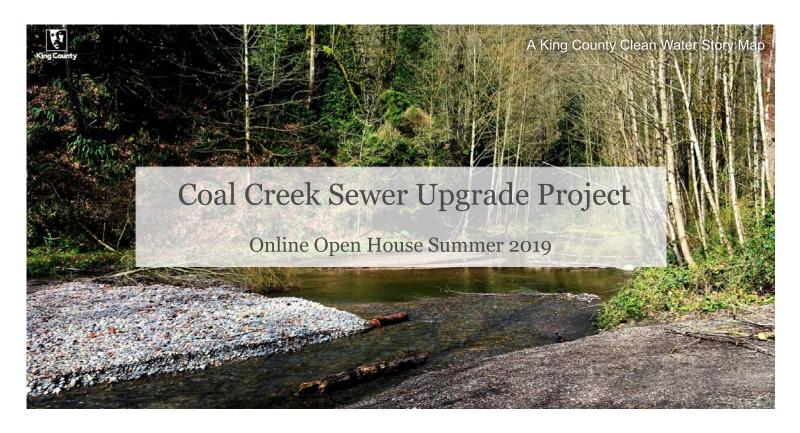
This story was made with Esri's Story Map Cascade. Read it on the web at https://arcg.is/10rfXL.



Welcome to the online open house for the Coal Creek Sewer Upgrade Project!

King County Wastewater Treatment Division (WTD) is designing a needed upgrade to part of the Coal Creek Sewer Trunk. This upgrade will provide more wastewater capacity to a growing area in Bellevue and Newcastle. The project also offers WTD the opportunity to move much of the active sewer pipe away from the banks of Coal Creek.



The maintenance holes you see as you hike the trails by Coal Creek show you where the City and County systems are in the Natural Area.

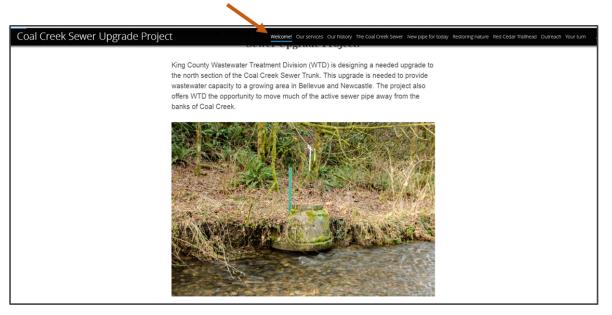
King County's project team is hosting a month-long online open house for the community to learn about the project, ask questions, tell us your thoughts, and let us know how to keep you up to date on this project.

This online open house complements in-person community meetings scheduled for May 15 and 29. We know that scheduled in-person meetings don't always work for people, and we want to meet our communities where they are at.

How to use this online open house

You may visit this online open house and provide input as many times as you would like from May 13- June 15, 2019. You can scroll through this open house section by section, or choose sections to visit by selecting menu buttons.

Would you like to go right to the project and skip the background? Select "The Coal Creek Sewer" from the menu.



This screenshot shows the first page of this Story Map, with a red arrow pointing to the menu bar.

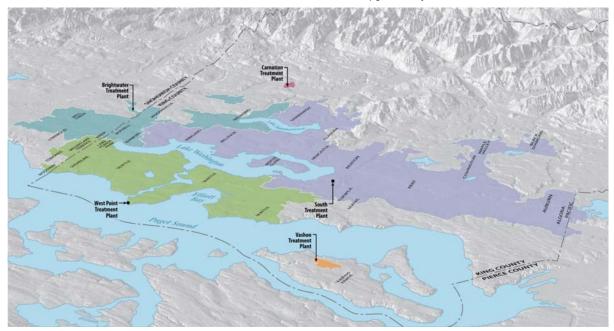
You will find a link to a survey in the last section of this open house. Please take time to let us know how you use this area, what you are concerned about, and how to keep you up to date and involved as design goes forward.

Find contact information to call or email with questions or access needs. We are available to help you learn about the project and participate.



King County WTD serves the Puget Sound region and helps to protect our waters. Our service area extends from the just inside Pierce County to the south all the way into Snohomish County in the north.

WTD <u>operates three regional treatment plants</u>- West Point, South Plant, and Brightwater. In addition, WTD operates two local plants, one for the City of Carnation and another for Vashon. In the map below, you can see each of the treatment plants and their service areas.



King County provides wastewater treatment for over 1.7 million people in 17 cities and 17 sewer districts. The water you send down the drain goes to your local sewer and then into King County's pipes, where it travels to a treatment plant. Wastewater travels through over 400 miles of pipe in our system to reach a treatment plant. We're treating about 180 million gallons of wastewater a day on average. That is enough volume to fill 3.6 million bathtubs every single day!



King County treats 3.6 million bathtubs full of wastewater for people in our region every day.

Want to see how King County treats our wastewater? Watch the video below to get a view of the entire water cycle. Better yet, tour a treatment plant in person.



People can tour a treatment plant and learn about water systems and how we affect them.



"Part of the Cycle" is narrated by visitors taking treatment plant tours. The treatment process described is used in the Brightwater Treatment System. (Tess Martin, 2011).

Video: www.youtube.com/watch?v=Vt7aU4O2jQU



King County's regional wastewater service system was born from need and frustration. Increasing population without adequate wastewater management overwhelmed our waterways and the area's citizens.

Westward expansion brought people to the West Coast, drawn by rich natural resources. Migrants began settling in our area beginning in the mid-1800's. A century later, about a half million people lived in the area.

Despite the growing population, there was little treatment of water washed down drains or off streets. For many decades, the area continued to develop. By the 1950s, wastewater flowed into Lake Washington and Puget Sound and many rivers and smaller lakes without enough treatment, fouling water and making a sullied mess of local beaches.



In 1958 voters fed up with polluted waters created Metro and developed a regional wastewater treatment system based on watersheds instead of political boundaries. Major work began to build this new system.

Soon after South Treatment Plant and West Point began operations in the mid-1960's, waters improved. Today, over 50 years later, Lake Washington is considered one of the cleanest urban lakes in the world. Our region's waters still face threats, but widespread discharge of untreated sewage is not one of them.



People from around the world have moved to the Puget Sound region to work and to enjoy the area's natural beauty.

Visit our Web to learn more about the history of King County WTD.



The Coal Creek Trunk Sewer protected Lake Washington for over 50 years by sending wastewater to a treatment plant instead of the lake. The pipe is nearing the end of its service life, and increased flow from more people means it is time to upgrade. This upgrades also lets us find a better location for the pipe.

The Coal Creek Trunk Sewer was born during early efforts to create a regional system. The Coal Creek Trunk collects wastewater from Newcastle in the south and conveys it by gravity from south to north. The north section of the pipe empties into a larger County pipe in the vicinity of I-405. That large pipe carries wastewater to South Treatment Plant in Renton.

It is time to upgrade the Coal Creek Trunk Sewer. Continue scrolling to find out why.

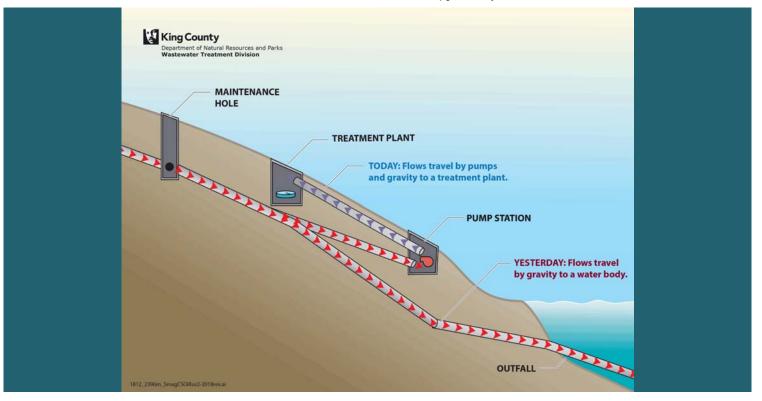


The north section of the Coal Creek Trunk Sewer is shown as the bright red line running along the creek in this map. This pipe was installed before King County established a natural area with access for the public.



Hikers leaving the Red Cedar (Upper West) Trailhead can't miss this sewer manhole along the trail- either with their eyes or their nose.

In 2004, the City of Bellevue acquired the Coal Creek Natural Area from King County. This area, almost 450 acres in size, connects with King County's Cougar Mountain Regional Wildland Park.



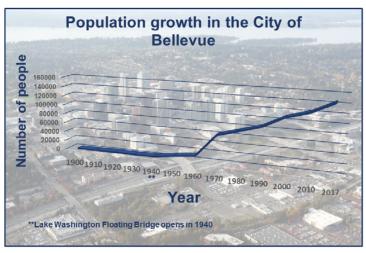
For designers at the time, building pipes at low points where water gathered -- creeks, wetlands, and tidelands -- was a sustainable, cost-efficient approach: wastewater flowed by gravity, saving equipment, energy, and labor in operations.



This 1940's outfall once discharged partially treated wastewater from the North Beach Treatment Plant (primary treatment).



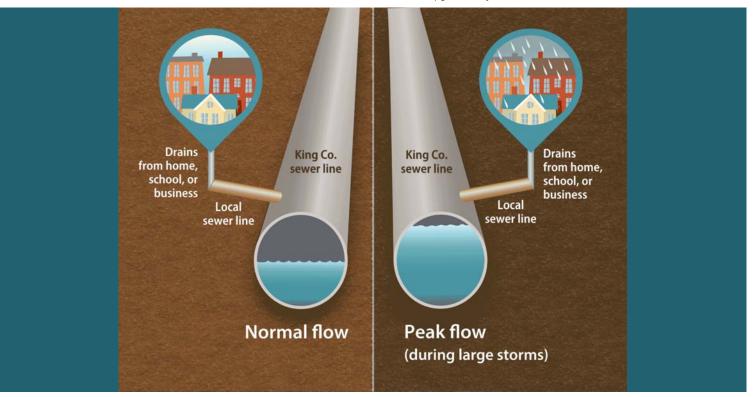
The area that drains to the Coal Creek Trunk Sewer has grown dramatically. In the years since the Coal Creek pipe was installed, the populations of Bellevue and Newcastle have more than doubled.



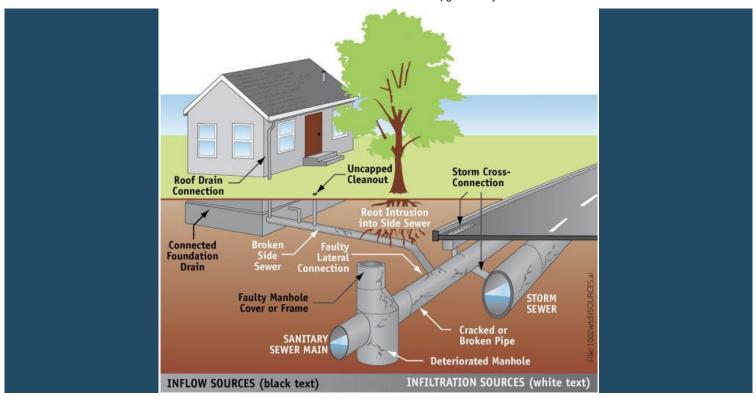
This graph shows the population in Bellevue from 1900 to today. The Lake Washington Floating Bridge, which opened in 1940, helped fuel growth.

Bellevue and Newcastle continue to grow, welcoming new businesses and people from nearby and around the world. More people send more water down drains, filling up sewer pipes.

Photo by Jelson25, Wikimedia Commons



Leaky sewers also reduce capacity in the wastewater system. Aging sewer pipes from homes and businesses can become cracked, letting groundwater in to the pipes. This groundwater takes away capacity for wastewater, especially during storms.



You can help keep groundwater out of pipes by inspecting and maintaining your side sewer, and planning your landscape to avoid problems for your sewer and other utilities.



This photo shows what happens when tree roots invade a residential side sewer. Eventually, this can cause sewer backups into the home.



Creek flooding poses a threat to the north Coal Creek Trunk Sewer pipe. Flooding has scoured the banks around the pipe at least four times in large storms. This creates risk both for the pipe and the creek.

This photo was taken after the December 11, 2007 major storm. You can see the Coal Creek Sewer pipe exposed in the creek, with a fallen tree over it.

The most recent bank repair, completed in 2015 and shown in the picture below, cost about \$1 million.



Engineers designed a system to protect the bank where the existing Coal Creek Trunk is located.

We view the environment differently from the time when the Coal Creek Trunk Sewer was built. Construction technology has advanced since that time as well. We can make different choices when we build sewer pipes today.

The Coal Creek Sewer Upgrade Project will provide the area with safe, reliable sewer service and protect Coal Creek. Keep reading to see what the project team is designing.



The Coal Creek Sewer Upgrade Project is in early design, with many steps ahead before the team puts pencils down and the contract is ready to bid. When it is completed, the new pipe and local connections will serve your area for the next 50 years or more.



*Schedule is approximate and may change.

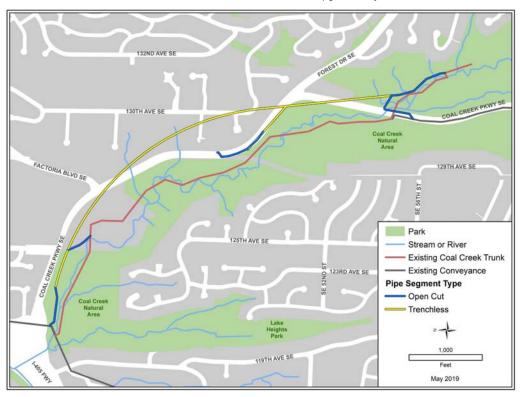
Pictured above is the project schedule, showing duration of major activities and outreach. Permitting and environmental review are expected to continue until 2021, followed by contract bid and procurement. Construction is expected to begin in early 2022 and extend into 2025. project schedules may change depending on several factors. We will keep you up to date as design progresses.

The team evaluated many options to upgrade the Coal Creek Trunk Sewer. They needed to find an option that would keep wastewater flowing, with the lowest construction challenges and impacts.

The team carried forward few of the early options. They left behind those that had construction challenges or severe impacts. The team looked at open trenching through Coal Creek Parkway, but found this option unworkable. The pipeline needs to be very deep in this location to keep wastewater flowing. Construction would be extremely challenging and traffic impacts to the busy commuter road would be severe.

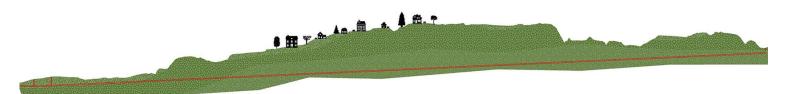


The project team determined that trenchless, or underground, construction methods offered the best options to reduce community and environmental impacts at the surface. The team looked at two different trenchless options. They moved forward with the option that provided the best profile for wastewater flows and the lowest level of construction impacts. The Coal Creek trunk and some connections can be installed using trenchless construction, reducing impacts at the surface. Some connections will be installed by open cut construction, digging from the surface. The map below shows how different segments of pipe will be built.



The long yellow line that arcs across the map is the new Coal Creek Sewer pipe path. Lines extending from that path will be new connections to the City of Bellevue's existing system. The red line running along the creek is the existing Coal Creek Trunk Sewer.

The work will occur deep underground except at each end of the Coal Creek pipe alignment, and in locations where the contractor builds connections to the local sewer system. Below is a profile of the new Coal Creek Trunk compared to the profile of the hill above.

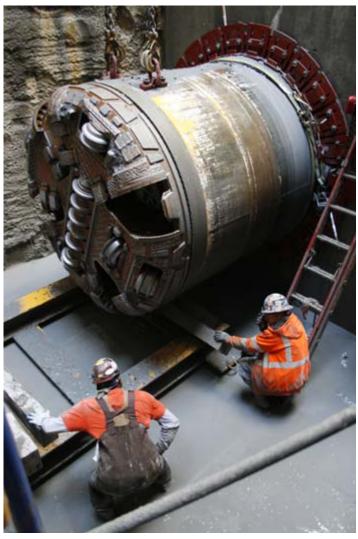


The red line is the new underground pipe.

In the image above, the hill profile is shown in green. The new Coal Creek Trunk will be installed deep underground, where the red line travels.

Trenchless construction

When contractors completed the Coal Creek Trunk Sewer in the 1970s, underground construction methods were in their infancy. Today, there are a range of trenchless construction methods and more contractors with the skill to use them. Trenchless technology allows us to build and repair pipes while reducing impacts to roadways, structures, and sensitive environmental areas. The contractor builds pits at each end of the alignment for materials and equipment. All work in between those points occurs underground.



This photo shows crews preparing a microtunnel machine for removal from the exit pit. King County's Fremont Siphon Project used microtunneling to install two new pipes under the Ship Canal between Fremont and Queen Anne.

To get an idea how trenchless construction works, watch this video about a recent project in the Rainier Valley area. If you use a smartphone, access the video here. This project used a trenchless method called microtunneling.



Reducing community impacts during construction using microtunneling (Open Caption Version)

Video: www.youtube.com/watch?v=gBcV6DElk24

In the next section, find a description of the work that will occur on the surface at each location. Since we are early in design, the project team is continuing to add detail to these plans. Stay tuned for updates.



The Coal Creek Sewer Upgrade Project team is hard at work in early design. What you see here are work areas and types of activities we expect at each area. You will find a blue box on the map showing the area that is being described.

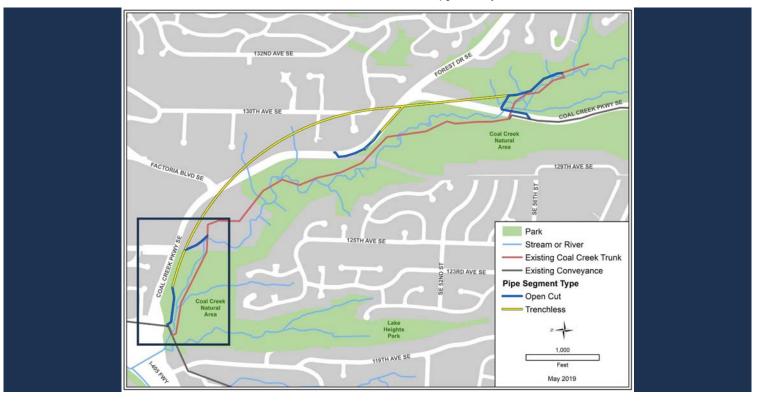
The team will be filling in much more detail in the coming year. We will share updates through the design process.



The north work area is the end of the line for the trenchless construction. An exit pit will be built to retrieve the machine from the ground.



Exit pit built for the Rainier Valley Wet Weather Storage Project.



More work is needed in this area to connect existing Bellevue sewers to the new Coal Creek Sewer pipe. The contractor can use open trench methods to build these sections of pipe.



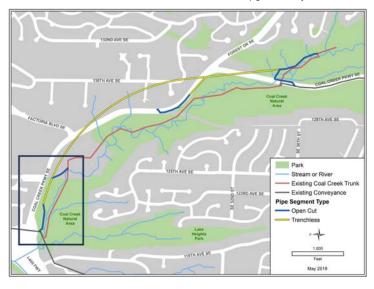
In-stream work will be performed according to stringent permit conditions.

Some work in the stream will be needed in this area. The project team will define the scope of work as design progresses.



The contractor will use open cut construction to connect the new Coal Creek Interceptor to King County's Eastside Interceptor (ESI). The ESI carries wastewater to South Treatment Plant in Renton.

The north area includes temporary work in wetlands. Affected wetlands will be restored.



In this photo, a contractor works in a wetland on King County's North Creek Interceptor project in Bothell.



In the central area, the contractor will build a connection to get flows from City of Bellevue pipes to the new Coal Creek Sewer pipe. This segment can be installed partly by trenchless construction and part by open cut.

This work will affect traffic on Coal Creek Parkway. Traffic will be managed according to City of Bellevue permit conditions.



Flaggers, signs, cones, reader boards, and other traffic control will help keep drivers and bicyclists moving.

In addition, it will be necessary to remove trees along the Parkway to build entry and exit shafts. Visit the "Restoring Nature" section to learn about forest restoration.

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Most construction activity will be concentrated at the south work area. The Red Cedar (Upper West) Trailhead will serve as the launch point for the machine that installs the new Coal Creek Trunk. The contractor will travel down the trail and across the parkway to make connections to the City of Bellevue's system.



The trailhead parking lot will serve as a major construction area for up to 24 months.



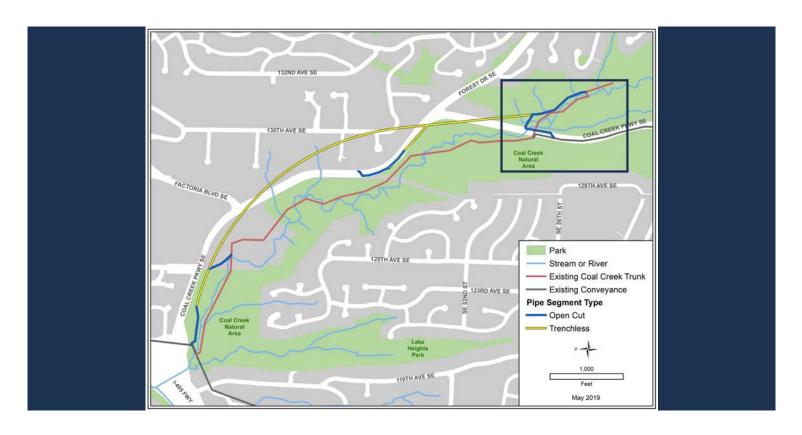
The Red Cedar (Upper West) Trailhead is where most construction activity will occur on the Coal Creek Project. The machine and materials that build the new Coal Creek pipe will be launched from this location and work northward. The contractor will build connections to the local system.



Construction is expected to close the Red Cedar (Upper West) trailhead for at least 18 months; fish windows or other factors could extend this period. During trenchless construction, an entry pit will occupy a portion of the parking lot.



This image shows a type of entry pit for trenchless construction. Pipe segments are fed through the entry pit.



In addition, a connection to the local sewer will be built along part of the trail. Visit the "Red Cedar Trailhead" section to learn how we are working to maintain trail access during cosntruction.



This City of Bellevue manhole is located right by the trail, and the pipe underneath connects to King County's system.



A second connection to the local system crosses Coal Creek Parkway. That section will be built by open cut construction, digging from the surface. Major underground utilities affect where designers can put this section of pipe, and how contractors can build it.



Open cut construction on the Georgetown Wet Weather Treatment Station Project.



During this work, drivers can expect delays. Work hours and traffic control plans will be established under permits issued by the City of Bellevue.

Here you see major work to repair a pipe under North Mercer Way on Mercer Island.

Trenchless construction greatly reduces impacts to people and the environment compared to open cutting, or digging from the surface along the whole path. But there will still be impacts to build entry and exit points. Some pipe segments will be installed by open cut, disturbing pavement and trees. Continue reading to see how King County will restore affected natural areas.



King County's design will move much of the active sewer pipe away from the banks of Coal Creek. But since the original system was built in sensitive areas, the new project will impact them. King County needs to maintain connections to the local service in this area. As a result, construction will affect wetlands, forests, and streams.

Project design is still under development. The team is still working out the details and will be keeping the community up to date as we know more about impacts in the Natural Area. Our project team is planning events this summer where we can meet, walk the trail together, and discuss the work and restoration.

In this section, we will discuss goals for restoring sensitive areas. In the next section, we will talk about opportunities to build upon improvements at the trailhead with increased enrichment and accessibility.



We know that the tree canopy is important to your community. At King County, we get it: the <u>1 Million Trees initiative</u> is well on the way to reaching the goal to plant a million trees by 2020 to help us fight climate change and host wildlife.



At King County, we know how important trees are for people and wildlife like this Anna's hummingbird.



Construction will impact some trees in each work area. Where possible, removed trees may be reused in the landscape to host wildlife from insects to birds.



We will restore the work areas according to permit conditions from the City of Bellevue, as well as the Washington Department of Fish and Wildlife. These agencies will require more trees to be replanted than what the contractor needs to remove.



We will plant trees that can live for hundreds of years, providing habitat for wildlife and taking up water during the rainy season. There is opportunity to add diverse forest plants for habitat.



Increasing forest diversity means more kinds of plants for wildlife. This orange trumpet honeysuckle is a Pacific Northwest native plant that provides nectar for hummingbirds and fruit for other birds.



This project requires work in Coal Creek. During construction, permits and contract specifications tell the contractor how and when to work in the creek. King County's Construction Management oversees the contractor's work, and our environmental planners help to review their plans.

Where work affects the creek, the banks will be restored to protect trails and infrastructure while letting the creek flow as naturally as possible.



The Coal Creek project will affect some wetland areas and wetland buffers. We will restore these areas with the goal to create healthy wetlands that can do their job for wildlife and water quality. The pictured wetland is at Seattle's Discovery Park.

Wetlands perform valuable work for the environment and wildlife. They hold water and clean it before it goes to creeks, streams, lakes, and marine waters like Puget Sound. Wetlands help to control flooding. They provide habitat for the small animals and insects that salmon rely on for food. Birds and larger animals also use wetlands.



A pair of hooded merganser ducks rests on a wetland pond at King County's Brightwater Natural Area.

King County's <u>Mitigation and Monitoring Program</u> will monitor and maintain restored natural areas for years after construction. They will keep invasive plants from taking over while new plants and trees are getting established.



The Coal Creek Natural Area is a cherished wild space in a busy urban area. Every day, visitors exercise, enjoy nature, walk their dogs, and dig into history on the trails.



The remains of once-mighty trees can be seen along the trails. Logging forever changed the Coal Creek area. Find links in the credits to learn about the area's history.

As part of the Coal Creek Culvert Replacement Project, the City of Bellevue restored the Red Cedar (Upper West) Trailhead with improved access, habitat, and stormwater management. Temporary parking established on Forest Drive became permanent, allowing more people to walk visit the forested creek.



The Red Cedar Trailhead was improved with a paved surface, additional parking, and stormwater controls such as this pervious pavement in the area by Coal Creek Parkway.

King County's project will need to use the trailhead area to construct the Coal Creek Sewer Upgrade Project. The County's contractor will use a segment of the trail to build a connector pipe needed to capture existing flows from the local system. Work at the trailhead may take 18 months, but the closure could be extended depending on fish windows and other factors.

We know you will have concerns about access to the natural area during construction. You may wonder what will happen to the recent investment in this popular trailhead. Keep reading to learn about ideas we have to address impacts and build upon the improvements at the trailhead.



A connector pipe to bring flows from Bellevue's existing sewer pipes to the new Coal Creek Sewer pipe will be built under the trail.

King County WTD prioritizes sustainability and being a good neighbor as we build critical clean water projects. We look for ways to reduce waste and to buffer impacts.

The Coal Creek project team identified ways to reuse materials at the trailhead, maintain access during construction, and build upon the City of Bellevue's improvements. The project team is exploring ideas with the City of Bellevue Parks and Community Services. These ideas are not final at this time. Continue reading to see what we're looking at and let us know your thoughts!

Reusing materials



Many of the landscaping materials at the trailhead can be reused, including rocks, the kiosk, and fencing.

The County's contractor could find outlets for landscaping rocks and fencing meeting King County's goal to divert construction materials from the landfill. But the project team proposes to re-purpose these materials at other City of Bellevue sites. Using materials locally puts the previous investment back into the community and reduces hauling.

Many of the young native plants at the trailhead can be salvaged and replanted elsewhere. It is not cost-effective to store them during construction and replant them later. However, they could benefit yards in the community. We see an opportunity to host a community plant salvage event, providing education and tools so people can give these plants a new home.



Native plants provide benefits for local and migratory wildlife. Cedar waxwings winter in South America and spend summers here, feeding primarily on berries like this native Oregon grape.

Maintaining access during construction



The project team and the City of Bellevue are looking at expanding this alternate parking area on Forest Drive. The expansion would provide more parking while the Red Cedar Trailhead area is closed and remain permanently.

The Coal Creek project team is working to maintain access during construction for maintenance and monitoring activities and recreation. King County and the City of Bellevue are evaluating potential to increase the parking area on Forest Drive for both temporary and permanent use. In addition, we are assessing an option to build a trail detour around the trailhead construction area through the City's Well-KEPT Program. This summer youth employment program provides education, job skills, and career development training in the field of park resource management.

Improving access and enrichment



The Coal Creek Natural Area has rich history, wildlife, and nature to explore. This sensitive area is also affected by neighboring communities and visitors. The City of Bellevue develops signage and guides to help people learn about and protect parks and natural areas. Bellevue Utilities provides resources and links to classes to help people conserve and protect the environment.

King County's project team is proposing to add to the City's efforts when we restore the Red Cedar Trailhead. We see opportunities to increase accessibility in the project area with resurfacing, seating, and signage that meet needs for people with mobility impairments. Maps posted on site and online can help people of all abilities plan their visit.

Interactive signage and online content can enrich the experiences of people with visual, hearing, or cognitive impairments.



This interpretive sign at the Sitka National Historic Park is an example of interactive signage for people of all abilities. Online audio and visual content complements this installation. Photo courtesy of Lake Ledge Naturalists.

King County's team will continue working with the community and the City as these plans are evaluated and developedstay tuned and join us this summer to share your thoughts!



King County Wastewater Treatment Division works hard to engage communities in programs and projects. We meet people where they are at, listen, respond, and adapt our communications to make sure we're meeting your needs.

We have a well-stocked communications toolkit, and are always looking to add more ways to reach out. If we missed something, let us know!



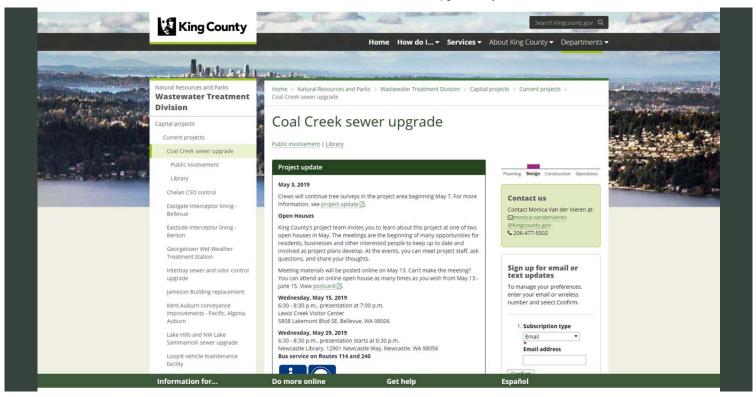
Meeting in person helps us to build relationships with people we may be working with for years throughout the life of a project.



Talking with you helps us to answer your questions and hear your thoughts.

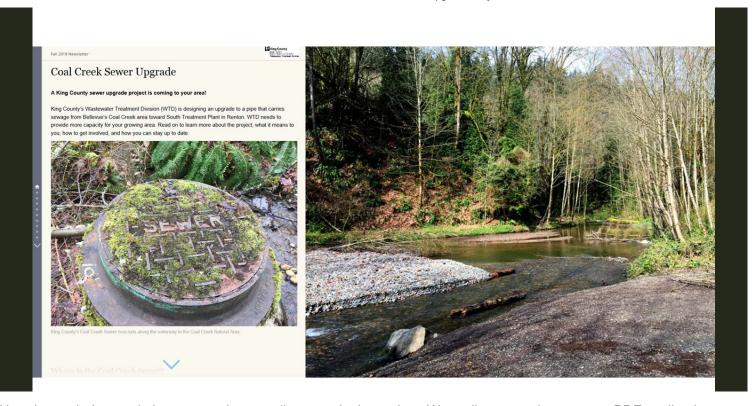
We host community meetings, provide briefings for groups and organizations, and meet one-on-one. We meet in community centers, parks, on the street, and even in people's living rooms.



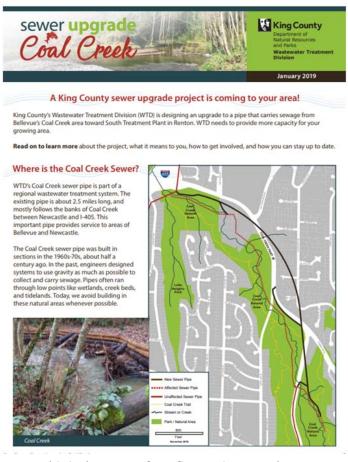


We maintain a project Web page throughout the life of the project. You will find notices, updates, information about the project, and past notices, meeting materials, and events.

Can't find what you are looking for? Give us a call or send us an email and we'll help.



Newsletters help people keep up to date at milestones in the project. We mail out newsletters, post PDFs online in multiple languages, and create electronic newsletters.



This is the cover of our first project newsletter.

Let us know if you need project content for your group/organization newsletter!



King County WTD's project teams visit community fairs and festivals and host family-friendly events. These events give us the opportunity to talk with people about our projects and provide some interactive water systems education at the same time. We are looking at opportunities around the Coal Creek project area, including hosting a dog-friendly event at the Natural Area.



This canine project neighbor attended a celebration for a new WTD clean water facility in West Seattle.

Do you have a suggestion for an event we should host or attend? Let us know!

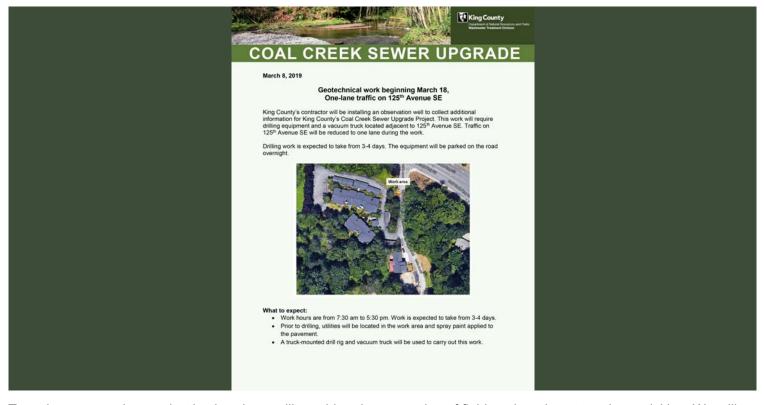


We all benefit from infrastructure. But even when we know it's needed, construction can wear on us and interfere with our activities and plans.

King County's Community Services teams are with you every step of the way through the project, including construction.



We work with the community during construction from the office, in the street, and even after hours from home.



To make sure you know what is ahead, we will provide advance notice of field work and construction activities. We will keep you updated on progress.

We are available to answer questions and address concerns and complaints. Once a contractor starts work on the Coal Creek Sewer Upgrade, we will be on call 24/7 for the remainder of the work.

King County WTD places a premium on responsive, adaptable public outreach. You can help us serve you by taking the survey in the next section.



Now it is your turn. Let us know how you interact with the project area. Tell us whether you have enough information to participate. Let us know the best ways to keep you informed and to help you participate.

Access the survey here.

Want to talk about the project? You also call or email Monica Van der Vieren at 206-477-5502 or monica.vandervieren@kingcounty.gov. Find resources to learn more and explore the project area in the credits section.

For more information about the Coal Creek Sewer Upgrade Project, <u>visit the project</u> Web page .

Photos, graphics, and maps produced by King County, unless otherwise indicated.

Cougar Mountain Regional Wildland Park

King County Department of Natural Resources and Parks

Well-KEPT Program | City of Belevue Parks and Community Services

Aerial photo of Bellevue Jelson25, Wikimedia Commons

King County WTD Mitigation and Monitoring Program | Web page and projects

1 million trees program King County's Strategic Climate Action Plan initiative

Photo, salmon sign, Sitka National Historic Monument | Courtesy of Lake Ledge Naturalist

History Link Encyclopedia of Washington State history

Newcastle history Newcastle (Washington) Historical Society