



MEMORANDUM

To: Savannah McDonald, Poster Mirto McDonald
From: Erin Harris, PE
Kimley-Horn and Associates, Inc.
Date: February 14, 2024
Subject: Camp Riff – Utility Narrative

PROJECT OVERVIEW

This existing site includes two parcels, covering a total of 175 acres, which previously served as a golf course. The proposed site will include a campground and associated recreational facilities as shown on the Master Plan.

Based on this Project Overview, existing utility research and proposed utility demands and flows are provided in the narrative below.

EXISTING UTILITIES

NACO SANITARY DISTRICT SEWER

Existing facilities base map have been provided by Naco Sanitary District and are attached to this narrative.

HEARTHSTONE WATER

The existing water facilities were formerly managed by Naco Water Company but are now under the operation of Hearthstone Water. Existing facilities base map have been provided by Hearthstone and are attached to this narrative.

SOUTHWEST GAS

Existing facilities base map have been provided by Southwest Gas and are attached to this narrative.

CENTURY LINK UNDERGROUND FIBER & COPPER FACILITIES

Existing facilities base map have been provided by CenturyLink and are attached to this narrative.

APS OVERHEAD & UNDERGROUND ELECTRIC

Existing facilities base map have been provided by APS and are attached to this narrative.

PROPOSED UTILITIES

SANITARY SEWER

A letter has been provided by Naco Sanitary District stating that they have the capacity and infrastructure to receive the sanitary sewer flows and intend to allow service to the site. This letter is included as an attached to this narrative.

The analysis of the sanitary sewer flows is based on the proposed site plan and unit flows per the Arizona Administrative Code Title 18, Ch. 9 – E322.4.22. The quantity of units per facility were estimated based on engineering judgement and used to determine the total sewage design flow as shown in the second table.

FACILITY	UNIT	SEWAGE UNIT FLOWS (GPD/UNIT)
POOL	PERSON	10
BAR/LOUNGE	SEAT	30
RESTROOM, PUBLIC	TOILET	200
PARK (W/ WATER AND	VEHICLE SPACE	100
PARK (TRAILER)	SPACE	250
CAMP (OVERNIGHT TOILETS	CAMP UNIT	150
STORE	EMPLOYEE	20
RESTAURANT:	EMPLOYEE	20
WITH TOILET, ADD	COSTOMER	7
KITCHEN WASTE, ADD	MEAL	6
GARBAGE DISPOSAL, ADD	MEAL	1
COCKTAIL LOUNGE, ADD	CUSTOMER	2
KITCHEN WASTE DISPOSAL	MEAL	2

Estimated unit sewage flows per Arizona Administrative Code Title 18, Ch.9 – E322.4.22 Table 1.

FACILITY	UNIT	QUANTITY	SEWAGE DESIGN FLOW (GPD)
STORAGE MAINTAINENCE BUILDING REMODEL			
WORKSHOP/STORAGE BUILDING	TOILET	2	400
PLAYGROUND	VEHICLE SPACE	7	700
HOOKUP CAMPSITES	SPACE	169	42250
DRY CAMPSITES	SPACE	488	73200
DUMP STATION			
BATHROOM + SHOWER FACILITY			
OUTSIDE BAR	SEAT	40	1200
RESTROOM BUILDING	TOILET	10	2000
POOL	PERSONS	40	400
WEDDING PAVILION			
BRIDAL PREP ROOM	TOILET	1	200
PERFORMERS GREEN ROOM	TOILET	1	200
CAMPING SERVICES BUILDING (RECEPTION, RETAIL, RESTROOMS, LOUNGE)	LOUNGE/SEATS	30	900
	TOILET	6	1200
	STORE EMPLOYEE	15	300
RESTAURANT/BALLROOM REMODEL	CUSTOMER	175	1225
	MEAL	175	1575
		TOTAL:	125750

Total calculated sewage design flow by facility.

The estimated average daily flow out of the site was calculated to be 125,750 gallons. The sewage flow calculation shown hereon is preliminary and should be confirmed by the architect and design team. It is subject to change as the site design is further refined.

The estimated average daily flow is used to determine the required pipe size, calculations as shown:

AVERAGE DAILY FLOW

Average Daily Flow:	125,750 gpd
Peaking factor (R18-9-E301.D.1.b.i) =	3.62
Peak daily flow = 125,750 x 3.62 =	455,215 gpd (dry weather peak)
Gross development area =	175 acres
Unit stormwater infiltration =	250 gal/acre
Peak wet weather flow =	498,965 gpd (wet weather peak)

FLOW VELOCITY

Manning's equation:

$$V = k / n * (A / P)^{2/3} * S^{1/2}$$

$k = 1.49$, for unit conversion
 $n = 0.013$, per DEQ

For 10" Sewer Pipe:

Diameter of Pipe = 8" (0.66 ft)
 Radius of Pipe = 4" (0.33 ft)

$$A = \pi * R^2$$

$$= 3.1416 * (0.33\text{ft})^2$$

$$= 0.342 \text{ ft}^2$$

$$P = 2 * \pi * R$$

$$= 2.073 \text{ ft}$$

$$R_h = A / P$$

$$= 0.165 \text{ ft}$$

$S_{min} = 1.0\%$
 $S_{max} = \text{N/A}$

Vmin= 3.4 fps

Ratio of Flow Depth

$$Q(\text{ff}) = [0.463 d^{(8/3)} s^{(1/2)}] / n$$

$$= 1.18 \text{ cfs}$$

$$= 70.78 \text{ cfm}$$

$$= 529.49 \text{ gpm}$$

Peak Weather Daily Flow	=	498,965 gpd
	=	346.50 gpm
Discharge Ratio	=	346.50/529.49= 0.65

The Manning's equation yields an estimated Ratio of Depth of Flow of 0.65 which is less than or equal to the maximum 0.65. An 8" sewer line is recommended to meet the demands of the site. The existing public sewer line is 8", the pipe that services the site should either match or be smaller in size. Per this

analysis, the 8" pipe is recommended at a minimum slope of 1% to have the capacity to take the flows. Either increasing the minimum pipe slope or reducing the number of facilities that contribute to the wastewater flow could reduce the ratio of flow depth to be more conservative, if needed. There is high potential to tie the proposed private line into the existing mainline via an existing public manhole in lieu of needing to set a new public manhole.

WATER

A letter has been provided by Hearthstone Water stating that they intend to allow service to the site. They have also noted that due to the likely sizeable water demand, the existing system may require upgrades in order to provide the service. This letter is included as an attached to this narrative.

The water demand has been calculated based on the proposed site plan and the recommended fixture units by fixture type per the Arizona Administrative Code Title 18, Ch. 9 – A214.4. The quantity of fixture units per facility type were estimated based on engineering judgement and used to determine the total water fixture units as shown in the second table.

FIXTURE TYPE	NUMBER OF FIXTURE UNITS
WATER CLOSET (CAMPER)	1
WATER CLOSET (1.6 to 3.2 GPF)	4
SHOWER (CAMPER)	1
SHOWER	2
DISHWASHER	2
CLOTHES WASHER	2
LAVATORY	1
SINK, BAR	1
SINK, KITCHEN (INCLUDING DISHWASHER)	2
SINK, KITCHEN (CAMPER)	1
UTILITY TUB OR SINK	2

Recommended fixture units by fixture type per Arizona Administrative Code Title 18, Ch.9.

FACILITY TYPE	FIXTURE TYPE								WFU TOTALS
	WATER CLOSET	SHOWER	DISH WASHER	CLOTHES WASHER	SINK, BATHROOM	SINK, BAR	SINK, KITCHEN	UTILITY TUB/SINK	
STORAGE MAINTAINENCE BUILDING REMODEL	0	0	0	0	0	0	0	2	4
WORKSHOP/STORAGE BUILDING	2	0	0	0	2	0	0	2	14
PLAYGROUND									
HOOKUP CAMPSITES	169	169	0	0	169	0	169	0	676
DRY CAMPSITES									0
DUMP STATION	0	0	0	0	0	0	0	1	2
BATHROOM + SHOWER FACILITY	56	28	0	0	56	0	0	0	336
OUTSIDE BAR	0	0	0	0	0	0	1	0	2
RESTROOM BUILDING	10	0	0	0	6	0	0	0	46
POOL	0	0	0	0	0	0	0	5	10
WEDDING PAVILION									0
BRIDAL PREP ROOM	2	1	0	0	2	0	0	0	12
PERFORMERS GREEN ROOM	2	0	0	0	2	0	0	0	10
CAMPING SERVICES BUILDING (RECEPTION, RETAIL, RESTROOMS, LOUNGE)	8	0	1	0	8	1	0	1	45
RESTAURANT/BALLROOM REMODEL	8	0	0	0	8	0	2	1	46
								TOTAL:	1203

Water fixture units demand calculation by facility.

A total of 1,203 WFUs have been determined and a 3" water meter is recommended to meet the demands of the proposed site at this time. The water demand calculation shown hereon is preliminary and should be confirmed by the architect and plumbing engineer. It is subject to change as the site design is further refined.

Fire hydrants will be required onsite per the International Fire Code 507.5. Each building face must be within 400', as you walk, from a hydrant. The site will then be subject to meeting the required fire demands.

DRY UTILITIES

The existing dry utility infrastructure that borders the proposed site, as seen in the attached utility base maps, suggests that service to the site is expected to be easily accessible. The dry utility design coordination will be pursued with the engineering team and appropriate utility companies. No calculations are required at this time.



Naco Sanitary District

P.O. Box 755
Naco, Arizona 85620-0755
(520)353-4372
nacosanitary.org

02/13/24

Samone Marquez | Analyst
Kimley-Horn | 3300 E. Sunrise Drive, Suite 130, Tucson, AZ 85718
Direct: (520)-615-1143

RE: Bisbee Ventures One LLC

Re: Parcels 102-55-002 & 102-55-005 Permission to Connect to Naco Sanitary District Sewer Systems

Dear Samone Marquez :

The Naco Sanitary District grants permission to you to connect Parcels 102-55-002 & 102-55-005 to the Naco Sanitary District pipes and system. We allow for one 4 inch service connection into our main line. No other permission is granted other than sewage and wastewater treatment by the Naco Sanitary District.

We request plans, maps and other code related information from the Contractor and an inspection by NSD before you bury the 4 inch service connection.

Please call me at 520-255-6368 if you need more information.

Sincerely,



Stephen T. Dey
NSD Chair



02/14/2024

Samone Marquez
Kimley-Horn
3300 E. Sunrise Drive, Suite 130
Tucson, AZ 85718
(520)-615-1143

Samone,

This letter shall serve as a “Will Serve” letter for the proposed Riff Development project in Naco, Arizona. The proposed project will be located within the Naco Water Company –Town system. The Town system presently has approximately 166,500 gallons of storage and various boosters serving approximately 277 service connections. The proposed Camp Riff development includes a mixture of dry campsite, RV hook-up sites, public restrooms, and commercial locations. Naco water company has the ability to provide domestic water and fire service for the proposed development, but system upgrades may be required depending on the rate of development, water use and fire demand.

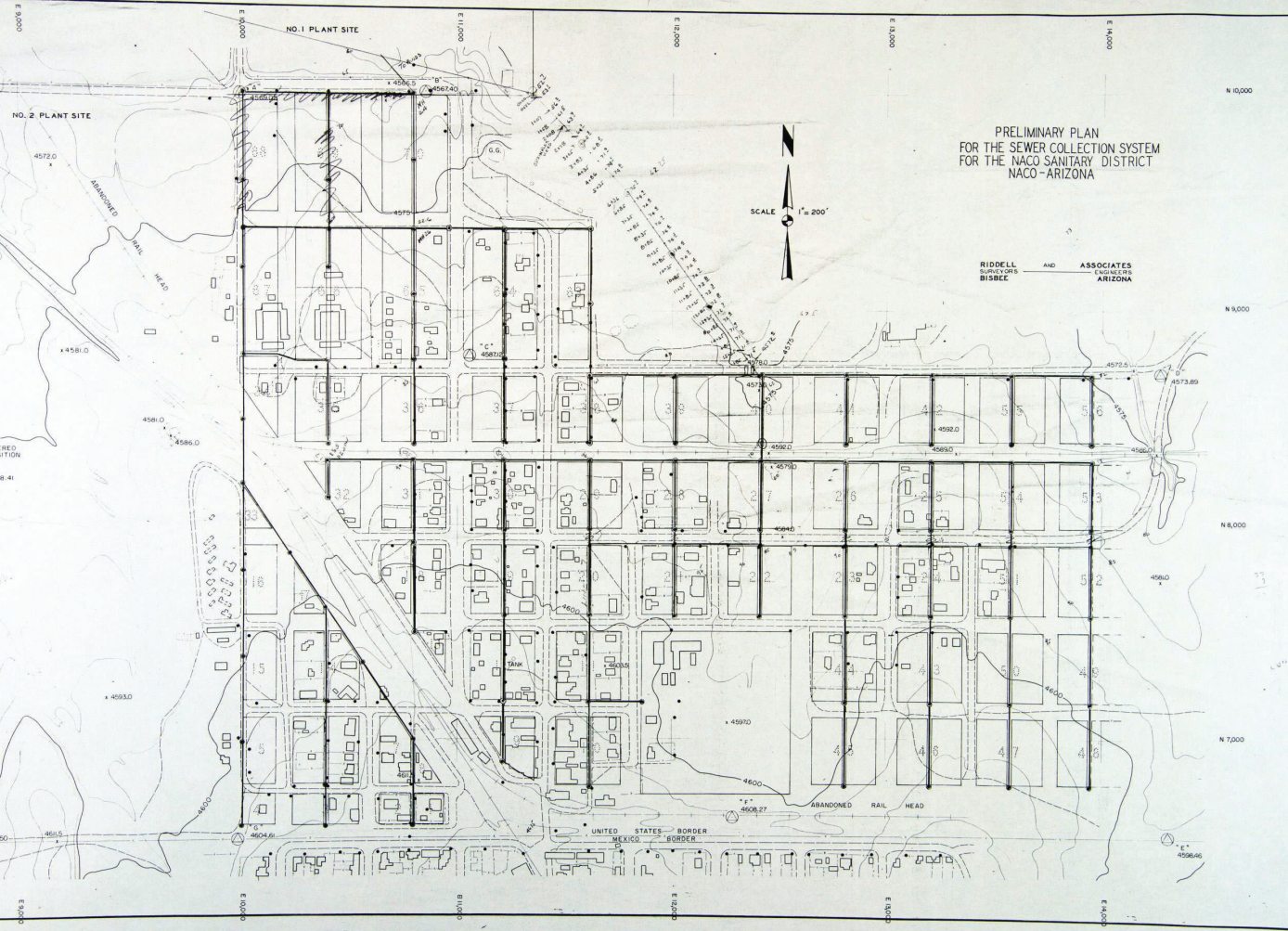
Sincerely,

A handwritten signature in black ink that reads "Josh Uhland". The signature is fluid and cursive, written over the word "Sincerely,".

Josh Uhland
Operations Manager

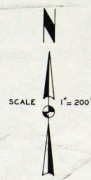
Hearthstone Water, Inc
Naco Water Company
4116 E. Avenida Cochise Ste. D
Sierra Vista, AZ 85635
cell: 520-699-4101

juhland@hearthstonecompany.com | www.hearthstonewater.com



PRELIMINARY PLAN
FOR THE SEWER COLLECTION SYSTEM
FOR THE NACO SANITARY DISTRICT
NACO - ARIZONA

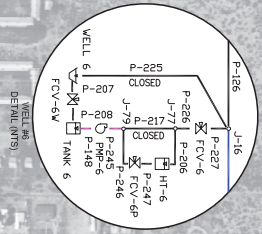
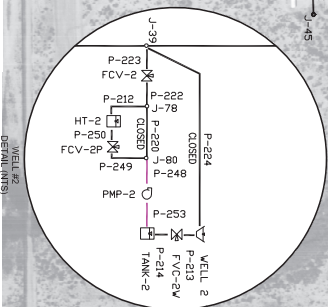
RIDDELL AND ASSOCIATES
ENGINEERS
BISBEE ARIZONA



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Carton Engineering Project No. 09-075



LEGEND

P-1	12" DISTRIBUTION MAIN
P-2	8" DISTRIBUTION MAIN
P-3	6" DISTRIBUTION MAIN
P-4	4" DISTRIBUTION MAIN
P-6	3" DISTRIBUTION MAIN
P-7	2" DISTRIBUTION MAIN
J-1	MODEL JUNCTION
H-2	HYDRANT
WELL	WELL
FCV	FLOW CONTROL VALVE (FOR MODERN PURPOSES)
PUMP	PUMP
TANK	TANK
RAILROAD CROSSING	RAILROAD CROSSING
ALTERNATIVE RAIL	ALTERNATIVE RAIL
EXISTING BRIDGE OVER DISTRIBUTION MAIN	EXISTING BRIDGE OVER DISTRIBUTION MAIN



PREPARED BY: GREG CARLSON ENGINEERING, LLC
 PROJECT NO: 09-075
 SHEET NO: 1/20
 DATE: FEBRUARY 2010

FIGURE 4 PROPOSED SYSTEM (ALTERNATIVE #1) MODEL MAP FOR NACO WATER COMPANY LOCATED WITHIN A PORTION OF SECTION 18, T24N, R24E, G28E, COCHISE COUNTY, AZ

SCALE: 1" = 200'
 DATE: FEBRUARY 2010

3240240181



3240240191

3240230133

3240240183



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 For Reference Only - Not valid for line locating purposes. No representation or warranty is made for the adequacy, accuracy or completeness of the information or depictions shown. This information is protected from further disclosure under the Federal Freedom of Information Act and the Protected Energy Infrastructure Information Act of 2002, and Arizona Revised Statutes § 41-4272.
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Atlas Map

Atlas: 3240240184

Date: 1/2/2024

1 inch = 200 feet



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FOR ACTUAL FIELD LOCATIONS
CONTACT ARIZONA BLUE STAKE CENTER
AT 1-800-762-5348 (1-800-STAKE-IT).

Electric Line Features Legend

- Overhead Primary
- Overhead Aerial Cable
- Overhead Secondary
- Overhead Service
- Underground Secondary
- Underground Service
- Underground Primary
- Underground Transmission
- Underground 230 kV Transmission
- Overhead Transmission
- Overhead Communication Line
- Underground Communication Line
- Conduit / Duct / Direct Buried

Electric Device Features Legend

- Dark-To-Dawn Light
- Feeder Circuit Breaker
- Fuse Disconnect
- Manhole - Octagonal
- Manhole - Rectangular
- Metal Pole - APS Owned - Joint Use
- Metal Pole - APS Owned - Not Joint Use
- OH APS XFR Bank - One Unit
- OH APS XFR Bank - Three Unit
- OH APS XFR Bank - Two Unit
- OH Auto Transfer Switch
- OH Blade Disconnect
- OH Garg-Operated Air Break Switch
- OH Primary Meter
- OH Recloser
- OH Sectionalizer
- OH Voltage Regulator
- OH/UG Change in Wire Conduit Size
- One-Archer Guy
- Open Point
- Overhead Capacitor Bank
- Overhead Tap Mid Span
- PM Auto Transfer Enclosure
- PM Junction Enclosure
- PM Sectionalizing Enclosure
- PM Switching Enclosure
- PM Substation Enclosure
- Pole Mounted Voltage Regulator
- Pole Mounted 1 Ph XFR
- Pole Mounted 3 Ph XFR
- Pole Mounted Duplex XFR
- Pole Mounted Primary Meter
- Pole Mounted Sectionalizer
- Primary Junction Box
- Primary Pull Box
- Primary Pull Box - Man Accessible
- Riser/Transition Assembly
- Service Entry Point
- Street Light
- Surface XFR
- Vault Building
- Wood Pole - APS Owned - Joint Use
- Wood Pole - APS Owned - Not Joint Use
- Substation
- Secondary Junction Box

Wire Code Legend

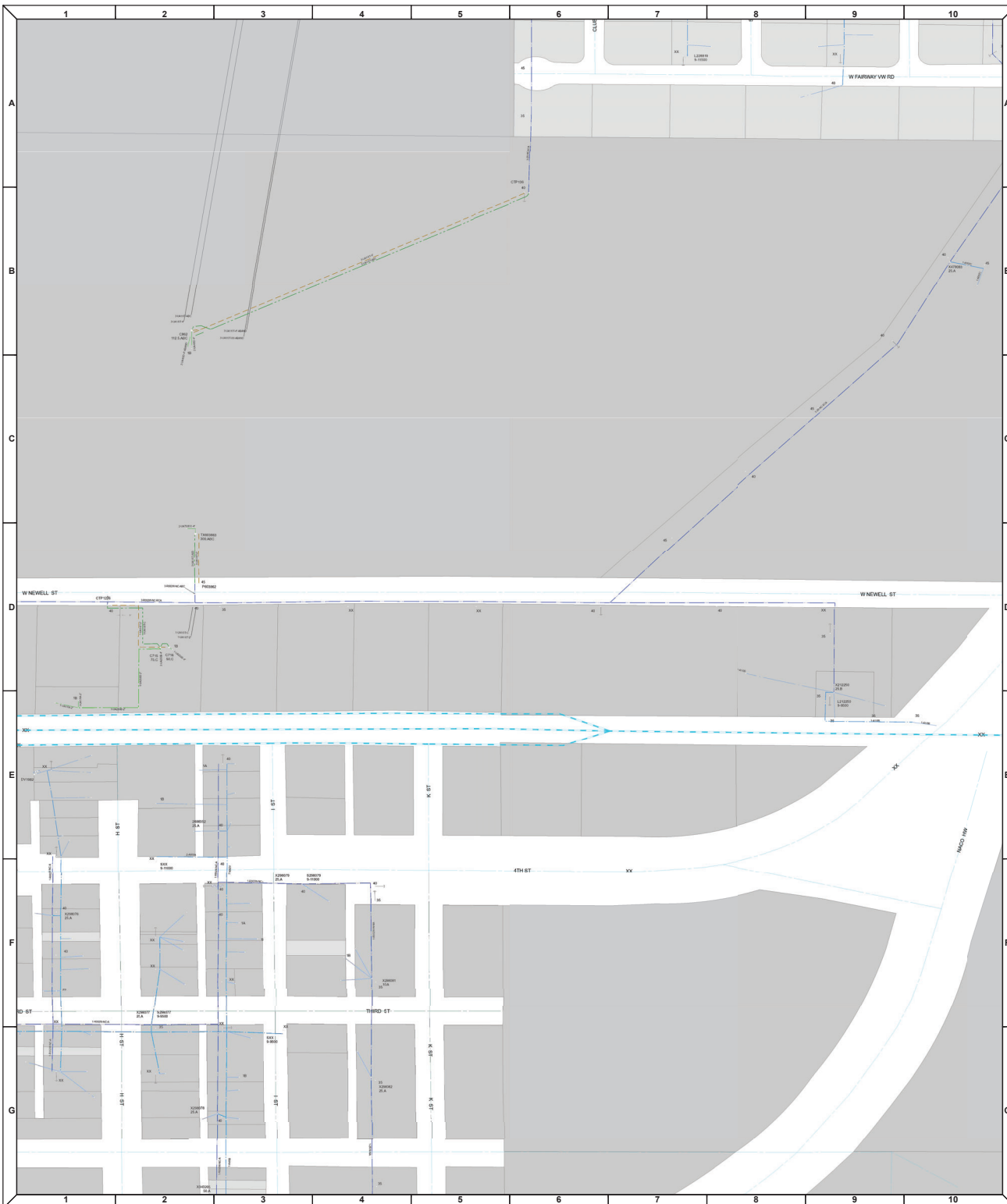
- Overhead:
 - Phase
 - Neutral Position
 - Wire Code
 - # of Conductors
- Underground:
 - Phase
 - Neutral Position
 - Wire Code
 - # of Conductors

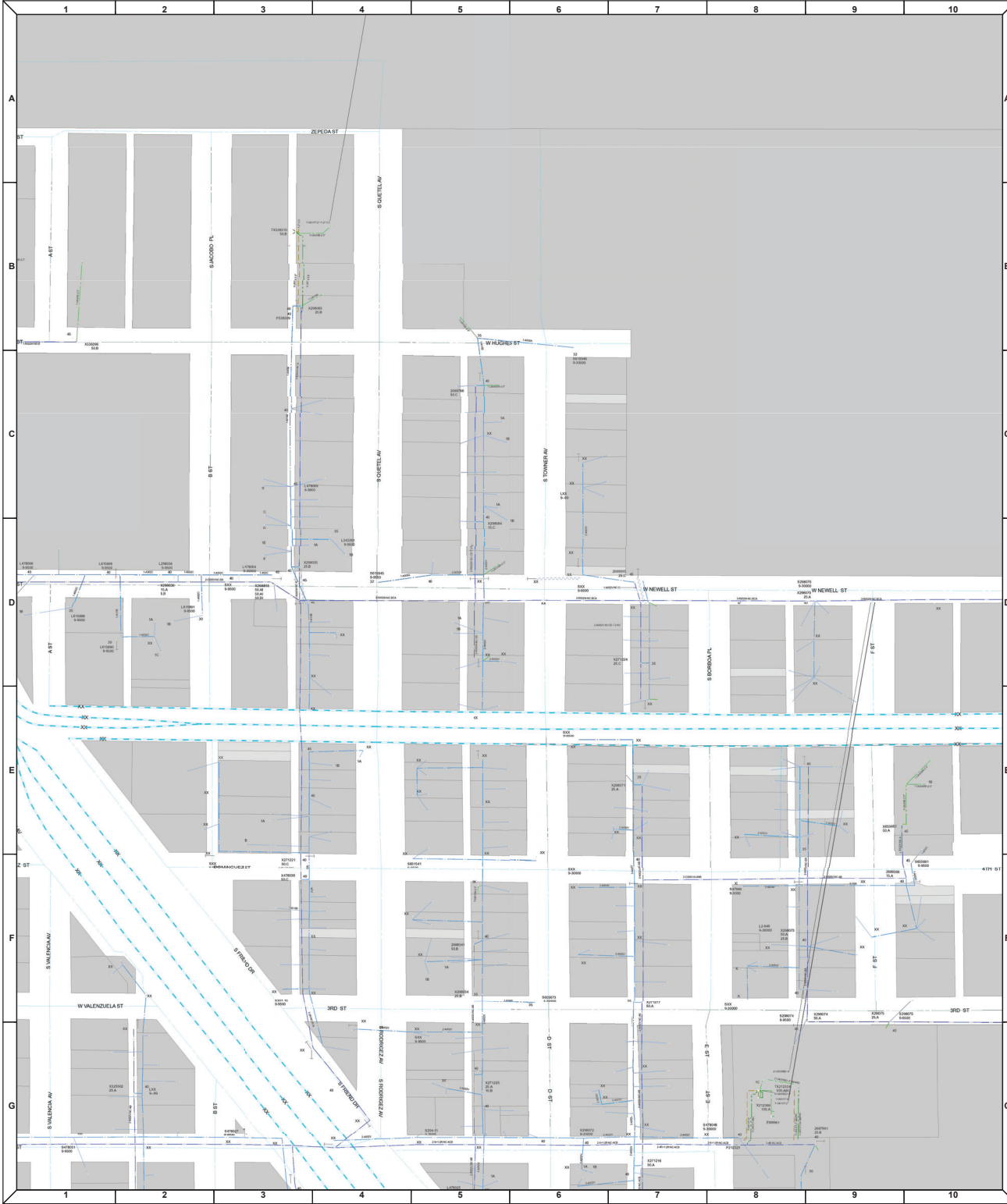
OH & UG ELECTRIC

24S 24E 18 SE

Date: 2/5/2024

Scale: 1:1,200





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- PM Suspension Enclosure
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- Pad Mounted Duplex XFR
- Pad Mounted Primary Meter
- Pad Mounted Sectionalizer
- Primary Junction Box
- Primary Pull Box
- Primary Pull Box - Man Accessible
- Riser/Transition Assembly
- Service Entry Point
- Street Light
- Subsurface XFR
- Wall Building
- Wood Pole - APS Owned - Joint Use
- Wood Pole - APS Owned - Not Joint Use
- Substation
- Secondary Junction Box

Wire Code Legend

- Overhead
- Underground
- Phase
- Neutral Position
- Wire Code
- Number of Conductors
- Environment
- Use of Conduit
- Material
- at Conduits

OH & UG ELECTRIC

24S 24E 18 SW

Date: 2/5/2024

Scale: 1:1,200



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 - Wire Code
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OH & UG ELECTRIC

24S 24E 18 NE

Date: 2/5/2024

Scale: 1:1,200

