





## Citrus Central Landfill – Meeting 8/10/16

Inspection conducted 6/27/16

Inspection follow up letter dated 7/20/16

### “Not OK” Inspection Report Items:

#1.6 – results of water quality testing

- Violation – supplemental assessment needed for MW-7, MW-19, MW-21

#2.27 – gas vents intact and functioning properly

- Area of Concern – adequacy of gas venting system needs to be evaluated

#2.28 – mixing of leachate and stormwater

- Area of Concern – discharge non-contact water to stormwater management system

#10.12.1 – all weather access road in SOPF area

- Area of Concern – maintain access road for emergency equipment

### Gas Probe Details

GP-1 through GP-18

SCS Engineers letter re: “LFG Probe Installation Construction Certification” dated 1/3/2006

[http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.217372.1\]&\[profile=Permitting\\_Authorization\]](http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.217372.1]&[profile=Permitting_Authorization])

- GP-1 through GP-11 installed to depths of 40 feet (est. waste depth at closed areas)
- GP-12 through GP-18 installed to depths of 80 feet (depth of waste at active landfill)

GP-19

Citrus County letter re: “Landfill Gas Monitoring” dated 3/24/11 transmitted the gas monitoring report for 2011Q1.

[http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.107894.1\]&\[profile=Discovery\\_Compliance\]](http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.107894.1]&[profile=Discovery_Compliance])

- GP-19 was installed during November 2010

Landfill Gas Remediation System

Jones Edmunds letter re: “Landfill Gas Remediation System As-Built Drawings” dated December 16, 2010

[http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.99884.1\]&\[profile=Discovery\\_Compliance\]](http://depdms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.99884.1]&[profile=Discovery_Compliance])

- Outboard and central gas extraction wells installed to a depth of 100 feet
- Two interior gas extraction wells installed to a depth of 60 feet
- Gas extraction wells connected to solar powered blower

### **Monitoring Results**

“Water Quality Monitoring Plan Evaluation Report, Jan. 2013 – Jan. 2015” prepared by CDM Smith dated September 2015

[http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.235482.1\]&\[profile=Discovery\\_Combpliance\]](http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.235482.1]&[profile=Discovery_Combpliance])

- §4.1 – Low concentrations of leachate indicator parameters (chloride, TDS, ammonia) at background well MW-7 indicated the occurrence of volatile organics is attributed to exchange of these compounds from landfill gas to ground water.

“Operation Permit Renewal, Responses to RAI #1” prepared by SCS Engineers dated April 18, 2016

[http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.249079.1\]&\[profile=Permitting\\_Authorization\]](http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.249079.1]&[profile=Permitting_Authorization])

#### Ground water impacts @ MW-19

Landfill gas has built up in well MW-19 causing condensate to develop inside the well and drip down to ground water

- Plume of VOCs has migrated deeper than the screened interval at well MW-10
- Exploring options for optimizing the ground water treatment system over the coming year to prevent further migration

#### Ground water impacts @ MW-7

- Absence of leachate indicator parameters at MW-7
- No apparent upgradient source for impacts at MW-7
- Landfill gas is the most likely source of benzene at MW-7; liner system of current disposal area prevents dissipation of landfill gas from the closed unlined landfill; gas is migrating under the liner system in contact with ground water causes changes in local geochemistry in the vicinity of well MW-7; contamination at MW-7 similar to impacts observed at MW-10 and MW-19

“Compliance Monitoring Report, First Semi-Annual 2016” prepared by Jones Edmunds dated June 2016

[http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&\[guid=8.248362.1\]&\[profile=Discovery\\_Combpliance\]](http://depedms.dep.state.fl.us:80/Oculus/servlet/shell?command=getEntity&[guid=8.248362.1]&[profile=Discovery_Combpliance])

#### Ground water impacts @ MW10 & MW-19

- VOCs have been shown to be originating from landfill gas in contact with ground water
- Solar powered gas extraction system has decreased concentrations of VOCs at MW-10
- Recent detections of VOCs at MW-19 is indicative of a plume migrating through the aquifer
- Landfill gas measured in MW-19 (carbon dioxide) shows impacts from landfill gas
- Focused landfill gas at 3 central extraction wells in March 2016; measure effectiveness during 2016 2<sup>nd</sup> half sampling event via trend analysis
- If concentrations continue to increase, will explore other options for remediation

#### Ground water impacts @ MW-21

- Benzene exceedances since 2011; similar to impacts at MW-10 – related to landfill gas
- Measure landfill gas in MW-21 during 2016 2<sup>nd</sup> half sampling event

#### Ground water impacts @ MW-7

- Benzene exceedances most likely related to landfill gas
- Landfill gas measured in MW-7 – methane @ 32% volume

8/10/16  
IRM NOTES

## CITROS CENTRAL LANDFILL - MEETING TO FOLLOW UP 6/27/16 INSPECTION

- UNLINED AREA GAS VENTS CALLED FOR TIER II TESTING
- NOT A LOT OF GAS FOUND IN THE PASSIVE VENTS IN THE UNLINED AREAS
- MW-20 & MW-21 SHOULD BE COMPLIANCE WELLS? FEEL THEY ARE DETECTION WELLS
- GAS REMEDIATION OPTIONS
  - VENTING ON CLOSED AREAS
  - VENTS ON 7-ACRE CELL
  - DID GAS MONITORING ON PERMANENT - NO VENTS
- MARCH 2016 - IDEAL @ MW-20 240 mg/L OR 24 mg/L?
- ESTIMATE RESPONSE WITHIN 90 DAYS FOR REMEDIATION APPROACH
- COMPLIANCE ASSISTANCE OFFER TO AMEND C.O. TO INCORPORATE GAS REMEDIATION ACTIVITIES
- E-MAIL TO INDICATE RESPONSE WITHIN 90 DAYS OF MEETING