove the delivery double-parking dilemma.

Negatives

- Alleys as a primary entrance could create difficulties for a fire department to access (due to the alley width) the building or facility in the event of an emergency.
- The address of the buildings could get confusing with a primary access onto an alley. This would be important in the event of emergency services trying to find the building.
- Maintenance is currently an issue. Adding more traffic to an already deteriorating alley will cause them to fail quicker.
- Very little lighting for personal safety and parking.

Positive or Negative (Depending on viewpoint)

- The alleys are not wide enough to accommodate two vehicles passing each other going in opposite directions. The alleys may need to be reclassified as a "one way" if the City decides to adopt a policy that will increase the amount of vehicle traffic.
- Fewer driveway entrances could increase the amount of on-street parking.

Alley – Typical Section

We recommend the typical section of any reconstructed or new alley be similar to the construction of Leavenworth Fire Apparatus Road, which is 2-inches of asphalt over 6-inches of crushed surfacing top course or base course.

Upgrading & Maintenance Costs

Herb Amick determined an alley improvement cost in July, 2018. (See attached.) The costs are based on:

- 15,675 feet (3.0 miles) of alleys.
- Adding 4-inches of gravel (or 2,400 cubic yards).
- Work will be done by Leavenworth forces.
- Includes clearing, compaction, mowing, pruning, and herbicide.

Total Cost (2018 dollars)	\$261,400
Add 5% per year for construction material inflation (2018 to 2021)	\$41,200
Total Cost (2021 Dollars)	\$302,600
Total Linear Feet for Alleys	15,675
Improvement Cost per Linear Foot (2021 Dollars)	\$19.30

Herb also determined a yearly maintenance cost in July, 2018. (See attached.) The costs are based on:

- 15,675 feet (3.0 miles) of alleys.
- Adding 2-inches of gravel (or 1,200 cubic yards) each year.
- Work will be done by Leavenworth forces.
- Includes landscape mowing, pruning, and herbicide.

Total Cost (2018 dollars)	\$144,600
Add 5% per year for construction material inflation (2018 to 2021)	\$22,800
Total Cost (2021 Dollars)	\$167,400
Total Linear Feet for Alleys	15,675
Maintenance Cost per Linear Foot (2021 Dollars)	\$10.68

It is likely the first year of maintenance will cost more than the \$10.68/foot due to the lack of maintenance to date; however, every subsequent year should cost approximately \$10.68/foot.

Alley Improvement Cost Sharing

There are very few funding sources available to maintain or improve alleys. Below are a few ideas for the maintenance or improvement:

- Using City funding to maintain/improve alleys.
- If a developer or current user proposes to use an alley as a primary and/or secondary access, the user would be responsible for the full cost to improve the alley to comply with the recommended typical section.
- Create a Local Improvement District (LID) per RCW Chapters 35.43 through 35.56. LIDs are a means of assisting benefiting properties in financing needed capital improvements through the formation of special assessment districts. Per the MRSC website, LIDs are very well-suited for filling in gaps in a city's existing infrastructure, including (among other tasks): Paving gravel streets or alleys to reduce dust and maintenance costs.

Summary

In our opinion, the first question Leavenworth needs to ask is “how do we want our alleys to function in a single family neighborhood versus a multi-family neighborhood versus a commercial neighborhood?” Based on those answers, the City can they start redeveloping or modifying the alley policy.

This white paper is in a draft form and we would love to continue to modify it to meet your needs. We already know we would like to reach out to the public works/maintenance employees in Jackson, Wyoming to determine how they approach snow removal in alleys, if they do at all.

Lastly, we want to take the time and thank Leavenworth for selecting us for this project. We have had the privilege of working on your streets for more than seven years and we do not take that responsibility lightly. We look forward to your feedback.

Sincerely,



Steven N. Marsh PE
Vice President / Regional Manager
TD&H ENGINEERING

Enclosure (2)

Alley Yearly/Every Other Year Maintenance Worksheet by Herb Amick
Alley Initial Improvement Assessment by Herb Amick

ALLEY YEARLY/EVERY OTHER YEAR MAINTENANCE

15,675 Lineal Feet (3 Miles)

2" Replacement Gravel – 1200 cu. yds. \$106,200.

- 1200 cu. yds. @ \$11/yd. = \$13,200.
- Gravel Installation Labor 1200 cu. yds. @ \$40/yd. = \$48,000.
- Equipment 900 hours @ \$50/yd. = \$45,000.

Other Required Yearly Maintenance (Mowing/Pruning/Herbicide) \$38,400.

- 16 Hours/week @ 32 weeks = 512 man-hours @ \$50. = \$25,600
- Equipment 256 hours @ \$50. = \$12,800.

Total Including Yearly 2" Gravel Replacement = \$144,600.

Note: If gravel is not replenished yearly, additional grading will be required in the off years in addition to the other maintenance.

ALLEY INITIAL IMPROVEMENT ASSESSMENT

\$261,358.00

July 6, 2018

West Commercial / SR 2 – 627' \$12,266. (\$19.56/lineal foot)

- **Clearing 12 man-hours @ \$50. = \$600.**
- **Grading 4 man-hours @ \$50. = \$200.**
- **Removal of Dumped Debris 4 man-hours @ \$50.00 = \$200.**
- **Gravel 116 cu. yds. (4") @ \$11/yd. = \$1,276. (15' width)**
- **Gravel Installation – 116 cu. yds. @ \$40/cu. yd. = \$4,640.**
- **Misc. Equipment (Roller/Grader/Trucks) – 107 hours @ \$50. = \$5,350.**

West Commercial | Scholze Street -696' \$11,503. (\$16.53/lineal foot)

- **Clearing 16 man-hours @ \$50. = \$800.**
- **Grading 4 man-hours @ \$50. = \$200.**
- **Removal of Dumped Debris 4 man-hours @ \$50. = \$200.**
- **Gravel 103 cu. yds. (4") @ \$11/yd. = \$1,133. (12' width)**
- **Gravel Installation – 103 cu. yds. @ \$40/yd. = \$4,120.**
- **Misc. Equipment – 101 hours @ \$50. = \$5,050.**

East Commercial / Front Street – 367' \$5,670. (\$15.45/lineal foot)

- **Grading – 4 man-hours @ \$50. = \$200.**
- **Gravel 68 cu. yds. (4") @ \$11/yd. = \$748. (15' width)**
- **Gravel Installation – 68 cu. yds. @ \$40/yd. = \$2,720.**
- **Misc. Equipment – 55 hours @ \$50. = \$2,750.**

(New) Front Street / Commercial – 1,108' \$18,514 (\$16.71/lineal foot)

- **Clearing 24 man-hours @ \$50. = \$1,200.**
- **Grading – 12 man-hours @ \$50. = \$600.**
- **Removal of Dumped Debris 4 man-hours @ \$50. = \$200.**
- **Gravel 164 cu. yds. (4") @ \$11/yd. = \$1,804. (12' width)**
- **Gravel Installation 164 cu. yds. @ \$40/yd. = \$6,560.**
- **Misc. Equipment – 163 hours @ \$50. = \$8,150.**

Cedar / Pine Street – 2,026' \$33,750. (\$16.66/lineal foot)

- Clearing 24 man-hours @ \$50. = \$1,200.
- Grading – 24 man-hours @ \$50. = \$1,200.
- Removal of Dump Debris 24 man-hours @ \$50. = \$1,200.
- Gravel 300 cu. yds. (4") @ \$11/yd. = \$3,300. (12' width)
- Gravel Installation 300 cu. yds. @ \$40/yd. = \$12,000.
- Misc. Equipment – 297 hours @ \$50. = \$14,850

Birch / Ash – 950' \$16,190 (\$17.04/lineal foot)

- Clearing 24 man-hours @ \$50. = \$1,200
- Grading 10 man-hours @ \$50. = \$500.
- Removal of Dumped Debris 4 man-hours @ \$50 = \$200.
- Gravel 140 cu. yds. (4") @ \$11. = \$1,540. (12' width)
- Gravel Installation 140 cu. yds. @ \$40/yd. = \$5,600.
- Misc. Equipment – 143 hours @ \$50. = \$7,150.

Birch / Cedar – 964' \$18,043 (\$18.72/lineal foot)

- Clearing 24 man-hours @ \$50. = \$1,200.
- Grading 24 man-hours @ \$50. = \$1,200.
- Removal of Dumped Debris 6 man-hours @ \$50. = \$300.
- Gravel 143 cu. yds. (4") @ \$11/yd. = \$1,573. (12' width)
- Gravel Installation 143 cu. yds. @ \$40/yd. = \$5,720.
- Misc. Equipment 161 hours @ \$50. = \$8,050.

Evans / Ash – 287' \$5,103 (\$17.78/lineal foot)

- Grading 4 man-hours @ \$50. = \$200.
- Gravel 53 cu. yds. (4") @ \$11/yd. = \$583. (15' width)
- Gravel Installation 53 cu. yds. @ \$40/yd. = \$2,120.
- Misc. Equipment – 44 hours @ \$50. = \$2,200.

Whitman / Benton – 1,462' \$26,017 (\$17.80/lineal foot)

- Clearing 48 man-hours @ \$50. = \$2,400.
- Grading 16 man-hours @ \$50. = \$800.
- Removal of Dumped Debris 4 man-hours @ \$50. = \$200.
- Gravel 217 cu. yds. (4") @ \$11/yd. = \$2,387. (12' width)
- Gravel Installation 217 cu. yds. @ \$40/yd. = \$8,680.
- Misc. Equipment 231 hours @ \$50. = \$11,550.

West Street / Park – 1,315' \$20,445 (\$15.55/lineal foot)

- Clearing 16 man-hours @ \$50. = \$800.
- Grading 16 man-hours @ \$50. = \$800.
- Gravel 195 cu. yds. (4") @ \$11/yd. = \$2,145. (12' width)
- Gravel Installation 195 cu. yds. @ \$40/yd. = \$7,800.
- Misc. Equipment 178 hours @ \$50. = \$8,900.

Center Street / West Street – 653' \$10,797. (\$16.53/lineal foot)

- Clearing 12 man-hours @ \$50. = \$600.
- Grading 8 man-hours @ \$50. = \$400.
- Removal of Dumped Debris 2 man-hours @ \$50. = \$100.
- Gravel 97 cu. yds. (4") @ \$11/yd. = \$1,067. (12' width)
- Gravel Installation 97 cu. yds. @ \$40/yd. = \$3,880.
- Misc. Equipment 95 hours @ \$50. = \$4,750.

Park / Prospect – 580' \$10,036 (\$17.30/lineal foot)

- Clearing 16 man-hours @ \$50. = \$800.
- Grading 8 man-hours @ \$50. = \$400.
- Gravel 86 cu. yds. (4") @ \$11/yd. = \$946.
- Gravel Installation 86 cu. yds. @ \$40/yd. = \$3,440.
- Misc. Equipment 89 hours @ \$50. = \$4,450.

W. Whitman / Highway 2 – 1,313' \$25,093 (\$19.11/lineal foot)

- Clearing 12 man-hours @ \$50. = \$600.
- Grading 16 man-hours @ \$50. = \$800.
- Removal of Dumped Debris 8 man-hours @ \$50. = \$400.
- Gravel 243 cu. yds. (4") @ \$11/yd. = \$2,673. (15' width)
- Gravel Installation 243 cu. yds. @ \$40/yd. = \$9,720.
- Misc. Equipment 218 hours @ \$50. = \$10,900.

W. Whitman / W. Benton - 984' \$16,546 (\$16,82/lineal foot)

- Clearing 12 man-hours @ \$50. = \$600.
- Grading 16 man-hours @ \$50. = \$800.
- Removal of Dumped Debris 8 man-hours @ \$50. = \$400.
- Gravel 146 cu. yds. (4") @ \$11/yd. = \$1,606. (12' width)
- Gravel Installation 146 cu. yds. @ \$40/yd. = \$5,840.
- Misc. Equipment 146 hours @ \$50/hr. = \$7,300.

W. Benton / Mine / Mill – 324' \$5,458. (\$16.81/lineal foot)

- Clearing 4 man-hours @ \$50. = \$200.
- Grading 4 man-hours @ \$50. = \$200.
- Removal of Dumped Debris 4 man-hours @ \$50. = \$200.
- Gravel 48 cu. yds. (4") @ \$11/yd. = \$528. (12' width)
- Gravel Installation 48 cu. yds. @ \$40/yd. = \$1,920.
- Misc. Equipment 48 hours @ \$50. = \$2,400

Benton / Center Street 820' \$16,652. (\$20.31/lineal foot)

- Clearing 12 man-hours @ \$50. = \$600.
- Grading 16 man-hours @ \$50. = \$800.
- Removal of Dumped Debris 4 man-hours @ \$50. = \$200.
- Gravel 152 cu. yds. (4") @ \$11/yd. = \$1,672. (15' width)
- Gravel Installation 152 cu. yds. @ \$40/yd. = \$6,080.
- Misc. Equipment 146 hours @ \$50. = \$7,300.

Commercial / Main Street – 814' \$3,018 (\$30.18/ lineal foot east end only)

- Clearing 12 man-hours @ \$50. = \$600.
- Grading 2 man- hours (excluding hill) @ \$50. = \$100
- Gravel 18 cu. yds. (4") (east end only) @ \$11/yd. = \$198. (15' width)
- Gravel Installation 18 cu. yds. @ \$40/yd. = \$720
- Misc. Equipment 28 hours @ \$50. = \$1,400.
- Note: Work at the east 100' only

Commercial Street / Waterfront – 385' \$6,257 (\$16.25/lineal foot)

- Clearing 6 man-hours @ \$50. = \$300.
- Grading 6 man-hours @ \$50. = \$300
- Gravel 57 cu. yds. (4") @ \$11/yd. = \$627. (12' width)
- Gravel Installation 57 cu. yds. @ \$40/yd. = \$2,280.
- Misc. Equipment 55 hours @ \$50. = \$2,750.

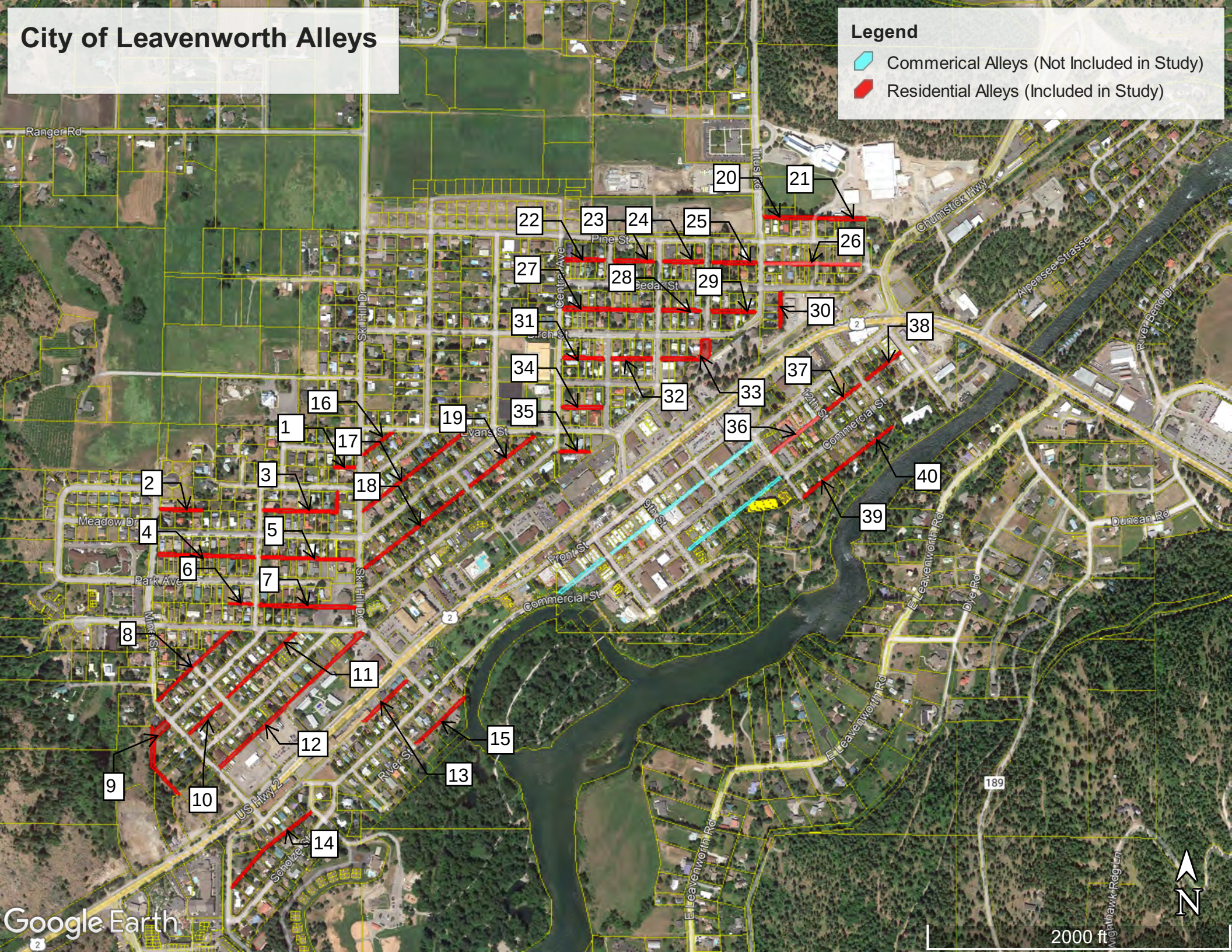
Appendix B: Alley Mapping

City of Leavenworth Alleys

Legend

Commerical Alleys (Not Included in Study)

Residential Alleys (Included in Study)



Appendix C: Existing Site Summary Matrix



Residential Alley Planning Study: Data Collection Findings Summary

City of Leavenworth

City of Leavenworth Residential Alley Summary Table (Part 1 of 2)

Alley No.	Adjacent East/West Streets	Adjacent North/South Streets	Approx. Length (ft)	Primary Usage	PASER Rating	Measurable Width (ft)	Observable Utilities	Vegetation Intrusion	Parking Stalls	Snow Shed Structures ¹	Adjacent Driveways
1	Stafford St. to Center St.	O'Grady St. to Ski Hill Dr.	145						0		0
2	North of West St.	East of Mine St.	280					✖	0		0
3	Center St. to West St. (E-W Alley)	Cherry St. to Ski Hill Dr.	630	Parking/Access	3 - 4	10 - 13	-	○	22	3	7
4	West St. to Park Ave.	Mine St. to Cherry St.	640	Parking/Access	3 - 3	10 - 10	⚡	🌱	39	2	13
5	West St. to Park Ave.	Cherry St. to Ski Hill Dr.	625	Parking/Access	3 - 5	10 - 13	⚡	○	25	0	6
6	Park Ave. to Prospect St.	Mine St. to Cherry St.	160	Yard/Garage Access	3 - 5	10 - 10	⚡	●	3	4	2
7	Park Ave. to Prospect St.	Cherry St. to Ski Hill Dr.	400	Driveway/Garage Access	3 - 4	9 - 10	⚡	🌱	5	0	1
8	Prospect St. to Benton St.	Mill St. to Prospect St.	665	Thoroughfare/Parking	4 - 4	9 - 11	☔	○	7	1	4
9	Mine St.	West of Mill St.	580				⚡	✖	0		0
10	Benton St. to Whitman St.	Mill St. to Clinton St.	300	Access/Parking	3 - 4	9 - 11	⚡	○	9	2	5
11	Benton St. to Whitman St.	Clinton St. to Prospect St.	620	Access/Parking	2 - 4	10 - 13	-	○	22	3	10
12	Whitman St. to US 2	Mill St. to Prospect St.	1,275	Thoroughfare	2 - 5	10 - 17	⚡	🌱	10	2	2
13	US 2 to Commercial St.	West of 3rd St.	400	Thoroughfare/Parking/Access	3 - 3	13 - 13	⚡☔💧	-	15	4	7
14	Commercial St. to Scholze St.	Joseph St. to Enchantment Park Way	730	Parking/Access	3 - 3	9 - 10	⚡	●	7	0	5
15	River St.	East of 2nd St.	440	Access	3 - 3	10 - 10	💧	○	1	0	1
16	Evans St. to Center St.	Ski Hill Dr. to Evans St.	245					✖	0		0
17	Center St. to Benton St.	Ski Hill Dr. to Evans St.	840	Parking/Access	3 - 4	12 - 16	⚡	-	25	5	11
18	Benton St. to Whitman St.	Ski Hill Dr. to Woodward St.	845	Parking/Access	3 - 4	11 - 16	↓	🌱	29	2	12
19	Benton St. to Whitman St.	Woodward St. to Evans St.	540	Parking/Access	3 - 4	11 - 11	-	○	31	1	11

Legend

Gravel Road Surface Evaluation Rating (PASER) Scale

Ranking	Condition	Visible Distress	General Condition/Treatment Measures
5	Excellent	No distress. Dust controlled. Excellent surface condition and ride.	New construction or total reconstruction. Excellent drainage. Little or no maintenance needed.
4	Good	Dust under dry conditions. Moderate loose aggregate. Slight washboarding	Recently graded. Good crown and drainage throughout. Adequate gravel for traffic. Routine grading and dust control may be needed.
3	Fair	Good crown (3"-6"). Adequate ditches on more than 50% of roadway. Gravel layer mostly adequate. Some culvert cleaning needed. Moderate washboarding(1"-2" deep) over 10%-25% of area. Moderate dust. None or slight rutting (< 1" deep). An occasional small pothole (< 2" deep). Some loose aggregate (2" deep).	Shows traffic effects. Regrading (reworking) necessary to maintain. Needs some ditch improvement and culvert maintenance. Some areas may need additional gravel.
2	Poor	Little or no roadway crown (< 3"). Adequate ditches on less than 50% of roadway. Portions of the ditches may be filled and/or show erosion. Culverts partially full of debris. Moderate to severe washboarding(> 3" deep) over 25% of area. Moderate rutting (1"-3") over 10%-25% of area. Moderate potholes (2"-4") over 10%-25% of area. Severe loose aggregate (> 4" thick).	Travel at slow speeds (less than 25 mph) is required. Needs additional new aggregate. Major ditch construction and culvert maintenance also required.
1	Failed	No roadway crown or road is bowl shaped with extensive ponding. Little if any ditching. Filled or damaged culverts. Severe rutting (> 3" deep), over 25% of area. Severe potholes (> 4" deep), over 25% of area. Many areas (> 25%) with little or no aggregate.	Travel is difficult and road may be closed at times. Needs complete rebuilding and/or new culverts.

Inaccessible Alleys

Red shaded row = Inaccessible at this time

Measurable Widths

	= 8-9 ft
	= 10-12 ft
	= 13-15 ft
	= 16-17 ft

Observable Utilities

⚡	= Power
☔	= Stormwater
💧	= Water
↓	= Sewer

Vegetation Intrusion

✖	= Overgrown
●	= Significant
🌱	= Moderate
○	= Minimal

Notes:

Blank = Unobservable at this time.

¹No. of adjacent structures with potential for snow shedding

City of Leavenworth Residential Alley Summary Table (Part 2 of 2)

Alley No.	Adjacent East/West Streets	Adjacent North/South Streets	Approx. Length (ft)	Primary Usage	PASER Rating	Measurable Width (ft)	Observable Utilities	Vegetation Intrusion	Parking Stalls	Snow Shed Structures ¹	Adjacent Driveways
20	North of Pine St.	Titus Rd. to Cone St.	305	Access to 1 Property/Unaccessible	3 - 3	10 - 10	-	🟢	2	0	1
21	North of Pine St.	East of Cone St.	330	Parking/Access	3 - 4	10 - 10	-	🟢	7	0	3
22	Pine St. to Cedar St.	Central Ave. to Summit Ave.	270	Parking/Access	4 - 4	9 - 10	🔌	⊗	6	1	4
23	Pine St. to Cedar St.	Summit Ave. to Price Ave.	270	Thoroughfare/Minimal Use	2 - 2	8 - 10	🔌	●	0	2	0
24	Pine St. to Cedar St.	Price Ave. to Kelley Ave.	270	Parking/Access/Thoroughfare	2 - 3	10 - 14	🔌💧🔽	🟢	5	4	4
25	Pine St. to Cedar St.	Kelley Ave. to Burke Ave.	300	Access/Parking	3 - 4	13 - 13	🔌💧🔽	🟢	15	1	5
26	Pine St. to Cedar St.	Burke Ave. to Fir St.	650	Thoroughfare/Access/Parking	2 - 4	12 - 13	🔌🔽	🟢	8	4	5
27	Cedar St. to Birch St.	Central Ave. to Price Ave.	605	Parking/Access	2 - 4	10 - 10	🔌	●	16	3	5
28	Cedar St. to Birch St.	Price Ave. to Kelley Ave.	265	Some Access	4 - 4	13 - 13	🔌🔽	🟡	12	3	4
29	Cedar St. to Birch St.	Kelley Ave. to Burke Ave.	300	Parking/Access	2 - 3	11 - 11	🔌🔽	🟢	6	3	3
30	South of Cedar St.	East of Burke Ave.	240					⊗	0		0
31	Birch St. to Ash St.	Central Ave. to Summit Ave.	270	Parking/Access	3 - 4	12 - 13	🔌☔	🟡	15	1	5
32	Birch St. to Ash St.	Summit Ave. to Price Ave.	270	Parking/Access	3 - 4	10 - 10	-	🟡	4	1	3
33A	Birch St. to Ash St. (E/W Sect.)	East of Price Ave.	285	Parking/Access	3 - 4	10 - 13	🔌	🟢	6	3	3
33B	Birch St. to Ash St. (N/S Sect.)	East of Price Ave.	135	Parking/Access	2 - 2	16 - 16	🔌	🟢	0	0	0
34	Ash St. to Evans St.	Central Ave. to Summit Ave.	270	Parking/Access, Utility	3 - 4	12 - 16	🔌	-	22	2	7
35	South of Evans St.	East of Central Ave./Whitman St.	210	Parking/Access	2 - 2	13 - 13	🔌	🟢	10	0	2
36	Front St. to Commercial St.	Division St. to 12th St.	400	Parking/Property Access, Thoroughfare, Utilities	3 - 3	11 - 12	🔌	-	24	1	7
37	Front St. to Commercial St.	12th St. to 13th St.	300	Thoroughfare/Parking/Access	2 - 2	14 - 14	🔌	🟢	25	2	6
38	Front St. to Commercial St.	13th St. to 14th St.	300	Thoroughfare/Accesses Community Cupboard/MEND properties	2 - 4	11 - 11	🔌	🟢	14	1	5
39	South of Commercial St.	Division St. to 12th St.	445	Thoroughfare/Utilities (possibly)	3 - 5	10 - 13	🔌☔	-	2	0	1
40	South of Commercial St.	East of 12th St.	325	Access/Parking	4 - 4	10 - 14	🔽	-	5	0	1

Legend

Gravel Road Surface Evaluation Rating (PASER) Scale

Ranking	Condition	Visible Distress	General Condition/Treatment Measures
5	Excellent	No distress. Dust controlled. Excellent surface condition and ride.	New construction or total reconstruction. Excellent drainage. Little or no maintenance needed.
4	Good	Dust under dry conditions. Moderate loose aggregate. Slight washboarding	Recently graded. Good crown and drainage throughout. Adequate gravel for traffic. Routine grading and dust control may be needed.
3	Fair	Good crown (3"-6"). Adequate ditches on more than 50% of roadway. Gravel layer mostly adequate. Some culvert cleaning needed. Moderate washboarding(1"-2" deep) over 10%-25% of area. Moderate dust. None or slight rutting (< 1" deep). An occasional small pothole (< 2" deep). Some loose aggregate (2" deep).	Shows traffic effects. Regrading (reworking) necessary to maintain. Needs some ditch improvement and culvert maintenance. Some areas may need additional gravel.
2	Poor	Little or no roadway crown (< 3"). Adequate ditches on less than 50% of roadway. Portions of the ditches may be filled and/or show erosion. Culverts partially full of debris. Moderate to severe washboarding(> 3" deep) over 25% of area. Moderate rutting (1"-3") over 10%-25% of area. Moderate potholes (2"-4") over 10%-25% of area. Severe loose aggregate (> 4" thick).	Travel at slow speeds (less than 25 mph) is required. Needs additional new aggregate. Major ditch construction and culvert maintenance also required.
1	Failed	No roadway crown or road is bowl shaped with extensive ponding. Little if any ditching. Filled or damaged culverts. Severe rutting (> 3" deep), over 25% of area. Severe potholes (> 4" deep), over 25% of area. Many areas (> 25%) with little or no aggregate.	Travel is difficult and road may be closed at times. Needs complete rebuilding and/or new culverts.

Inaccessible Alleys

Red shaded row = Inaccessible at this time

Measurable Widths

	= 8-9 ft
	= 10-12 ft
	= 13-15 ft
	= 16-17 ft

Observable Utilities

🔌	= Power
☔	= Stormwater
💧	= Water
🔽	= Sewer

Vegetation Intrusion

⊗	= Overgrown
●	= Significant
🟡	= Moderate
🟢	= Minimal

Notes:

Blank = Unobservable at this time.

¹No. of adjacent structures with potential for snow shedding

Alley Upgrade Feasibility

Alley Upgrade Needs Rating

Rating	Upgrades Needed
Meets City Standards	
Needs Minor Improvements	
Needs Moderate Improvements	
Needs Significant Improvements	
Alley Not Established	

Note: The improvements described above are based on upgrading the alleys to meet the minimum designated **City Residential Alley Standard**, which includes the highlighted classifications below:

PASER Rating		Vegetation Intrusion	Measurable Widths
Rating	Condition	✱ = Overgrown ● = Significant ○ = Moderate ○ = Minimal	8-9 ft 10-12 ft 13-15 ft 16-17 ft
5	Excellent		
4	Good		
3	Fair		
2	Poor		
1	Failed		

Estimated Relative Costs for Improvements

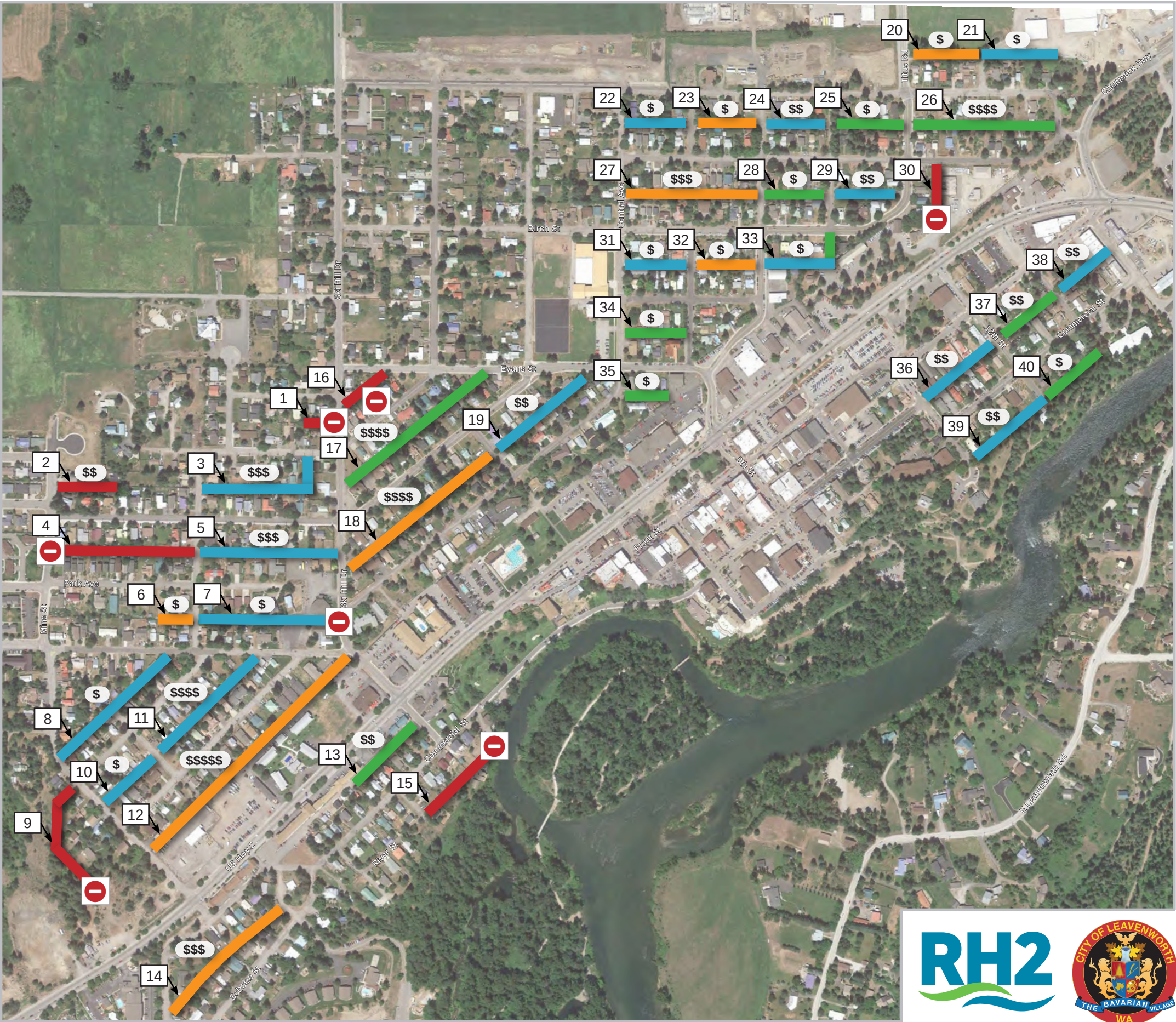
Relative cost to upgrade alley to City Residential Alley Standard.



⊘ = Restrictive Alley Access

Alleys identified with this symbol were identified with cost prohibitive improvements, such as:

- Right-of-way incomplete
- Topographic grade challenges
- Structures built within the alleyway



PASER Rating and Vegetation Intrusion

PASER Rating

Rating	Condition
5	Excellent
4	Good
3	Fair
2	Poor
1	Failed

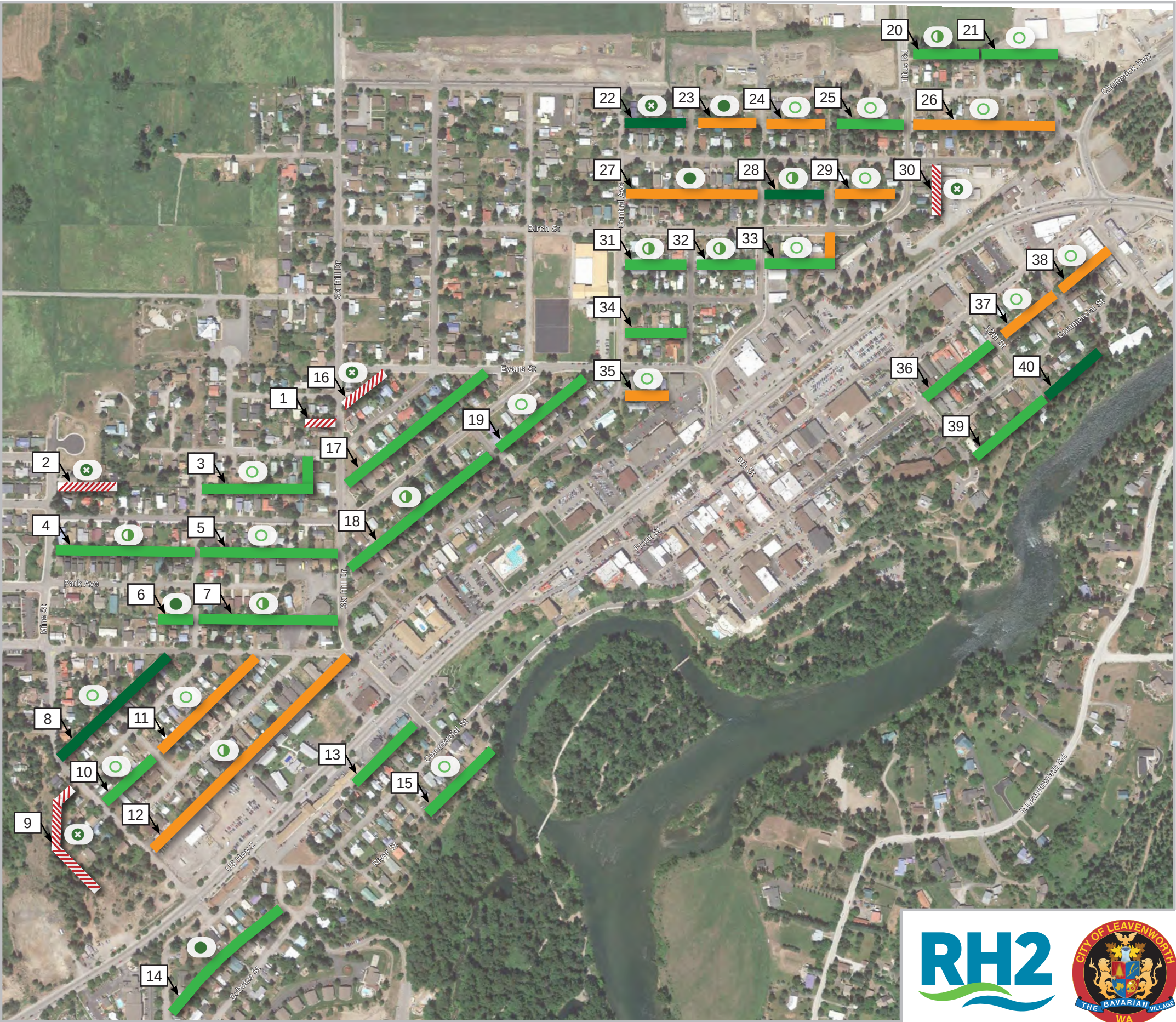
Note, these are showing the lowest rating scored for each alley.

Vegetation Intrusion

⊗	= Overgrown
●	= Significant
◐	= Moderate
○	= Minimal

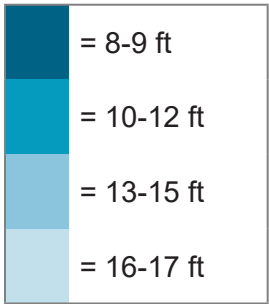
Note, blank alleys had no vegetation intrusion/overgrowth, except unmarked inaccessible alleys (not observable).

//// = Inaccessible Alley



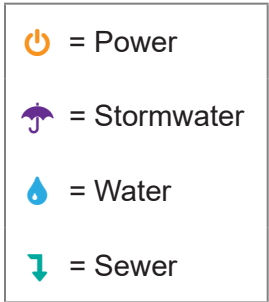
Measurable Widths and Utilities

Measurable Widths



Note, these are showing the narrowest width measured for each alley.

Observable Utilities



Note, blank alleys had no observable utilities.

//// = Inaccessible Alley



Parking Stalls and Potential Snow Shedding Structures

Parking Stalls

= Number of parking stalls along alley

No. of Adjacent Structures with Potential for Snow Shedding

	= 0
	= 1
	= 2
	= 3
	= 4-5*

*Alley No. 17 is the only alley with 5 potential snow shedding structures

 = Inaccessible Alley



Alley Findings By Map Areas

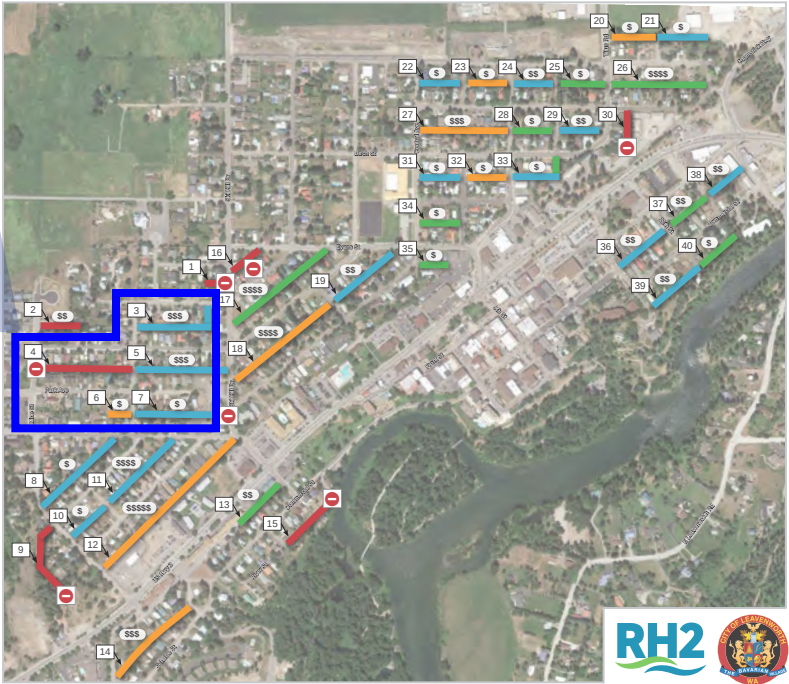
No: 3	PASER Rating: 3-4	Width: 10'-13'	Primary Usage: Parking/Access	
Utilities:	-	Vegetation: ○	Parking Stalls: 22	Snow Shed Structures: 3
Surface Description: Asphalt-1/2 the length of first parcel, primarily fine-grained soil with some aggregate. Potholes throughout alley length.			Drainage Pattern: Current drainage appears to infiltrate in the alley. Near the east end of alley, surfacing slopes to the east.	
Public Works Notes: Haven't maintained for a while			RH2 Walk-Through Notes: NA	

No: 4	PASER Rating: 3	Width: 10'	Primary Usage: Parking/Access	
Utilities:	🔌	Vegetation: ●	Parking Stalls: 39	Snow Shed Structures: 2
Surface Description: Primarily fine-grained surfacing with some aggregate.			Drainage Pattern: Low point in center of alley length.	
Public Works Notes: Guy wire in the way. Maintained, not plowed.			RH2 Walk-Through Notes: Guy wire and overhead power cross the East end of the alley (utilities are running along Cherry Street, not down alley). West end of alley does not connect to Mine Street, dead ends at embankment at the West end.	

No: 5	PASER Rating: 3-5	Width: 10'-13'	Primary Usage: Parking/Access	
Utilities:	🔌	Vegetation: ○	Parking Stalls: 25	Snow Shed Structures: 0
Surface Description: Small, well-graded aggregate.			Drainage Pattern: East end drains down alley to the east. Remaining has cross slope to the south.	
Public Works Notes: No City utilities or major issues.			RH2 Walk-Through Notes: Overhead power lines located on the South side of the alley	

No: 6	PASER Rating: 3-5	Width: 10'	Primary Usage: Yard/Garage Access	
Utilities:	🔌	Vegetation: ●	Parking Stalls: 3	Snow Shed Structures: 4
Surface Description: East end is pea gravel and relatively well graded. Remaining is vegetation/soil surfacing, poorly graded/drainage.			Drainage Pattern: East end of alley slopes to the east, remainder of alley slopes to the west.	
Public Works Notes: City has never maintained			RH2 Walk-Through Notes: Overhead power- south side of alley.	

No: 7	PASER Rating: 3-4	Width: 9'-10'	Primary Usage: Driveway/Garage Access	
Utilities: 		Vegetation: 	Parking Stalls: 5	Snow Shed Structures: 0
Surface Description: West end has ~4" deep pothole, ½ usable width. Remaining is primarily fines with some aggregate, rocks/vegetation on either side of the usable alley width.			Drainage Pattern: East end drains to the east. Remainder of alley drains to the west.	
Public Works Notes: NA		RH2 Walk-Through Notes: Buried power & cable locate on the north side of alley. Buried cable pedestal observed on south side of alley. East end of alley ends within Nazarene Church parking lot. Alley ties into the parking lot. 8 large, mature trees appear to have their trunks located within ROW.		



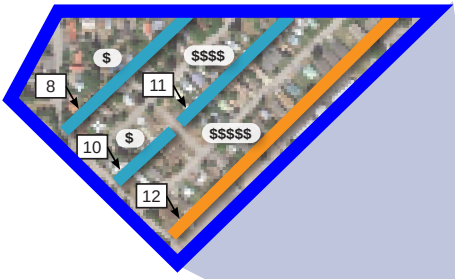
Alley Findings By Map Areas

No: 8	PASER Rating: 4	Width: 9'-11'	Primary Usage: Thoroughfare/Parking
Utilities:  		Vegetation: 	Parking Stalls: 7 Snow Shed Structures: 1
Surface Description: From the east side till Clinton St, aggregate with some fines. West end is undeveloped alley, boulders, vegetation, wood piles, etc.			Drainage Pattern: Low spot in center of alley length between Prospect Street & Clinton Street.
Public Works Notes: Assumed that west of Clinton St. is abandoned. Gravity sewer main and Storm run across from Prospect St. to alley (through property, w/ easement of 223 Prospect) and then runs west to Clinton St.			RH2 Walk-Through Notes: Between Mill St. and Clinton St. the alley ROW is not developed. Existing catch basin. 2 parcels appear to access alley ROW by driving in grass. West of 2 access points, alley ROW is composed of large bushes, vegetation, boulders, stacked woodpiles, etc.

No: 10	PASER Rating: 3-4	Width: 9'-11'	Primary Usage: Access/Parking
Utilities: 		Vegetation: 	Parking Stalls: 9 Snow Shed Structures: 2
Surface Description: West side is a combination of fines and aggregate. East side is relatively well graded, few potholes/ washboarding.			Drainage Pattern: Drainage appears to be to the east.
Public Works Notes: Normally grade but haven't for a few years. No gravel left and lots of vegetation.			RH2 Walk-Through Notes: Overhead power: south side of alley ROW.

No: 11	PASER Rating: 2-4	Width: 10'-13'	Primary Usage: Access/Parking
Utilities: -		Vegetation: 	Parking Stalls: 22 Snow Shed Structures: 3
Surface Description: West end has significant potholing/ washboarding. Center has some rutting/potholes and is primarily fines.			Drainage Pattern: East end drains to the east. Remainder of alley drains to the west.
Public Works Notes: Manhole and catch basin are part of apartments private storm system and are privately owned.			RH2 Walk-Through Notes: Manhole and catch basin observed on south side of alley. Appears they are outside of alley ROW.

No: 12	PASER Rating: 2-5	Width: 10'-17'	Primary Usage: Thoroughfare
Utilities: 		Vegetation: 	Parking Stalls: 10 Snow Shed Structures: 2
Surface Description: East side is primarily fines, large potholes/washboarding. Center has Large potholes. West end has Potholes & washboarding.			Drainage Pattern:
Public Works Notes: No City utilities and west end is very tight to get through.			RH2 Walk-Through Notes: Overhead power on south side of alley. Alley provides commercial access to 2 motels, 1 coffee shop & architecture office, and a City-owned parking lot.



Alley Findings By Map Areas

No: 13	PASER Rating: 3	Width: 13'	Primary Usage: Thoroughfare/Parking /Access	
Utilities: 		Vegetation: -	Parking Stalls: 15	Snow Shed Structures: 4
Surface Description: Paved, washboarded/potholed, some aggregate.		Drainage Pattern: Low spot in center of west half of alley. East side drains to the east.		
Public Works Notes: Sewer in the length of alley- flows to the east. No sewer in US-2, so all commercial properties (N side of alley) are served by sewer in the alley. Water crosses alley (between properties of 114 Commercial St. east end of property)		RH2 Walk-Through Notes: Commercial buildings on the north side of alley. Residential development on the south side of alley. West end of alley is through what feels like commercial parking lot. Catch basin- collects drainage from hotels and nearby roof downspouts. Underground cable/power: north side of alley.		

No: 14	PASER Rating: 3	Width: 9'-10'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 7	Snow Shed Structures: 0
Surface Description: Minimal to no aggregate		Drainage Pattern: West end drains to the west or is flat. Remainder of alley drains to the east.		
Public Works Notes: Gravity sewer main runs the length of the alley. Difficult to maintain in winter: no place to push snow to.		RH2 Walk-Through Notes: Overhead power - furthest west pole is on south side of alley, all other poles & lines on north side. Gravity sewer main within alley.		

No: 15	PASER Rating: 3	Width: 10'	Primary Usage: Access	
Utilities: 		Vegetation: 	Parking Stalls: 1	Snow Shed Structures: 0
Surface Description: Gravel access to 1st parcel on west side. Remaining is vegetation that appears to occasionally be driven on.		Drainage Pattern: Drains to the west		
Public Works Notes: City does not maintain east of 2nd street. Water and sewer along length.		RH2 Walk-Through Notes: N/A		

No: 17	PASER Rating: 3-4	Width: 12'-16'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: -	Parking Stalls: 25	Snow Shed Structures: 5
Surface Description: West end is relatively well graded gravel roadway. Some potholes in remainder of alley.		Drainage Pattern: West end of alley drains to the west.		
Public Works Notes: Buildings are very tight, might be on ROW.		RH2 Walk-Through Notes: Overhead power: North side of alley		

No: 18	PASER Rating: 3-4	Width: 11'-16'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 29	Snow Shed Structures: 2
Surface Description: East side is generally well graded aggregate. West side has some potholes.		Drainage Pattern: East side drains to the east, center drains to the west, low spot in center of west half, west end drains to the east.		
Public Works Notes: Roofs shed snow that shed into alley. Gravity sewer main crosses alley ~2 to 3 parcels from the west end.		RH2 Walk-Through Notes: Substantial overhead tree growth. Alley is generally built within an existing slope-banks on either side of alley limit its usable width.		



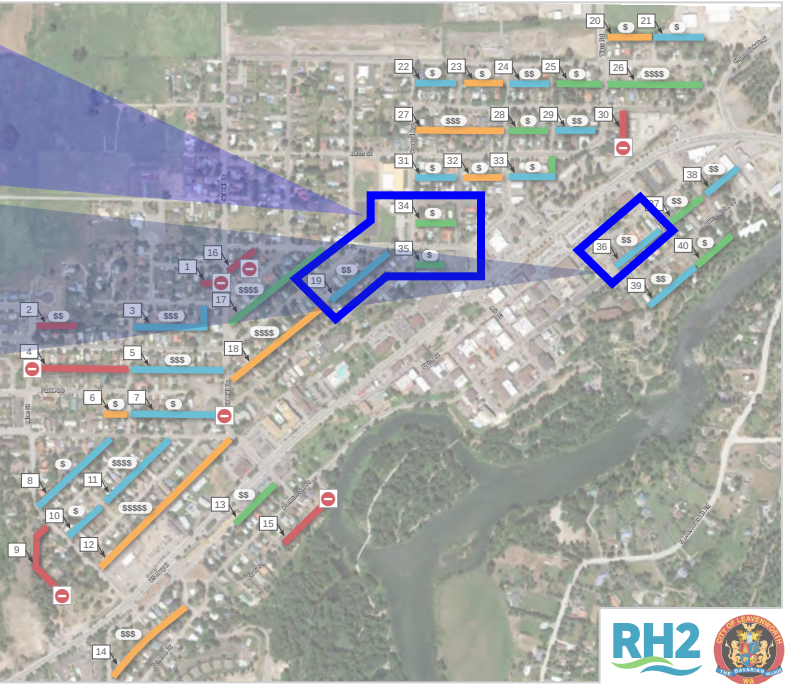
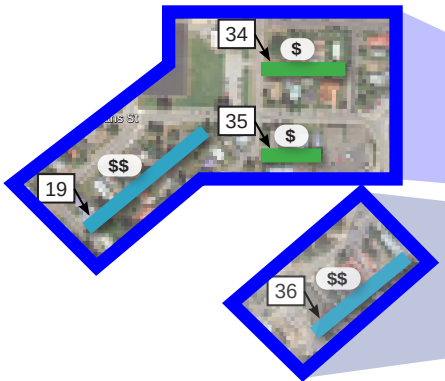
Alley Findings By Map Areas

No: 19	PASER Rating: 3-4	Width: 11'	Primary Usage: Parking/Access	
Utilities:	-	Vegetation: ○	Parking Stalls: 31	Snow Shed Structures: 1
Surface Description: East end has a mixed gradation, some coarse aggregate with fines. The center has 4" potholing. West end is dry, dusty potholing.			Drainage Pattern:	
Public Works Notes: There used to be a large puddle, now there is a drywell catch basin that drains to drain rock, etc.			RH2 Walk-Through Notes: N/A	

No: 34	PASER Rating: 3-4	Width: 12'-16'	Primary Usage: Parking/Access, Utility	
Utilities:	🔌	Vegetation: -	Parking Stalls: 22	Snow Shed Structures: 2
Surface Description: East end has primarily fines with minimal coarse aggregate. East of center has some potholing.			Drainage Pattern: Drains to the west along alley length and has a cross slope to the south.	
Public Works Notes: Nothing notable here, easy to maintain.			RH2 Walk-Through Notes: Overhead power on the north side of the alley.	

No: 35	PASER Rating: 2	Width: 13'	Primary Usage: Parking/Access	
Utilities:	🔌	Vegetation: ○	Parking Stalls: 10	Snow Shed Structures: 0
Surface Description: Almost no aggregate, substantial washboarding/potholing			Drainage Pattern: East end drains to the east. Remainder of alley is flat or may drain to the west.	
Public Works Notes: N/A			RH2 Walk-Through Notes: Overhead power & buried cable only on the south side of alley on the east end. East end of alley is access to hotel parking, senior center, private parking lot, etc.	

No: 36	PASER Rating: 3	Width: 11'-12'	Primary Usage: Parking/Property Access/Thoroughfare/Utilities	
Utilities:	🔌	Vegetation: -	Parking Stalls: 24	Snow Shed Structures: 1
Surface Description: West end has HMA surfacing, remainder of alley is fine-grained surfacing with potholes 3" to 6" deep.			Drainage Pattern: Assumed drainage is infiltration with alley.	
Public Works Notes: Hotel is likely within ROW.			RH2 Walk-Through Notes: West end of alley serves commercial properties and the alley is paved. Remainder of the alley serves residential parcels. Overhead power on north and south sides of alley with a crossing near center of alley length.	



Alley Findings By Map Areas

No: 20	PASER Rating: 3	Width: 10'	Primary Usage: Access to 1 property/Unaccessible	
Utilities: -		Vegetation: 🟢	Parking Stalls: 2	Snow Shed Structures: 0
Surface Description: Minimal aggregate, mostly fines.			Drainage Pattern: Drains to the west.	
Public Works Notes: City does not maintain.			RH2 Walk-Through Notes: Alley only accessible and drivable from the west end for the length of the 2 west-most parcels. Remainder is gated off, thick vegetation on east end of alley prevents access	

No: 21	PASER Rating: 3-4	Width: 10'	Primary Usage: Parking/Access	
Utilities: -		Vegetation: 🟢	Parking Stalls: 7	Snow Shed Structures: 0
Surface Description: Minimal aggregate, but relatively smooth driving surface.			Drainage Pattern: Drains to the east.	
Public Works Notes: City does not maintain			RH2 Walk-Through Notes: Boulders on either side at west end of alley.	

No: 25	PASER Rating: 3-4	Width: 13'	Primary Usage: Access/Parking	
Utilities: 🔌💧		Vegetation: 🟢	Parking Stalls: 15	Snow Shed Structures: 1
Surface Description: East side has washboarding and minimal aggregate. West end has minimal aggregate.			Drainage Pattern: East side drains to the east.	
Public Works Notes: Water and gravity sewer mains run down the alley for this whole section.			RH2 Walk-Through Notes: Overhead power and buried communication on north side of alley. Sewer within middle of alley. Private natural gas/propane tank on north side of alley, assumed on ROW line.	

No: 26	PASER Rating: 2-4	Width: 12'-13'	Primary Usage: Thoroughfare/Access/Parking	
Utilities: 🔌📶		Vegetation: 🟢	Parking Stalls: 8	Snow Shed Structures: 4
Surface Description: East end has aggregate with some washboarding. Center has large potholing. West side has washboarding.			Drainage Pattern: Alley drains to the west.	
Public Works Notes: City also maintains gravel extension of Cone St. on south side of alley.			RH2 Walk-Through Notes: Overhead power and underground cable on north side of alley.	

No: 29	PASER Rating: 2-3	Width: 11'	Primary Usage: Parking/Access	
Utilities: 🔌📶		Vegetation: 🟢	Parking Stalls: 6	Snow Shed Structures: 3
Surface Description: Minimal aggregate, substantial potholing/washboarding			Drainage Pattern: Drains to the east.	
Public Works Notes: Nothing noteworthy.			RH2 Walk-Through Notes: Overhead power and buried communication on south side of alley.	



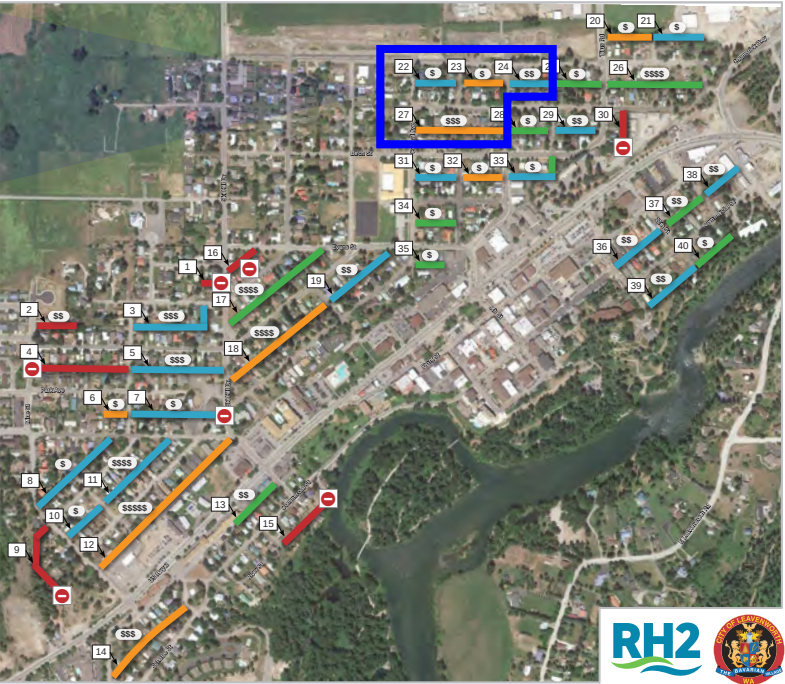
Alley Findings By Map Areas

No: 22	PASER Rating: 4	Width: 9'-10'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 6	Snow Shed Structures: 1
Surface Description: Primarily fines with some coarse aggregate covered in pine needles, difficult to see surfacing.			Drainage Pattern: East & west side of the alley drains to the west with a cross slope to the north. The center of the alley is a flat low spot.	
Public Works Notes: City maintains, but not super high priority.			RH2 Walk-Through Notes: Overhead power and buried cable on north side of alley. Embankment, rocks, abandoned but not removed fence posts on eastern-most property on south side of alley. Free standing hose spigot located just on homeowner side of ROW on south side of alley, source unclear, but assumed to be form home, as water main assumed to be in Cedar St, not alley.	

No: 23	PASER Rating: 2	Width: 8'-10'	Primary Usage: Thoroughfare/Minimal Use	
Utilities: 		Vegetation: 	Parking Stalls: 0	Snow Shed Structures: 2
Surface Description: West side has pine needles and leaves a few inches deep, no aggregate observed. Center has no aggregate and soil only.			Drainage Pattern: No crown/superelevation. Alleyway is low spot, embankment on either side of alley. Length of alley drains to the east.	
Public Works Notes: City does not maintain. Large roof that shed a lot of snow. Garbage in alleyway.			RH2 Walk-Through Notes: Appears to have minimal use. Overhead power and buried cable on north side of alley.	

No: 24	PASER Rating: 2-3	Width: 10'-14'	Primary Usage: Thoroughfare/Parking/Access	
Utilities:  		Vegetation: 	Parking Stalls: 5	Snow Shed Structures: 4
Surface Description: East end is primarily only fines. Center is primarily fines with some potholing. West end has bigger potholes.			Drainage Pattern: Low spot in middle of alley length.	
Public Works Notes: Rob does not believe there is a water main on this section. There are water services that come off Price and run down alley.			RH2 Walk-Through Notes: Overhead power and buried cable on north side of alley. Water meters for 613 & 615 Pine St. located in north side of alley on property line between these 2 parcels. 2 meter chambers (City standard), 1 taper top vault, all located behind assumed ROW line on parcels. A water meter chamber located on north side of alley on west end has a broken non-traffic rated lid.	

No: 27	PASER Rating: 2-4	Width: 10'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 16	Snow Shed Structures: 3
Surface Description: East end has fines with some small aggregate. Center has 1'+ rocks in surface with pine needles and minimal aggregate.			Drainage Pattern: The west end of the alley drains to the west while the remainder drains to the east.	
Public Works Notes: City does not maintain west of Summit Ave. Does not maintain east half.			RH2 Walk-Through Notes: Alley accessible via City ROW form Summit Ave. Overhead power and buried cable on south side of alley	



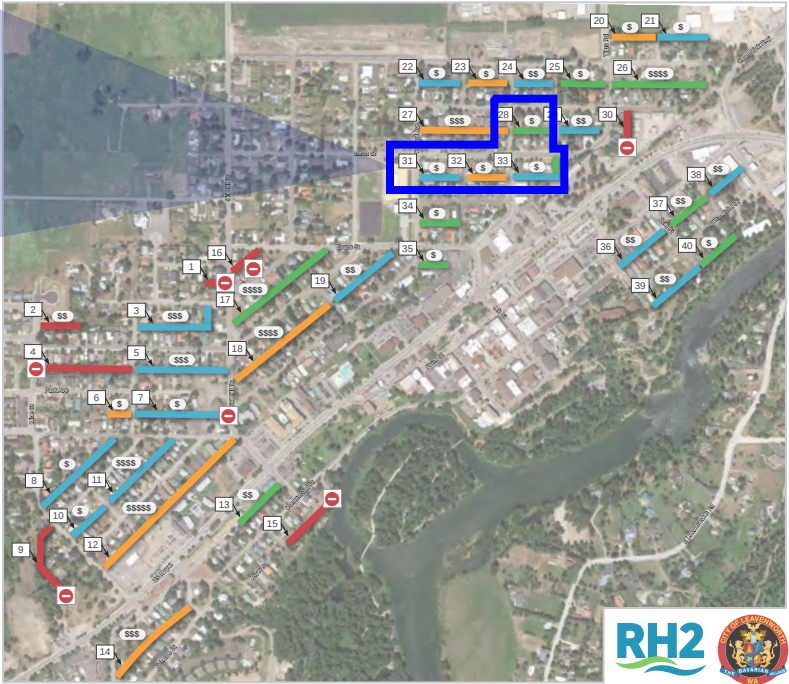
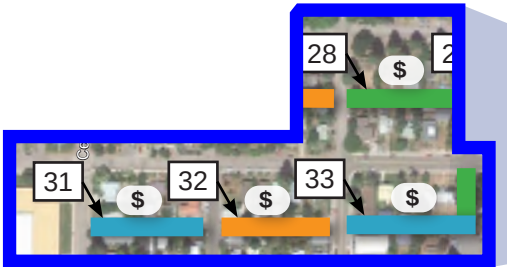
Alley Findings By Map Areas

No: 28	PASER Rating: 4	Width: 13'	Primary Usage: Some Access	
Utilities:  		Vegetation: 	Parking Stalls: 12	Snow Shed Structures: 3
Surface Description: West end has small aggregate with some minor washboarding.		Drainage Pattern: Generally drains west to east, has a low spot in center of alley length.		
Public Works Notes: Tight buildings, all end up shedding snow.		RH2 Walk-Through Notes: Overhead power and buried cable on south side of alley.		

No: 31	PASER Rating: 3-4	Width: 12'-13'	Primary Usage: Parking/Access	
Utilities:  		Vegetation: 	Parking Stalls: 15	Snow Shed Structures: 1
Surface Description: East end has pea gravel with fines. Remainder is primarily fines with some <0.5" diameter aggregate.		Drainage Pattern: Alley length drains to the east, cross slope appears flat and drainage appears to be via infiltration.		
Public Works Notes: Maintain regularly.		RH2 Walk-Through Notes: Overhead power on north side of alley crosses over to south side at east end of alley.		

No: 32	PASER Rating: 3-4	Width: 10'	Primary Usage: Parking/Access	
Utilities: -		Vegetation: 	Parking Stalls: 4	Snow Shed Structures: 1
Surface Description: West side is generally fine-grained surfacing with some coarse aggregate. The center has wheel rutting and the west end has a ~4" deep pothole		Drainage Pattern: Alley length drains to the east and drainage appears to be infiltration in the center of alley length.		
Public Works Notes: Do not maintain except filling potholes. Grass in center of roadway.		RH2 Walk-Through Notes: N/A		

No: 33	PASER Rating: 2-4	Width: 10'-16'	Primary Usage: Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 6	Snow Shed Structures: 3
Surface Description: West end is primarily fines with some small aggregate.		Drainage Pattern: West end drains to the west.		
Public Works Notes: Huge rocks partially buried in alleyway and tight houses make it difficult to maintain.		RH2 Walk-Through Notes: House with street #612 appears to have only access from alley. Overhead power crossing alley runs down length at a diagonal. Buried cable on north side of alley.		



Alley Findings By Map Areas

No: 37	PASER Rating: 2	Width: 14'	Primary Usage: Thoroughfare/Parking/Access	
Utilities: 		Vegetation: 	Parking Stalls: 25	Snow Shed Structures: 2
Surface Description: The east end is a paved surface, and the remainder has substantial potholes and minimal aggregate.			Drainage Pattern: West side drains to the west and east side drains to the east.	
Public Works Notes: N/A			RH2 Walk-Through Notes: Overhead power on the north and south side of alley. Water spigot just off of ROW.	

No: 38	PASER Rating: 2-4	Width: 11'	Primary Usage: Thoroughfare/Access Community Cupboard/MEND properties	
Utilities: 		Vegetation: 	Parking Stalls: 14	Snow Shed Structures: 1
Surface Description: East side has substantial potholing/washboarding.			Drainage Pattern:	
Public Works Notes: N/A			RH2 Walk-Through Notes: Overhead power on the north and south side of alley.	

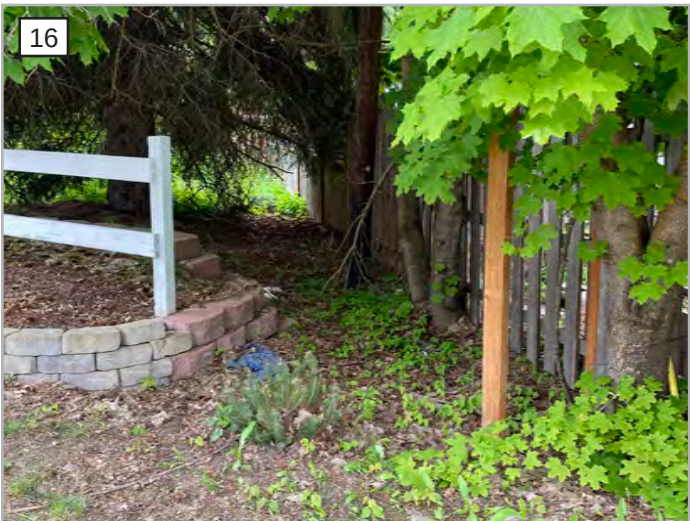
No: 39	PASER Rating: 3-5	Width: 10'-13'	Primary Usage: Thoroughfare/Utilities	
Utilities:  		Vegetation: -	Parking Stalls: 2	Snow Shed Structures: 0
Surface Description: Southwest end has well graded rock.			Drainage Pattern: Southwest end of alley has a south ditch.	
Public Works Notes: City does maintain, but homeowner does some of their own alley maintenance. Catch basins and storm runs to Division St.			RH2 Walk-Through Notes: Strom drainage runs the length of alley NE to SE. Rock wall on south side of alley, estimated to be on ROW line. Fence on north side of alley, estimated to be 4' behind ROW line. Catch basin within alley, inlet and outlet run along middle of alley, with inlet from the SW of alley. Overhead power estimated to be on ROW line on north side of alley for length of 2 parcels.	

No: 40	PASER Rating: 4	Width: 10'-14'	Primary Usage: Access/Parking	
Utilities: 		Vegetation: -	Parking Stalls: 5	Snow Shed Structures: 0
Surface Description: Generally well graded with minor washboarding and aggregate displacement.			Drainage Pattern: East side of all slopes to the east with a cross slope to the south. Remainder of alley is flat with a cross slope to the north.	
Public Works Notes: City does not maintain. Sewer services at the east end.			RH2 Walk-Through Notes: N/A	

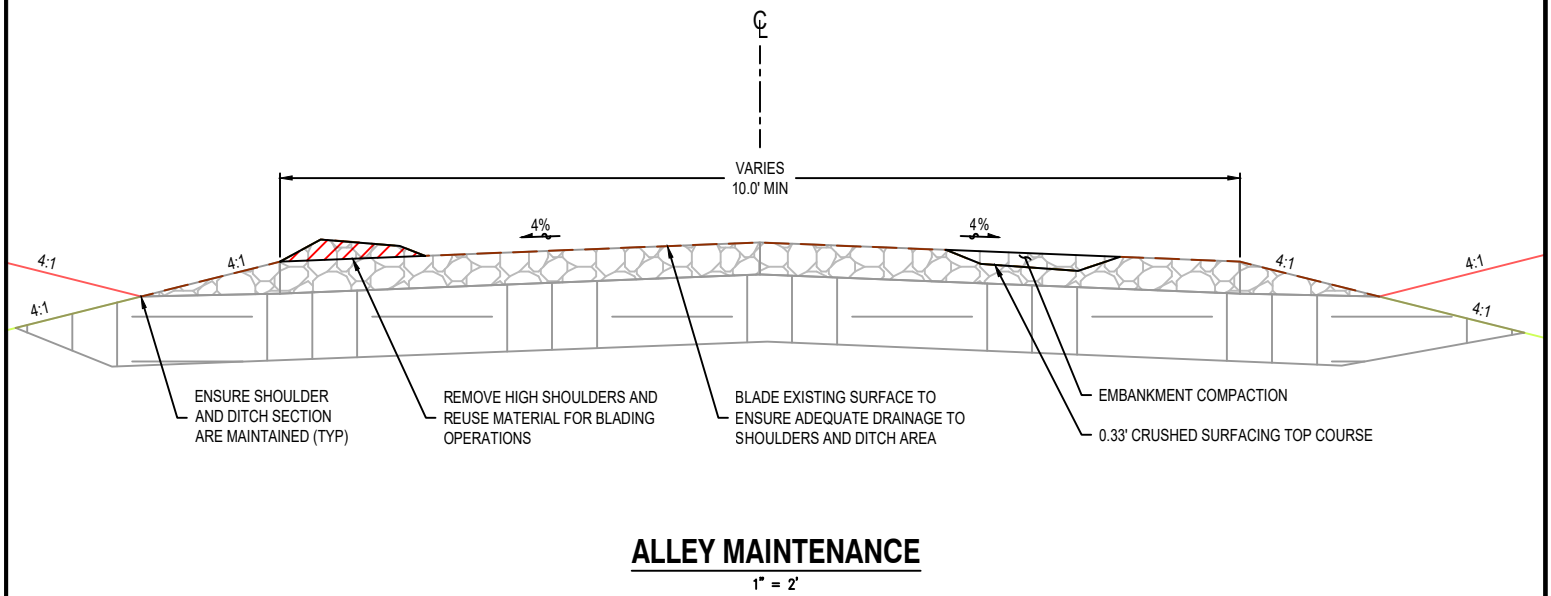
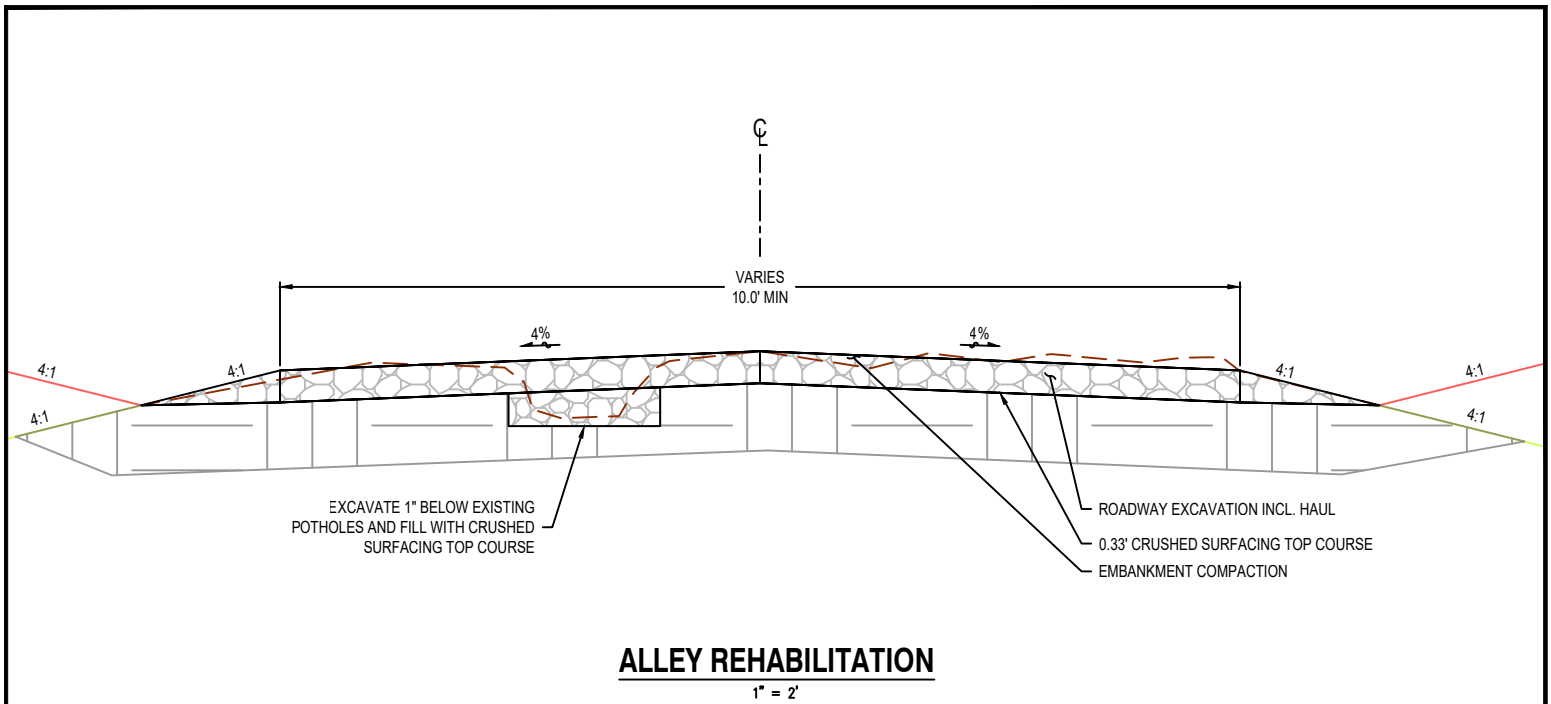


Alley Findings By Map Areas

Inaccessible Alleys

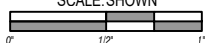


Appendix D: Alley Design Exhibit





 SCALE: SHOWN



 DRAWING IS FULL SCALE WHEN
 BAR MEASURES 1"

PLOT DATE: 8/25/2022
 FILE PATH: J:\Data\LEAV\22-0072\CAD\alley-e-sec.dwg




ALLEY DESIGN EXHIBIT

RESIDENTIAL ALLEY PLANNING

Attachment A

14.14.100 Water supply standards.

- A. All projects shall be served by the water system of the city of Leavenworth as approved by the public works director or city engineer working in consultation with the community development director.
- B. It is compulsory for every new building(s) or existing building(s) meeting the criteria below within the UGA to hook up to the city water system, if said buildings are located within 200 feet of existing water mains. The existing domestic water source (well) shall be abandoned in conformance with local and state regulations with any rights associated with the well transferred to the city at the option of the city.
Pursuant to LMC § 13.04.040, all individuals, firms or organizations located within city limits requiring domestic water service shall be required to be connected to the city's water system. Private domestic wells are not permitted. Any existing private domestic well shall be abandoned in conformance with local and state regulations with any rights associated with the well transferred to the city at the option of the city. Private irrigation wells will be permitted within the city limits on parcels two acres or larger; provided, that the city reserves the right to deny approval of wells which may threaten the city's present or future domestic supplies or water rights. A permit signed by the city administrator must be obtained for such systems. Appropriate backflow prevention devices are required and inspection of the installation by the city is required for such systems.
 - 1. For existing buildings, as described above, which become located within the 200 feet as a result of improvements to the city water system, connection to those improvements shall be made when one of the following occurs:
 - a. Remodeling or expansion of the existing building which exceeds 50 percent of the value of the building/structure;
 - b. Remodeling or expansion of the existing building occurs which would require an upgrade of an existing on-site water system, as determined by the Chelan-Douglas health district; or
 - c. The existing water system is failing, as determined by the Chelan-Douglas health district.
- C. All water supply systems shall be designed and constructed according to all applicable provisions of this chapter and specifications on file in the office of the city engineer unless otherwise provided for in the Leavenworth Municipal Code.
- D. When water rights are appurtenant to the land, the property owner shall covenant to transfer water rights to the city in a quantity which is equal to the quantity to be utilized by the development and the covenant shall run with the land into perpetuity.

The transfer may occur at the time of development or at a future point in time, as decided by the city. Property owner shall cooperate with the transfer.

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- E. Whenever possible, if either a public or private irrigation source is available and is currently being utilized for the applicable property, the property owner shall continue to utilize this source for all outside irrigation. The feasibility of this shall be evaluated and a determination of applicability made by the city as part of the application process. The property owner shall provide such information the city determines necessary to make this decision.
- F. Public Works Director or City Engineer Approval. For properties located inside of the city's UGA and its city limits, the city public works director or city engineer shall approve water connection subject to requirements for connection as found within the Leavenworth Municipal Code.
- G. Council Approval. For properties located outside of the city's UGA, the city council may grant (at the council's sole discretion) an exception to allow an extension and/or connection to the city water system subject to the following:
 - 1. Consideration for the protection of water use for properties within the city as a priority and paramount prior to granting water outside of the city. Granting water connections outside of the city UGA is a not a right, and the intent is to ensure water is available to the citizens of Leavenworth; and
 - 2. After purchase of property, a plight of the applicant is due to unique and unexpected circumstances over which the property owner has no control, ~~which may include but is not limited to~~ for one or more of the following criteria:
 - a. Unsuccessful Well Development
 - 1. A minimum of two (2) well drilling attempts have been completed for each five (5) acres of the subject property; and
 - 2. Each drilling location was selected by a Washington State licensed well driller based on available hydrogeologic information and accepted industry practices; and
 - 3. Each well was drilled to a depth determined appropriate by the licensed well driller; and
 - 4. The licensed well driller has determined that additional drilling is not reasonably expected to produce sufficient potable water to serve one single-family residence; and
 - 5. The following documentation shall be provided:
 - a. Well logs for each drilling attempt.
 - b. Site plan showing well locations.

- c. Written report from the licensed well driller documenting drilling locations, depths, yields, and professional findings.
- a. ~~At least one attempt to drill a well down to bedrock yielded insufficient quantities of potable water necessary to serve one single-family resident as determined by the city; or~~
- b. Existing Well with Insufficient Water Supply
 - 1. An existing well has been evaluated by a Washington State licensed well driller; and
 - 2. Reasonable improvements recommended by the licensed well driller have been completed to increase water production; and
 - 3. The licensed well driller has determined that the well remains incapable of providing sufficient potable water for one single-family residence; and
 - 4. The following documentation shall be provided:
 - a. Existing well log.
 - b. Written evaluation from the licensed well driller.
 - c. Documentation of improvements completed.
 - d. Pump test or production results following improvements.
- b. ~~An existing well to bedrock yields insufficient quantities of potable water necessary to serve one single-family resident as determined by the city; or~~
- c. Existing Well Presents a Health Risk
 - 1. An existing well has been determined to present a contamination or other public health risk.
 - 2. The contamination cannot be reasonably corrected or the well cannot be rehabilitated to provide a safe potable water supply.
 - 3. The following documentation shall be provided:
 - a. Laboratory water quality results.
 - b. Written determination from the applicable regulatory agency or Washington State licensed well driller.
 - c. Documentation describing why rehabilitation is not feasible.
- c. ~~An existing well is to be abandoned in favor of connection to the city domestic water system due to contamination or other similar health risk from the existing well; or~~
- d. Previously Approved Subdivision

1. The property is located within a final plat recorded prior to March 12, 1996.
2. The approved plat or other City-approved documents identify the City water system as the intended water source.
3. The lot was created in reliance on the City's commitment to provide municipal water service.
4. The following documentation shall be provided:
 - a. Recorded final plat.
 - b. Utility plans, development agreement, or other City documentation identifying City water as the approved water source.
 - c. Any additional documentation demonstrating the City's commitment to provide water service.

~~d. A recorded subdivision in situations where the final plat was based on the city's prior commitment to provide water and the lot was legally created prior to March 12, 1996; and~~

3. The authorization of the exception shall not be materially detrimental to the purposes of this title, be injurious to property in the same district or neighborhood in which the property is located, or be otherwise detrimental to the objectives of any comprehensive plan; and
4. Water extension and/or connection for the creation of a lot shall be a one-time waiver, shall not be allowed to serve more than one lot, shall not be transferable, and the properties created shall not be allowed future/additional water extension and/or connection for a period of no less than 10 years. Such moratorium shall include a notice to title recorded with the Chelan County auditor's office which shall be recorded at the expense of the property owner; and
5. When a water connection outside of the UGA has been authorized, the Applicant shall complete all Water Connection Permit processing with the City of Leavenworth, including payment of all applicable fees, within one year from the date upon which the City Council authorized the connection. If the Water Connection Permit is not paid for and issued within this time period, the connection authorization shall be considered null and void; and
6. If the Applicant has not completed the physical connection to the City's water system prior to the expiration date of the Water Connection Permit, both the Water Connection Permit and the connection authorization shall be considered null and void. The City Council may grant a one-time extension of a Water Connection Permit for up to a maximum of one year from the original

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expiration date upon finding that the Applicant has demonstrated a hardship beyond the Applicant's reasonable control that has prevented timely completion of the connection. The hardship must be specific to the property or project, must not have resulted from the Applicant's actions or lack of diligence, and must be supported by documentation acceptable to the City Council; and

7. Not more than a total of three equivalent residential units (ERU) per calendar year shall be authorized for connections outside of the UGA, beginning the first of January of each year. For purposes of the annual ERU calculation, a connection shall be counted on the date the City Council authorizes the connection, regardless of when the Water Connection Permit is issued; and
8. Prior to physical connection, the property owner shall transfer to the city of Leavenworth their present domestic water rights and cooperate in any process to transfer those rights to the city, unless otherwise specifically waived by the city council; and
9. The applicant shall install a new water main to the property within right-of-way or public utility easement. The line size shall be determined by the city engineer; and
10. The applicant shall be responsible to install necessary appurtenances for the water line extension; such may include but are not limited to fire hydrant(s). At no time may an extension of water line, for the purposes of this provision, be extended beyond that of the original approval; and
11. Construction and installation shall adhere to the adopted Construction Standard Details and/or applicable LMC standards and specifications; and
12. A water connection shall not be allowed to split into two or more. The lateral line (connection) shall serve a maximum of a single structure; and
13. The property owner, their successors, heirs, and assigns shall record with the Chelan County auditor's office a notice to title, as approved by the city of Leavenworth, which provides notice of and binds all future property owners to the following waivers of protest and other requirements. It shall also be the obligation of the property owner, their successors, heirs, and assigns to inform potential buyers of these items:
 - a. Property owners, their successors, heirs, and assigns shall not protest annexation. Provided further, nothing in approval of extension of city water shall bind the city to annex said property nor obligate the city to approve future subdivision and development of the property, nor impose or not impose any particular conditions or requirements for said development and land use actions, nor

Commented [AZ3]: The Council expressed desire for this to be deleted

Commented [AZ4]: Reviewing for consistency with Ecology settlement and interlocal agreements.

implement improvements to its utilities and/or roads that may be required to serve the development. If the city agrees to annex this property, the city does not warrant that existing facilities are adequate to serve this development.

- b. Property owners, their successors, heirs, and assigns agree to participate in future local improvement districts (LID) and/or other similar financing mechanisms for the redevelopment of streets, sidewalks, utilities and related infrastructure in the area. This participation shall be in accordance with reasonable methods established by Washington State law and/or by local law, and shall be for a pro-rata share of improvements in the geographic area as established by a benefits assessment or other similar mechanism.

- 14. No extension or connection for water service may be allowed if such connection or extension outside the city's UGA would violate the Growth Management Act of the state of Washington.