AGENDA
REGULAR DRAINAGE MEETING
Wednesday, December 2, 2020 9:30 AM
Large Conference Room
Due to Covid-19 health concerns, this meeting is open to the public via conference call only. The meeting date and time will remain the same. You may call at that time to access the meeting by following the instructions below:
To access the meeting call: 1-(312)-626-6799, when prompted enter meeting ID code: 82075672007
You can also access the meeting online at: https://us02web.zoom.us/j/82075672007

1. Open Meeting
2. Approve Agenda
3. Approve Minutes

Documents:

11_25_20 - DRAINAGE MINUTES.PDF
DD 11 LANDOWNER MTG 11_18_2020.PDF
4. Approve Claims For Payment

Documents:

PAYABLES-DRAINAGE PUBLICATION 12_04_2020.PDF
5. DD 55-3 WO 201 - Discuss W Possible Action - Investigation Summary

Documents:

DD 55-3 WO 201 INVESTIGATION SUMMARY 11_25_20.PDF
6. Other Business
7. Adjourn Meeting

# REGULAR DRAINAGE MEETING WEDNESDAY, NOVEMBER 25, 2020 9:20 AM This meeting was held electronically and in-person due to Covid-19 concerns. 

11/25/2020 - Minutes

1. Open Meeting

Hardin County Drainage Chairperson Lance Granzow opened the meeting. Also present were Trustee Renee McClellan; Lee Gallentine of Clapsaddle-Garber Associates (CGA); Michael Pearce, Network Specialist; and Denise Smith, Drainage Clerk.
2. Approve Agenda

Motion by McClellan to approve the agenda. Second by Granzow. All ayes. Motion carried.
3. Approve Minutes

Motion by by McClellan to approve the minutes of Drainage Meeting dated 11-18-2020. Second by Granzow. All ayes. Motion carried.
4. DD 82 WO 301- Discuss W Possible Action - Investigation Summary

Gallentine stated this we went out and looked at the property for Miss Eklund, this was a property her father dealt with primarily, and there are some CRP grounds coming out of CRP, Miss Eklund has some concerns about surface drainage. Gallentine stated this is a main tile and there is a lot of surface water in the vicinity, we could not find any issues with the main tile, no sinkholes or blowouts. There is some surface erosion occurring but it is not with the district facility per se, Gallentine does not see where it is a district problem at this point, if the district desired, you could put some intakes along I Ave. to try to get some of that water below ground instead of going overland, but under heavy flooding chances are more water may come out than goes in so it may make the matter worse. Gallentine stated the district is under no obligation and is just letting them know they could if they choose to. Granzow stated the choice would be the Engineer's and if he doesn't have an issue with the ditch then it is probably the landowner that wants to put a standpipe in, which they have the capability of hooking to that tile. Gallentine stated definitely, or if Secondary Roads wants to put in an intake they could, we couldn't find anything wrong with the tile at this point. Smith asked if Gallentine had spoken with the landowner. Gallentine stated he has not, he wanted to make sure the Trustees had the opportunity to review this and make a decision before he spoke with Miss. Eklund. Granzow stated we need to forward this on yo Secondary Roads so the County Engineer can review it. Gallentine stated it is possible there are intakes there already and they are just covered it up but we could not find them. Granzow stated we can notify the County Engineer and then his advice to the landowner is that the District does not have an issue, that is surface water drainage, and if an intake is to be put on that is up to the County Engineer or the landowner, the County Engineer will know then what we are talking about.

Gallentine asked if the Trustees would like him or the Drainage Clerk to forward that information on to the County Engineer and landowner. Granzow stated CGA would charge us to do that, so let's have the Drainage Clerk relay that information on. Smith stated she can do that and has Miss Eklund's email as well, and can let the County Engineer know it is up to him if he chooses to do anything with it.

Motion to direct the Drainage Clerk to notify the landowner with the results of the investigation and possible solution and also to notify County Engineer Roll of the same. Second by Granzow. All ayes. Motion carried.
5. DD 4-112 - WO 2020-1 - Discuss W Possible Action - Utility Crossing Summary

Gallentine stated this was a Drainage Utility Permit filed by Minerva Valley, they did some installation down in the southern part of the County, and Minerva Valley installed a line along the road that did not cross a district facility, but they went back to the west along that driveway and where that line of trees is there is an open channel that is not a district facility, near as Gallentine can tile, and there is also a tile in there. Minerva Valley ran their utility installation along the driveway and they are only a couple of feet deep, there is some existing culverts, and for that reason they are above the existing culverts, and the culverts are above the district tile. Gallentine stated they didn't conflict the district tile, they are above the district tile, but they are significantly above the district tile because of the culverts, which Gallentine understands and would be a variance from permit requirements, they did not install any signage as it was a service line going to someone's house, so that would also be a variance from permit requirements, that the Trustees would likely want to grant to Minerva Valley. Gallentine stated the last thing he wanted to note was that the tile we shot was a little bit downstream of the culverts in the driveway, and the tile is in bad shape, it is a corrugated metal pipe, and as they were probing the tile, they broke through the corrugated metal pipe with the tile probe. Gallentine stated if the Trustees wanted to do further investigation at this time the

Trustees certainly could, this is a joint district with Story County, so you may want to get them in the loop if you want to do more work.

Granzow stated is suggestion would be to authorize the two variances, also knowing if we do any work in the area and tear up Minerva Valley's line, it is their responsibility to replace and repair their line, Granzow would give that recommendation on that tile on to Story County and they can decide if they want to move forward with it and we can ask them how they want to proceed. McClellan asked if there was any blockage on the tile. Gallentine stated no, as a matter of fact once they were probing the tile, and poked the tile open on the top, it actually started draining the waterway into the tile, the tile is definitely flowing. Granzow stated it sounds like a sinkhole will start pretty quick. Gallentine stated it is hard to say. Granzow's recommendation would be a landowner's meeting if it were our district. McClellan stated if there is not a problem with the flow now, Granzow stated it is just a potential problem now, we can let it go across Story County's minutes and see how they would like to proceed. McClellan stated in recent landowner meetings, landowners are looking to spend the least amount possible, if there is not an issue currently, they may not want to spend anything. Granzow asked if this was a large district, Gallentine stated this is on a lateral within the district and does not believe the district is huge. Granzow just wondered if a letter could be sent at landowners notifying them which tile it is. McClellan stated we could always do a zoom meeting. Granzow stated we could just send a letter out notifying landowners of the findings and that we will do no action unless a request is made. McClellan stated they could watch for sinkhole or any other issues. Granzow stated we can just tell them we are aware of this, just tell us what you want to do and we will set on it, we can just send it to landowners in our County for now. McClellan stated that is true, then we don't have to have a landowner's meeting unless an issue arises, we don't have to go back and forth, we can just see what the landowners want to do at this time, without involving Story County. Gallentine stated it is about 1,200 to 1,300 acres, it is not huge. Granzow asked how may landowners are we talking about, about ten. Gallentine stated, probably at the most. Granzow stated it is easier to send ten letters and ask them what they want to do, we can give them options of a landowner meeting, we can give them options of a repair request, Granzow stated he agreed people are not wanting to spend any money right now. McClellan stated we can give them options, Granzow would want it on file that we made them aware of this and it is in their hands and not ours, the water is flowing. Gallentine stated it looks like the lateral drains about 700 acres, and Gallentine would emphasis that water is flowing at this point. Granzow stated landowners may just say, let it flow. McClellan stated a landowner mailing with the option to contact the Drainage Clerk if you experience any issues with the tile. Smith stated she can send out a mailing to the landowners, and let the Clerk know if you are interested in having a landowners meeting or are experiencing any problems to let the Clerk know, if the Clerk does not hear anything back from you we will leave it as it is now. Granzow stated make sure to note if they call in, to refer to this district we are talking about. Smith can include a copy of the Crossing Summary as well with the mailing. Granzow stated he would rather go that route, and let them know we are not planning on doing anything with it at this time, it just a be aware notice. McClellan stated that would be better since there are few landowners.

Motion by McClellan to approve the two variances as recommended by the Drainage Engineer on Drainage Utility Permit 2020-1 in DD 4-112. Second by Granzow. All ayes. Motion carried.

Motion to instruct the Drainage Clerk to send out a letter notifying the landowners in DD 4-112 of the issue with tile condition that has been discovered and asking the landowners to contact the Drainage Clerk if issues should arise. Second by Granzow.

In additional discussion on the motion, Gallentine asked if the Trustees would like Story County notified as well. McClellan stated she is just thinking of notifying the landowners at this point, we won't notify Story County until it is decided to go ahead and do a repair. Granzow stated we can send the same letter to Story County, Smith stated she could do that and provide Story County with a copy of the Crossing Summary. McClellan asked if it should go to the Story County Engineer. Granzow stated it should go to the Story County Engineer and Drainage Clerk. Smith stated she will do that.

All ayes. Motion carried.
6. DD's 1, 8,8 Sub 2, 44, 62, \& 78 - WO 2020-12 - Discuss W Possible Action - Utility Crossing Summaries

Gallentine stated these crossing summaries could be hit at all at once, these are all Heart of lowa crossings done under the same permit, Heart of lowa went under all the tile on every one of them, the closest they came to the tile was about $5-1 / 2^{\prime}$ feet and they exposed the tile, and their locate depths are noted, they exceeded the permit requirements by far. Gallentine stated they do have signage out there but the signage does not have their mailing address and phone number on them, they just have "Warning Underground Fiber Optics Heart of lowa" and they reference to call lowa One Call, so their signage does not $100 \%$ comply with the Drainage Utility Permit requirements, and was not sure if the Trustees would like to grant a variance or how they would like to handle it. Granzow stated Heart of lowa did a great job. McClellan asked if these were all under one permit. Smith stated the
crossing summaries are for each district crossed in the scope of Heart of lowa's work under the one Drainage Utility Permit \#2020-12.

Motion by McClellan to approve the variance in signage and acknowledge receipt of the Crossing Summaries for DD's 1, 8, 8 Sub 2, 44, 62, \& 78 under Drainage Utility Permit 2020-12. Second by Granzow.

In additional discussion on the motion, Gallentine stated the signage supplied by Heart of lowa does not list their mailing address and phone number but still goes above and beyond what most utilities install. Granzow stated he is fine with that.

All ayes. Motion carried.
7. DD 46 - WO 2020-14 - Discuss W Possible Action - Utility Crossing Summary

Gallentine stated this is for Midland Power Co-op for just the DD 46 portion of Permit \# 2020-14, Midland installed new overhead lines and went out and located the Lateral 5 tile of DD 46, and they are overhead lines, and the nearest pole is 8' from our tile, so they are clearing the tile by plenty, they don't have any signage as the poles are overhead, and Gallentine does not know how much sense signage makes in that case, if there is a hole, there is a pole in it so it is pretty obvious. Granzow does not have a problem with that. Gallentine stated this would be a variance from the permit's language requiring signage.

Motion to approve the variance in signage and acknowledge the receipt of Crossing Summary for DD 46 under Drainage Utility Permit 2020-14. Second by Granzow. All ayes. Motion carried.
8. Other Business
9. Adjourn Meeting

Motion by McClellan to adjourn. Second by Granzow. All ayes. Motion carried.

# DD 11 LANDOWNERS MEETING WEDNESDAY, NOVEMBER 18, 2020 11:30 AM This meeting was held electronically and in-person due to Covid-19 concerns. 

11/18/2020 - Minutes

1. Open Meeting

Hardin County Drainage Trustee BJ Hoffman opened the meeting. Also present were Trustee Renee McClellan; Landowners Jim Smuck, Robert Smuck, Merv Vierkandt, Jack Runge; Lee Gallentine of Clapsaddle-Garber Associates (CGA); Angela Silvey, Board Secretary; Michael Pearce, Network Specialist; and Denise Smith, Drainage Clerk.
2. Approve Agenda

Motion by McClellan to approve the agenda. Second by Hoffman. All ayes. Motion carried.
3. Introductions/Attendance

Introductions were made and attendance verified.
4. DD 11 WO 294 - Discuss W Possible Action - Explanation Of Investigation Summary

Gallentine stated that in this small district, earlier this year we had a report of a sinkhole, we found the main tile of DD 11 is not in that great of shape, like all of our districts it has been in there over a hundred years. Gallentine stated it was interesting that not only is the tile starting to collapse with the veeing in, it seems like there is a void beside the tile on either side, so when it is cracked on the top and on the bottom it makes it really tough to find something to connect to, because once you get near that, that side crack wants to push into that void on one side or the other. Gallentine stated we did end up televising about 1,600' roughly, we went upstream and downstream both, got some snapshots and tabulated what we found, we found 13 spots in each direction that are either partially collapsed or imminently going to collapse soon, and so we have some pictures, and we can talk about that, Gallentine referenced photos from the Investigation Summary, the first photo is a closeup that showed the void so you can see the smooth dirt where the old tile was, and right above the waterline you can see that void beside the tile, that is not typical of what you see, in most of these districts the tiles have been in there so long you don't see any voids beside them so that must be due to some kind of erosion going on through the years, that is kind of the unusual part. The next photos show the condition that the first joint of the tile starting to vee down a little bit, we know they are all cracked, we didn't count cracks, but once that top starts veeing down we know they are going to collapse, there is one that has gotten a bit farther along and you can start to see the dirt, next photo shows the top starting to vee down right away and you go on to the next section of tile and you can see more of that on the right side, the next photo is a little bit uglier and shows both the top and sides are cracked. Gallentine stated if anyone has questions, feel free to stop him at any time.

Gallentine referenced another photo of the top starting to vee down with dirt visible, Runge asked where these are located, Gallentine stated they are pretty much all over and pretty evenly spread throughout the length of the tile. It was asked if these damaged areas were north or south of Buckeye, Gallentine stated they were all north of Buckeye and north of Buckeye is the only place we televised. It was asked how many total feet of main is there from the north edge of Buckeye to the creek, and how far from the north edge of Buckeye does the main go southward. Smuck stated the blowout was due west of his house. Gallentine will look at the report for details. It was discussed that the main tile in Buckeye is right on the east edge of the east alley and goes up west of the schoolhouse, right by the Main Street. Gallentine stated that looking at the old map, right from the road that runs east west right north of Buckeye, it runs through three different forty acre parcels, $3 / 4$ of a mile, goes north of Buckeye, it extends through Buckeye, once you get south of Buckeye it extends down more for a couple more forty acre parcels so it extends about a half mile south of Buckeye. It was asked if we start to do this, this could lead to the southern end including the city of Buckeye, but we wouldn't know that until we start. Gallentine stated he does not know anything about the rest of the tile other than what we have exposed and televised, which is just this 1,600 ' north of Buckeye. Vierkandt stated if we did replacement here going north, there would likely be problems with the tile going south, if in fact, we decide to replace, he would like to know what the whole cost would be to replace the total length before we open up a can of worms. Gallentine stated that is understandable, and that is how we got to this point, once we televised and brought this to the Trustees, the Trustees said, let's stop and get the landowners together to discuss this, and see what people think and want to do.

McClellan asked if this would be a situation where if we decide to just fix some of it and we go in there and dig, we will have problems finding something good enough to connect on to. Gallentine stated that is what we ran into, we got about 50 ' and we put concrete collars on it and wrapped it up in fabric, and reported back. Gallentine stated if you just want to look at the $1 / 4$ mile we televised, there are 26 areas that need spot repairs, some of them are
close enough you could combine them into one repair, so you would be down to 11 spot repairs consisting of 500', which would be under the $\$ 50,000$ hearing threshold. If you want to replace this whole $1 / 4$ mile, you would be above and beyond the $\$ 50,000$ threshold and would have to have an Engineer's Report and a hearing, or if you want to upsize it while you replace that report and hearing would be required. Smuck asked how the assessment is split on this, because this is $100 \%$ of Buckeye's storm and city sewer. Gallentine stated no it is not, the incorporated limits of Buckeye are split between three different drainage districts, all of Buckeye has to go through one district or another, you would be right that most of it goes through this one district, Gallentine does not know where their city sewer discharges. Smuck stated they do not have city sewers it is all septic tanks and leach fields. McClellan asked what happens if we start messing with the drainage tile and city sewer runs through it. Gallentine stated the last one of these that we ran into was a lateral over on the west side of town, and the DNR said you can hook them back up and at the time of transfer it would need to be addressed, sooner or later it forces them to do something.

Gallentine stated so that is where we are at, we are all covered up now, those spots Gallentine referenced on the photos were some of the worst, when they are starting to vee down like that, maybe they will last another 5, 10 or 20 years, no one knows, that void on the side of the tile is concerning because that gives it a space where there is no side support. Smuck stated it looks like it has separated at the cracks and the water started to swirl in those side areas. Gallentine stated that is all he can think of also, as the erosion has to have started somewhere, or it has just worked its way upstream when it is overloaded.

Runge shared his comments with Smuck and Vierkandt this morning, Runge is a fix as fail person on this, as once we start this you are not going to want to stop and it will go beyond the scope any of us want to see right now. Runge realizes it will take attention in the future, and we are in some uncertain financial times right now as a country, although the markets look good today, and this could all blow up in our face. Runge stated he realizes this but by the same token $90 \%$ of his corn goes across the bridge that says safe for one truck only, we are putting a lot of emphasis on getting tile lines fixed, but there was a time two years ago I could not even get from 220th St to Co Hwy D41 anywhere between S21 and S27, they have addressed that now, we have two open and are still one short, Runge will go on record as fix as fail. Gallentine stated that to clarify, when you say fix as fail, that when we get a sinkhole, we just go out there and fix it, is that correct. Runge stated yes, that is what he is thinking. Gallentine stated the good news is that the tile is flowing now. Smuck stated yes and no one's sewer is backing up. Vierkandt stated he is with Runge, because we don't know how long it will last, and as long as this is on Smuck's ground as long as he is compensated for that, if in fact there would happen to be another blowout, and the district would have to go through Smuck's field to repair, they could compensate his crop loss through a damage claim, and asked Runge if he agreed. Runge stated yes, he went out in June and looked at the repair in June, when they went down into the other place 2 years ago, he can show you his crop yields in that area, so fixing it as we go is not without it's ramifications also. Vierkandt asked Runge if he had any objections to possibly getting some estimates so we know what we are dealing with here in a worst case scenario. Runge did not have a problem with that, and did not think we need an engineering study, Runge would be against a full blown engineering study, we have educated people that could give us a pretty close reference to where this might be, and that may be subject to another meeting, but Runge is not totally in favor of doing another engineer study, until we get to that point. Smith stated if costs were to become available she could provide a breakdown of what that would look like for each of the landowners. Runge stated a ballpark figure would be helpful, and we should be able to come to some idea of what a project like this would cost.

McClellan asked if Runge was talking about the cost of replacing the tile. Vierkandt stated we don't know how many repairs we would have in the next 20 years, so yes so we have an idea of what those replacement costs might be up front, Vierkandt asked if there was some sort of cost estimate Gallentine could do short of a full blown engineering study. Gallentine stated we could give them a preliminary idea of costs without going through a formal study, it would take 2 to 4 hours, if it was just a rural district it would be a little bit easier, but we will have to figure what it will cost to go through Buckeye. Vierkandt asked if Gallentine could do just the north edge of Buckeye going north for the cost estimate, Smuck stated that is where $90 \%$ of our blowouts occur. Vierkandt stated there has not been any in Buckeye. Smuck stated he knew there was an underground fiber optic line in Buckeye, and we had televised some in the past, and there would be issues with the tile line as it runs under the Cooperative in Buckeye and under the railroad tracks, and that would be very cost prohibitive. Hoffman asked what that might be called for pricing. Gallentine stated we could give you a one page Opinion of Costs.

Vierkandt stated we would be further ahead if we did the work from the north edge of Buckeye going to the north, and asked is there any chance that because this is in town are there any monies or grants available to the town of Buckeye to bear some of those costs, if not all of the costs. Gallentine stated there are CDBG (Community Development Block Grant) funds available to towns now, but the key to those grants is they are tied to water quality, so what that would do is they will want is a wetland, or to slow the water down or to treat it, as far as putting in a tile, and draining it out, they will pay for that but only if there is a water quality aspect to the project. Hoffman stated if you want to put a CREP wetland at the end, it may be an option. Gallentine stated you may not even need to put a wetland at the end, you could do biofoils in town with ditches in native grasses and allow the
water to pool up in it so it drains more slowly, tree trenches etc. Smuck stated the only time he know of a tile in town draining anything the CDBG worked on was the project in lowa Falls out by Theisens, that drains ag ground and the city, and they paid $100 \%$ of that tile, the landowners got to drain their farms and the State paid for the crossing under Hwy 65. Gallentine stated that is state law, the State will have to pay for highway crossings. Smuck stated the landowners did not pay for any of it. Concern was expressed that any costly project would break the town of Buckeye, any major project would be costly. Smuck stated they have had plenty of years to stock up for this, and maybe they should know there is a project like this coming up. Gallentine stated he has heard both sides of the story, that the folks in town can't afford it and that the folks in town could have planned for it, he does not know what the answer is, the Trustees get to decide and they want the landowners input. Smuck stated that sooner or later something will have to be done, likely in Smuck's lifetime, he does not think it would last another 50 years, we have to think sooner or later this will be a project that has to get done, Smuck is not saying it has to get done now, we need to start exploring some avenues where there is some cost sharing and so there is some options to possibly make this happen with some government funding so nobody is out what they could be out currently. Smuck stated there are options out there and ways to make this work and does not think a complete repair right now is that option, everybody wants to talk about infrastructure for the next four years and ways to get everybody working, maybe this is a way we can get some government money and we need to keep a good ear open for those options. Gallentine stated he would love to hear about some of those options if anyone hears about them, we had a different district and nobody was for it and nobody wanted it, but one landowner stepped up and they ended up putting up a CREP wetland, and that saved us putting in a $1 / 4$ to $1 / 2$ mile of tile and in that wetland project the government paid to replace the tile downstream of it, and the district cost on that was really minimum on it. Smuck stated we have already put in one wetland on this a $1 / 4$ mile away on pasture that Smuck has, and something like that may be applicable at the end of this tile. Gallentine stated he thinks it is DD 21 that is to the south and east of this one, Smuck stated maybe one wetland can serve both tiles. Gallentine stated there is a couple of tile that run parallel to that outlet portion and could possibly grab both of those and save both districts some money. Smuck stated right across the stone fence, his cousin Rastetter has some CRP, not official wetlands but some CRP, and maybe a practice like that could be considered in this case.

Gallentine asked if there was any other questions for him, none were presented. Hoffman stated that Calvin Hiland brought up to him when he was over to Radcliffe, that some of these projects that end up going into municipalities, there is a ten year finance option put into place for this, its not like you have to do it right then and there. Hoffman wants to be conscious of everyone's life and livelihood, and when some people see that big bill, it is very intimidating but there are means of financing it through the Drainage Clerk, so if someone gives you a hard time, please know we are here to work with you, that is why we have these meetings. Hoffman wishes there were more people here today, but there are means of relief if something like that comes up, and people may not understand we are here to work with you and we don't want to bankrupt anybody. Hoffman stated it is much like the project in Radcliffe, some of our homeowners stated they will have to put $\$ 20$ a month away and if that project comes to fruition, they will have it, but they had no idea because a lot of the landowners just don't engage on something like this. Hoffman lives in a drainage district and did not know until he got his first assessment 3 years ago, and had never received an assessment before, Hoffman may have $1 / 4$ of an acre in the district, so now Hoffman and his brother who manage the family farm put a little bit away for that assessment knowing it is just a matter of time before we will be assessed again.

McClellan asked if the Drainage Clerk could provide information on the drainage assessment process. Smith stated once an assessment goes out, from the date the assessment goes out there is a 30 day window in which you can sign up for a drainage waiver, and what the drainage waiver does is it takes the cost of the assessment and we can spread that amount out over 10 years of payments, it splits the amount equally into those payments over the 10 year period of time. There is a $5 \%$ interest fee charged on the assessment payments, some people might find they can find a better interest rate through their bank, but we can certainly do a waiver to spread that assessment payment out over time, we can do that for any landowner receiving an assessment over \$500, there is a $\$ 500$ minimum for the waiver. Smith stated if your assessment is over $\$ 500$ we can sign you up for a waiver payment plan. Hoffman stated for some people that may have moved to Buckeye or Radcliffe and don't have good credit, this is still an option. Smuck asked if credit was requirement, Hoffman stated no, and this is an option. Vierkandt asked who all got the letter for this meeting. Smith stated the letter went out to all landowners in the district, Smith stated there is a total of 134 parcels and in the district and once Smith removes all of the duplicate landowners, she mailed out about 62 letters notifying of the meeting, Smith states everyone in the district that is a landowner should have gotten one, whether they chose to attend today or not for personal reasons or Covid, Smith can't be sure, we tried to give everyone the option to zoom into the meeting like Runge is doing, so that everyone that wanted to attend today's meeting had that option to attend. Vierkandt asked if we would get a breakdown of what each individual landowners costs might be if we could get an opinion of costs from the engineer. Smith stated she could provide the landowners a list of potential costs broken down by parcel, once that estimate is received from the engineer, and could mail that out to all landowners. Hoffman asked if this process would be ok with everyone here included, we would ask CGA to form an Opinion of Costs for the tile on the north side of Buckeye, once we get that we will have the Clerk plug it into the assessment schedule and get it out to the landowners, Hoffman asked does that sound reasonable. Vierkandt stated yes, and asked this would be just for
informational purposes. Smith stated yes that was correct. Smuck stated it would be helpful to have that information and we don't have to make this decision today, if we can kind of continue to do this as a fix as fail for now, and then in the next 20 to 30 years we need to know what we are looking at as to what this could cost and if we need to apply for grants, we need to know what kind of grants to apply for and how much we might need.

Hoffman stated amongst yourselves, you might appoint a self designated liaison and we can get you in touch with Mike Bourland who is the engineer that did the CREP project out at Stoley's and at the Perry's, it may be better to get ahold of him sooner than later to find out what options are available and he can get a hold of one of you and say hey this might be a good time to initiate this program with this option, it might all come together at the right time. Vierkandt stated he is willing to be one of those guys, and the Smucks as well. Hoffman stated he wanted as many landowners to be involved as possible as it is their money and not Hoffman's, but State Code says the Trustees shall maintain the facility, which means it shall function, Hoffman does not want to order a steak well done if you do not want a steak well done, that is just a common courtesy. Vierkandt thinks the majority want to fix it for right now, and continue to fix it as we have problems, this is something that rather than all of a sudden there is a quarter million dollar project paid for by a few, if it comes upon you all at once, if you know it is coming then you can brace yourselves for the next few years. Vierkandt stated we have had some of the wettest years on record with more rainfall, and there are more drainage issues because of it, as we know that can cause drainage issues as the ground gets saturated and that tile gets full, it makes the sides softer because of that, we may be in a dry cycle the next 5 to 10 years, we may not have another blowout for 5 to 10 years. Gallentine stated this is not a tile he remembers being out on doing repairs on every few years, it has been a while, you look at that video and think it isn't going to last a long time but we have not had a huge amount of blowouts over the last 5 or 10 years, maybe a couple. Vierkandt stated there has been 4 or 5 , Smuck agreed. Gallentine stated there are districts you are there spring and fall like clockwork. Vierkandt stated not this district, the drier we get the better off the tile is.

Hoffman stated one of the things we have implemented on the landowners behalf is if someone calls in after the meeting today and says we have a problem, do we have to wait until next week for our meeting next week to deal with it, we have given some authority to our Drainage Clerk, to initiate that investigation process on our behalf, limited by a dollar amount, but at least if we have a crew already working in Alden, why not have them stop by and get going on this, so we have at least helped the process part of the situation, not only in this district but in all the districts, so we can maintain some continuity there. Vierkandt stated if we were to do Buckeye north to the creek, how much would that cost, not an official quote, just a guess, not to hold you to anything. Gallentine stated to just make a guess, possibly $\$ 300,000$ to $\$ 400,000$, part of which would be assessed to Secondary Roads as part of the road crossing. Vierkandt stated that was what he was afraid of. Smith stated looking back in the assessment bible, it was last assessed in 2017, prior to that 2014, and the next previous repair was in 1991, so at least we are lucky in the sense that this district has not had a lot of recent repairs that have been very costly. Gallentine stated in the 2017 repair, we worked on every lateral.
5. Comments/Discussion

Hoffman asked if the previous discussion covered both items 4 and 5 on the agenda. Smith stated yes, she would just need a motion if the Trustees would like to formally request an Opinion of Costs from CGA.

## 6. Possible Action

Motion by McClellan for Clapsaddle-Garber Associates (CGA) to provide and Opinion of Costs to replace the tile running north from the north edge of Buckeye. Second by Hoffman.

Hoffman asked for any additional discussion on the motion. McClellan stated this would just be replacing the tile from the north edge of the town of Buckeye running north. Hoffman stated Gallentine will report that cost estimate back to us and then we will get it out to the landowners in the district and those in attendance today. Hoffman asked if that was fine for now, Smuck stated yes and we will just fix as fail for now. Hoffman stated yes, he will not box CGA into a time frame, but as soon as we get those numbers from CGA, we will get those numbers plugged into an assessment schedule and got those numbers out to you. Smuck stated Carolus was at the top of that district, paying about $40 \%$ of the cost of that repair, and asked but if it is a certain size project does it get reallocated by percentage. Hoffman stated no, you would have to reclassify the district or split it into a north and south district, Gallentine stated if we increase the tile size or capacity, then you automatically reclassify the district, if you replace what is already there with the same size tile reclassification is not required, the Trustees would have to authorize reclassification if they feel something isn't equitable. Hoffman stated if a landowner comes forward and says we would like to see this be more equitable, it has been 100 years since this classification has been done, and things have changed, if you ask us for a reclassification, there is about a $99 \%$ chance that we would do that on your behalf. Hoffman stated if you make improvements and upgrade the coefficient then we automatically reclassify the district, but if you put in the same then you would have to request it and Gallentine would engage the reclassification commission to do that. Smuck stated if we put in the same size tile, and then down the road we do a project, how is that set into motion.

Hoffman called for the vote. All ayes. Motion carried.

## 7. Other Business

Hoffman stated he would recommend reclassification sooner than later. Smuck stated it seems high that 800 acres in the district and someone with 40 acres would be paying a huge amount. Hoffman stated that $100 \%$ will be divided so someone will pay more than someone else, and we have had some new classifications that have happened, that people are like I paid $30 \%$ before, and now I am paying $33 \%$, well if Joe Smith went down $8 \%$ that $8 \%$ has to be accounted for somewhere. Smuck asked if it were divided on a per acre basis based on where you land sits. Gallentine stated it is based off of soil types, we take into account the slope of your ground, how close you are to the facility, whoever is closer pays more as they don't have to have as much private tile to maintain drainage, and acres also play into it, there have been times where we have had the farther up the district facility you are you pay more, but that has not always been the case, it is the commissioner's discretion on that. Gallentine stated the Commission is comprised of an Engineer and two disinterested landowners from the County who don't own land in the district and don't rent ground in the district. Hoffman asked if that made sense, four years ago this was all new to me, and this is a teaching moment, when we get a handful of people in here, it is only fair we educate rather than surprise people. Gallentine stated 100 years ago, everyone would have known this as they were doing the classifications every other week, but now unless you have a major project the reclassification don't get done often.

Vierkandt asked if in fact this project goes forward what would Gallentine recommend, a parallel tile install or a complete replacement. Gallentine stated he would recommend a complete replacement. Vierkandt asked if that is because we will have problems with the old tile collapsing later down the line. Gallentine stated yes, 50 years ago when the tile was only 50 years old parallel tiling made some sense, but now the tile is 100 years old and we are past the useful life of the tile, so it is like buying a new Corvette and putting Model t tires on it, you are stuck with the maintenance on the old tile and the payment on the new tile, because you change size from $15^{\prime \prime}$ to a 24 " is only going to cost you a couple more dollars a foot and may save you on doing rock bedding, Gallentine would recommend replacing it and not worrying about the old tile. Vierkandt wished they wouldn't put back the same size but would put in a larger tile. Gallentine stated that most of the old tile was put in with a coefficient of $1 / 8$ " a day or maybe $1 / 4$ " a day, it was mainly designed to drain a few potholes here and there, they didn't envision pattern tiling, as long as you put it in it is a good consideration to upsize, this is currently a 21 " tile now, Smuck stated it may be the outside diameter of the tile at 21 ". Gallentine stated you can;t get plastic tile at $21^{\prime \prime}$ in size. McClellan asked if Gallentine's estimate would include upsizing, Gallentine stated no it would just be replacement. Smuck stated we know our estimate to replace and could figure a couple bucks more per foot to upsize. Gallentine stated upsizing will cost more, but it won't be any cheaper in five years, contracting costs just don't go up and down the way farm pricing surges up and down.

Hoffman asked if there were any other questions. Smith stated if any of the landowners present in this meeting also have land in DD 14 they can stick around for the DD 14 Landowner Meeting to immediately follow this one. Runge stated he did not get notice for this meeting. Smith stated he should have received notice on this meeting Runge is welcome to stay and we can move right into the DD 14 Meeting.
8. Adjourn Meeting

Motion by McClellan to adjourn. Second by Hoffman. All ayes. Motion carried.

Hardin County
Drainage Claims with Pay Date of 12/4/2020

| DD 9 WO 229-Pay Estimate Number 1 | Gehrke Inc. | 101,221.56 |
| :--- | :--- | ---: |
| DD 55-3 WO 251 - Indemnification Agreement on Pond | The Davis Brown Law Firm | 550.00 |


| Date 12/4/2017 |  |  |  |  |  | Work Order \# 201 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| District \# 55-3 | 55-3 | Lateral | 12 |  |  | Fund \# |  | 51085 |  |
| Township Concor | Concord | Section | 3 | Twp | 86 | Rge | 22 | Qtr Sec | NW1/4 |
| Repair Requested By | Jerry Hindman |  |  |  |  |  |  |  |  |
| Address |  |  |  |  |  |  |  | (515) 6 | 9-2761 |
| Landowner | Jerry Hindman |  |  |  |  |  |  |  |  |
| Address | GIS 862203100002 |  |  |  |  |  |  |  |  |
| Request Taken By | Tina Schlemme |  |  |  |  |  |  |  |  |

Available for Repair Now? $\boldsymbol{\nabla}$ Yes

Problem Description Tile plugged in the RR ROW about 450' south of 280th Street.

Date Available $\qquad$

Repair labor, materials and equipment $\qquad$
$\qquad$
$\qquad$

Potential Wetlands?Yes-Repair existing tile onlyNo-Repair and maintain tile

Repaired By: $\qquad$
Date:

Please send statement for services to:

Phone (641) $939-8111$
Fax (641) 939-8245

Hardin County Auditor's Office
Attn: Tina Schlemme
1215 Edgington Ave, Suite 1
Eldora, IA 50627


## Drainage District:

\#55 - Division 3 - Lateral 12

## Investigation Summary:

- As a result of the findings in the previous investigation, the District Trustees requested permission to jet clean the Lateral 12 tile within the railroad right of way in the NW $1 / 4$ of Section 3, Township 86 North, Range 22 West.
- Excavated on both sides of the railroad and conducted root cleaning of the assumed 8-inch VCP Lateral 12 tile from each direction inward towards the railroad. When CCTV inspection was about to take place, it was found that there was a second 8-inch VCP tile in the vicinity on the East side of the railroad right of way, with said second tile running parallel to the assumed Lateral 12 tile and a single wall HDPE tile and tees connecting them.
- Conducted CCTV inspection of the assumed Lateral 12 tile from the east side of the tracks (heading upstream/west) and was stopped at a location where the 8 -inch cast iron pipe joint was largely offset from the 8 -inch VCP. Moved to the west side of the tracks and conducted CCTV inspection in the downstream direction but was quickly hampered by tree roots and debris within the tile.
- Conducted a second-round of jet cleaning and CCTV inspection from the west side of the tracks and found that there were still some roots present within the tile. CCTV was able to push through said roots and continue inspection until reaching the $1 / 4$ pipe diameter offset VCP/cast iron joint that hampered inspection from the other direction.


## Contractor Time and Materials (spent while CGA was on-site):

See attached Tabulated Contractor Time and Materials Sheet while CGA was on-site. It should be noted that CGA was not on-site for all work completed.

## Additional Actions Recommended:

1. It is not clear which tile is the actual Lateral 12 tile. However, at least one of them is flowing, but with the defects as noted on the attached sheet. At a minimum, it is our recommendation that the District Trustees remove or chemically re-treat the trees within 100-feet of the assumed Lateral 12 tile to prevent additional root growth and monitor the offset joint for signs of failure. Alternatively, the District Trustees could pursue total replacement of the entire tile crossing under the railroad. It is our opinion that the construction cost for this would easily exceed $\$ 50,000$ and require an Engineers Report and hearing.
2. The sections of single wall HDPE appear slightly deformed and may fail prematurely due to improper bedding. We recommend their replacement.
3. The contractor did not fill the excavations before leaving the site, and said work should be arranged.

## Tabulated Contractor Time and Materials

| Date | Totals | $9 / 8 / 2020$ |
| ---: | :--- | :---: |
| Workman (hrs) | 6 | 6 |
| Excavator (hrs) | $11 / 2$ | $11 / 2$ |
| CCTV (hrs) | $11 / 2$ | $11 / 2$ |

CONSTRUCTION ENGINEERING
OBSERVATION REPORT
PROJECT NUMBER:
COUNTY, ROUTE, ROAD:

DATE:
DAYS OF WEEK:
SHEET NO.

| S | M | W | T | S |
| :--- | :--- | :--- | :--- | :--- |

1
OF $\qquad$

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION
9:30 ARR IVFD ON SITE
ROTE -ROOTER WAS PACKING UP
TALKED TO THE CONTRACTOR WI RAIL PROS REIRESENTATWE COMTRALTIR SAID THAT HE THINKS THERE IRE
 REMOVED THE ROOTS IV THE TILE AVO THAT HE THOUGHT THAT ROTE ROOTER HM D A BETTER CAMERA JAM A PUSH CAMERA. NO TELEVISING LIAS DOME TODAY, CONTRACTOR ALSO SAID THAT WE DO NOT WEED TO HAVE RAIL PRO THERE FOR THE TELEVISING, THE RAIL PRO REPRESENTATWE CONFIRMED THIS, CONTRACTOR IS TONFIN SCHEOUALIMM PAUL WILLIAMS TO TELEVISE THE TILE CINE AND WILL CALL US WHEN N DE HE HAS A DATE. 10:15 CEFT THE SITE:

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.
Observer's Signature: $\qquad$ Date Prepared:
Reviewed by: Engineer

$$
8-18-2020
$$

CONSTRUCTION ENGINEERING OBSERVATION REPORT

PROJECT NUMBER:
COUNTY, ROUTE, ROAD: $\frac{6636.4}{\frac{280^{\text {th }} \text { st. }}{28}}$

DATE:
DAYS OF WEEK:
SHEET NO.

$$
9-8-20
$$

| $S$ | $M$ | (1) | W | T | F |
| :--- | :--- | :--- | :--- | :--- | :--- |

$\qquad$ OF

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

12:00 p.m. = Arrived at job site. No activity on job site. current wheather $=$ cloudy, light rain with temperature in the so's. 12:05 pin = Contractor and Paul williams arrived on-site.
Tried to televise exposed $8^{\prime \prime}$ VCP, tile was $1 / 3^{t} /-$ full of gravel. Could not get camera into $8^{\prime \prime}$ clay tile, on East side R.R. Contractor hand excavated a $8^{\prime \prime}$ plastic Tee East of $8^{\prime \prime}$ clay tile, placed camera in $8^{\prime \prime}$ plastic and found ane the Tee approximately $3.0^{\prime} \mathrm{t} / \mathrm{-}$ North of exposed $8^{\prime \prime}$ clay tile. Contractor continued to hand excavete to tee and found another $8^{\prime \prime}$ clay tile running parallel to exposed $8^{\prime \prime}$ clay tile. Placed camera into this $8^{\prime \prime}$ clay tile and was able to advance into tile $38.5^{\prime}$ where there was an off set at material change from clay file to Cast. Camera could not get over off set joint

Li:6 $\mathrm{p} . \mathrm{m}_{\mathrm{m}}=$ moved to West side of railroad.
Ii 21 pom. $=$ Attempted to televise North $B^{\prime \prime}$ clay tile under railroad from west side of tracks. $1.5^{\prime} \%$ in camera could not pass a plastic $4^{\prime \prime}$ tile from North and South. Contractor hand dug and removed $4^{\prime \prime}$ tile. Camera advanced to approximately $12.3^{\prime}$ and found cornstalks and organic matter in tile that it could not pass. Line will need to be jetted before televising Contractor is hoping to do this next week after rain chances diminish. Equipment on-site was trac-hoc.
see next page for drawing.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.
Observer's Signature:


Date Prepared:

$$
9-8-20
$$

Reviewed by: $\square$ Engineer

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

| PROJECT NUMBER: |
| :--- |
| COUNTY, ROUTE, ROAD: $\frac{6636.4}{280^{+h} \text { Sf. }}$ |
| LOCATION: Hardin Cocenty DD $^{*} 55$ |

DATE:
DAYS OF WEEK:
SHEET NO.

OF $\qquad$

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION


I Certify that the work described in this report was incorporated into this contract unless otherwise noted.
Observer's Signature:
Date Prepared:
Reviewed by:
$\qquad$
$\square$ Engineer Date Reviewed






## PEARPOINT'缪

WRe MSCC Third Edition

# Inspection Report 

Produced on behalf of - HARDIN CO
Site location - ,
Survey reference - 6636.4
Date - 080920

WILLIAMS UNDERGROUND SVCS.
102 INDUSTRIAL DRIVE, ACKLEY, IOWA
50601,
641-485-3925

## Contents

1 Drain / Sewer Survey ..... 3
1.1 Site information ..... 3
1.2 Drain / Sewer Details ..... 3
1.3 Survey Details ..... 3
1.4 Drain / Sewer Diagram ..... 4
1.5 Observations ..... 5
1.6 Photographs ..... 6
2 Drain / Sewer Survey ..... 7
2.1 Site information ..... 7
2.2 Drain / Sewer Details ..... 7
2.3 Survey Details ..... 7
2.4 Drain / Sewer Diagram ..... 8
2.5 Observations ..... 9
2.6 Photographs ..... 10

## 1 Drain / Sewer Survey

### 1.1 Survey Header

| 1.1.1 | Surveyed by (Operator) | PAUL |
| :--- | :--- | :--- |
| 1.1.2 | Contract no. |  |
| 1.1.3 | Job no. | 6636.4 |
| 1.1.4 | Catchment (Drainage area) | DD55 |
| 1.1.5 | Division | DIV 3 |
| 1.1.6 | District |  |
| 1.1.7 | Pipeline length ref | 1000 |
| 1.1.8 | Date | 080920 |
| 1.1.9 | Time | $13: 24$ |
| 1.1.10 | Location |  |
| 1.1.11 | Start manhole no. |  |
| 1.1.12 | Start depth | m |
| 1.1.13 | Start cover level |  |
| 1.1.14 | Start invert level |  |
| 1.1.15 | Finish manhole no. |  |
| 1.1.16 | Finish depth | m |
| 1.1.17 | Finish cover level |  |
| 1.1.18 | Finish invert level |  |
| 1.1.19 | Use of Drain |  |
| 1.1.20 | Direction | D |
| 1.1.21 | Size 1 (diameter/height) | 8 mm |
| 1.1.22 | Size 2 (width) | mm |
| 1.1.23 | Shape | C |
| 1.1.24 | Material |  |
| 1.1.25 | Lining |  |
| 1.1.26 | Pipe length |  |
| 1.1.27 | Total length |  |
| 1.1.28 | Year laid |  |
| 1.1.29 | Video cassette number |  |
| 1.1.30 | Comments: General |  |
| 1.1.31 | Purpose |  |
| 1.1.32 | Sewer category |  |
| 1.1.33 | Pre-cleaning |  |
| 1.1.34 | Weather |  |
| 1.1.35 | Location code |  |
| 1.1.36 | Further location details |  |
|  |  |  |

### 1.2 Observations

|  | Cont |  |  | Diameter/ |  | Clock |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Video Ref Dist (tt) | Defect | Code | ef | Dimension | At | To | \% | emarks |

0+00 - Traveling downstream, small amount of roots - Pipe round
0+06 - VCP -> single wall HDPE - Pipe egg shaped
$0+07$ - Large root infiltrating tile w/ roots extending downstream - Pipe egg shaped
$0+12$ - Single wall HDPE -> VCP, camera unable to penetrate roots - pipe



## PEARPOINT'秴

WRc MSCC Third Edition

## Inspection Report

Produced on behalf of - HARDIN CO
Site location - ,
Survey reference - 6636.4
Date - 080920

WILLIAMS UNDERGROUND SVCS.
102 INDUSTRIAL DRIVE, ACKLEY, IOWA
50601,
641-485-3925

## PEARPOINT"舜

## Contents

1 Drain / Sewer Survey ..... 3
1.1 Site information .....  3
1.2 Drain / Sewer Details ..... 3
1.3 Survey Details ..... 3
1.4 Drain / Sewer Diagram ..... 4
1.5 Observations .....  .5
1.6 Photographs ..... 6
2 Drain / Sewer Survey ..... 7
2.1 Site information ..... 7
2.2 Drain / Sewer Details ..... 7
2.3 Survey Details ..... 7
2.4 Drain / Sewer Diagram ..... 8
2.5 Observations ..... 9
2.6 Photographs ..... 10

## 1 Drain / Sewer Survey

### 1.1 Survey Header

| 1.1.1 | Surveyed by (Operator) | PAUL |
| :--- | :--- | :--- |
| 1.1.2 | Contract no. |  |
| 1.1.3 | Job no. | 6636.4 |
| 1.1.4 | Catchment (Drainage area) | DD 55 |
| 1.1.5 | Division | DIV 3 |
| 1.1.6 | District | NORTH LAT |
| 1.1.7 | Pipeline length ref | 1000 |
| 1.1.8 | Date | 080920 |
| 1.1.9 | Time | $12: 54$ |
| 1.1.10 | Location |  |
| 1.1.11 | Start manhole no. |  |
| 1.1.12 | Start depth | m |
| 1.1.13 | Start cover level |  |
| 1.1.14 | Start invert level |  |
| 1.1.15 | Finish manhole no. |  |
| 1.1.16 | Finish depth | m |
| 1.1.17 | Finish cover level |  |
| 1.1.18 | Finish invert level |  |
| 1.1.19 | Use of Drain |  |
| 1.1.20 | Direction | U |
| 1.1.21 | Size 1 (diameter/height) | 8 mm |
| 1.1.22 | Size 2 (width) | mm |
| 1.1.23 | Shape | C |
| 1.1.24 | Material |  |
| 1.1.25 | Lining |  |
| 1.1.26 | Pipe length |  |
| 1.1.27 | Total length |  |
| 1.1.28 | Year laid |  |
| 1.1.29 | Video cassette number |  |
| 1.1.30 | Comments: General |  |
| 1.1.31 | Purpose |  |
| 1.1.32 | Sewer category |  |
| 1.1.33 | Pre-cleaning |  |
| 1.1.34 | Weather |  |
| 1.1.35 | Location code |  |
| 1.1.36 | Further location details |  |
|  |  |  |

### 1.2 Observations

| Video Ref Dist (ft) | Cont <br> Defect | Code | Photo Ref | Diameterl <br> Dimension | Clock | Intrusion | Remarks |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

0+00-Upstream direction, small amount of roots - Pipe round
$0+38$ - VCP $\rightarrow$ Cast Metal, large joint offset, end of survey - Pipe round


## PEARPOINT"嚮

WRe MSCC Third Edition

## Inspection Report

## Produced on behalf of - HARDIN COUNTY

Site location - ,
Survey reference - ADAM
Date - 131020

WILLIAMS UNDERGROUND SVCS.
102 INDUSTRIAL DRIVE, ACKLEY, IOWA
50601,
641-485-3925

## PEARPOINT'3

## Contents

1 Drain / Sewer Survey. .....  .3
1.1 Site information ..... 3
1.2 Drain / Sewer Details ..... 3
1.3 Survey Details ..... 3
1.4 Drain / Sewer Diagram ..... 4
1.5 Observations ..... 5
1.6 Photographs ..... 6
2 Drain / Sewer Survey. ..... 7
2.1 Site information ..... 7
2.2 Drain / Sewer Details ..... 7
2.3 Survey Details ..... 7
2.4 Drain/Sewer Diagram .....  .8
2.5 Observations ..... 9
2.6 Photographs ..... 10

## 1 Drain / Sewer Survey

### 1.1 Survey Header

| 1.1.1 | Surveyed by (Operator) | PAUL |
| :---: | :---: | :---: |
| 1.1.2 | Contract no. |  |
| 1.1.3 | Job no. | ADAM |
| 1.1.4 | Catchment (Drainage area) | GARDEN CITY RR |
| 1.1.5 | Division |  |
| 1.1.6 | District |  |
| 1.1.7 | Pipeline length ref | 1000 |
| 1.1 .8 | Date | 131020 |
| 1.1 .9 | Time | 09:48 |
| 1.1.10 | Location |  |
| 1.1 .11 | Start manhole no. |  |
| 1.1 .12 | Start depth | m |
| 1.1.13 | Start cover level |  |
| 1.1.14 | Start invert level |  |
| 1.1.15 | Finish manhole no. |  |
| 1.1.16 | Finish depth | m |
| 1.1.17 | Finish cover level |  |
| 1.1.18 | Finish invert level |  |
| 1.1.19 | Use of Drain | W |
| 1.1.20 | Direction | D |
| 1.1.21 | Size 1 (diameter/height) | 8 mm |
| 1.1.22 | Size 2 (width) | mm |
| 1.1.23 | Shape | C |
| 1.1.24 | Material | VC |
| 1.1.25 | Lining |  |
| 1.1.26 | Pipe length | m |
| 1.1.27 | Total length |  |
| 1.1.28 | Year laid |  |
| 1.1.29 | Video cassette number |  |
| 1.1.30 | Comments: General |  |
| 1.1.31 | Purpose |  |
| 1.1.32 | Sewer category |  |
| 1.1.33 | Pre-cleaning |  |
| 1.1.34 | Weather |  |
| 1.1.35 | Location code |  |
| 1.1.36 | Further location details |  |

### 1.2 Observations


$0+00-$ Mud and corn in base (start), traveling downstream - pipe round
$0+01$ - Crack in top of one tile - pipe round
$0+06-$ VCP $->$ single wall HDPE, large root infiltrating tile - pipe egg shaped
$0+11$ - Single wall HDPE -> VCP, large root ball - pipe round
$0+12$ - Mud and corn debris (end) - pipe round
$0+19$ - Standing water (start) - pipe round
0+24 - Offset joint - pipe round
$0+32$ - Large root infiltrating - pipe round
$0+42$ - Small root infiltration - pipe round
$0+55$ - Offset joint, standing water (end) - pipe round
$0+60$ - Small root infiltration - pipe round
$0+68$ - VCP -> Cast metal pipe - pipe round
$0+94$ - Cast metal pipe -> VCP, large joint offset - pipe round







