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Memorandum:

Public Trust Analysis and Groundwater Sustainability Plan Consistency Determination for Proposed Water Well

Project: Increased Water Use for Assessor Parcel No. 206-331-028

Prepared by: Humboldt County Department of Public Works, serving as the Humboldt County Groundwater Sustainability Agency (GSA) Administrator

Date: July 16, 2024

I. Introduction

The purpose of this memorandum is to analyze potential impacts to public trust resources associated with a proposed increased in water use from an existing well located within the Eel River Valley groundwater basin and to evaluate whether the proposed increase is consistent with the Eel River Valley Groundwater Sustainability Plan and common law public trust doctrine.

II. Project Description

On June 10, 2024, the Building and Planning Department made a referral to the Humboldt County GSA for a proposed Conditional Use Permit to increase cannabis cultivation and water use at Carlotta Gardens (APN 206-331-028; 6287 Highway 36, Carlotta). The referral described a proposed increase in annual water use from 864,474 gallons (2.7 acre-feet) to 1.76 million gallons (5.4 acre-feet) from an existing well. The 2023 report to the State Water Board reported applied water was 233,092 gallons in August 2023 and 235,970 gallons in September 2023. The existing well is located approximately 190 feet from Wilson Creek, a tributary to Yager Creek and subsequently the Van Duzen River. The well is located approximately 2,600 feet from the Van Duzen River.

III. Proposed Conditions of Approval

The Humboldt County GSA does not propose any Conditions of Approval.

IV. Background

Eel River Valley Groundwater Basin

The Eel River Valley Groundwater Basin ("Basin") encompasses the communities of Ferndale, Loleta, Fortuna, Carlotta, Hydesville, Alton, Metropolitan, Rio Dell, and Scotia. The Basin includes the alluvial valleys of the lower Eel River and Van Duzen River, upland terraces (primarily near Fortuna, Carlotta, and Hydesville), and lower portions of adjacent mountainous areas. The primary water-bearing units within the Basin are the alluvial aquifer and the underlying Carlotta Formation. The alluvial aquifer is most prominent within the central portions of the lower Eel River Valley, where the thickness is in excess of 260 feet, and extends up the Van Duzen River Valley, thinning from approximately 125 feet thick at the

confluence with the Eel River to less than 40 feet in the vicinity of Carlotta[1]. The alluvial aquifer is generally in direct contact and hydraulic connection with the Eel and Van Duzen Rivers. The Carlotta Formation underlies the alluvial aquifer and most, if not all, of the Eel River Valley.

The Basin is a coastal basin with drainage to the ocean along approximately ten miles of coastline. The Basin encompasses the Eel River estuary. The tidally influenced reach of the Eel River extends approximately 12 miles upstream from the river mouth, a few miles upstream of Fernbridge. In addition to the lower reaches of the Eel River and its tributary the Van Duzen River, the Basin contains the lower reaches of several tributary streams including Salt River, Palmer Creek, Rohner Creek, and Yager Creek.

Van Duzen River

The Van Duzen River is a navigable waterway and a major tributary to the Eel River. The U.S. Geological Survey maintains a stream gauge near Bridgeville, upstream of the Basin. Flows are highest during the wet season (November through April) and drop significantly during the dry season, with the lowest flows typically in August and September. Wilson Creek is an intermittent (non-navigable) stream and tributary to Yager Creek, which is a tributary to the Van Duzen River. Both Yager Creek and the Van Duzen River are navigable waters.

Groundwater-Surface Water Interactions

Groundwater (flowing in the alluvial aquifer) and surface water (flowing through the river channels of the Eel River, Van Duzen River, and certain tributaries) are interconnected through the hydrologic cycle. Groundwater and surface water interactions are complex and highly variable over space and time[2]. Efforts to understand the dynamics of groundwater-surface water interactions within the Basin are ongoing. In addition to the work performed to prepare the Groundwater Sustainability Plan (described below), the County continues to collect monitoring data and has applied for funding to perform more detailed data collection and analysis.

The Well Completion Report indicates that the existing well is screened from 100 to 170 feet below ground surface. In addition, the Well Completion Report indicates that a blue clay layer exists from 54 feet to 103 feet below ground surface, and the well has a sanitary seal from the ground surface down to 55 feet below ground surface. Based on the Well Completion Report, it can be concluded that the well is not hydrologically interconnected with Wilson Creek due to the presence of the nearly 50-foot clay layer between the surface deposits and the well screen.

Based on the significant distance from the Van Duzen River, the proposed well will not draw water from the river or induce infiltration.

Groundwater Sustainability Plan

The Sustainable Groundwater Management Act (SGMA), passed and signed in 2014, required preparation of Groundwater Sustainability Plans (GSPs) in basins designated as medium- and high-priority by DWR within specified deadlines. The Eel River Valley Groundwater Basin is designated as medium-priority by DWR. In 2020, Humboldt County received a grant from DWR to conduct technical studies, perform stakeholder outreach, and prepare a GSP for the Basin. On January 25, 2022, the Humboldt County Board of Supervisors adopted a GSP for the Basin[3] and authorized its submittal to DWR for review. On October 26, 2023, DWR approved the GSP for the Basin.

The fundamental goal of SGMA is to support beneficial uses of groundwater while avoiding undesirable results for six sustainability indicators: groundwater levels, groundwater storage, seawater intrusion, water

[1] Hydrogeologic Conceptual Model for the Eel River Valley Basin (GHD, August 18, 2021)
[2] Preliminary Analysis of 2020/2021 Surface Water and Groundwater Interaction Studies – Eel River Valley Groundwater Basin (SHN, January 24, 2022)
[3] https://humboldtgov.org/2820/Eel-River-Valley-Groundwater-Basin-Resou

quality, land subsidence, and beneficial uses of interconnected surface water. While SGMA is focused on groundwater conditions, surface waters are inherently involved because they are often hydrologically connected with groundwater. SGMA requires the establishment of sustainable management criteria for six sustainability indicators. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin. Sustainability indicators include adverse impacts to beneficial uses of interconnected surface waters (for example, the Eel River). Undesirable results are based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin. Minimum thresholds quantify the conditions at representative monitoring sites that are used to define undesirable results. Measurable objectives are quantitative goals that reflect the basin's desired groundwater conditions.

The sustainability goal for the Basin is to maintain high-quality and abundant groundwater resources to support existing and long-term community needs without causing undesirable results. The average annual total groundwater use within the Basin from water year 2011 through 2020 was approximately 14,837 acre-feet. This total annual use included approximately 12,559 acre-feet for agricultural irrigation (85%), 1,733 acre-feet for municipal drinking water (12%), 414 acre-feet for domestic drinking water (3%), 98 acre-feet for cannabis (0.7%), and 34 acre-feet for commercial/industrial (0.2%).

An integrated groundwater-surface water computer model (hydrologic model) was created to simulate the movement of groundwater and surface water to support preparation of the GSP. The model was used to gain insight into hydrologic processes within the Basin, simulate potential future scenarios, analyze potential impacts, and support the creation of sustainable management criteria. To analyze potential impacts to interconnected surface water, the GSP focused on criteria for adult fish passage, which is one of the most sensitive indicators of surface water beneficial uses in the lower Eel and Van Duzen Rivers. The GSP incorporated published criteria for the minimum water depth required for passage of adult salmon. The GSP established a benchmark for potential impacts as a lowering in river stage (the height of water in the channel) by 0.1 feet during the time period for potential fish passage (September through November) due to cumulative groundwater pumping.

The GSP synthesized empirical data, stakeholder input, computer simulation results, and geological interpretation to establish a management framework for sustainably managing groundwater resources within the Basin for economic, social, and environmental benefits. A key determination made in the GSP is that the Basin is being managed sustainably and undesirable results caused by groundwater conditions have not occurred and are not imminent, based on the best available data and information. The GSP concluded that groundwater pumping is not creating significant and unreasonable impacts on water levels, water storage, seawater intrusion, water quality, or the beneficial uses of interconnected surface waters.

The sustainable yield for the Basin was estimated to be at least 30,000 acre-feet per year. This amount represents a 100% increase from current groundwater use rates. Therefore, the Basin as a whole is not significantly constrained for groundwater availability. The GSP concluded that future water budgets for the Basin, accounting for climate change, land use changes, and population growth, would generally be equivalent to the current water budget. Minimum thresholds and measurable objectives associated with groundwater levels, annual groundwater pumping, and water quality were developed in specified monitoring wells for ongoing monitoring to assess whether undesirable results remain absent. The GSP includes a minimum threshold to maintain groundwater use below 30,000 acre-feet per year and a measurable objective to maintain groundwater use below 22,500 acre-feet.

Public Trust Doctrine

Under the common law Public Trust Doctrine, the State holds tidelands, submerged lands, and navigable waterways in trust for the benefit of the public, to be used for public trust purposes. Public trust purposes and uses include, but are not limited to, waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. Where governmental actions or decisions affect the

public trust, the State must determine whether the proposed use of land is consistent with trust purposes and make findings to that effect[4].

In its landmark 1983 decision, the California Supreme Court in *National Audubon Society v. Superior Court* applied the public trust doctrine for the first time to limit the appropriation of water from navigable streams and nonnavigable tributaries[5]. Specifically, the court held that "[t]he state has an affirmative duty to take the public trust into account in the planning and allocation of water resources." The State Water Resources Control Board, the state agency in charge of administering water rights in California, may allocate water resources within its discretion and "despite foreseeable harm to public trust uses" but only as long as it "considers" public trust resources and "preserves" those resources to the extent "feasible." What is feasible, in turn, includes what is in the "public interest" as determined by the State (or other trustee agency)[6]. Legal subdivisions of the State such as counties and special districts may share responsibility for administering the public trust.

In 2018, the Third Appellate District in California determined that the public trust responsibility extends to consideration of impacts to public trust resources when a trustee agency (there, a county) approves groundwater wells in a basin where there will be harm to public trust uses or values in an interconnected navigable waterway[7]. Although counties do not administer or allocate overlying rights to groundwater use, and groundwater itself is not a public trust resource[8], the 2018 case determined that counties have a duty under the Public Trust Doctrine to consider whether the issuance of a well permit for groundwater extraction would affect public trust resources associated with interconnected navigable waters. The 2018 case also determined that SGMA and the Public Trust Doctrine co-exist as separate and independent laws (i.e., one law does not supplant the other).

V. Public Trust Analysis

Hydrologic Assessment

Acute Impacts

The proposed new well is located approximately 2,600 feet from the Van Duzen River and approximately 190 feet from Wilson Creek.

The potential for acute impacts to a waterway depends on multiple factors, including:

- The volume of water used (particularly during the low-flow seasons in the summer and fall).
- The setback distance between the well and the waterway.
- The physical characteristics of the water-bearing unit (especially hydraulic conductivity and the potential presence of aquitards).
- Whether the well draws from the aquifer or perched groundwater.
- Patterns of water use (whether the pumping rate is high and intermittent or low and steady).
- What portion of the extracted water recharges back to groundwater through a septic system.
- The natural (unimpaired) hydrology of the waterway.

As previously described, the existing well is not hydrologically connected to Wilson Creek based on its depth and construction. The well will not be connected to the Van Duzen River due to the significant setback distance. Based on these considerations, the risk to streamflow within a navigable water or tributary to a navigable water is considered negligible.

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[4] *San Francisco Baykeeper, Inc. v. State Lands Commission* (2015) 242 Cal.Ap.4th 202.
[5] *Nat'l Audubon Soc'y v. Superior Court* (1983) 33 Cal.3d 419, 446-447.
[6] *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 777–778.
[7] *Environmental Law Foundation v. State Water Resources Control Bd.* (2018) 26 Cal.Appl5th 844.
[8] *Santa Teresa Citizens Action Group v. City of San Jose* (2003) 114 Cal.App.4th 689.

Cumulative Impacts
The annual volume of groundwater extraction proposed (approximately 5.4 acre-feet) is significantly less than the Basin's estimated annual average total groundwater use (14,837 acre-feet) and the estimated sustainable yield (30,000 acre-feet).

Summary
The proposed increase in water use in the setting described above is unlikely to have any measurable effect in nearby streams. Therefore, the effects on flowrates or water surface elevations within Wilson Creek or the Van Duzen River would be *de minimis*.

Public Trust Uses and Values

Waterborne Commerce
Waterborne commerce traditionally refers to the buying and selling of commodities involving transportation by water. The Van Duzen River is used for mining of aggregate from gravel bars during the dry season, but the extracted gravel is transported by land-based vehicles rather than by boat or barge. There are no known uses of the Van Duzen River for waterborne commerce of commodities.

Navigation
Navigation traditionally refers to movement over water by boat, ship, or other watercraft for the purpose of transportation. The Van Duzen River has very limited, if any, use for transportation (recreational boating and paddling are evaluated below). While the Van Duzen River does support watercraft use for recreation, the significant distance between the well and the Van Duzen River will ensure no measurable effect on navigation in the Van Duzen River.

Fisheries
The portion of the Van Duzen River within the Basin provides habitat for anadromous salmonids and other fish and aquatic species, primarily as a migration corridor for juveniles out-migrating in the spring and adults migrating upstream in the fall and winter. The lower river provides very limited rearing habitat due to high water temperatures and poor habitat quality, and small areas of adult holding and spawning habitat[9]. The Van Duzen River is used for recreational fishing.

Wilson Creek has marginal habitat downstream of the site and is not designated as critical habitat for salmonids species. Chinook salmon and steelhead have been observed in Wilson Creek based on intermittent monitoring but detailed information on fish abundance and productivity is not available[10].

Based on the hydrologic assessment described above, the well will have no measurable effect on flows and, therefore, no adverse effect on fisheries within Wilson Creek or the Van Duzen River.

Water-related Recreation and Public Access
The Van Duzen River is regularly used for recreational boating and paddling when flow conditions are suitable. Based on the significant distance between the proposed well and the Van Duzen River, the well will have no measurable effect on flows or water surface elevations and, therefore, no adverse effect on recreational boating and paddling within the Van Duzen River.

Open Space
The Van Duzen River contributes to scenic vistas and the aesthetics of the Eel River Valley. Based on the significant distance between the proposed well and the Van Duzen River, the well will have no measurable

[9] Endangered Species Act Section 7(a)(2) Biological Opinion for the Letters of Permission for Gravel Extraction in Humboldt County (LOP 205-1), National Marine Fisheries Service, August 27, 2015.
[10] Lower Eel River Basin Assessment (California Department of Fish and Game and Pacific States Marine Fisheries Commission, July 2010).

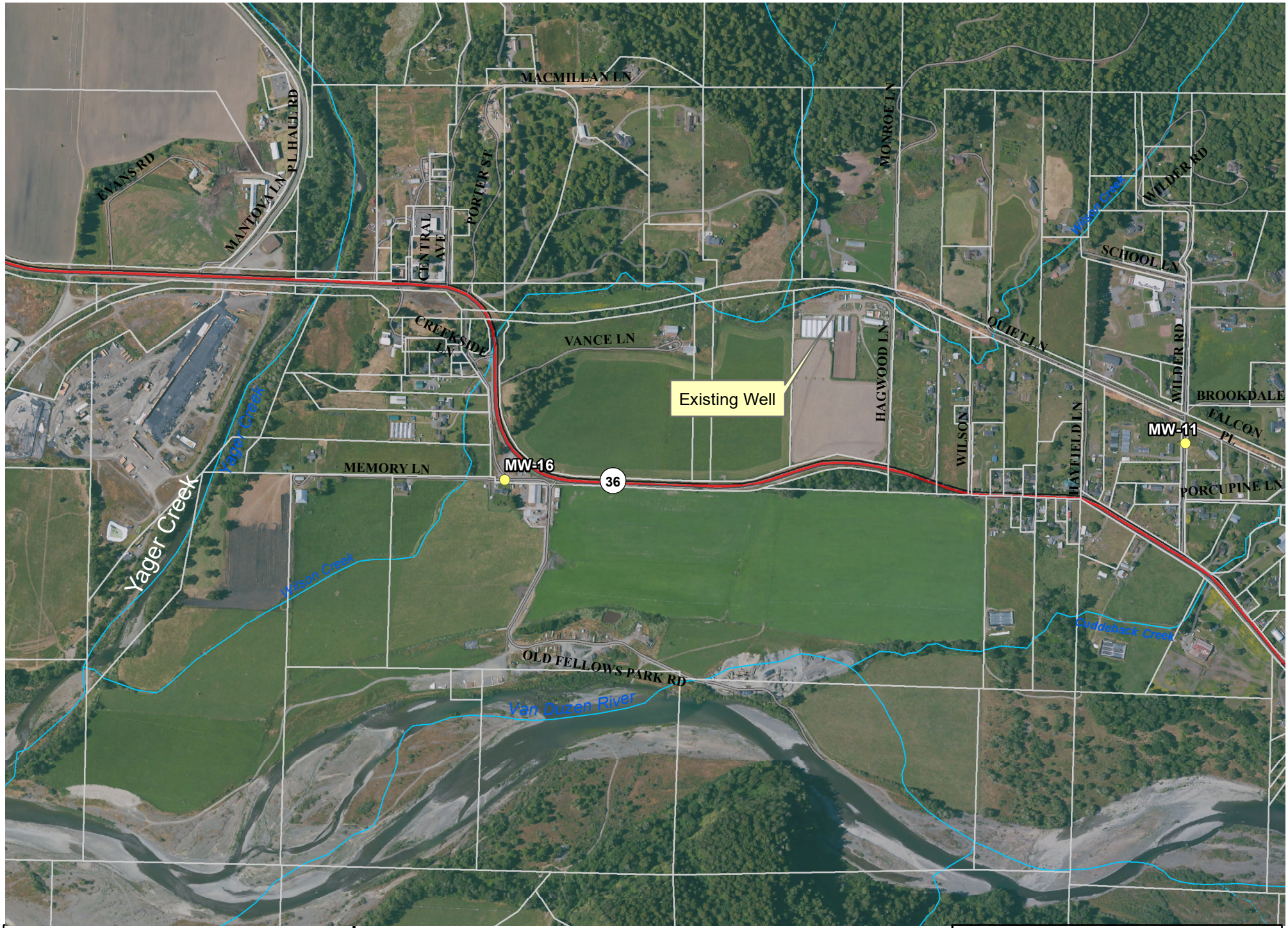
effect on flows or water surface elevations and, therefore, no adverse effect on open space or natural values within the Van Duzen River.

VI. Groundwater Sustainability Plan Consistency Determination

The proposed well would not affect the Sustainability Goal for the Basin and would not affect the GSA's ability to maintain groundwater levels above the minimum thresholds and measurable objectives established in the Eel River Valley Groundwater Sustainability Plan.

VII. Conclusion

Based on the facts and circumstances described above, staff conclude that the proposed groundwater well will not interfere with the Public Trust or substantially impair the public rights to navigation, fisheries, water-related recreation, public access, open space, or other Public Trust needs and values. In addition, staff conclude that the proposed groundwater well is consistent with the Eel River Valley Groundwater Sustainability Plan.



Created: 7/16/2024
Imagery: USDA NAIP (2022)

Figure 1:
Site Location Map

Proposed Increased Water Use in Existing Well
APN 206-331-028

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