Flood Restoration, Repair, and Mitigation Projects After December 2 Storm.

General Description of Dec 2 Flooding Damage

The apparently record rainfall event beginning Dec 2, 2020 reprised flooding patterns of several previous years but particularly the years 2017 and 2018. The 2020 event was much worse than the previous years. Throughout Gustavus, residential yards and roads collected rain and flooded several inches deep. It took days for that all to drain away due to the gradual slope of the outwash fan and the saturated soil.

However, the primary impact from flooding was caused by Salmon River overflow from north of the National Park boundary. When this occurs, overflow floods down marshy overflow channels north of the gravel pits and into the pit ponds. This causes the pit ponds to overflow. That overflow is intended to pass through two culverts leading from the south central pit and the southwest pit into a channel that passes through a large culvert under the Wilson Rd/Rink Creek Rd junction bend and into the east side Airport Ditch, and hence on to icy Passage south of the runway. However, the Airport ditch has not been cleaned in many years and is choked with brush. In this event, as in past years, the overloaded ditch backed up through the big culvert under the Wilson/Rink Creek bend. Excess flow then bypassed the culvert and floods down Wilson Rd. Some flow also flooded down Rink Creek Road. Both roads were badly washed out and ditches, where present, were filled with sediment and flood debris.

The flood water coursed 18-24" deep down Wilson Rd from the overflowing pits, branching three ways. Between the Wilson residence and Hemlock Rd, one overflow branch entered an old stream channel leading south across subdivisions along Hemlock, Jensen, Chase, and Harry Hall roads and eventually emptied into the Salmon River at several points near Riverbend Ln. There were major washouts of the roads along this route and of private driveways and property surfaces near the Salmon River. Most of the overflow onto Wilson Rd continued south, past the old stream channel, down to Chase Dr. At that point half entered a deeper ditch along the east side of Wilson until that ditch connected to the eastside airport ditch, which took it to Glen's Ditch and then to Icy Passage. The other half flowed west toward the river along Chase and River Bend, flooding Riverbend and adjacent driveways on the way to the river. Chase was a swift stream during the event. Roads throughout the subdivision were scoured and lost gravel.

Heavy rain north and east of Rink Creek Road flooded across Rink Creek Road on its way south to Icy Passage. That washed out the surface of Rink Creek Rd and filled ditches with sand at many locations east of the gravel pits. Subdivisions in the Rink Creek area were flooded by local rain, Rink Creek and Homestead Creek, and runoff from Excursion Ridge. There was standing water on properties throughout the Rink Creek area, including the Bear Track Lodge. The end of Buoy Dr has no drainage.

The tasks summarized below were completed to alleviate flooding at time of event by unplugging culverts and re-routing flow as possible, and then address damage from washouts, loss of road gravel, and sedimentation of roads and drainage ditches and improve ditches to handle more flood water. A second but smaller atmospheric river rain event was forecasted for around Christmas and the City moved quickly and effectively to prevent repeat flooding. The tasks improved ditch quality and capacity along roads and flood control barriers at the City gravel pits to divert water away from roads and into channels like the airport ditch system. Combined with follow-up DOT cleaning of the eastside airport ditch this work should reduce future flooding down Wilson Rd.

Project Tasks:

Task 1. Southwest Pit Pond and South-Central Pit Pond Drainage Channel to Airport Ditch System

Purpose. This task repaired flood damage, scouring and sedimentation in the two channels and culverts leading from the Southwest Pit Pond and the South-Central Pit Pond to the eastside airport ditch. In addition to repairs, the task is intended to block future overflow from bypassing the entrance to the eastside airport ditch.

The contractor bulldozed a berm along the south side of the southwest pit, joining berms along the west side and near the outflow channel, thereby plugging a broad gap to prevent future overflow into the woods and on to Wilson Road, bypassing the eastside airport ditch.

The contractor also cleaned the channels from the southwest and south-central pits to the large culvert under the road bend and a short section of the channel beyond the large culvert. A damaged culvert plugged in the channel from the southwest pit was removed and scrapped, and a broad open ditch was cut to facilitate flow from the pit.

The work at this site resulted in a strong flow out of the two pits into the airport ditch. After 24 hours the water level in the pits dropped about two feet. The pits will be able to buffer flow into the airport ditch in future storms and the channels will enhance flow up to the capacity of the airport ditch.

The work applied a D3 Cat dozer, a Kobelco excavator and Bobcat skid steer loader

Status: complete except for minor touch-up after flow minimizes. We didn't cut brush along the channel where it was going to be hard to get to.

Other recommendations: Cut brush along sides of channel between pit and culvert and excavate channel deeper. (That would lower water level in ponds further.)

Cost of Task 1 completed work: $3,380
Cost estimate for Task 1 recommended additional restoration work: $3,500 if we cut more brush along the channel and excavate further.

Task 2. Rink Creek Road Washouts, Gravel Loss and Plugged Ditches and Culverts

Purpose. This task repaired flood damage to the road surface and 13,410 ft of ditches along of Rink Creek Road between the gravel pits and the Rink Creek bridge culvert. The contractor cleaned ditches of flood debris and restored drainage flow on both sides of the road, cleaned discharge channels carrying water away from Rink Creek Rd, filled washouts in the road bed with new gravel, and bladed the road to restore surface, crown, and ditch shape.

The work applied a Kobelco excavator, a Bobcat skid steer loader, a 10-yard dump truck, a tractor with towed Savannah grader, and a Cat motor grader.

Status: Mostly complete, but more ditch work is still recommended toward the east end of the road. There are several undersized or small double culverts at driveways that need to be replaced in the future, but probably as special separate projects.

Other recommendations from contractor: Need $3K pit run, $2K blade/compact. Also need to consider dealing with stumps/etc. generated from current cleaning probably $2-3K depending on sidecast/haul out of stumps, cottonwoods, etc. Do we have to remove anything from private property that we've done?

Cost of Task 2 completed work: $13,150
Cost estimate for Task 2 recommended additional restoration work: $6-10,000.

Task 3. Wilson Road Ditches and Culvert Plugging

Purpose. This task repaired damage to the washed-out road surface of Wilson Road, and cleared 4,400 ft of ditches south of Jensen of sediment and debris. The contractor excavated sediment and debris from a major east side Wilson Rd ditch that connected opposite to Fara Way to the east side airport ditch system and Glen's Ditch. They excavated and cleaned ditches on the west side immediately north of Chase Dr and cleaned a cross venting culvert under Wilson at the Chase intersection to relieve flooding of residential properties along Wilson near Chase. They hauled and spread gravel to replace lost road surface, reshaped the road crown and smoothed the rutted and scoured travelling surface from Four Corners (Gustavus Rd) to the gravel pits.

The work applied a Kobelco excavator, a Bobcat skid steer loader, a John Deere tractor with towed Savannah grader, and a Cat motor grader.

Status: Ditch work complete south of about Jensen except for minor ditch excavation around internet fiberoptic cables.

Additional recommendations: The contractor needs to haul and lay more gravel to raise road surface from Chase to the Pits, blade and reshape road prism.

As a separate project, extend ditches from Jensen to the pits on both sides and install culverts at driveways. This will have to be scoped separately and culverts will be expensive.

Cost of Task 3 completed work: $9,500.
Cost estimate for Task 3 recommended additional restoration work: $7,000 ($5k for pit run, $2k for blading and shaping.)

Task 4: Repair of Subdivision Roads West of Wilson—Chase, Harry Hall, Parker, and White.

Purpose. This task repaired scoured and washed out roads in the subdivision after flooding subsided. The Contractor hauled gravel to fill washed out road sections, and restored road contour and surface.

The work applied a 10-yard dump truck, John Deere tractor with towed Savanah grader, and a Cat motor grader.

Status: Partially complete. Still needs more gravel to raise roads to proper height where washed out in some areas. This subdivision needs more drainage improvements, but the easements are only 30 ft wide. Improved drainage needs planning with engineering help. That is a future project not in this recommendation.

Cost of Task 4 completed work: $2,500
Cost estimate for Task 4 recommended additional restoration work: $6,000 ($5k pit run, $2k blading compacting.)

Task 5. Tong and Toad Roads Flooding Relief and Ditch and Road Repairs and Ditch Cleaning

Purpose. This task involved three parts. During the height of flooding, the ditch at the west end of Tong Road, near the Country Inn driveway was backed up by two sediment-filled culverts and debris in the ditch. Flood water flowing off the adjacent Agricultural Unit flowed across the flooded ditch and across two adjacent subdivision residential properties flooding both seriously. The flood waters also flooded much of Tong and Toad Roads, resulting in scouring and heavy rutting as vehicles drove through the flood.

The first part of Task 5 was to clear culverts of sediment to re-establish flow along the ditch that leads to a small stream and the Good River. That task successfully relieved the flooding of the two properties and prevented further damage there, and reduced flooding of Toad Road.

The second part of Task 5, after flooded ditches had drained, was to clear brush and sediment from the ditch along the west side of Tong Road and along a short section of the Country Inn driveway to improve flow during future major storms. One damaged and undersized culvert under the Owens Ditch Road along the section line at the west end of Tong Rd was removed and scrapped. It will be replaced with a simple foot crossing later.

The third part of Task 5 was to fill washed out holes in Tong and Toad roads with gravel, reshape the road crown and grade out the deep ruts that developed during the flood.

Equipment used included a Bobcat skid steer loader, brushing attachment, 10-yard dump truck, a John Deere tractor with towed Savannah grader and a motor grader.

Status: Base project complete. However, we need to plan an additional project to extend the Tong Rd ditching east to Mountain View Rd on both sides of the road and install several culverts. This can be a special project and is not included in the existing restoration project

Cost of Task 5 completed work: $4,000
Cost estimate for Task 2 recommended additional restoration work: None

Task 6: Eastside Airport Ditch Cleaning—DOT.

Purpose. The task is to clean the eastside airport ditch running from the culvert under the Wilson Rd/Rink Creek Rd bend at the pits, along the east side of the airport runway 11-29 then southeast to Icy Passage. It hasn't been cleared of brush in many years and that brush appears to be restricting flow down the ditch during heavy rain events.

Status: Request for service has been filed with the DOT Commissioner.

Task 6 cost estimate: Not available—DOT expense

Task 7: Westside Airport Ditch and Glen's Ditch Cleaning—DOT

Purpose. The task is to clean the westside airport ditch beginning at the ponds on either side of runway 2-20 and running across airport property, then under Gustavus Rd in a culvert, then south to Icy Passage as far as the Parking lot for the Nagoonberry Trail. After crossing under Gustavus Rd it is known as Glen's Ditch. The ditch along the City's Wilson Road empties into the westside airport ditch opposite Fara Way, so brush restrictions in the airport ditch slow stormwater flow from Wilson Rd. The Glen's

Ditch section is in a ditch easement assigned to the State of Alaska, so remains the responsibility of DOT. None of this system has been cleaned in many years, although the Airport Manager cleared brush along the upper portion of the ditch from Fara Way toward Gustavus Rd.

The City of Gustavus as asked the Alaska Dept of Transportation to clean the ditch from the culvert at the upper end to below the airport to improve flow.

Status: Request for service has been filed with the DOT Commissioner.

Task 7 cost estimate: Not available—DOT expense

Task 8. Same Old Road and End of the Trail

Purpose. This task repairs flood damage to the road surface and improves ditches along Same Old Road from Glens Ditch Road to Moose Lane and on End of the Trail, which branches off Same Old Road. At the first 90-degree bend traveling east from Glen's Ditch the road flooded due to a plugged culvert that runs from the ditch on the northwest side to a flowing ditch on the southeast side of the corner. The ditches partly filled with sediment from the flooded road. On End of the Trail flooding washed out a large hole just to the east of the intersection with Same Old Road. End of the Trail also lost gravel and was badly rutted due to flooding.

Task 8 will restore gravel to road surfaces and washed out locations on both roads to restore driveability. Estimated 300 CY spread and compacted. It will not address needed new ditches and culverts.

Additional work is recommended as a separate project to clean or replace the culvert at that first bend and grader-ditch both sides of Same Old Road, installing culverts at driveways where they are missing, damaged, or undersized. The road embankment will be raised to cover culverts, regraded, and crowned.

Status: Basic initial grading complete to restore basic driveability on both Same Old Rd and End of the Trail. Additional 300 CY of gravel and grading is needed to replace washed out areas along middle E-W section of Same Old Rd. A lift of gravel the full length of End of the Trail followed by grading is recommended.

Cost of Task 8 completed work: $700
Cost estimate for Task 2 recommended additional restoration work: $6,000 ($4k pit run, $2k blading and compacting.)

Task 9. Fairweather Rd.

Purpose. This task will clean sediment and material from ditches that flooded properties on the north side of Fairweather Rd. Fairweather Rd runs east from Dock Rd to Jacob and the DeBoer subdivision. The City completed ditch cleaning and excavation from Pleasant Ave to Jacob and on to Glen's Ditch in 2019. But the 720' section from Dock Rd to the Hooge driveway just west of Pleasant was not treated at the time. That section flooded during the Dec 2 event, forcing a shutdown of a ground-mounted transformer box.

This task will be to ditch the north side of Fairweather from Dock Rd to the Hooge driveway just west of Pleasant Ave where it will join into the ditch completed last year. It will require installing 3 driveway culverts. There may be utilities in the way. This task will have to be done as a separate future project

Status: Task is still being scoped. No restoration work has been done at this time, other than basic grading.

Programming Cost Estimate: $30K.


Flood Repair Projects
Legend
Overflow Channel
South Central Pond ditch
Southwest Pond Ditch
Eastside Airport Ditch
Rink Creek Road
Rink Crk Rd End
Old Streambed channel
Hemlock
Jensen
Wilson Road
Country Inn Driveway
Tong Rd
Toad Rd
Eastside Airport Ditch
Chase
Old Stream channel in subdivision
Parker
Moose Ln
Riverbend
Harry Hall
Same Old Rd
white
Fara Way
Westside Airport Ditch
End of the Trail
Starting Location
Four Corners
Same Old Rd
Gustavus
Glens Ditch
Nagoonberry Trail Parking
Dock Rd Ditch (DOT)
Fairweather Rd
Google Earth
©2020 Google
N
1 mi