

Mike Penney GeoInsight

Senior engineer at GeoInsight for 13 years. Landfills and Geotechnical engineering is his specialty

“...we were hired to look at this landfill earlier with regard to the potential for redevelopment of it as athletic fields. We are trying to evaluate how we might reuse and reclaim that land for public benefit. GeoInsight, as a company philosophy, feels very strongly about sustainable development and one great way of sustainable development is when you can take a piece of land that has had something happen to it, and bring it back into public benefit. In many cases all it takes is some kind of engineering control to allow that to happen. Of course risk evaluation is a very important part of this.

I would like to cover some of the basic things we evaluate with regards to landfill. Landfills do contain waste. We bury them and cover them for a reason. We do not want the public or children or animals to come into contact with the waste. Landfills produce gas as they degrade over time and that gas has to be managed in a certain fashion. Landfills, while they are operating, get rained on or groundwater flows through them, and as that water contacts the waste the water can sometime become contaminated. So there's leachate that needs to be evaluated. And finally landfills, by their very nature, do not contain structural building materials. They are full of waste that you or I would throw into our trashcans. So we have to evaluate the actual structural stability of the landfill.

With regards to this site at Jones Avenue we'll go right down this list. From a waste point of view the nice thing about this landfill is a) it's very old and b) it was a burning dump so a lot of the waste has been burned away. Even if there were chemical waste – such as a can of paint, it has been burned away. These types of concerns are most often mitigated by a burning dump. Although burning dumps are not allowed nowadays, by the nature of the way they were operated, it does take care of some of the contamination that was put in there in the past. In addition, there was Ash placed there in bulk quantities so what you're left with is a fairly stable residue from a chemical and structural point of view. As opposed to – if this were a municipal solid waste landfill that was closed just five years ago there would be a lot more issues with regards to the waste that was there because they're still kind of alive. In the landfill the wastes are kind of dead. The waste that are there are materials that don't really migrate. They stay in one place and are pretty innocuous.

The next thing is regarding gas. With a new municipal solid waste landfill where there is lots of biodegradation going on, landfills have the capacity to produce incredible amounts of gas. In fact in some landfills they actually harvest the gas and burn it and turn it back into electricity. That procedure doesn't work for old landfills. The gas production for an ash landfill is pretty much zero. One of the things that we've evaluated for this site is – are any of the existing passive gas vents producing any gas pressure. Based on our evaluation – they're not, which is what we'd expect. The material in the landfill now is 99.9% inorganic. There's nothing there to degrade or to create gas. So landfill gas is not really a risk or an issue.

The next thing is groundwater. Most of the landfill is lined and certainly capped with a liner and has been shedding water for years and years and years. Any water that remains in it from its previous operation has slowly drained out through a leachate system that was built into the landfill when it was closed many, many, years ago - 30 years ago almost. The way we try to evaluate whether there is leachate being produced and the quality of that leachate is by looking at the groundwater around the landfill. It's a very common procedure done at probably every landfill in the country. We've evaluated the groundwater quality at this site, and as with the gas production, there is really nothing in the landfill. There are some low concentrations of metals but they're not at any concentrations that would concern anybody. Probably no different than the concentrations you might find in your backyards. The groundwater isn't anything to be concerned with,

Finally, from a structural point of view, the shape of the landfill and its contents presents a situation that makes it easy for redevelopment to happen because the ash is quite stable. It's not going to settle. It's not going to cause problems with regards to interaction with any materials we put on top because the ash is covered with a liner and then it's covered above that with approximately two feet of soil. The concept for the redevelopment of land fill would include primarily placing additional soil above what's there now. There may be some very small areas where the cap is cut into a little bit, but DES and the solid waste division are very careful in its review of this type of project. Because of projects that GeoInsight has done with DES in the past for other landfills as well other engineers they have developed a pretty specific criteria list of things that you have to be aware of and include in your engineering design. We see this site as being very simple with regards to taking care of those things. One is that you have to maintain a minimum of a two-foot cover of soil above any waste material. That would be very easy to happen at this site.

So if you take all of those things into account from an engineering perspective this would be a very simple redevelopment site. Very straightforward and easy controls could be designed into the reuse so we could address all those concerns. By me standing here and saying that ash is not a problem, and gas and groundwater are not problems doesn't mean we wouldn't pay attention to those things. In fact the design that we would come up with for the reuse would have features that would accommodate the collection of gas still. We would still maintain groundwater management, monitoring and control of the site. We would still monitor the landfill for settlement. All those things would still be looked out for. And as was mentioned earlier, the city is still monitoring that landfill now. So it's going to be monitored one way or the other for many years to come. All that being said, I realize because of my profession and having dealt with this before there is a lot of public concern when you start talking about dealing with landfill and we really need to put the risks into perspective. It may sound very cliché-ish but getting into a car has a risk a thousand times worse than could happen to a child using this site. The materials that are there, the way the fields are going to be built, yes, a child may get injured playing soccer there or get a softball in the eye, those types of risks are orders of magnitude greater than any potential risk from anything that is buried in the landfill because of the way this is going to be constructed. The reconstruction is done in a very particular way, very careful

way. As a professional engineer I owe a duty to the public to build and make recommendations that are safe for the public. . . . At this site given all the potential risks , we would count this from a technical perspective to be extremely low if not absolutely insignificant in terms of whether we should let kids be on this site.