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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

United States of America,
Plaintiff,
v.
Denali Water Solutions, LLC,
Defendant.

No. CV-

COMPLAINT

The United States of America (“United States”), by the authority of the Attorney General of the United States, on behalf of the United States Environmental Protection Agency (“EPA”), alleges as follows:

NATURE OF ACTION

1. This is a civil action brought pursuant to Sections 309(b) and (d) of the Clean Water Act (“CWA”), 33 U.S.C. §§ 1319(b) and (d), to obtain civil penalties against Denali Water Solutions, LLC (“Defendant”), for actions relating to the land application of sewage sludge (also known as “biosolids”) at locations in Arizona and southern California.

2. This case is based on Defendant’s violations of federal regulations, codified at 40 C.F.R. Part 503, that set requirements for the management and land application of sewage

1 sludge. In numerous instances, Defendant applied sewage sludge in amounts exceeding the
2 “agronomic rate” in violation of 40 C.F.R. § 503.14(d). And Defendant failed to obtain the
3 information it needed to properly calculate agronomic rates, in violation of 40 C.F.R.
4 § 503.12(e)(1).

5 3. In this action, the United States seeks to require Defendant to pay civil penalties
6 as provided in Section 309(d) of the CWA, 33 U.S.C. § 1319(d).

7 **JURISDICTION AND VENUE**

8 4. This Court has jurisdiction over the subject matter of this action and the parties
9 pursuant to Sections 309(b) and (d) of the CWA, 33 U.S.C. §§ 1319(b) and (d), and pursuant to
10 28 U.S.C. §§ 1331, 1345, and 1355.

11 5. Venue is proper in the District of Arizona pursuant to Section 309(b) of the CWA,
12 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1391(b) and 1395, because a substantial part of the events
13 giving rise to the violations occurred in this district.

14 6. Authority to bring this civil action is vested in the Attorney General of the United
15 States, pursuant to Section 506 of the CWA, 33 U.S.C. § 1366, and 28 U.S.C. §§ 516 and 519.

16 7. Notice of the commencement of this action has been given to the States of
17 Arizona and California as required by Section 309(b) of the CWA, 33 U.S.C. § 1319(b).

18 **DEFENDANT**

19 8. Defendant Denali Water Solutions, LLC (“Denali”) is a limited liability company
20 incorporated in Delaware, with its principal place of business in Arkansas. Denali is a “person”
21 as defined in the CWA, 33 U.S.C. § 1362(5), and relevant regulations, 40 C.F.R. § 503.9(q).

22 9. Denali – acting directly or through its wholly-owned subsidiary Solid Solutions,
23 LLC (“Solid Solutions”) – provides the service of land application of sewage sludge for
24 municipalities across the nation. As relevant here, from at least 2016 through August 22, 2024,
25 Denali collected sewage sludge from municipal wastewater treatment plants (publicly owned
26 treatment works or “POTWs”) in southern California and applied that sludge to hundreds of land
27 application sites (fields) on farms in southern California and Arizona. On August 22, 2024,
28 Denali sold the assets, and transferred or assigned the contracts, that it used to conduct its land

1 application business within California and Arizona, and no longer conducts that business.

2 **STATUTORY AND REGULATORY BACKGROUND**

3 10. The Clean Water Act (the “Act” or “CWA”) 33 U.S.C. §§ 1251-1388, was
4 enacted by Congress to “restore and maintain the chemical, physical, and biological integrity of
5 the Nation’s waters.” 33 U.S.C. § 1251(a).

6 11. In treating municipal sewage, POTWs generate sewage sludge that contains high
7 levels of nitrogen in the form of nitrate. Nitrate is highly mobile, moves with water, and is a
8 significant source of water pollution nationwide.

9 12. To address the risks of water pollution, particularly nitrogen pollution, posed by
10 domestic sewage, the CWA required EPA to develop and publish regulations providing
11 guidelines for the disposal of sludge and the utilization of sludge for various purposes. 33 U.S.C.
12 § 1345(d)(1). The CWA prohibits the disposal of sewage sludge from a POTW except in
13 accordance with those regulations. 33 U.S.C. § 1345(e).

14 13. Accordingly, EPA has promulgated regulations governing the use and disposal of
15 sewage sludge, which are codified at 40 C.F.R. Part 503. The Part 503 regulations define sewage
16 sludge as “solid, semi-solid, or liquid residue generated during the treatment of domestic sewage
17 in a treatment works.” 40 C.F.R. § 503.9(w).

18 14. One form of sewage sludge disposal is land application, where the sludge is
19 deposited on the surface of the soil in areas such as crop or rangelands. The nitrogen in land-
20 applied sewage sludge can be an important source of nitrogen for crops and other vegetation.

21 15. Subpart B of the Part 503 regulations addresses land application of sewage sludge
22 and applies to “any person who applies sewage sludge to the land,” 40 C.F.R. § 503.10(a), and
23 prohibits land application “except in accordance with the requirements in this subpart,” 40
24 C.F.R. § 503.12(a).

25 16. As relevant here, Subpart B imposes two requirements on land appliers of sewage
26 sludge:

- 27 a. **40 C.F.R. § 503.14(d)** requires land appliers to apply sewage sludge at an
28 application rate that is equal to or less than the “agronomic rate.”

1 b. **40 C.F.R. § 503.12(e)(1)** requires land appliers to “obtain information needed to
2 comply with the requirements” in Subpart B, which includes the information that
3 is needed to comply with 40 C.F.R. § 503.14(d).

4 17. The **agronomic rate** is a maximum application rate that is designed both to
5 “(1) provide the amount of nitrogen needed by the [crop or vegetation] grown on the land” and to
6 “(2) minimize the amount of nitrogen in the sewage sludge that passes below the root zone ... to
7 the ground water.” 40 C.F.R. § 503.11(b). This requirement prevents overapplication of nitrogen
8 beyond the level the crop or vegetation can utilize. Such overapplication can cause excess
9 nitrogen to migrate downward to the underlying groundwater aquifer below the application site,
10 potentially impacting the aquifer.

11 18. Different crops and vegetation have different nitrogen needs, and those needs vary
12 with the expected crop yield; a larger crop will require more nitrogen than a smaller one.
13 Determining the “amount of nitrogen needed” requires knowledge of the amount of nitrogen the
14 crop needs and the expected yield of that crop.

15 19. In addition, nitrogen amounts in the soil vary across different fields, and across
16 different soil depths, based on what has historically been added to and grown in a field. In some
17 fields, nitrogen may already be present in the soil – in a form and at a depth that it can be used by
18 a crop plant – before sewage sludge is land-applied. Determining the “amount of nitrogen
19 needed” requires knowledge of the amount of plant-available nitrogen in the soil, because that
20 will reduce the amount of nitrogen that is “needed by” the crop from land-applied sludge.

21 20. The nitrogen in land-applied sewage sludge is subject to **volatilization**, which is
22 the loss of nitrogen to the atmosphere through the conversion of ammonium to ammonia gas.
23 Volatilization rates vary based on soil acidity and climate conditions, and therefore vary across
24 geographic regions and soil types.

25 21. The nitrogen in sewage sludge is also subject to **mineralization**, which is the
26 microbial decomposition of organic nitrogen into ammonium. Mineralization rates vary based on
27 soil temperature, moisture, and the amount of oxygen in the soil, and therefore, like
28 volatilization, vary across geographic regions and soil types.

22. Determining the “amount of nitrogen needed” requires knowledge of volatilization and mineralization rates for land-applied sludge at a given location, because it affects how much nitrogen in the sludge will be available to the crop.

23. The CWA authorizes EPA “to commence a civil action for appropriate relief, including a permanent or temporary injunction,” when any person is in violation of 33 U.S.C. § 1345. 33 U.S.C. § 1319(b).

24. The CWA also provides that any person who violates 33 U.S.C. § 1345 shall be subject to a civil penalty not to exceed \$66,712 per day for each such violation occurring after November 2, 2015, where penalties are assessed on or after December 27, 2023. 33 U.S.C. § 1319(d); 88 Fed. Reg. 89,309 (Dec. 27, 2023) (codified at 40 C.F.R. § 19).

25. States may also establish and implement their own programs for the handling of sewage sludge, which operate in parallel with the federal Part 503 regulations. Arizona has established such a program, codified at Title 18, Chapter 9, Article 10 of the Arizona Administrative Code. *See* A.A.C. R18-9-1001 *et seq.*

ALLEGATIONS

26. From at least January 1, 2016 through August 22, 2024, Denali contracted with approximately 22 municipalities in California that own or operate POTWs, as defined by 40 C.F.R. § 403.3(q).

27. Those POTWs each generate “sewage sludge” that is used for “land application” as these terms are defined by 40 C.F.R. §§ 503.9(w) and 503.11(h), respectively.

28. Denali entered into various contracts with these municipalities, under which Denali was paid to land apply the sewage sludge generated by the POTW facilities.

29. On various occasions between January 1, 2016 and August 22, 2024, Denali land applied the sewage sludge at various land application sites in Maricopa, Pinal, and Yuma Counties in Arizona; and Madera, Merced, and Riverside Counties in California (the “Covered Farms”). A full list of the Covered Farms is in the attached Appendix A.

30. Each of the Covered Farms includes multiple fields where separate and/or different crops were grown. Which crop (if any) was grown in a given field in a given year, and

whether and in what amounts Denali land applied sewage sludge to a given farm or field, varied over that time period. As a result, only some fields at some Covered Farms were subject to land application by Denali in any given year.

31. Denali land applied sewage sludge at some of the Covered Farms in every year from at least 2016 through August 22, 2024.

32. As a land applier of sewage sludge in Arizona, Denali – or its subsidiary Solid Solutions – submitted annual reports to the Arizona Department of Environmental Quality (“ADEQ”) pursuant to A.A.C. R18-9-1014 and was subject to inspections pursuant to A.A.C. R18-9-1015.

33. In August 2018, ADEQ conducted a biosolids inspection of Solid Solution’s land application practices at one of the Covered Farms, Desert Ridge Farms in Yuma County, Arizona (“Desert Ridge”). ADEQ requested additional information from Solid Solutions and issued Notices of Violation (“NOV”) to Solid Solutions in September 2018 and February 2019 for violating various provisions of Arizona’s laws regarding sewage sludge application.

34. Subsequently, EPA requested and received from Solid Solutions, and Denali, additional information regarding Denali’s land application practices at Desert Ridge and the other Covered Farms.

35. Denali reported to EPA that between 2016 and 2018, it applied at least 96,093 tons of sewage sludge to fields at Desert Ridge.

36. Some of the sewage sludge Denali applied at Desert Ridge was applied to fallow fields, that is, fields in which no crop was planted during that calendar year.

37. The amount and destination of sewage sludge that Denali reported it land applied at Desert Ridge was as follows:

Year of Application	Total No. Fields	Fallow Fields		Planted Fields	
		No. of Fields	No. of Tons	No. of Fields	No. of Tons
2016	12	4	11,793	8	20,740
2017	11	1	2,294	10	25,020

2018	16	5	12,017	11	24,229
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38. Denali reported to EPA that between 2016 and 2023, it applied at least 295,991 tons of sewage sludge to fields at Covered Farms other than Desert Ridge.

39. The amount and destination of sewage sludge that Denali reported it land applied at Covered Farms other than Desert Ridge was as follows:

Year of Application	No. of Tons	No. of Farms	No. of Fields
2016	25,779	7	50
2017	39,323	7	49
2018	39,871	11	71
2019	73,849	12	121
2020	48,270	17	99
2021	48,371	11	97
2022	16,520	6	47
2023	4,008	8	60

40. On numerous occasions between January 1, 2016 and August 22, 2024, Denali did not obtain or use reasonably site-specific information to determine how much sewage sludge could be applied at each field without exceeding the agronomic rate. Specifically, when land-applying:

- a. Denali did not confirm that the crop anticipated to be planted was actually planted, or in fact that *any* crop was actually planted (i.e., that the field was not left fallow); did not obtain actual crop yield data from the Covered Farms; and instead used crop yields that were uniform and not consistent with publicly available data about average crop yields for the counties where the Covered Farms are located. As a result, Denali could not accurately determine how much nitrogen was needed for crop growth on any individual field.
- b. Denali did not conduct soil sampling at any of the Covered Farms to determine how much nitrogen was already present in the soil prior to Denali's land

1 application. As a result, Denali could not accurately determine how much
 2 nitrogen was *already* available for crop growth on any individual field prior to
 3 any application of sewage sludge.

4 c. Denali used uniform percentages for volatilization and mineralization, across all
 5 the Covered Farms, that were not supported by research, sampling, or empirical
 6 data. As a result, Denali could not accurately determine how much of the nitrogen
 7 in the sewage sludge it planned to apply would *actually* be available for crop
 8 growth.

9 d. Denali did not conduct any soil sampling after land application to determine
 10 residual nitrogen remaining in the soil, or to determine the amount of
 11 volatilization or mineralization of nitrogen that was occurring. As a result, Denali
 12 could not accurately determine how much nitrogen was “left over” and was not
 13 being used for crop growth. As a result, Denali could not validate the assumptions
 14 it was using in its land application process, and it could not determine if it was
 15 over-applying sewage sludge to any fields at the Covered Farms.

16 41. Without this information, Denali could not ensure that its land application of
 17 sewage sludge at the Covered Farms was equal to or less than the “agronomic rate.” Denali did
 18 not obtain the information it needed to prevent overapplication of nitrogen and to avoid
 19 migration of “leftover” nitrogen downward to the underlying groundwater aquifer.

20 42. In fact, sampling performed in 2019 at Desert Ridge – after years of land
 21 application by Denali using the methods described above – documented elevated levels of
 22 nitrogen at depths below the root zone, indicating that excess nitrogen had been applied to the
 23 surface and had migrated downward.

24 **FIRST CLAIM FOR RELIEF**

25 **Land Application to Fallow Fields – Desert Ridge**

26 43. Paragraphs 1-42 are hereby incorporated by reference.

27 44. In performing land application at Desert Ridge, Denali disposed of sewage sludge
 28 from a POTW within the meaning of Section 405(e) of the Clean Water Act and hence was

1 required to comply with regulations established pursuant to Section 405(d), including the
 2 requirement in 40 C.F.R. § 503.14(d) to apply sewage sludge at a rate that is equal to or less than
 3 the agronomic rate.

4 45. As set forth in Paragraphs 36 and 37, in 2016, 2017 and 2018 Denali applied at
 5 least 26,104 tons of sewage sludge to fallow fields at Desert Ridge.

6 46. The agronomic rate for a fallow field is zero. If no crops are being grown there is
 7 no nitrogen needed to grow a crop, and hence no need for any nitrogen from sludge application.

8 47. Denali's application of sewage sludge to fallow fields at Desert Ridge was a *per*
 9 *se* overapplication in excess of the agronomic rate, in violation of 40 C.F.R. § 503.14(d).

10 48. Each instance of Denali's violation of the requirements of 40 C.F.R. § 503.14(d)
 11 is a violation of Section 405 of the CWA, 33 U.S.C. § 1345, and the implementing regulations at
 12 40 C.F.R. Part 503.

13 **SECOND CLAIM FOR RELIEF**

14 **Land Applications above Agronomic Rates – All Covered Farms**

15 49. Paragraphs 1-42 are hereby incorporated by reference.

16 50. In performing land application at the Covered Farms, Denali disposed of sewage
 17 sludge from a POTW within the meaning of Section 405(e) of the Clean Water Act and hence
 18 was required to comply with regulations established pursuant to Section 405(d), including the
 19 requirement in 40 C.F.R. § 503.14(d) to apply sewage sludge at a rate that is equal to or less than
 20 the agronomic rate.

21 51. As set forth in Paragraphs 29, 30, 37 and 38, on numerous occasions from at least
 22 2016 through at least 2022, Denali applied sewage sludge on various fields at the Covered Farms
 23 in excess of the agronomic rate, in violation of 40 C.F.R. § 503.14(d).

24 52. Each instance of Denali's violation of the requirements of 40 C.F.R. § 503.14(d)
 25 is a violation of Section 405 of the CWA, 33 U.S.C. § 1345, and the implementing regulations at
 26 40 C.F.R. Part 503.

THIRD CLAIM FOR RELIEF

Failure to Obtain Necessary Information

53. Paragraphs 1-42 are hereby incorporated by reference.

54. In performing land application at the Covered Farms, Denali disposed of sewage sludge from a POTW within the meaning of Section 405(e) of the Clean Water Act and hence was required to comply with regulations established pursuant to Section 405(d), including the requirement in 40 C.F.R. § 503.12(e)(1) to obtain information needed to comply with the requirements in 40 C.F.R. Part 503.

55. As set forth in Paragraphs 40 and 41, on numerous occasions from at least 2016 through at least 2023, Denali failed to obtain or use accurate information needed to ensure that it was applying sewage sludge at a rate equal to or less than the agronomic rate, in violation of 40 C.F.R. § 503.12(e)(1).

56. Each instance of Denali's violation of the requirements of 40 C.F.R. § 503.12(e)(1) is a violation of Section 405 of the CWA, 33 U.S.C. § 1345, and the implementing regulations at 40 C.F.R. Part 503.

PRAYER FOR RELIEF

WHEREFORE the United States, on behalf of the Environmental Protection Agency, respectfully requests that this Court grant it the following relief:

1. Order Denali to be assessed, pursuant to Section 309(d) of the CWA, 33 U.S.C. § 1319(d), civil penalties of up to \$66,712 per day for each violation of the CWA occurring after November 2, 2015.
2. Award the United States its costs in this action.
3. Grant such other appropriate relief as this Court may deem just and proper.

Respectfully submitted,

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APPENDIX A: COVERED FARMS**List of Land Application Locations Where Violations Are Alleged**

State	County	Farm Name
Arizona	Maricopa	Arlington Farms
		Broken Wing Farms
		M&M Farms
		Odom Farms
		Skousen Farms
	Pinal	J Farms
		RPT Farms
	Yuma	Andersen-Brams Farms
		Buddy Black Farms
		Cullison Farms
		Desert Ridge Farms
		Ott Farms
		Skousen Farms
California	Madera	Blech Farms
		Crutchet Farms
		Philip Verwey
		Vlot Farms
	Merced	B & L Ranch
		Baker Ranch
		Diamond J Farms
		Fagundes/Silva Farm
		N + W Land
		Perrett Farms
		Robinson Ranch
	Riverside	River Bottom Farms
		Tara Farms