State of Utah

GARY R. HERBERT
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SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

L. Scott Baird
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
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Water Quality Board
Jennifer Grant, Chair
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Steven K. Earley
Brandon Gordon
Michael D. Luers
L. Scott Baird
Emily Niehaus
James Webb
Dr. James VanDerslice
Dr. Erica Brown Gaddis
Executive Secretary

Utah Water Quality Board Meeting
Via Adobe Connect

July 22, 2020
Meeting Begins at 9:00 am

AGENDA

Water Quality Board Meeting – Roll Call

A. Funding Requests:

1. Duck Creek Request for Reauthorization ..... Skyler Davies

B. Public Comment Period

C. Meeting Adjournment

Next Meeting August 26, 2020 at 8:30 am
DEQ Board Room 1015
195 North 1950 West
Salt Lake City, UT 84116

DWQ-2020-014388
Revised 7/13/2020

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human resources, at (801) 536-4281, TDD (801) 536-4284, or by email at lwyss@utah.gov at least five working days prior to the scheduled meeting.

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TO: Water Quality Board

THROUGH: Erica Brown Gaddis, PhD

FROM: Skyler C. Davies, P.E.

DATE: July 22, 2020

SUBJECT: Kane County Water Conservancy District Duck Creek Sewer Project
Duck Creek Request for Reauthorization (additional information) Memo

On June 24, 2020 the Request for Reauthorization for Kane County Water Conservancy District (the District) was presented to the Water Quality Board with a recommendation to reauthorize funding to Kane County Water Conservation District of $1,000,000 loan for 30 years at 0 percent and a grant of $3,997,000 with the same special conditions as the original authorization (of $1,000,000 loan for 30 years at 0 percent and a grant of $2,997,000). The memo from that Board Packet and the original Authorization memo are included in this packet for reference. At the June 24th Board Meeting the Board requested additional information to better understand the water quality and human health needs for the project. This memo provides summaries from relevant studies that were completed in the area.

One of the most recent documents that discussed some of the Board's concerns is the Duck Creek Townsite Act Land Conveyance Environmental Assessment Dated October 2017 (EA). The EA was completed for the USDA Forest Service as a requirement of the Townsite Act necessary prior to transfer of Federal property to the District. The impact on the environment was reviewed for each of the Alternatives including the No Action Alternative; if no action is taken the area will continue to develop with septic systems being the primary means for wastewater treatment and disposal. In the EA under the purpose and need for the action, it states:

"Duck Creek Village is the community hub supporting the surrounding private and NFS lands. Various studies (UDEQ 2004, Phillips 2006, 2007) completed in recent years have determined that there is significant risk for groundwater and surface water contamination in the Duck Creek area on Cedar Mountain primarily caused by improperly treated septic tank effluent. Currently, wastewater treatment for all homes and businesses in the area is provided using on-site septic tank or sewage holding tank systems."

The Environmental impacts subsection Water Resources section of Environmental Consequences Chapter of the report goes on to explain the impacts of the No Action alternative in more detail. It states:

"The NFS would maintain ownership of the proposed conveyance land along with the existing wastewater treatment ponds. The existing uses and leases would be maintained. The USFS would continue to manage

the land in accordance with the Land Resource Management Plan (USDA 1986). The NFS wastewater treatment system would not be used to collect and treat wastewater from private lands due to federal policy. High septic tank density within the Duck Creek Area is potential sources of phosphorus, nitrate, and E. coli in groundwater which could cause negative downstream effect on surface water quality of the Upper Sevier River and the Upper Virgin River.

The No Action alternative could have a negative direct and indirect effect on ground water/surface water quality of the Dixie National Forest. Negative effects on water quality would likely increase in magnitude over the long-term due to ongoing and increasing anthropogenic impacts within the Duck Creek Area."

The Environmental impacts subsection Socio-Economic Conditions section of Environmental Consequences Chapter of the report further explains the impacts of the No Action alternative: It states:

"The No Action alternative could have a negative, long-term effect on the socio-economic conditions of Kane County resulting from water quality issues, public health, and public perception.

High septic tank density within the Duck Creek Area is potential nitrate, phosphorus and E. coli source in groundwater which could cause a downstream effect on surface water quality of the Upper Sevier River and/or the Upper Virgin River. Summer home development and associated impacts including groundwater/surface water contamination, erosion, and recreation are key issues identified as having potential adverse effect on the water quality (UDEQ 2004). The No Action alternative could have a negative direct effect on ground/surface water quality of the watershed. Without a local wastewater treatment system, the ability of the county to issue building permits would be stalled until an alternative solution that complies with state wastewater regulations is developed. This would be a negative socio-economic effect on the community.

Water quality issues have a negative effect on the health and safety of the wildlife and people living within the watershed. This is considered a negative indirect effect on socio-economics of the community.

Negative effects on water quality would likely increase in magnitude over the long-term due to increasing anthropogenic impacts."

Similar sentiments were expressed in other section of the Environmental Consequences Chapter.

Attachment 1 (Duck Creek Wastewater Planning Study Background Information) is a 1 page flyer that was distributed to the Residents of Duck Creek in order to seek public support of the project. It provides some quotes from some of the Existing Studies as well.

Another report that is frequently referenced in many of the reports is Parker, L. and K. Solomon, Sampling and Analysis Project for Determining Ground Water Vulnerability to Non-Point Source Contamination in the Mammoth/Duck Creek Areas of Cedar Mountain, Utah, Southwest Utah Public Health Department, 2003. This report states:

"Because of an increase in development, UDEQ Engineers have expressed concern aquifer contamination may occur from increased use of septic tanks. No previous general sampling of private wells in the Duck Creek area has been determined.

E-coli was discovered in two samples from shallow wells down-gradient from a high concentration of

septic systems in the Duck Creek Village area. Subsequent testing for e-coli in those wells later in the year were negative."

Further testing would be needed to identify if there is an ongoing issue but the information in the report does provide reason for concern regarding potential public health concerns as growth continues in the area.

In conclusion the general consensus of the various studies is that, although there may not be an immediate danger to the drinking water system in the area or to surface waters, that it is not wise to continue to grow the area using septic systems as there is a potential for nitrates to increase in culinary wells, which would eventually cause a public health risk There is particular concern expressed for the Duck Creek meadow area, which is where this initial phase would serve. The proposed project will not, on its own, solve all of the issues, but it is a good start and provides a backbone for future sewer connections. Furthermore, the project provides sewer to the area with the greatest risk of public exposure and water quality impacts. Southwest Utah Public Health Department has also expressed their support of the project in an email to DWQ Staff; the email is included as Attachment 2.

Per the June 2020 board packet:

"Taking into account the high cost of sewer service per connection, staff recommends the Board reauthorize funding to Kane County Water Conservation District of $1,000,000 loan for 30 years at 0 percent and a hardship grant of $3,997,000 with the same special conditions as the original authorization."

DWQ-2020-014234
File: SRF KCWCD Duck Creek, Planning, Section 1

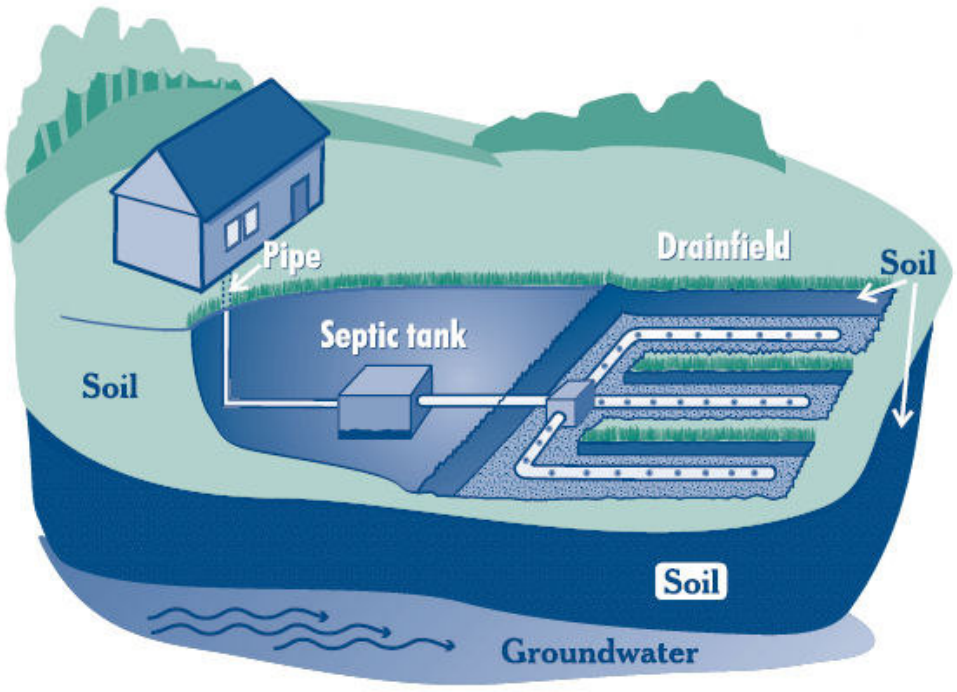
Duck Creek Wastewater Planning Study Background Information

Current Requirements

The Southwest Utah Public Health Department currently requires that absorption systems should not be located on a direct slope above wells, springs, and other water supplies. They also require that there must be a minimum of 48 inches of existing suitable soil between bedrock formations or impervious strata and the bottom of the absorption trench, bed, or pit. They then define unsuitable soil or bedrock formations in part as:

- Soil or bedrock formations with open joints, fractures, or channels which permit such rapid flow that effluent is not treated. This includes coarse particles such as gravels, cobbles, rocks, boulders, or fragments wherein insufficient soils are present to fill the voids.
- Solid or fractured bedrock such as shale, limestone, sandstone, basalt, or granite are unacceptable for conventional absorption systems.

The EPA recommends that you should have a typical septic system inspected at least every 3 years by a professional and your tank pumped as recommended by the inspector (generally every 3 to 5 years).



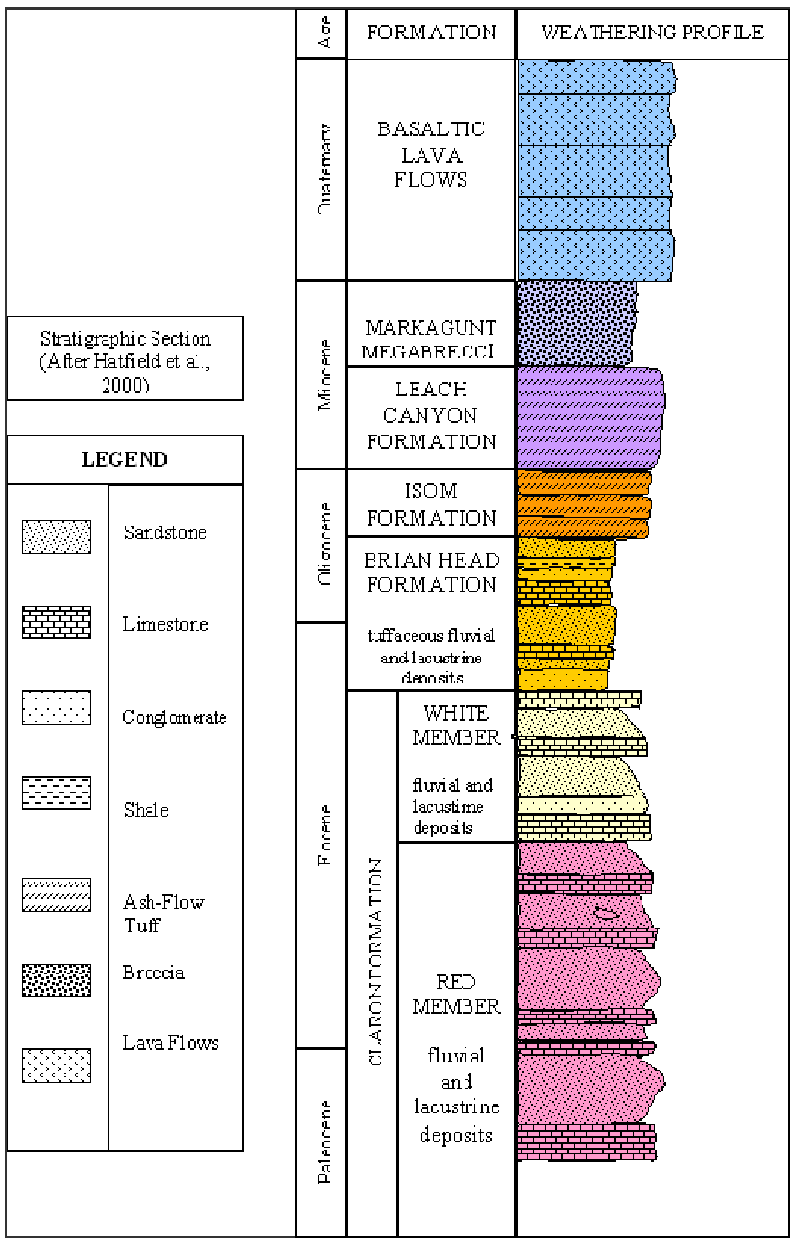
Septic Tank Usage

The first subdivisions to the Duck Creek area came in the 1970's. Growth has continued since then, amounting to an estimated 1,800 homes in 2005. It is expected that 3,100 homes will eventually be built in the area. These homes have largely been used for recreational purposes, although there is an increasing number being used as year-round residences.

The EPA estimates that septic tanks serve 25% of the U.S. population and that between 10% and 20% of all onsite systems are not adequately treating wastewater. Septic systems are the second greatest threat to groundwater quality, as viewed by State water quality agencies. Groundwater and surface water from the Duck Creek area influence three different river basins.

The EPA has also reported that system densities in some areas around Duck Creek exceed the capacity of even suitable soils to assimilate wastewater flows and retain and transform their contaminants. In addition, many systems are located too close to groundwater or surface waters and others, particularly in areas with newly installed public water lines, are not designed to handle increasing wastewater flows.

"Septic systems that are properly planned, designed, sited, installed, operated and maintained can provide excellent wastewater treatment. However, systems that are sited in densities that exceed the treatment capacity of regional soils and systems that are poorly designed, installed, operated or maintained can cause problems." (EPA, 2005) It is thought by local and State agencies that the poor soil conditions coupled with the high density of septic tanks poses a health risk to both animal and human populations who make use of the water from the Duck Creek area.



Stratigraphic Section for the Cedar Mountain Area.

Existing Studies

In 1974, two new developments were built in the Duck Creek area. A letter to the Bureau of Environmental Health, dated July 15, 1974, with regards to the suitability of soils in the Movie Ranch subdivision, stated that, "soils conditions for subsurface wastewater disposal are marginal to totally unsuitable." It also stated the following:

> "In over one-half the excavations, rock was observed to be a serious problem as evidenced by the shallow depth at which the holes were able to be excavated with a back-hoe. Over one-half the excavations were observed to be within the 5 ft to 7 ft depth range and were indicative of very difficult excavating. Where rock did not appear to be a serious problem, heavy clay was predominant."

In 1974, the Utah Geological and Mineral Survey performed a geologic reconnaissance of the Movie Ranch and Timber Trails subdivisions. The report states that (referring to the Movie Ranch subdivision), "Generally speaking the earth materials distributed over the area of this subdivision are impermeable and bedrock is shallow to very shallow in depth." In reference to the Timber Trails development, the report states, "The terrain here is essentially like that immediately to the north at Movie Ranch Estates. Here, too, bedrock is quite shallow, normally from 1 ft to 2 ft in depth."

The Upper Sevier River TMDL, published in 2004 by the Utah Division of Water Quality, states that, "As development continues to increase, impacts to surface and groundwater from poorly designed, located and installed septic systems may be a potential problem particularly since the claron-limestone and volcanic substrates present from Duck Creek to Panguitch Lake are not suitable and conducive to septic system use."

A soil suitability study performed in the Duck Creek area by the NRCS in 2004 reports, "The septic system hazard associated with a slow percolation rate is that effluent will not leave the site fast enough through the ground." This increases the likelihood that wastewater can resurface and possibly pond on the surface. Additionally, the shallow bedrock layer prevalent throughout the study area increases the likelihood that the wastewater can flow along the top of the bedrock. This is particularly dangerous if the bedrock has fractures present, which may allow the wastewater to travel quickly into the groundwater. Also, if the site slopes, wastewater can resurface farther down the hill without having been sufficiently cleaned. Once the wastewater comes to the surface, it could come into direct contact with humans or contaminate surface water. It could also contaminate the groundwater if the groundwater table is shallow.

Skyler Davies <sdavies@utah.gov>

Duck Creek Sewer Project

Jeremy Roberts <jroberts@swuhealth.org> Tue, Jul 7, 2020 at 4:31 PM
To: sdavies@utah.gov
Cc: Jerry Jorgenson <jorgenson@swuhealth.org>, Sandra Thevenin <sthevenin@swuhealth.org>, Mitchell Christensen <mchristensen@swuhealth.org>

Hi Skyler Davies,

The Southwest Utah Public Health Department is in full support of efforts to sewer the Duck Creek Area. A few of the reasons that we are in support are:

1. This area has higher ground water levels, which would make it difficult to site replacement septic drainfields. There are concerns also that existing septic drainfields might not have enough separation between the drainfield to groundwater to allow proper treatment of the sewage effluent.

2. Duck Creek is located in an important watershed area and as such extra efforts should be taken to protect water sources from potential pollution sources such as septic systems.

3. Businesses that would be regulated through a pre-treatment program if connected to a sewer system will have to watch more closely what is discharged to the plumbing of that business. The same amount of monitoring does not take place when a business is on an onsite wastewater disposal system.

4. Sewer systems in general are more protective of Public Health and the Environment than the use of many onsite wastewater disposal systems.

Thank you for the opportunity to send an email in support of the Duck Creek Area Sewer Project.

Sincerely,

Jeremy Roberts

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