To: DeMeo, Sharon M.[Demeo.Sharon@epa.gov]
From: Mike Marlett
Sent: Thur 1/23/2014 11:35:27 PM
Subject: RE: Questions regarding Italian VCE systems

Sharon,

Based on my information, the two Italian plants that are not running are Fusina and Sulcis. Fusina is not running due to commercial contracts they have in place. Sulcis is not running because they are not generating any feed water.

The project profile only covers the process of FGD WW evaporation and not the entire power plant. For the FGD process, if the distillate is reused within the plant and the only discharge is a solid off site, there is no liquid discharge beyond the plant boundaries from the FGD process. Therefore, the FGD process is ZLD. We do not say the entire plant is ZLD since we have not provided the treatment equipment for the entire plant. It is a proven practice that boiler blowdown can be treated in a ZLD process.

Based on my understanding of your correspondence,

Scenario 1

FGD evaporator distillate is not discharged beyond the boundary.

Distillate is used in the scrubber.

Boiler blowdown is discharged and landfill leachate is produced.

Therefore, the FGD process is ZLD.

Scenario 2

FGD evaporator distillate is not discharged beyond the boundary.

Distillate is used in the boiler or for ash conditioning.

Boiler blowdown is discharged and landfill leachate is produced.

Therefore, the FGD process is not ZLD.

There is no difference in the blowdown from the **plant** in either scenario 1 or 2. Your scenarios suggest

playing a shell game where, if we reuse the water for one purpose in the plant, the process is ZLD but if we use it in another place, it isn't, despite the fact the liquid discharges from the other processes would still be there regardless of the source of water for those discharges. My definition of process ZLD is that the water produced is suitable for reuse within the plant and no liquid is directly discharged from the process outside of the plant boundary. In both scenarios, no liquid is discharged from the FGD evaporation process beyond the plant boundary. Whether the plant chooses to achieve full ZLD in the plant from all sources or not does not invalidate a statement that a **process** is ZLD provided the water is completely reused within the plant and no water from that process is directly discharged beyond the plant boundary. In my opinion, how the water is reused within the plant does not determine whether the process is ZLD or not.

I stand by the Aquatech Profile. The FGD evaporation process is ZLD.

Is the use of FGD evaporator distillate for use as boiler makeup or ash conditioning the direct cause of boiler blowdown discharges or landfill leachate? No. If evaporator distillate were not used, would another water source for boiler makeup and ash conditioning be required? Yes

From my standpoint the reuse of evaporator distillate is beneficial since it reduces the load on the water supply by reusing water and reduces treatment chemicals because the water being reused has a higher quality than the other sources of water that might be used.

Regarding the EU regulations for discharges, it would be best if you contacted them regarding what is permissible. I'm not knowledgeable on what is permitted.

J. Michael Marlett, P.E, P Eng

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From: DeMeo, Sharon M. [mailto:Demeo.Sharon@epa.gov]
Sent: Thursday, January 23, 2014 12:34 PM
To: Mike Marlett
Subject: Questions regarding Italian VCE systems

Hi Michael,

Thanks for chatting with me a couple weeks ago about VCE technology. You had mentioned that Aquatech had installed five systems in Italy. According to the literature, the five facilities are Fusina Power Plant, Torrevaldaliga Nord Power Plant, Sulcis Power Plant, La Spezia plant and Brindisi Sud Power Plant. You also explained that only three of the five plants are currently operating. Would you please tell me which two are not operating and confirm that they had determined off-site disposal was more economical?

In addition, each of the Aquatech Project Profiles for these facilities indicate that ZLD systems were installed and that "[t]he industrial grade soft water and high purity distillate produced in the system will be used in the main power plant." My understanding is that if VCE water is reused back to the scrubber than the system is truly ZLD. On the other hand, if the water, for example is used for boiler make up or ash conditioning, these operations generate boiler blowdown and landfill leachate. Therefore, it is not a complete ZLD system. The Profiles also explain that "[w]astewaters from FGD treatment plant can no longer be discharged into the sea due to tough Italian and EU environmental regulations," but are other wastewaters allowed to be discharged from these plants?

Any information you can share or point me towards is greatly appreciated.

Regards,

Sharon

Sharon DeMeo

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