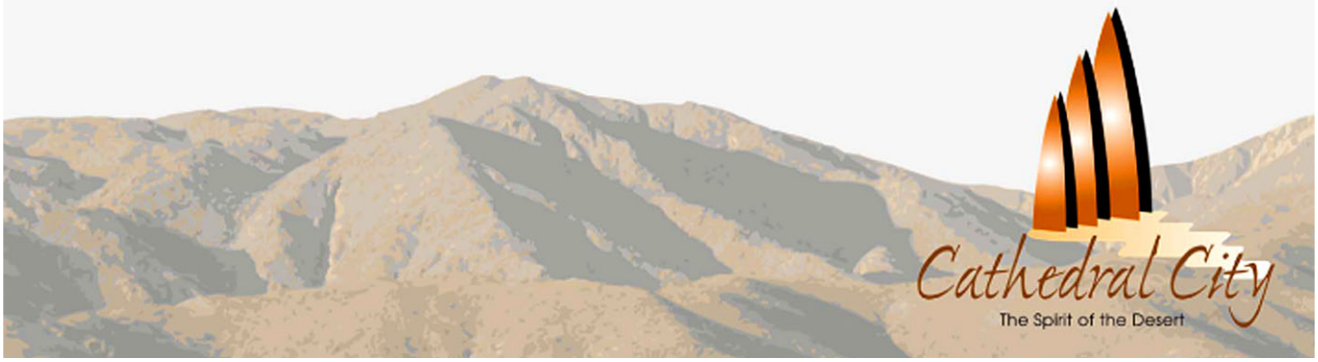
SECTION IV: PRIVATE DEVELOPMENT



CHAPTER 6 INFRASTRUCTURE IMPROVEMENTS

A. Introduction

The North City Extended Specific Plan includes an extensive master-planned infrastructure system for water, sewer, stormwater and dry utilities. These facilities will be designed and installed at the expense of the developers of the property in a phased manner in accordance with agency and utility purveyor requirements.

This chapter will identify the existing conditions in place as of the adoption of the Specific Plan, as well as outline the major recommended infrastructure improvements necessary to implement and support the plan. The hydrology analysis which established the proposed stormwater improvement facilities was developed by RJR Engineering in Oxnard, California. The remaining infrastructure master planning was completed by MSA Consulting, Inc.

B. Domestic Water System

Existing Conditions: Water services will be provided by Coachella Valley Water District (CVWD). The water district serves the upper and lower Coachella Valley which includes the City Cathedral City. CVWD covers 640,000 acres and provides 100,000 domestic water connections for homes and business. Water is supplied from wells drilled into an aquifer with a capacity estimated at 39.2 million acre feet. The water related services provided to most of the valley include irrigation water, fire protection system and domestic water delivery, wastewater reclamation and recycling.

Based on the grade elevations, the North City Extended Specific Plan is located within the Sky Mountain Pressure Zone (SMPZ). According to an analysis by CVWD, the SMPZ cannot currently support this project or other large projects without infrastructure improvements including additional supply wells, transmission mains and reservoir storage.

CVWD currently operates a 36-inch diameter water line in Rio Del Sol Road north of Varner Road and a 24-inch diameter water line in Varner Road, east of Rio Del Sol. In addition, CVWD has procured easements across the subject property for the future installation of transmission mains to connect the future reservoirs north of Vista Chino on Rio Del Sol to expand the SMPZ and to connect to the existing Mission Hills Pressure Zone (MHPZ) on the south side of Interstate 10.

Requirements: Previous to this Specific Plan submittal, CVWD has conducted master planning studies and evaluated the domestic water storage transmission main needs for the SMPZ to serve the entire pressure zone at buildout. As a result of this analysis, the required improvements are summarized as follows for the entire SMPZ:

- 16.7 million gallons (MG) of domestic water storage at a proposed CVWD reservoir site (4605) located north of Interstate Highway 10 and east of the intersection of Rio Del Sol Road and Vista Chino; and
- A 36-inch domestic water transmission main extended from the intersection of Bob Hope Drive and Ramon Road to the proposed CVWD reservoir site (4605).

Within the SMPZ, this Specific Plan proposes the development of the following building floor areas over a phased fifteen year buildout:

- 1,105, 000 square feet of Mixed Use and Light Industrial buildings;
- 400 hotel rooms;
- 1300 Single Family Residential Units; and
- 1,900 Multi-Family Residential Units.

CVWD has utilized the water demands provided by MSA Consulting, Inc. in combination with the conceptual water plans to complete the domestic water hydraulic modeling, determine domestic water infrastructure improvements and verify that the requirements of the Development Design Manual (DDM) have been fulfilled.

Based upon this analysis, the estimated domestic water demands are 2,155 gallons per minute (gpm) for average daily demand and 4,310 gpm for peak daily demand. In addition, the project's fire flow is 2,000 gallons per minute for a four-hour duration while maintaining 20 pounds per square inch (psi) residual operating pressure per the Cathedral City Fire Department Fire Marshall letter of August 13, 2012. The projected water demands and required fire flow for this Specific Plan were simulated in the hydraulic model. CVWD's domestic water design criteria were applied to the onsite waterlines and offsite infrastructure improvements to verify that pressure, flow velocity and headloss requirements were satisfied.

Based upon the CVWD analysis, the following Offsite Domestic Water System Improvements will be required in conjunction with the implementation of this Specific Plan:

- <u>Offsite Elevated Reservoir Storage:</u>
  Based upon the projected water demand and fire flow requirements, this Specific Plan requires approximately 6.7 Million Gallons (MG) of storage capacity for domestic diurnal demands, operational standby and fire flow. CVWD will require the developers of this Specific Plan to design and construct this elevated reservoir storage with the base elevation of 435 feet. CVWD may participate in upsizing the reservoir within the SMPZ and will pay the associated upsizing costs.

- Offsite Domestic Water Pipeline:
  The developers of this Specific Plan will be required to design and construct a 30-inch diameter ductile iron domestic water pipeline from the proposed 6.7 MG Offsite Elevated Reservoir previously specified to the existing 30-inch water main located at the intersection of Bob Hope Drive and Ramon Road. CVWD may elect to upsize the water main at CVWD's expense.

- Water Supply and Well Sites:
  Due to the land area of the project, seven (7) well sites will be required; and based on the water demands, this Specific Plan will require three of the seven sites to be pumping plants. These three pumping plants will provide supply for the project's domestic water diurnal demands and operational standby needs.

Build-out of the project site will cause an increase in the demand of potable water system requirements. It is anticipated that PA2, if it is the first phase of development, could be served by the existing water system. Phase 1B and future phases would require extensions and internal loops with a combination of 24, 18 and 12-inch mains to be installed as part of the project infrastructure as development occurs. In addition, due to the largeness of the parcels, fire systems could be required to surround the larger buildings to provide adequate fire protection.

No water improvements will be needed at the time of annexation. Future development within the North City Extended Specific Plan will be subject to final implementation of those services not already installed in accordance with CVWD standard requirements.

Refer to Figure 6-1 "Existing and Proposed Water Supply and Distribution Facilities" for locations and sizes of domestic water system lines. Phase one improvements to serve Phase 1A and 1B of development are highlighted on this figure.

Water pumping stations will include pumping equipment surrounded and visually shielded by a secured masonry wall of 6-8 feet in height (example below).

Dwelling Unit Equivalents (EDU) are defined as the equivalent number of Dwelling Units assigned to each user; and they establish the metric for water demand calculations as shown in Exhibit 6-1. A Dwelling Unit (DU) is defined as a single family residence, each unit of a duplex, each unit of an apartment house, condominium, motel, hotel and each mobile home. For sewage, the flow rate assigned to a single family residence is equal to 200 gallons per day; for domestic water, the flow is equal to 850 gallons per day. All non-residential uses are required to "convert" the daily usage to an "Equivalent Dwelling Unit (EDU). Table A-1 in Appendix I of the CVWD Design Manual categorizes several types of uses based on seats, suites, students or beds and assigns the EDU's. The EDU's are then used for hydraulic modeling and assessing fees (CVWD Design Development Manual).

C. Sanitary Sewer System

Existing Conditions - Sanitary sewer service will also be provided by CVWD. The project will convey wastewater flows to an existing 15-inch sewer main that parallels Varner Road to the southeast. This pipeline increases to a 24-inch main and is tributary to Water Reclamation Plant No. 7 (WRP7).

Requirements – The sanitary sewer hydraulic loading is based on the calculated number of equivalent dwelling units (EDU) and flows per EDU as provided by MSA. In this regard, refer to Figure 6-2 "Density and Water Demand Table" for a tabulation of demand calculations constructed by MSA Consulting, Inc. and provided to CVWD for their modeling purposes. The CVWD models provide for annual and dry-weather peak sewer loadings of 200 gallons per day per EDU (gpd/ EDU) and 400 gpd/ EDU, respectively. Peak wet-weather flow is three times the annual average loading. The total sewer loadings for the North City Extended Specific Plan are 530 gpm annual average flow and 1060 peak dry-weather flow. The peak wet-weather flow is 1,591.25 gpm.

Refer to Figure 6-3 "Existing and Proposed Sanitary Sewer Mains" which specifies pipe diameters, lengths, inverts and individual manholes as assumed by CVWD staff to verify that piping meets the criteria summarized in Figure 6-2. Loadings based on a total of 3.819 EDUs were apportioned to manholes as shown on Figure 6-3. Phase one improvements to serve Phase 1A and 1B of development are highlighted on this figure. The design of the on-site gravity sewer system will comply with the rules, regulations and specifications as outlined in Figure 6-2 and need to be submitted to CVWD once sufficient detail is available for a refined analysis. No sewer improvements will be required at the time of annexation. As new development occurs within the North City Extended Specific Plan, the CVWD standards for sewer design, construction and fees will be in effect. *Only gravity sewer lines will be required; no sewer lift stations are anticipated.*

Using estimated peak-hour loading, CVWD completed the hydraulic modeling for the North City Extended Specific Plan (NCESP) under current development

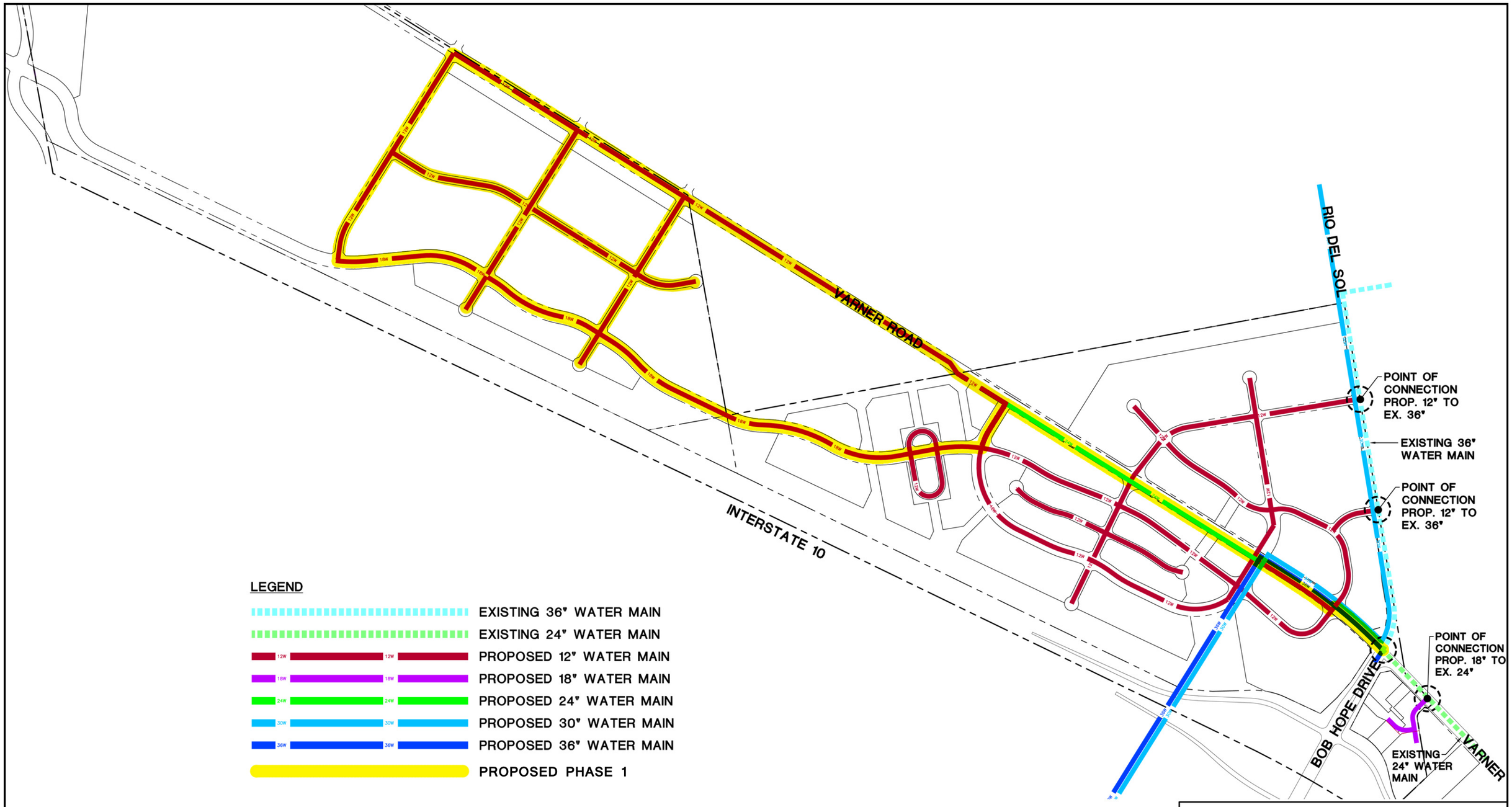
conditions, which included only CVWD existing customer demands and NCESP demands. In this case, the developers of the NCESP are responsible for the following off-site improvements to the sanitary sewer system:

- Replace approximately 260 linear feet of an existing 15-inch sewer with a 24-inch sewer main on Varner Road east of Jack Ivey Drive, near the Cook Street/ Interstate Highway 10 interchange. CVWD may elect to upsize this pipe to 36-inch at its expense.

- Install approximately 1,600 linear feet of 24-inch sewer main on Varner Road beginning 260 feet east of jack Ivey Drive and extending to Cook Street. CVWD may elect to upsize this pipe to 36-inch at its expense.

The developers of North City Extended Specific Plan may be required to install additional off-site requirements, beyond the improvements identified above, depending on the development schedule of NCESP and adjacent projects.

Refer to Figure 6-4 for a Key Map and Site Map of off-site improvements to the sanitary sewer system.



LEGEND

- EXISTING 36" WATER MAIN
- EXISTING 24" WATER MAIN
- PROPOSED 12" WATER MAIN
- PROPOSED 18" WATER MAIN
- PROPOSED 24" WATER MAIN
- PROPOSED 30" WATER MAIN
- PROPOSED 36" WATER MAIN
- PROPOSED PHASE 1

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Existing and Proposed Water Supply and Distribution Facilities

Figure 6-1

DENSITY AND WATER DEMAND CALCULATIONS

Planning Area	Description	Rooms/EDU	Building Area (SF)	Net Land Area (AC)	Rate Category	Rate (gpd)	Rate (gpd)	Daily Demand (gpm)	Demand Adjustment Factor	Average Daily Demand ADD adjusted (gpm)	Peak Daily Demand (2xADD) (gpm)	EDU (@ 0.59gpm per edu) (ix)
1	Single Family Residential	300			Residential	-	255,000	177.08	100%	177.08	354.17	300
1	Multi-Family Residential	1900			Residential	-	1,615,000	1,121.53	100%	1121.53	2,243.06	1,900
1	Hotel	300			Hotel	-	127,500	88.54	100%	88.54	177.08	300
1	MIXED-USE Retail /Commercial		190,000		Office Building	18,219		12.65	100%	12.65	25.30	22
1	MIXED-USE Restaurant		80,000		Restaurant	72,548		50.38	100%	50.38	100.76	86
1	MIXED-USE Office/Services		190,000		Office Building	18,219		12.65	100%	12.65	25.30	22
1	OPEN SPACE			50.6	Open Space	-	180,655	125.46	5%	6.27	12.55	11
2	Hotel	100			Hotel	-	42,500	29.51	100%	29.51	59.03	100
2	MIXED-USE Retail /Commercial		10,000		Office Building	959		0.67	100%	0.67	1.33	2
2	MIXED-USE Restaurant		40,000		Office Building	3,836		2.66	100%	2.66	5.33	5
3	Light Industrial		595,000	74.2	Office Building	57,055		39.62	100%	39.62	79.24	68
3	OPEN SPACE			16.8	Open Space	-	59,885	41.59	5%	2.08	4.16	4
4	Single Family Residential	1000		92.5	Residential	-	850,000	590.28	100%	590.28	1,180.56	1,000
4	OPEN SPACE			168.9	Open Space	-	603,065	418.80	5%	20.94	41.88	36
5	OPEN SPACE			3.8	Open Space	-	13,641	9.47	5%	0.47	0.95	1
		3600	1,105,000							2,155.35	4,310.69	
												3,857

Domestic Demand Rate Categories:

Office Building Domestic Demand is established using prior accepted reference (Rate of 35 gallons/year/square foot of r office space as obtained from Commercial and Institutional End Uses of Water, AWWA Research Foundation Table 6.18)

Restaurant Domestic Demand is established using prior accepted reference (Rate of 331 gallons/year/square foot of Restaurant space as obtained from Commercial and Institutional End Uses of Water, AWWA research Foundation Table 6.16)

Landscape Irrigation Demand

Rate of 4 AC-ft per year per acre is applied to the landscaped area (either 10, or 15% of the Net Land Area is used to reflec desert scape type landscaping)
Retention Basins are minimally landscaped and only over perimeter only (5% of Net Land Area)
Domestic Deman Rates stated above include an irrigation demand component,

Fire Flow Required

The fire flow can be reduced up to 75% (Based on existing Cathedral City Ordinance) when buildings are protected with a fire sprinkler system.
The largest fire flow of 8,000 gpm would be reduced by 75% down to 2,000 gpm.

9/10/2013

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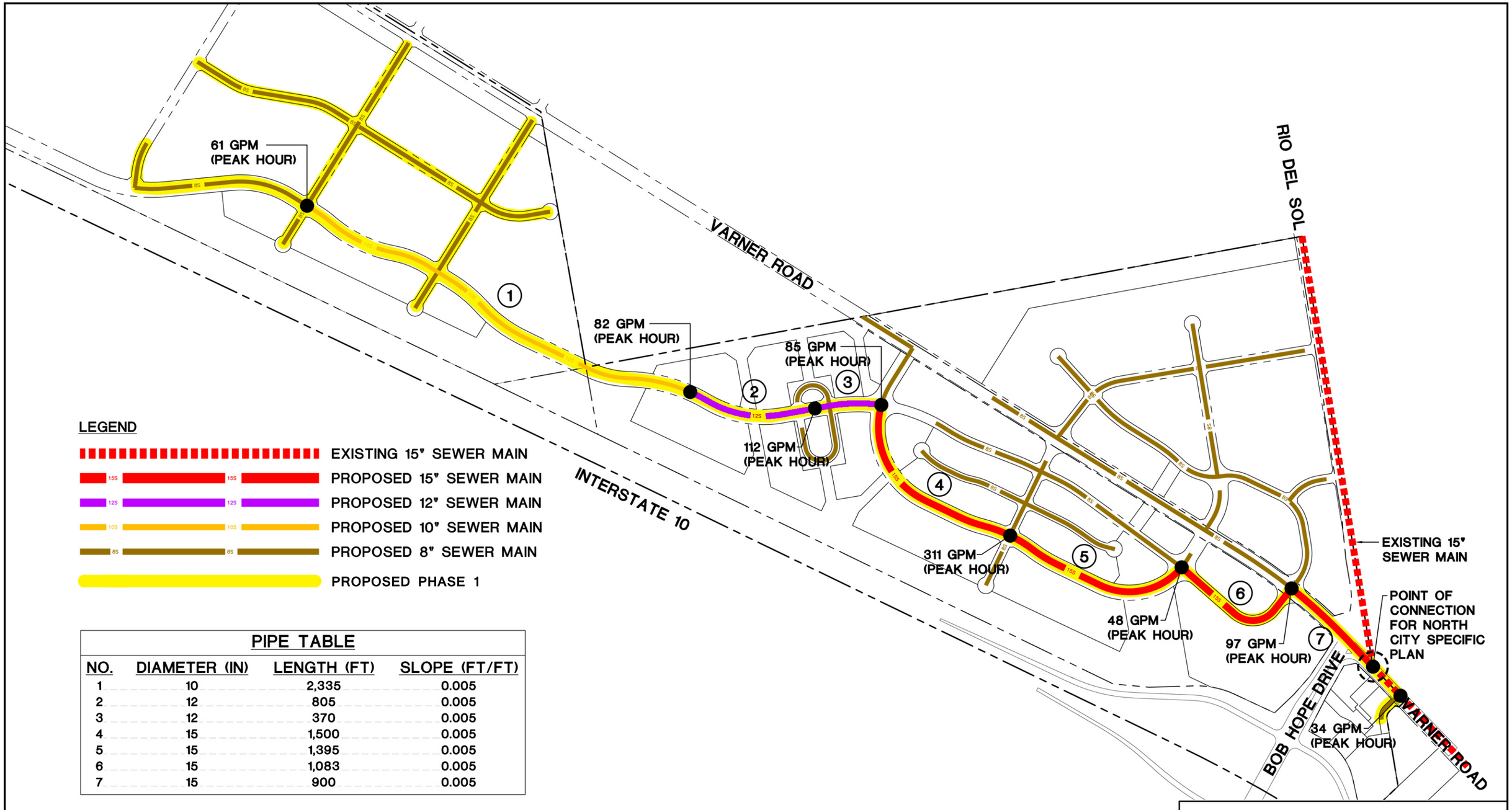
Density and Water Demand Table



LEGEND

- EXISTING 15" SEWER MAIN
- PROPOSED 15" SEWER MAIN
- PROPOSED 12" SEWER MAIN
- PROPOSED 10" SEWER MAIN
- PROPOSED 8" SEWER MAIN
- PROPOSED PHASE 1

PIPE TABLE

NO.	DIAMETER (IN)	LENGTH (FT)	SLOPE (FT/FT)
1	10	2,335	0.005
2	12	805	0.005
3	12	370	0.005
4	15	1,500	0.005
5	15	1,395	0.005
6	15	1,083	0.005
7	15	900	0.005

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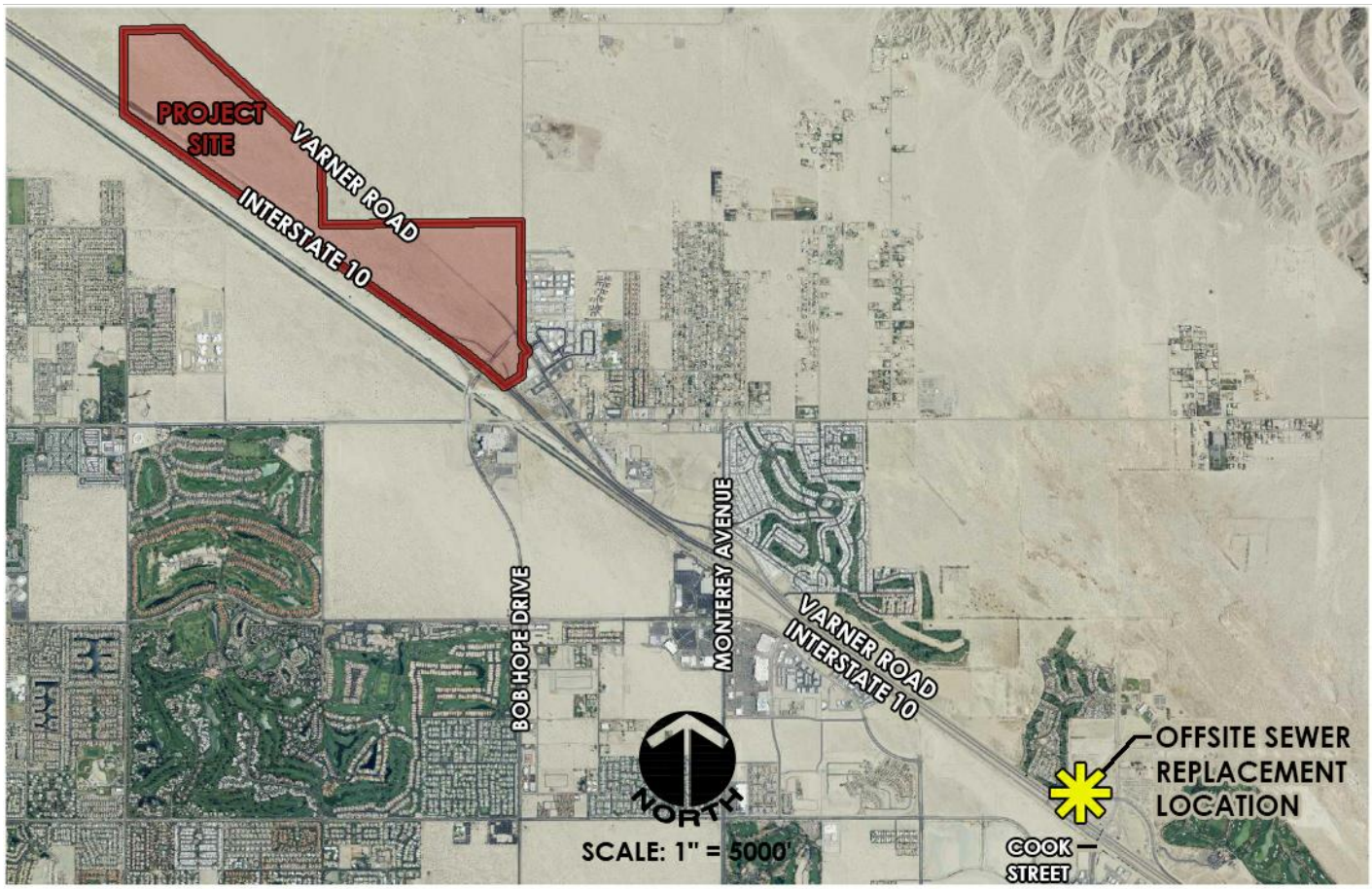
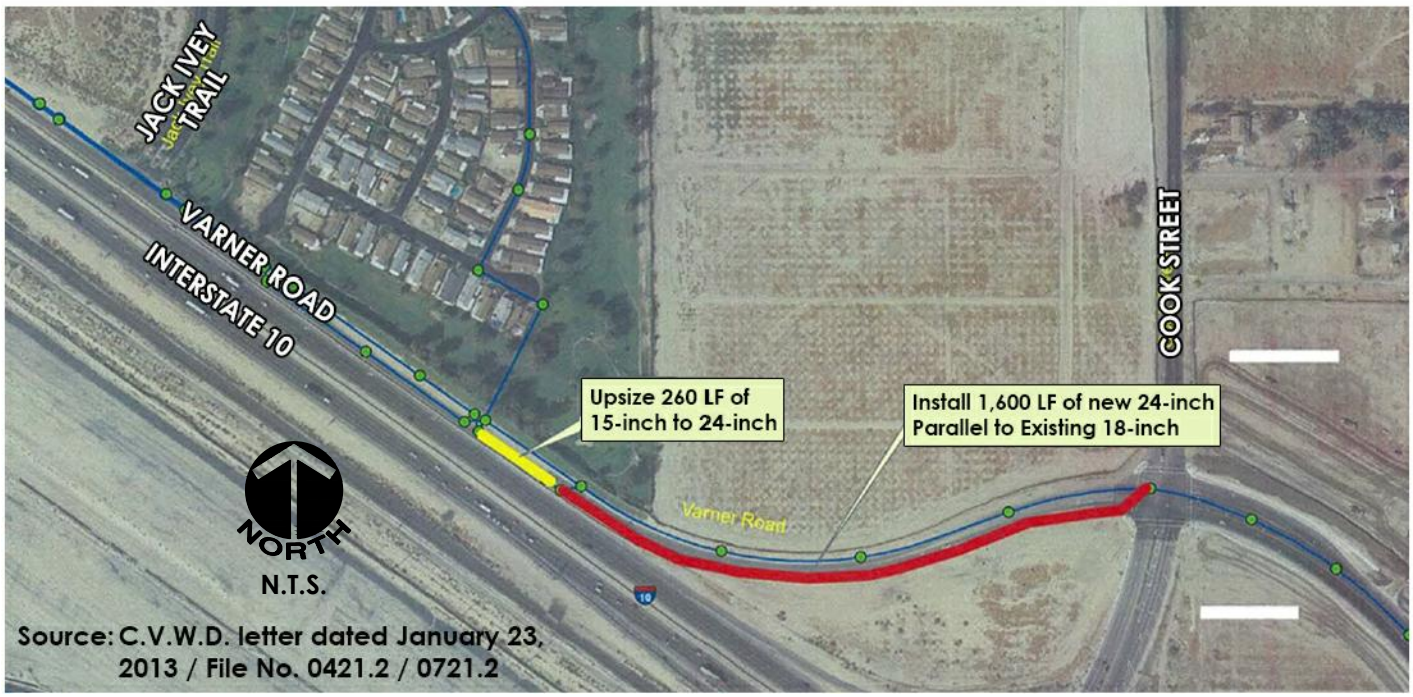
Existing and Proposed Sanitary Sewer Mains

Figure 6-3



KEY MAP



SITE MAP

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Offsite Sewer Replacement

D. Watercourses within the Specific Plan Area

Intent - The Riverine Drainage Corridor (including runoff from the Morongo Wash and alluvial fan runoff) contribute storm water to the Specific Plan area, potentially affecting development on a significant number of properties. Storm water within the Specific Plan currently contributes to the Riverine Drainage Corridor.

Riverine Drainage Corridor – A Riverine is described as a body of water relating to, formed by, or resembling a river. This drainage area is a strip of land approximately 2,000 feet wide located north and adjacent to Interstate 10. It extends from Palm Drive and Avenue 22 at the north to Adams Street at the south end. The tributary areas contributing to the storm flows for the Specific Plan area include the Morongo Wash as well as alluvial fan flooding from the canyons to the north.

Surface hydrology within the proposed project is largely dictated by natural topography, and soil characteristics. Although the project is part of the Riverine Drainage Corridor, there is no defined floodway channel. Storm flows and large flood events will sheet flow across the Specific Plan area in an easterly direction between I-10 and Varner Road.

Responsible Agencies - The Coachella Valley Water District (CVWD) and the Riverside County Flood Control District are responsible for the management of regional drainage within Cathedral City and the surrounding areas including rivers, streams and tributaries and areas which experience significant sheet flow flooding. Both districts are empowered with broad management functions, including flood control planning and construction of drainage improvements for flood control facilities and watershed protection.

Riverside County Flood Control and Water Conservation District

The Riverside County Flood Control and Water Conservation District (RCFCWCD) have established requirements for surface drainage and flood protection for projects such as the North City Extended Specific Plan which fall under their jurisdiction. Project applicants are required to meet the floodplain management ordinance which ensures that any new construction within a floodplain area is done in a matter which reduces damage to public and private property. The Coachella Valley Water district is designated to administer the flood management program in the eastern parts of the valley, including the proposed project site.

Coachella Valley Water District

The project is located within the Riverine Drainage Area Corridor (RDAC) and is subject to the Coachella Valley Water District (CVWD) ordinance for the area. On January 24, 2003, the Board of Directors of CVWD adopted an ordinance that established storm water management requirements for the

Riverine Drainage Corridor in order to preserve the existing storm water flow attenuation for possible floodwaters from the tributary area. Projects within the area are required to implement construction of flood control retention basins in order to decrease flood hazard potential.

The specific requirements of the ordinance are as follows:

1. *Developments larger than 5 acres will be required to design retention facilities to preserve natural storage such that the downstream hydrograph is not increased above that established in the FLO-2D model for the "Existing Conditions" Flood Hazards along Interstate 10 Morongo Wash Bridges to Washington Street, Coachella Valley, California, by Exponent dated, August 26,2002.*

2. *Developments smaller than 5 acres and larger than one acre will be required to retain estimated natural losses based on a retention coefficient which is calculated by determining the difference in volume between upstream and downstream hydrographs and evenly distributing that difference over the geographic area on an acre-foot per acre basis.*

3. *Developments smaller than one acre will be required to comply with Ordinance 458 and are not permitted to construct diversions such as channels, levees, and block walls that will concentrate flows away from the development and onto the adjacent Riverine Drainage Area.*

Additional Permitting Agencies - Additional state or federal permitting may be required for streambed alteration based on the exact location of delineated waterways, natural washes, channels and floodways in the entire Specific Plan. Each individual property owner shall work with the applicable storm water management agency (CVWD, RCFCD, U.S. Army Corps of Engineers, City of Cathedral City, etc.) to establish any additional constraints or requirements. Any principal use or conditional use permitted in the underlying zone district is permitted subject to the conditions and restrictions, as related to regional drainage, imposed by the applicable storm water agency.

E. Storm Drain System

Existing Conditions - There are currently no flood prevention facilities or storm drain facilities within the Specific Plan area. Presently, there are small drainage devices located at Bob Hope Drive, including curb inlet catch basins which collect water from the street, curb and gutter and outlets used to collect runoff onto the Specific Plan Area. In addition, a concrete box structure collects storm water from small storm events and conveys water from the Specific Plan area south under Bob Hope Drive to an existing vacant lot on the southern side of the traveled way.

Note Maintenance of street culverts will be by Cathedral City or CVWD depending on facility size.*

Exhibit 6-1
Existing Concrete Culvert

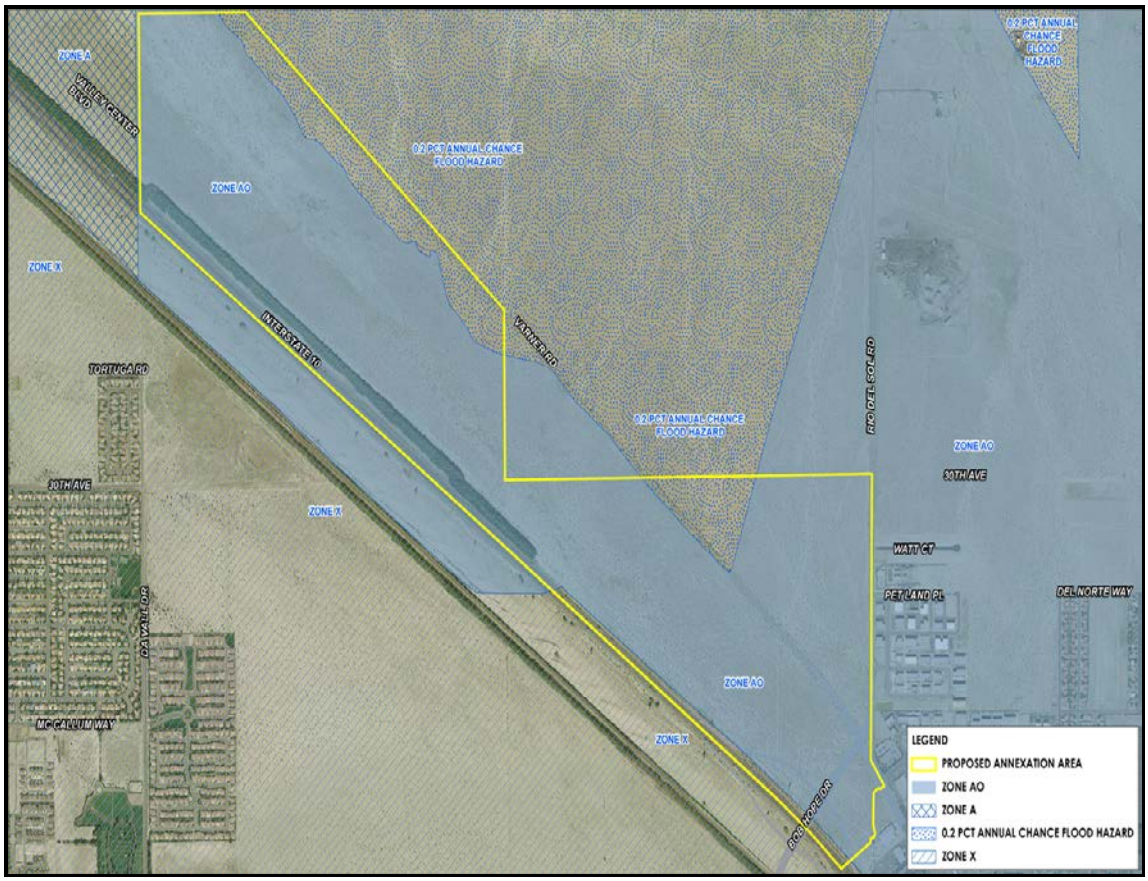
Exhibit 6-2
Existing Curb-Inlet Catch Basin

Riverine Drainage Corridor - The Riverine Drainage Area is a strip of land approximately 2,000 feet wide located north and adjacent to Interstate 10. It extends from Palm Drive and Avenue 22 at the north to Adams Street at the south end. The tributary areas contributing to the storm flows for the Specific Plan area include the Morongo Wash as well as alluvial fan flooding from the canyons to the north. Surface hydrology within the proposed project is largely dictated by natural topography, and soil characteristics. Although the project is part of the Riverine Area Drainage Corridor, there is no defined floodway channel. Storm flows and large flood events will sheet flow across the Specific Plan in an easterly direction between Interstate 10 and Varner Road.

Flooding Potential - The Specific Plan has been designated as an 'AO' flood zone according to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM). As presented in below, under this classification, the site is subject to 1% or greater chance of flooding with a depth of 1 to 2 feet of sheet flow across the site. The average flooding depth is approximately 2 feet based on the FIRM panel with velocities ranging from 5 feet per second to 7 feet per second.

ZONE	EXPLANATION
A	Areas of 100-year flood.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually In the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30 year mortgage.
B	Areas between the limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.
C	Areas of minimal flooding.
D	Areas of undetermined, but possible flood hazards.
E	Areas of 100-year coastal flood with velocity (wave action).

Exhibit 6-3
FEMA Flood Zones



Independent Studies - A hydrology study was conducted by Bechtel Engineering for the U.S. Army Corps of Engineers, Los Angeles District entitled "Without Project" Hydrology Report, Thousand Palms Area, Whitewater River Basin, Riverside and San Bernardino Counties, 1997. The study developed a 100 year peak hydrograph and routed it through the Thousand Palms Area using the Army Corp hydraulic methods HEC 1 and HEC 2. The Bechtel study determined that a uniform flow rate of 10,600 cfs for the Riverine Drainage Area.

In August of 2002, an additional hydrology study was completed by Exponent Engineering and was reviewed and approved by the Coachella Valley Water District. The earlier Army Corps. study hydraulic methods (HEC 1 and HEC 2) were conservative models. The updated report utilized a FLO-2D computer model of the Riverine Drainage area to route the 100 year peak hydrograph while taking into account flow losses that occur due to infiltration, unbounded flow, ponding and other existing geographical features that can cause flow losses. The FLO-2D model demonstrates that the 100 year peak flow rate from the Riverine flooding sources is reduced as the flow progresses downstream to the southeast.

Below are flow rates from the upstream most points of the Riverine Drainage Area to the downstream most point based on the FLO-2D model.

Date Palm Drive	6,830 CFS
Halfway Between Date Palm Drive & Bob Hope Drive	4,660 CFS
Bob Hope Drive	4,110 CFS
Cook Street	985 CFS
Washington Street	310 CFS
Adams Street	0 CFS

The 2002 Exponent report did not take into account the contributory flow rates from the alluvial fans to the north. However, in January of 2006, Kimley-Horn and Associates, Inc. published a drainage study which determined the contribution from the Northern alluvial areas. The area contributory to the proposed project was referred to as the Rio del Sol local drainage area. The area is part of Watershed IH-2 from the original Bechtal Report. In order to determine the 100 year peak flow rate for the Rio del Sol watershed, a ratio of the 100 year peak flow from Watershed IH-2 was used. The computed peak runoff from IH-2 was approximately 2,166 cfs for a 5.79 square mile area, which corresponds to 374 cfs per square mile. The Rio Del Sol local watershed has a drainage area of approximately 2 square miles, or 748 cfs.

Recommendations - Figure 6-4 illustrates the recommended layout of the flood prevention infrastructure. Storm flows across the Specific Plan sheet flow over a wide spread area and are not concentrated in a defined channel or wash. Therefore, a concrete channel, storm drain system or small detention basin is not feasible. Three regional retention basins are recommended to capture and infiltrate runoff from the Riverine Drainage Area Corridor, thereby minimizing the flood potential to the Specific Plan.

Each retention basin shall be a shallow open design intended to provide wide runoff capture areas. Storm water sheet flows which enter into the basins are captured and held allowing for the contained water to percolate into the soil. Each basin will be designed with 3:1 side slopes and a minimum of three feet of freeboard. Access roads shall be constructed in accordance with county and local standards. The basin shape, size, and bank heights shall be designed to capture the debris potential of the design storm. The captured sediment would settle within the basins as the storm water percolates into the soil.

The soils within the Specific Plan are fine to coarse grained alluvial sands with scattered gravel and cobbles. Based on USDA hydrologic soil groups, the soil has an infiltration rate at or greater than 0.30 inches an hour. Storm water flow rates and velocities across the Specific Plan have high erosion potential and velocity dissipation devices and/or rip rap shall be used to reduce erosivity. Boulders shall

be placed intermittently across the inlet of the retention basins to assist in reducing velocities. Rip rap placed along the bottom of the basin side slopes as well as planting the side slopes will prevent erosion of the basin banks.

Infiltration Basin #1 - The main regional retention basin is the largest of the three proposed basins. Basin #1 will be located northwest of the proposed Specific Plan improvements. The basin will span from Varner Road south to the Interstate 10 Right of Way, in order to catch sheet flow across the entire span of the Riverine Drainage Area. The upstream most edge of the basin will maintain existing grades and then gradually flow into the basin bottom which will be approximately three feet below the existing grades. The basin slope will range from 2 percent to 5 percent and be clear of brush. The basin sides will have a 22 foot wide berm with a 20 foot wide access road on top of the berm. Side slopes of the berm will be sloped at 3:1 and have a height providing a minimum of three feet of freeboard.

The preliminary basin design has an approximate width of 2,000 feet wide and a length of 2,700 feet with an approximate capacity of 428 acre feet.

Infiltration Basin #2 - An additional retention basin is proposed to be located just south of the larger main basin #1, described above. Basin #2 will collect stormwater runoff which sheet flows from the northern alluvial slopes which would enter the proposed project across Varner road between Basin #1 and the northern portions of the proposed project. The basin includes a 50 foot wide narrow channel adjacent to and along the south side of Varner Road. The channel will capture sheet flow crossing Varner road from the north and convey it south to the man retention area. The basin slope will range from 2 percent to 5 percent and be clear of brush. The basin sides will have a 22 foot wide berm with a 20 foot wide access road on top of the berm. Side slopes of the berm will be sloped at 3:1 and have a height providing a minimum of three feet of freeboard.

The preliminary basin design has an approximate width of 450 feet and a length of 500 feet with an approximate capacity of 125 acre feet.

Infiltration Basin #3 – An additional retention basin is proposed to be located north of the proposed Central Valley Business Park development. Basin #3 will collect stormwater runoff which sheet flows from the northern alluvial slopes. The basin slope will range from 2 percent to 5 percent and be clear of brush. The basin sides will have a 22-foot berm with a 20-foot wide access road on top of the berm. Side slopes of the berm will be sloped at 3:1 and have a height providing a minimum of three feet of freeboard.

The preliminary basin design has an approximate width of 750 feet wide and a length of 450 feet with an approximate capacity of 250-acre feet, depending on the final design. The proposed debris basins would prevent conveyed sediment and debris from being transported downstream to local streets, drainage devices, and

storm drains. The runoff would be captured and allowed to percolate into the soil within the proposed retention basins. The implementation of the retention basins will eliminate the proposed project's risk of flooding and therefore, would fall outside of the FEMA classifications. This would be an improvement in site conditions with no significant impact to the site from flooding.

Floodwall – Commercial 9 acre Eastern Site (PA2) Coachella Valley Water District (CVWD) has indicated that a backwater condition adversely affects the 9 acre portion of the proposed development, from the Riverine flows building up south and east of the site. Review of the site and flow conditions provided by the District indicate that the 9 acre commercial site could be protected by a floodwall, located along the south and eastern boundary.
If required, the exact height, location and design will be required during development review. Such a mitigation measure will need to be designed in accordance with the rules and regulations of the FEMA CLOMR process, and will be processed and approved accordingly.

Local Drainage Improvements - Development of the Specific Plan project would result in a reduction in the total amount of pervious surface currently located onsite. There are currently no impervious surfaces onsite. Approximately 583 acres would be utilized for development of impervious surfaces, such as structures and roadways, natural areas and landscaped areas.

As part of the Specific Plan development, a system of localized retention basins, storm drains, inlet structures, and roadways with curbs and gutters would be constructed to handle the estimated runoff from the project site. Graded slopes would be protected by the erosive effects of their own runoff by a system of drains, erosion control mats and landscaping. V-ditches, catch basins, roof drains, trench drains and area drain systems will be utilized to convey water away from building foundations.

Streets within the project site would have integral concrete curbs and gutters which will convey the runoff from the street surfaces, street parkways, parking lots, adjacent planter islands, commercial/industrial lots, and landscaped areas. Catch basins and area drain systems would remove storm runoff from the streets.

The Specific Plan development drainage facilities shall be sized in order to minimize erosion, flooding, and other drainage impacts. Property owners within the specific plan area shall provide a drainage design as well as supportive hydrologic and hydraulic calculations to the appropriate agencies for review and approval.

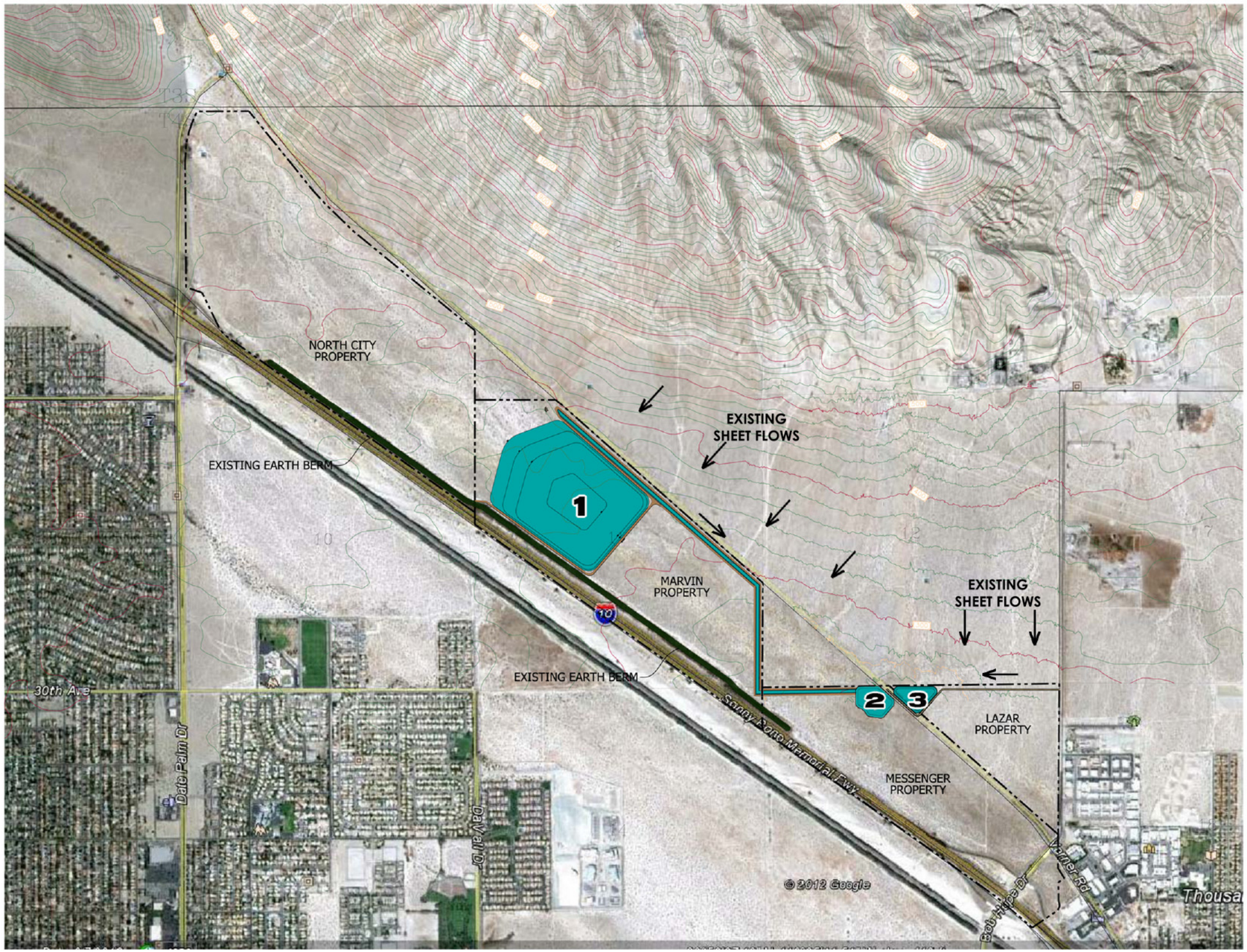
Notes:

1) *Ongoing maintenance of the Storm Drain System, including Debris Basins #1, #2, and #3 as well as narrow sheet flow channels attached to basins #1, #2 and #3 will be the responsibility of a single entity as jointly identified and established by the project developer and the City of Cathedral City.*

2) *No spillways are proposed as a part of this system.*

3) *Perimeters of all stormwater retention/ debris basin are to landscaped per the standards and guidelines of Chapter 8 of this Specific Plan.*

4) *Responsible Agencies for this system include:*
   - *Coachella Valley Water District (CVWD);*
   - *Riverside County Flood Control and Water Conservation District (RCFCWCD);*
   - *U.S. Army Corps of Engineers (USACE); and*
   - *City of Cathedral City*



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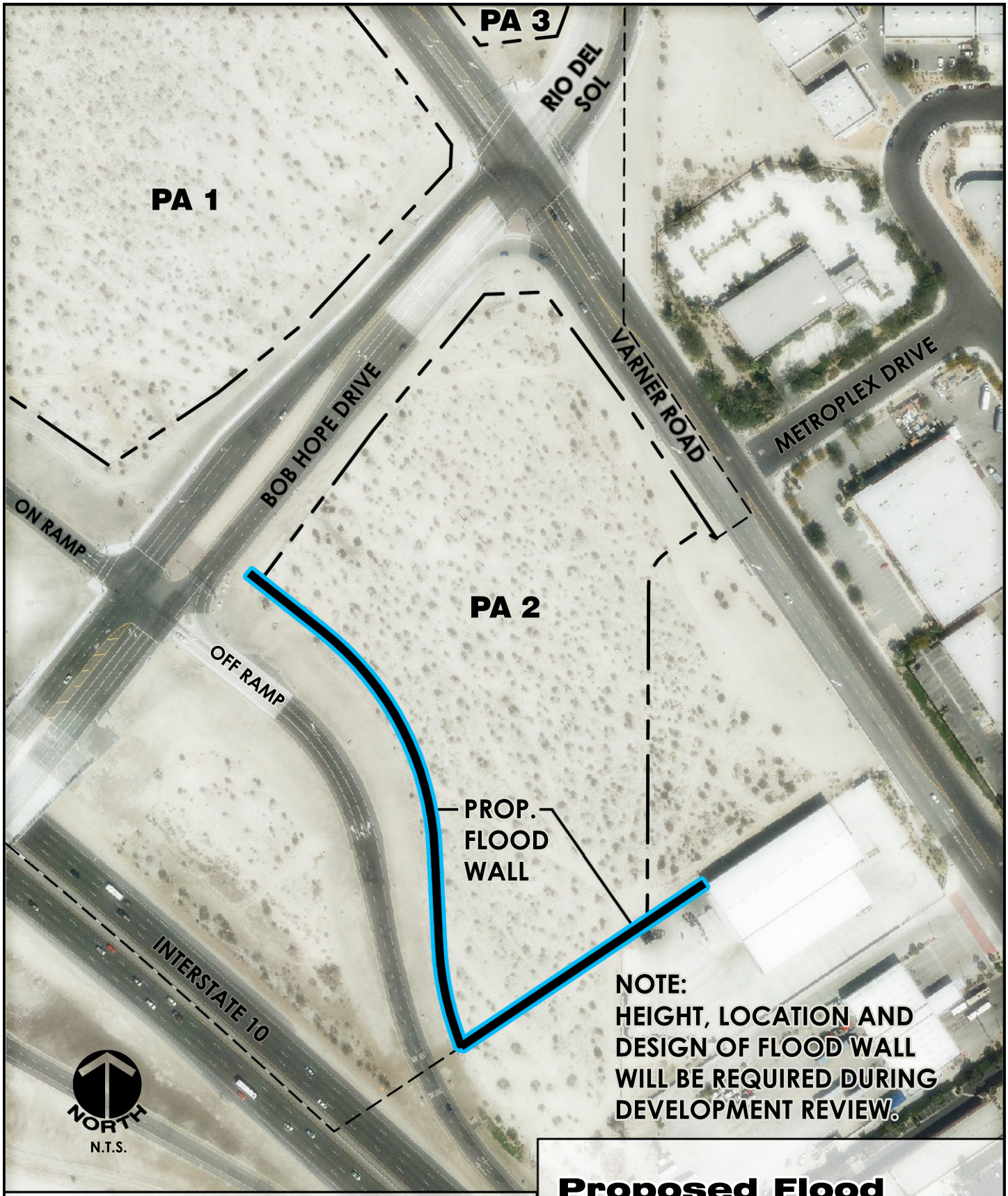
Preliminary Infiltration Basin Design

Figure 6-5



NOTE:
HEIGHT, LOCATION AND DESIGN OF FLOOD WALL WILL BE REQUIRED DURING DEVELOPMENT REVIEW.

FLOOD WALL LOCATION PER:

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Proposed Flood Wall Location

Figure 6-5a

F. Dry Utilities

For a composite overview of the backbone and primary systems located in joint trench, refer to Figure 6-5. Following discussions and exhibits summarize electrical, gas, telephone and cable dry utility systems within the Specific Plan.

1. Electrical System

Existing Conditions – The local provider is Southern California Edison (SCE), and they have existing overhead distribution and transmission lines on the project property. The existing distribution overhead line begins at Bob Hope and Interstate 10. It continues in a northwest direction running parallel to Interstate 10 and terminates near the east corner of Section 11. The overhead distribution system is fed from an overhead line coming from the south side of Interstate 10. This line has the capability of providing all the power needs to the site. Typically overhead distribution lines are conditioned by the City to be underground. For improvements east of Bob Hope in Planning Area 2, improvements would be fed from the underground vault system located at Bob Hope and Varner Road.

It is important to note that Rio Del Sol Road represents a power company service provider territorial divide that follows the north/south section line. Everything west of the Rio Del Sol Road is served by SCE. Any improvements east of the section line would be served by Imperial Irrigation District. It has been assumed that no improvements extend east of the section line.

There are also overhead transmission lines that run from Interstate 10, north through the site to the south side of Varner Road. From there, the overhead transmission lines continue northwest along the south side of Varner Road beyond the project property. Typically transmission lines are not conditioned to be underground but could be relocated if necessary at developer expense.

Refer to exhibit 6-6 for an overview of the existing electrical transmission and distribution systems.

Recommendations – Other than undergrounding the distribution lines, no other special conditions or requirements are anticipated.

2. Gas Systems

Existing Conditions – The local provider is Southern California Gas Company. They have a medium 4" pressure main located at the intersection of Varner Road and Rio Del Sol coming from the east on Varner Road. This would be the project's point of connection for gas.

Refer to Figure 6-7 for an overview of the existing gas supply system.

Recommendations - There are no other gas facilities on the proposed project property and no special Gas Company conditions or requirements are anticipated.

3. Telephone System

Existing Conditions – Local provider is Verizon and they report that there is a direct buried cable system along the north side of Varner Road the entire length of the project. The existing cable is active but insufficient to serve the needs of the project. Additionally, there is a buried cable on Rio Del Sol from Varner, running north past the project boundary.

The future point of connection is a Verizon manhole located at Varner Road and Rio Del Sol. This manhole has the capability of serving the entire project site. However, the feed comes from the Verizon, Thousand Palms central office, which does not currently provide Verizon Fios (Fiber Optic Service). Based on conditions at the time of this report, the site would most likely be fed by a copper system for typical dial tone usage and it should be assumed that Fios will not be available. T-1, T-2 or T-3 services would be available for broadband commercial users. While Verizon would prefer FIOS service be made available everywhere, they no longer provide the needed copper systems. This then becomes a developer cost.

Refer to Figure 6-8 for an overview of the existing telephone system.

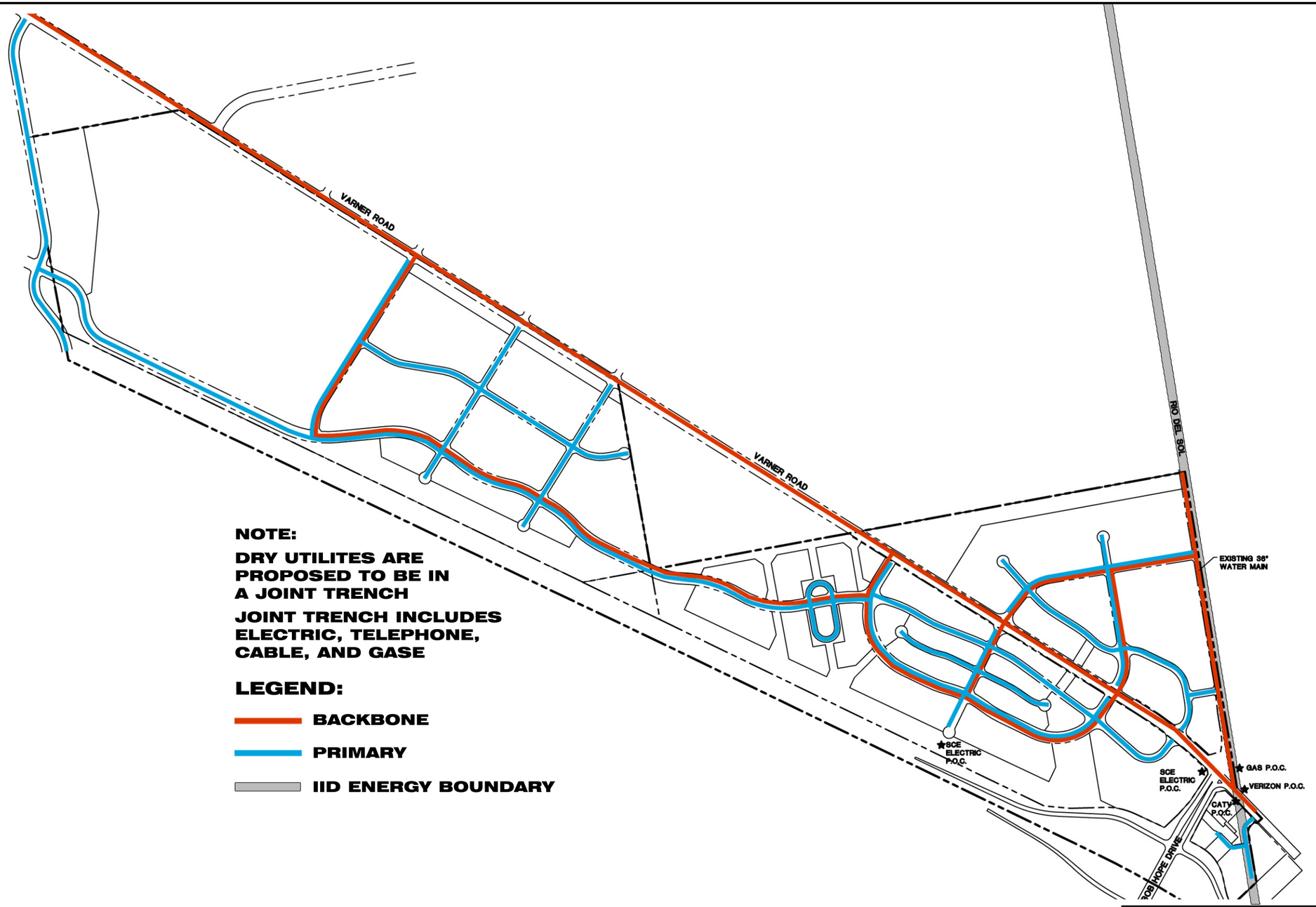
Recommendations – There are no anticipated requirements or conditions that would impact the project site.

4. Cable Television Systems

Existing Conditions – The local provider is Time Warner Cable, their nearest facility and pick-up point is at the southeast corner of Varner Road and Rio Del Sol Road. Service to the site would be readily available.

Refer to Figure 6-9 for an overview of the existing CATV system.

Recommendations – There are no unforeseen constraints or conditions associated with servicing the project site.



NOTE:

DRY UTILITES ARE PROPOSED TO BE IN A JOINT TRENCH

JOINT TRENCH INCLUDES ELECTRIC, TELEPHONE, CABLE, AND GASE

LEGEND:

- **BACKBONE**
- **PRIMARY**
- **IID ENERGY BOUNDARY**

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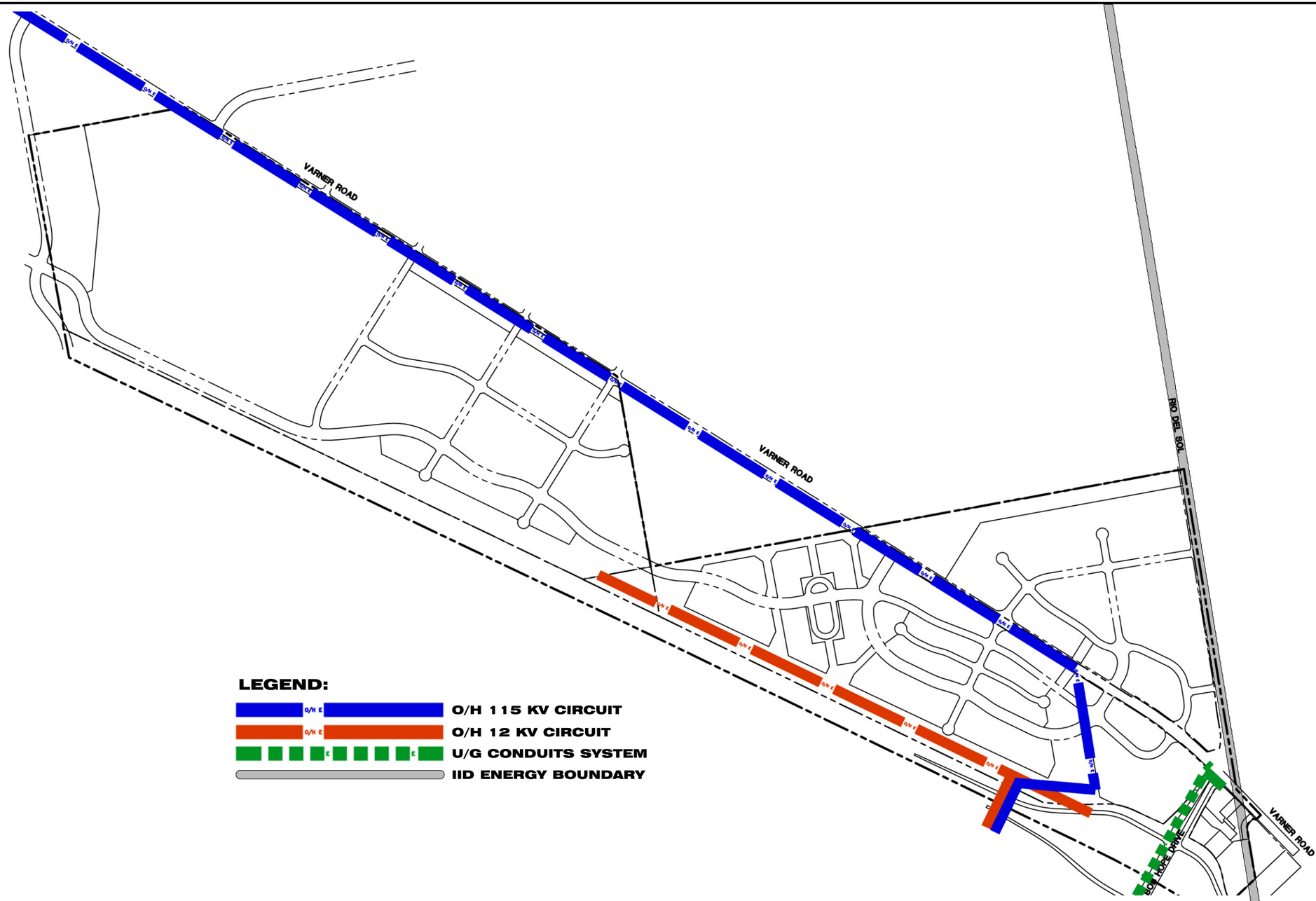
Proposed Dry Utilities

Figure 6-6



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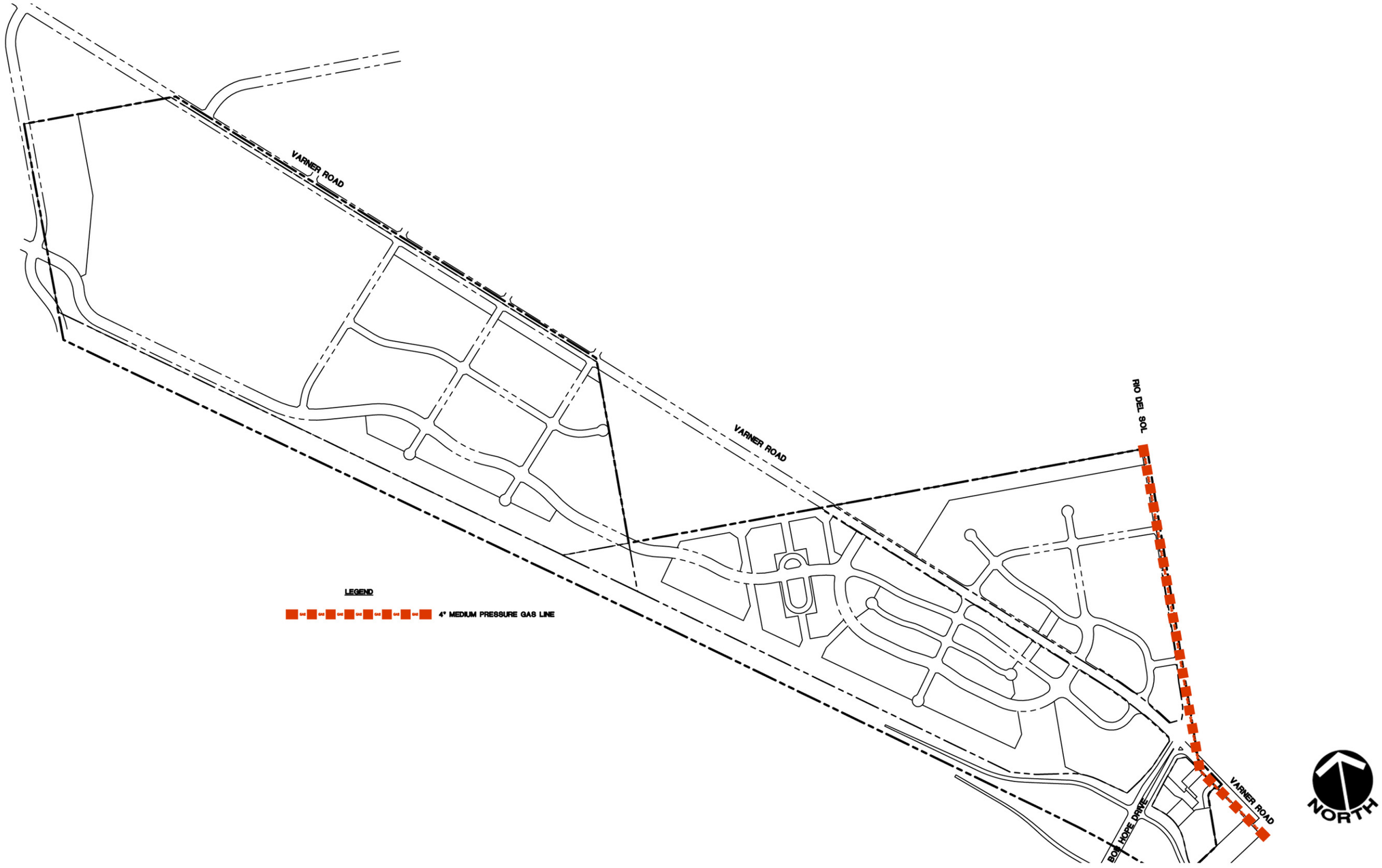
Existing Electrical System

Figure 6-7



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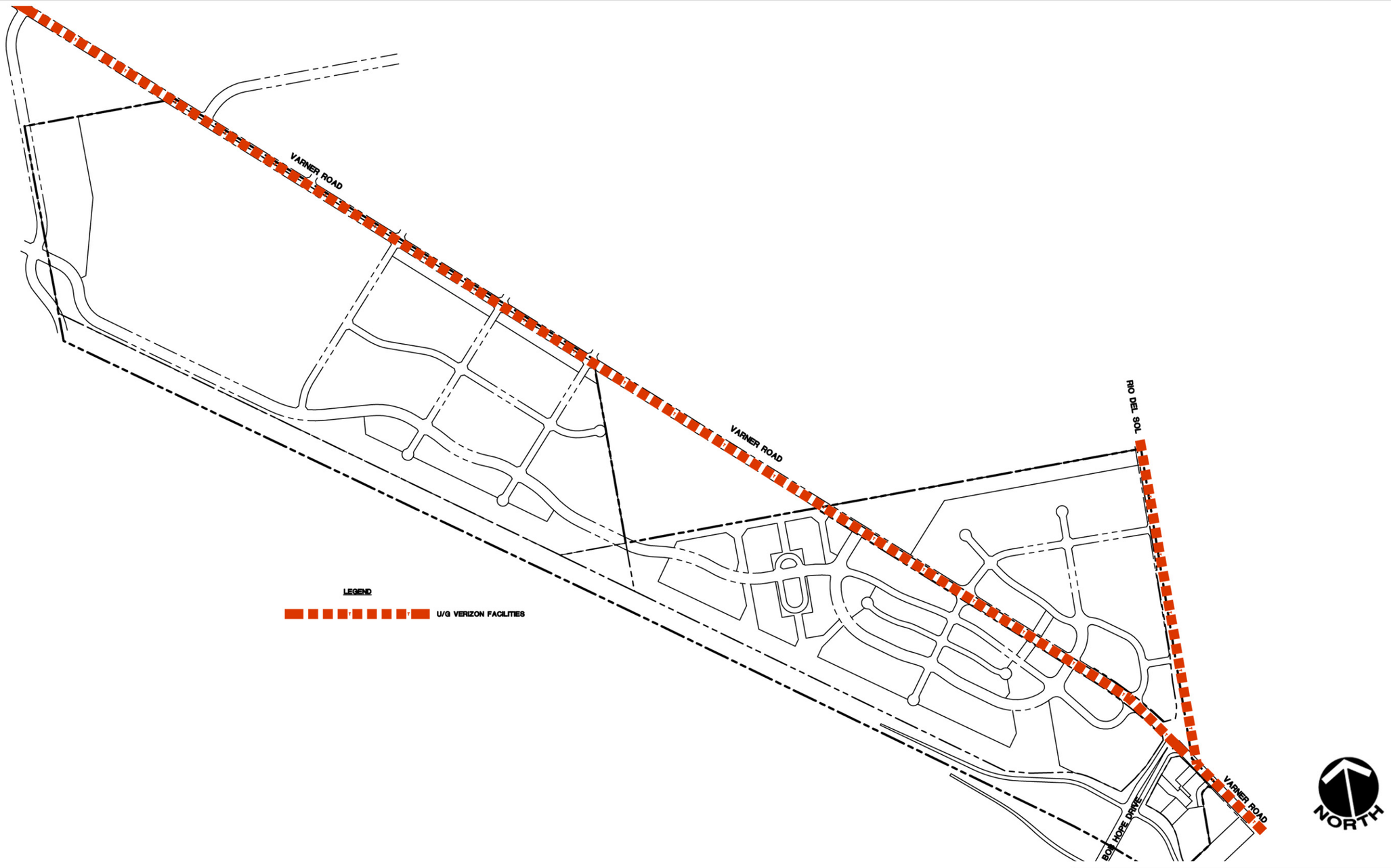
Existing Gas System

Figure 6-8



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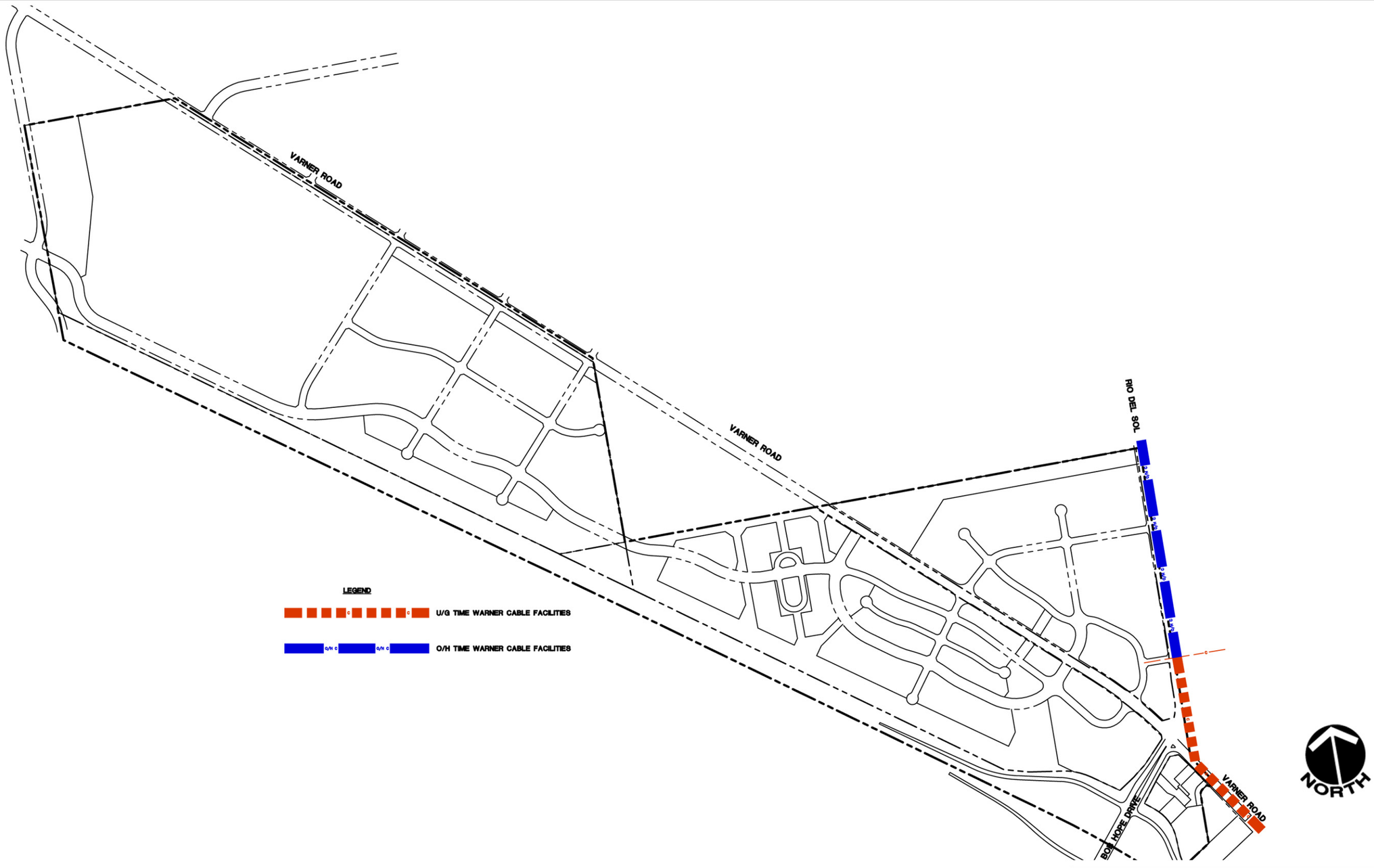
Existing Telephone System

Figure 6-9



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Existing CATV System

Figure 6-10

G. Sustainability

A very important goal of the Specific Plan is to encourage sustainable, energy-efficient developments. The standards and guidelines presented in this chapter of the original North City Specific Plan, and incorporated by reference into this North City Extended Specific Plan, incorporate applicable principles and recommendations established by the *Sustainable Sites Initiative,* which establishes standards for site development that will ultimately be integrated into the Leadership in Energy and Design (LEED) rating system. In addition, new residential development should follow Cathedral City's *Volunteer Green Building Program for Residential Construction* (Ordinance Number 657).

The development of both public and private infrastructure in the North City Extended Specific Plan has the clear objective of sustainable design and state of the art technologies. Water efficiency for both domestic and irrigation use, stormwater retention and recharge, the use of solar power where appropriate, are all key components to the project sustainability. The wastewater generated by the ultimate project build-out will be conveyed in an existing 15-inch sewer main in Varner Road, easterly on Avenue 38 to Water Reclamation Plant No.7 (WRP7) in Indio.

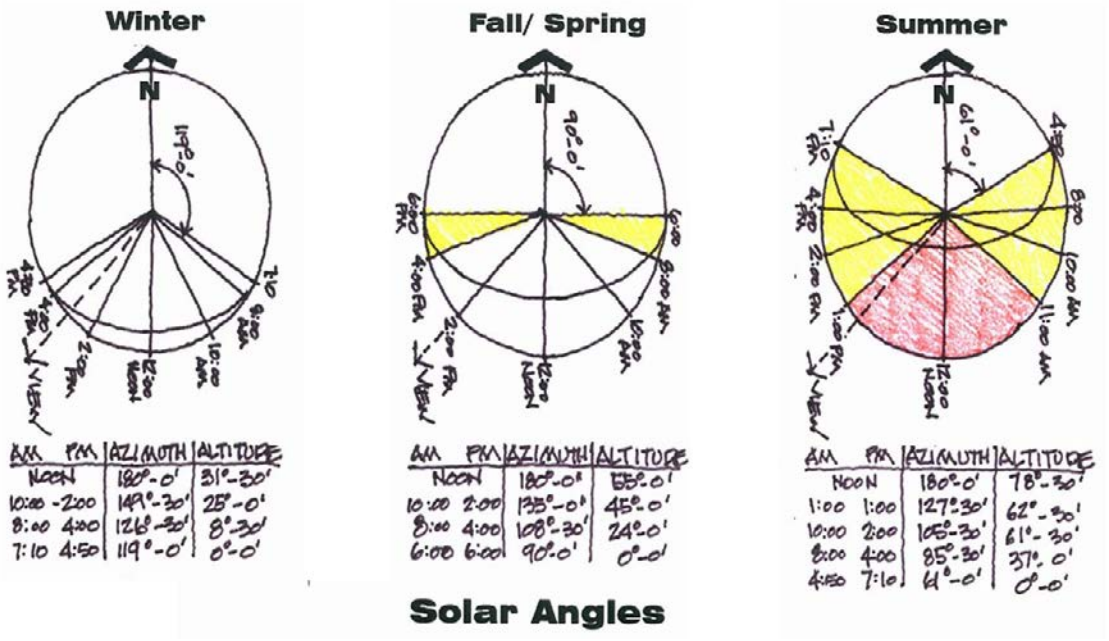
All water and wastewater facilities are owned and operated by Coachella Valley Water District (CVWD). Effluent from the WRP7 plant is mixed with canal water and reclaimed for irrigation of local golf courses. Large scale private builders are encouraged to consider solar facilities to offset electricity demand within their projects. Moreover, a solar field built in conjunction with the retention basins on Planning Area 4, if determined feasible, could provide the project with on-site electricity generation that significantly offsets the power demand.

However, the term "Sustainability" as discussed within the context of this Specific Plan includes a wider spectrum of design and development principles and standards. The additional areas of concern regarding sustainability within this Specific Plan also include:

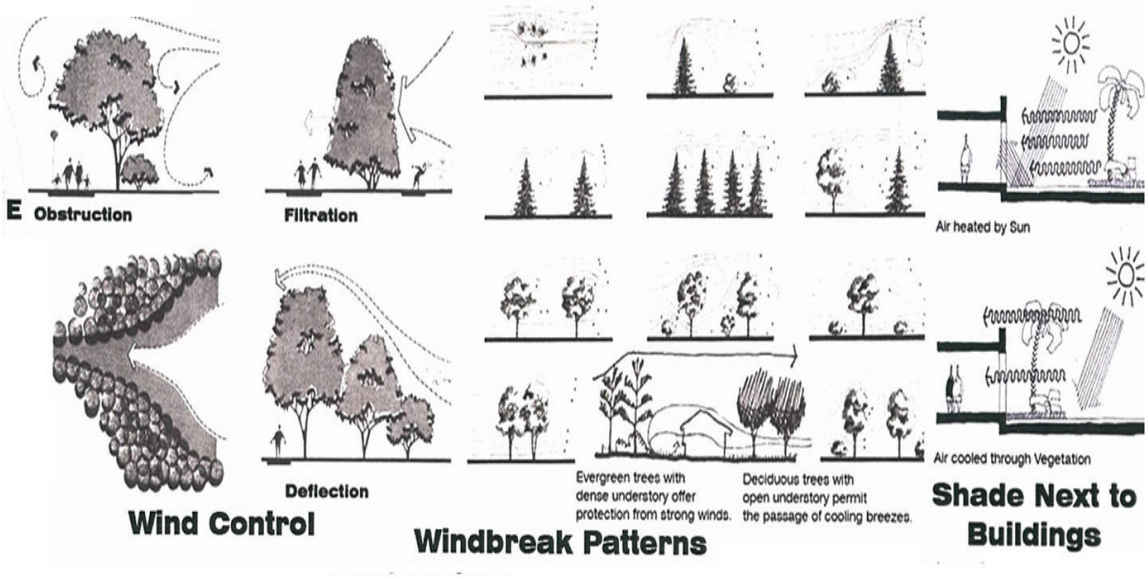
- Stormwater Management
- Landscape Design; and
- Building Design

Stormwater Management sustainability has been previously addressed within this Chapter. Landscape Design and Building Design are addressed within Chapter 8: "Design Standards Guidelines". All of these areas of concern are interrelated within the land planning and design process integral to the Specific Plan. The basic environmental design principles to be followed throughout include the following:

- **Sensitivity to Solar Orientation of Buildings/Public Spaces**



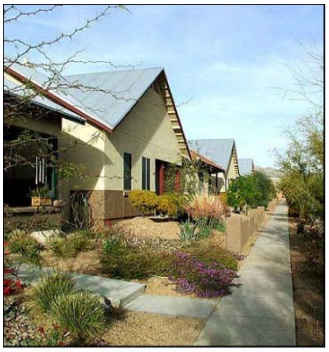
- **Sensitivity to Wind Directions and Windbreak Patterns**



- **Sensitivity to proper site plan organization for solar and wind control for this area.**

Finally, unique architecture and site design features can be employed to further capitalize on sustainability factors unique to this area. The photograph below illustrates the use of solar energy collection panels as sun shading devices for a surface parking lot.

Use landscaping in multi-family developments to visually soften the development and enhance the streetscape environment.



Front yard landscaping should be compatible with the primary structure.