AGENDA

WORKSHOP* OF THE BOARD OF COMMISSIONERS
VICTOR VALLEY WASTEWATER RECLAMATION AUTHORITY

Victorville City Hall – Conference Room "D"
14343 Civic Drive, Victorville, CA 92392
Phone: (760) 246-8638

WORKSHOP DATE: TUESDAY, DECEMBER 4, 2018 TIME: 1:30 PM

CALL TO ORDER & PLEDGE OF ALLEGIANCE

PUBLIC COMMENTS – WORKSHOP AGENDA

WORKSHOP:

1. **Discussion: Wastewater Treatment Plant, Interceptor Capacity and Allocation of Capacity**

2. **Presentation: VVWRA Rate Study to Include User Scenario, Connection Fee and Fixed Versus Variable Cost Model- Raftelis**

3. **Open Discussion on Items 1 and 2**

* No action will be taken at the Workshop, although the Board may direct staff, consultants or legal counsel to follow up on some of the issues discussed orprepare language for future discussion and consideration.

ADJOURNMENT

Agenda Posting: In accordance with the requirements of California Government Code Section 54954.2, this agenda has been posted in the main lobby of the Authority's Administrative offices not less than 72 hours prior to the meeting date and time above. All written materials relating to each agenda item are available for public inspection in the office of the Board Secretary.

Items Not Posted: In the event any matter not listed on this agenda is proposed to be submitted to the Board for discussion and/or action, it will be done in compliance with Section 54954.2(b) as an emergency item or because there is a need to take immediate action, which came to the attention of the Board subsequent to the posting of the agenda, or as set forth on a supplemental agenda posted in the manner as above, not less than 72 hours prior to the meeting date.

Public Comments: Any member of the public may address the Board of Commissioners on specific agenda items or matters of general interest. As determined by the Chair, speakers may be deferred until the specific item is taken for discussion and remarks may be limited to five minutes. Persons desiring to submit paperwork to the Board of Commissioners shall provide a copy of any paperwork to the Board Secretary for the official record.

Matters of Interest addressed by a member of the public and not listed on this agenda cannot have action taken by the Board of Commissioners except as authorized by Section 54954.2(b). If you wish to speak, please complete a Speaker's Form (located at the table in the lobby outside of the Board Room) and give it to the Board Secretary prior to the start of the meeting.

If any individual wishes to challenge an action of the Commission in court, he or she may be limited to raising those issues that were raised at the public hearing pertaining to the Commission's actions, or in any written correspondence delivered to the Commission on or prior to the public hearing.

Consent Calendar: All matters placed on the Consent Calendar are considered as not requiring discussion or further explanation and unless any particular item is requested to be removed from the Consent Calendar by a Commissioner, staff member or member of the public in attendance, there will be no separate discussion of these items. All items on the Consent Calendar will be enacted by one action approving all motions, and casting a unanimous ballot for resolutions included on the consent calendar. All items removed from the Consent Calendar shall be considered in the regular order of business.

The Chair will determine if any items are to be deleted from the Consent Calendar.

Items Continued: Items may be continued from this meeting without further notice to a Committee or Board meeting held within five (5) days of this meeting per Government Code Section 54954.2(b)(3).

Meeting Adjournment: This meeting may be adjourned to a later time and items of business from this agenda may be considered at the later meeting by Order of Adjournment and Notice in accordance with Government Code Section 54955 (posted within 24 hours).

Accommodations for the Disabled: In compliance with the Americans with Disabilities Act (ADA), the Board of Commissioners Meeting Room is wheelchair accessible. If you require any special disability related accommodations, please contact the Victor Valley Wastewater Reclamation Authority Board Secretary's office at 760-246-2892 at least 72 hours prior to the scheduled meeting. Requests must specify the nature of the disability and the type of accommodation requested.

VICTOR VALLEY WASTEWATER RECLAMATION AUTHORITY

MEMORANDUM

DATE: 4 December 2018

TO: Board of Commissioners

FROM: Logan Olds, General Manager

SUBJECT: Update on Capacity Allocation Discussion and Agreement

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The member entities have been involved in an attempt to resolve their differences, including the issue of diversion of flows by member entities. As part of those discussions, the member entities agreed to revise the Joint Powers Agreement to address the issue of diversions as well as other issues. The member entities agreed in principle that a JPA based on allocation of capacity (for both plants and interceptors) can provide the best approach that would accommodate the member entities' individual plans as well as VVWRA's need for predictability for its long term planning, operations and financial stability. In this context, the allocation of capacity is a crucial step in the process. VVWRA staff has worked with the Engineering and Finance Committees to develop the capacity values and design standards for inclusion in the Revised JPA (In that regard, Attachment 1 is the key document that allocates the capacity that member entities will be committing to). On November 7th, 2018, the Engineering and Finance Committees met without the elected officials being present, and a consensus was reached resulting in the following recommendation:

1. The total wastewater treatment capacity of VVWRA (including the main plant and subregional plants) is 19 million gallons per day (MGD). (Attachment One)
    a. This includes a total of 2 MGD for the water reclamation plants (subregionals), at 1 MGD each, and an additional 17 MGD for the main plant in Victorville.

2. The depth to diameter (d/D) ratios that will be used to evaluate the interceptor system is 0.5 (or half full) at peak wet weather flow (PWWF) for pipelines less than 18 inches in diameter. And for pipelines greater than 18 inches in diameter 0.75 (or ¾ full) at PWWF. (Attachment Two)

    a. Maps were also developed of the interceptor system with and without the subregionals. The maps do show the beneficial impact of the subregionals in significantly reducing locations where the interceptor exceeded design capacity and would require expansion/replacement. For simplicity Attachment Three is a table showing the impact of the subregionals on the interceptor system.

    b. The next step in the process will be to conduct an Interceptor Risk Analysis to develop a capital improvement plan to address the remaining interceptors that do not meet design standards. Even though an interceptor may exceed the design standard factors such as; slope, pipe material, pipe age, upstream drainage area, potential community growth, inflow and infiltration must be evaluated to learn if and when the interceptors would require

replacement or expansion. VVWRA staff intends to include the Interceptor Risk Analysis in the fiscal year 19/20 budget with a projected timeline for completion in fiscal year 20/21.

Once the wastewater treatment capacity technical review was agreed upon, that information was relayed to the Management Committee to review for the purpose of evaluating how to assign capacity to each of the Member Entities. The final method selected was based on Equivalent Dwelling Units (EDU's) for recommendation to the Board. An EDU is a unit of measure defined as one single-family residential household. This calculation is also used to define sewer connections for commercial and industrial properties. Attachment Four is the result of those discussions and agreed upon values.

The overall consensus was then to forward Attachment Four to Raftelis, the rate consultant, to develop a financial plan that addresses capacity allocation into a fixed and variable rate model. The rate model(s) will be presented by Raftelis at the Board Workshop. If the Board agrees in concept to a draft rate scenario the Board may direct staff to present the final rate study at the regularly scheduled Board meeting on 20 December 2018. If the Board authorizes staff to begin revising the relevant Ordinances pursuant to the selected rate scenario on 20 December 2018 VVWRA staff and legal counsel will begin the adoption process and schedule the public hearings for the Board meetings in January and February 2019.

Concurrently, legal counsel has received Attachment Four and has begun revising the draft JPA agreement. The draft JPA will be presented to the Commissioners, per your direction, at the 20 December 2018 Board meeting. The Member Entities will likely provide additional comments and revisions will be incorporated to prepare a final draft.

ATTACHMENT ONE

VVWRA Westside WRP Capacity Study

10/19/2018 Updated

DRAFT

Process	Capacity, mgd: Unequalized peak wet weather flow (UPWWF)	Capacity, mgd: Equalized peak wet weather flow (EPWWF)	Capacity, mgd: Annual average flow (AAF)[1][2]	Notes
Hydraulic capacity				
Bar Screens	21.0	Prior to EQ	10.5	• Based on equipment capacity: 2 duty units in service, each 10.5 MGD UPWWF • Need structural drawings and equipment submittal for detail hydraulic check.
Grit Removal	20.6 / 41.2	Prior to EQ	10.3	• Based on equipment capacity: 20.6 MGD UPWWF with 1 tank out of service, 41.2 MGD UPWWF with both tanks in service • Need mechanical, structural drawings and equipment submittal for detail hydraulic check.
Primary Clarifiers	42.0	Prior to EQ	21.0	• Based on Design Criteria peak hour 2,640 gpd/sf UPWWF, 8 basins in service
Aeration Basins	After EQ	See below	See below	• Aeration Basin effluent weir is submerged under all flow conditions.
Secondary Clarifiers	After EQ	See below	See below	• Secondary Clarifier effluent cipoletti weir is submerged under all flow conditions. • Secondary Effluent Diversion Structure weir is submerged under all flow conditions.
Aqua-Diamond Filters	After EQ	19.4	19.4[3]	• Based on max. design hydraulic loading 6.0 gpm/sf, one basin out of service. • Maximum allowed headloss (backwash initiation level) is 12 inches under this flow.
UV	After EQ	25.0 (Process) 20.5 (Hydraulic)	20.5[3]	• 25 MGD is based on process evaluation only. • Hydraulic check shows flow higher than 20.5 MGD will submerge UV influent weir.
Primary/secondary process capacity				
Scenario 1 - Existing configuration (Secondary clarifier 7 - 10 in service)		21.0	14.0	• Based on peak month influent load conditions • Assumes 60 percent primary suspended solids removal • Assumes all aeration tanks in service with equal ML distribution among tanks • Assumes 6.0 day total SRT at 20.0 deg C wastewater temperature • Assumes 42.0 mgd internal recycle flow (300 percent of AAF)* • Assumes secondary clarifier 7 through 10 in service • Based on design (90th percentile) SVI of 125 mL/g, assumes polymer addition for SVI control when necessary • Assumes 14.0 mgd reliable RAS pumping capacity** *Current average internal recycle flow rate is approx. 13.4 mgd (125 percent) based on 7/1 - 12/31/17 plant data **Current average RAS flow rate is 4.19 mgd (36 percent) based on 7/1 - 12/31/17 plant data • Assumes SE flow downstream of sercondary clarifiers can be diverted to percolation pond pump station in addition to filters under peak flow condition. Downstream hydraulics allows max. 18.5 mgd going to the filters without submerging the secondary clarifier effluent v-notch weir, when secondary clarifiers 1 through 8 are offline and 7 through 10 are in service.
Scenario 2 (Secondary clarifier 1 - 9 in service)		24.4	16.25	• Based on peak month influent load conditions • Assumes 60 percent primary suspended solids removal • Assumes all aeration tanks in service with equal ML distribution among tanks • Assumes 6.0 day total SRT at 20.0 deg C wastewater temperature • Assumes 48.75 mgd internal recycle flow (300 percent of AAF)* • Assumes secondary clarifier 1 through 9 in service* • Assumes ML distribution among clarifiers based on relative surface area • Based on design (90th percentile) SVI of 125 mL/g, assumes polymer addition for SVI control when necessary • Assumes 16.25 mgd reliable RAS pumping capacity with settled sludge withdrawal among tanks based on relative surface area* *different from Scenario 1 • Assumes SE flow downstream of sercondary clarifiers can be diverted to percolation pond pump station in addition to filters under peak flow condition. Downstream hydraulics allows max. 20.3 mgd going to the filters without submerging the secondary clarifier effluent v-notch weir, when secondary clarifiers 1 through 9 are in service.
Scenario 3 (Secondary clarifier 1 - 10 in service)		25.5	17.0	• Based on peak month influent load conditions • Assumes 60 percent primary suspended solids removal • Assumes all aeration tanks in service with equal ML distribution among tanks • Assumes 6.0 day total SRT at 20.0 deg C wastewater temperature • Assumes 51.0 mgd internal recycle flow (300 percent of AAF)* • Assumes secondary clarifier 1 through 10 in service* • Assumes ML distribution among clarifiers based on relative surface area • Based on design (90th percentile) SVI of 125 mL/g, assumes polymer addition for SVI control when necessary • Assumes 17.0 mgd reliable RAS pumping capacity with settled sludge withdrawal among tanks based on relative surface area* *Different from Scenario 1 and 2 • Assumes SE flow downstream of sercondary clarifiers can be diverted to percolation pond pump station in addition to filters under peak flow condition. Downstream hydraulics allows max. 21 mgd going to the filters without submerging the secondary clarifier effluent v-notch weir, when secondary clarifiers 1 through 10 are in service.
Overall capacity				

Notes:

(1) - assumes UPWWF = 2.0 x annual average flow (applies to bar screens, grit removal, and primary clarifiers)

(2) - assumes EPWWF = 1.5 x annual average flow (applies to aerration basins, secondary clarifers, cloth media filters, and UV disinfection)

(3) - assumes SE flow exceeding this value during peak flow periods will be diverted to percolation pond pump station

ATTACHMENT TWO

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760 942 5147 F 760.632 0164

MEMORANDUM

To:	Logan Olds, VVWRA
From:	Elizabeth Caliva, P.E. and Russ Bergholz, P.E.
Subject:	2018 Interceptor Capacity Analysis Approach
Date:	10/22/18
cc:	–
Attachment(s):	–

The following technical memorandum provides Victor Valley Water Reclamation Authority (VVWRA or Authority) with the following elements:

1. Brief summary of the October 2013 Upper Narrows Pipeline Replacement Hydraulics Background Information letter report prepared by Tetra Tech
2. Evaluation by Dudek of the above referenced letter report
3. Recommendations for evaluating the performance of pipelines associated with the 2018 Interceptor Capacity Study.

1 Design Criteria by Tetra Tech

In October 2013, Tetra Tech prepared a white paper for the Authority to provide general information regarding hydraulics and sewer pipeline design. Based on the title of the white paper, Dudek assumes the white paper was used for the selection of new pipelines associated with the Upper Narrows Pipeline Replacement project. Based on additional graphics provided to Dudek, this criteria also appears to be used to evaluate the Authority's interceptor system.

The 2013 Tetra Tech white paper provided a definition of several sewer flow conditions (average dry weather flow [ADWF], peak dry weather flow [PDWF], peak wet weather flow [PWWF]), several generalized equations for estimating flows, and listing of new pipeline design criteria for City of Anaheim, City of San Diego, LACSD and MNWD. A discussion of odor concerns related to surcharged pipelines and a recommendation to avoid consideration of the collection system as a means of storage for storm surge flows entering the treatment plant is included. Several references to avoiding the use of ADWF for sizing sewer pipelines is stated.

The recommendations for sewer pipeline from the report are stated below:

> *To confirm and comply with industry standard, it is recommended VVWRA observe the national standard of the following:*

- *A maximum* depth over diameter (d/D) ratio *of 0.5 for pipes less than or equal to 15 inches in diameter*
- *A maximum d/D of 0.75 for pipes greater than 15 inches in diameter*
- *Flows based on PWWF.*

2 Dudek Evaluation of White Paper

The following discussion draws attention to several specific observations and/or concerns with the 2013 Tetra Tech White Paper:

- Dudek concurs the recommended ***Pipeline Design Criteria*** be that pipelines 15" or less in diameter must convey PWWF flow at or below d/D of 0.5, and all other pipes convey PWWF flow at or below d/D of 0.75. The white paper documents research and survey results of other neighboring cities and agencies as to the maximum allowable d/D for sewer pipeline design. Dudek reflects our observation in working with these same agencies and numerous other sewer agencies that the above pipeline design criteria is most common among our clients. The application of this criteria, specifically based on projected ultimate peak weather flow has been regularly used for the design of new sewer pipelines, consisting of both extension of collection system infrastructure, or the replacement/upsizing of existing infrastructure to compensate for changes in projected future growth and sewer flows.
- The definitions of ADWF, PDWF and PWWF presented are appropriate in terms of the various flow conditions used in the sewer pipeline design process.
- Two equations for estimating PDWF are provided. The equation from the City of Los Angeles appears to be developed specifically for the City. The equation from the City of San Diego provides a more common approach to this estimation process by incorporating the upstream population into the equation. Generally, the larger the upstream drainage basin, the greater the dampening effect of time reduces the peak hour diurnal flows.
- Peak Wet Weather Flow (PWWF) is defined as PDWF x Wet Weather Peaking Factor (WWPF). The source or equation for WWPF was not provided beyond the coordination with hydraulic modeling engineers. The determination of this factor and its application towards the application of the Pipeline Design Criteria is very important as it is common for the WWPF to be greater than 2x PDWF.

3 2018 Interceptor Capacity Analysis

During the original design of the interceptor system, the design process likely considered the projected future flows of the service area and developed a design average dry weather flow (ADWF) and peak dry weather flow (PDWF). In addition to these values, an estimate of the inflow and infiltration (I&I) was likely included based on either observed flow monitoring data or prior experience with the collection system. The resultant determination of the pipeline design should have included both the pipeline diameter, slope, and estimated friction factor to calculate each pipeline segments capacity at various flow depths. Confirmation that the recommended pipeline design has the capacity to convey the projected sewer flow is standard practice.

Under typical long-term growth and development of the service area, sewer flows will generally increase in parallel with population towards the projected ultimate buildout of the service area. The original pipeline design process sought to project this future condition and resultant sewer flow. Over time, growth patterns, land uses, basin infrastructure, reliability of the collection system to minimize defect flow, and other factors can alter the ADWF, PDWF and PWWF values injected into the interceptor system. Therefore it is a requirement of collection systems, as part of the State mandated Sewer System Management Plan, to provide a capacity assurance plan that consistently evaluates existing and projected sewer flows with the existing infrastructure.

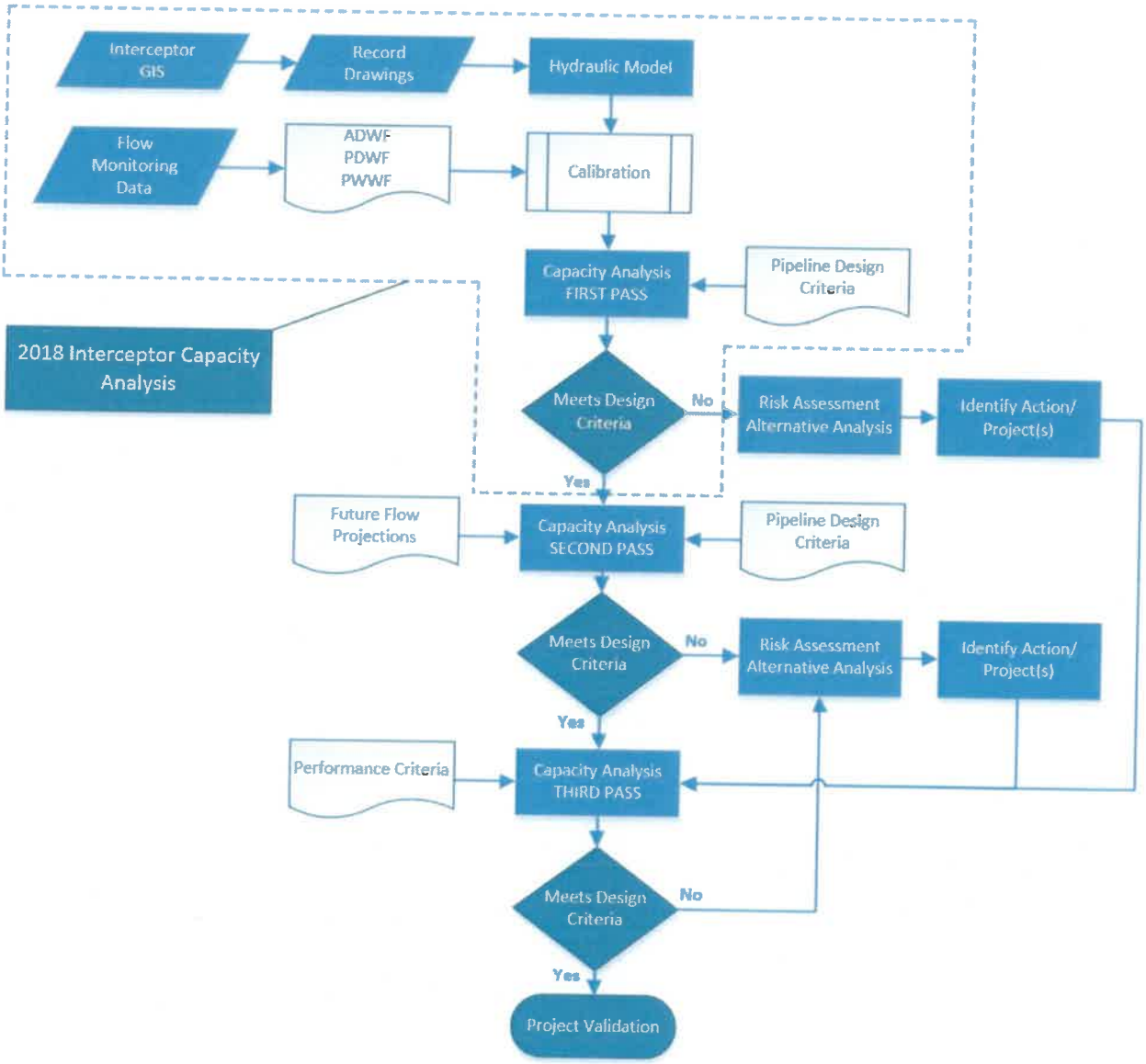
When conducting the capacity assurance analysis, ADWF, PDWF and PWWF values should be updated as necessary. These flow patterns are then input in to a computerized hydraulic model based on the physical infrastructure of the interceptor system to produce an extended period simulation of the collection system.

Once the simulated flow patterns are compared with field measurements, through the calibration process, the first evaluation of capacity performance is to apply the ***Pipeline Design Criteria*** to each reach of pipeline. As this first simulation is based on existing sewer flows and the upstream drainage basins are assumed to not have reached ultimate buildout, the interceptor system should NOT show any segments that exceed pipeline design capacity criteria. Use of evaluation criteria less stringent should only be applied as a secondary means of prioritizing high-risk areas in conjunction with any segments that show to be deficient using pipeline design criteria.

In the event that pipeline segments exceed the design criteria considerably sooner than the anticipated ultimate buildout of the service area, these segments warrant immediate attention as to the circumstances that resulted in the situation. Many factors can be applied during this risk assessment and alternative analysis process to identify the best course of action to mitigate the situation.

The following Figure 1 presents the general approach to completing the first pass of the capacity analysis of the interceptor system. As discussed above, the evaluation metric for meeting capacity will be by application of pipeline design criteria to demonstrate each segment does not exceed the maximum depth of diameter ratio (d/D). The following figure also provides the secondary and tertiary evaluation process used for validation of mitigation projects.

Figure 1: Approach to Capacity Analysis



ATTACHMENT THREE

DRAFT

VVWRA INTERCEPTOR CAPACITY ANALYSIS

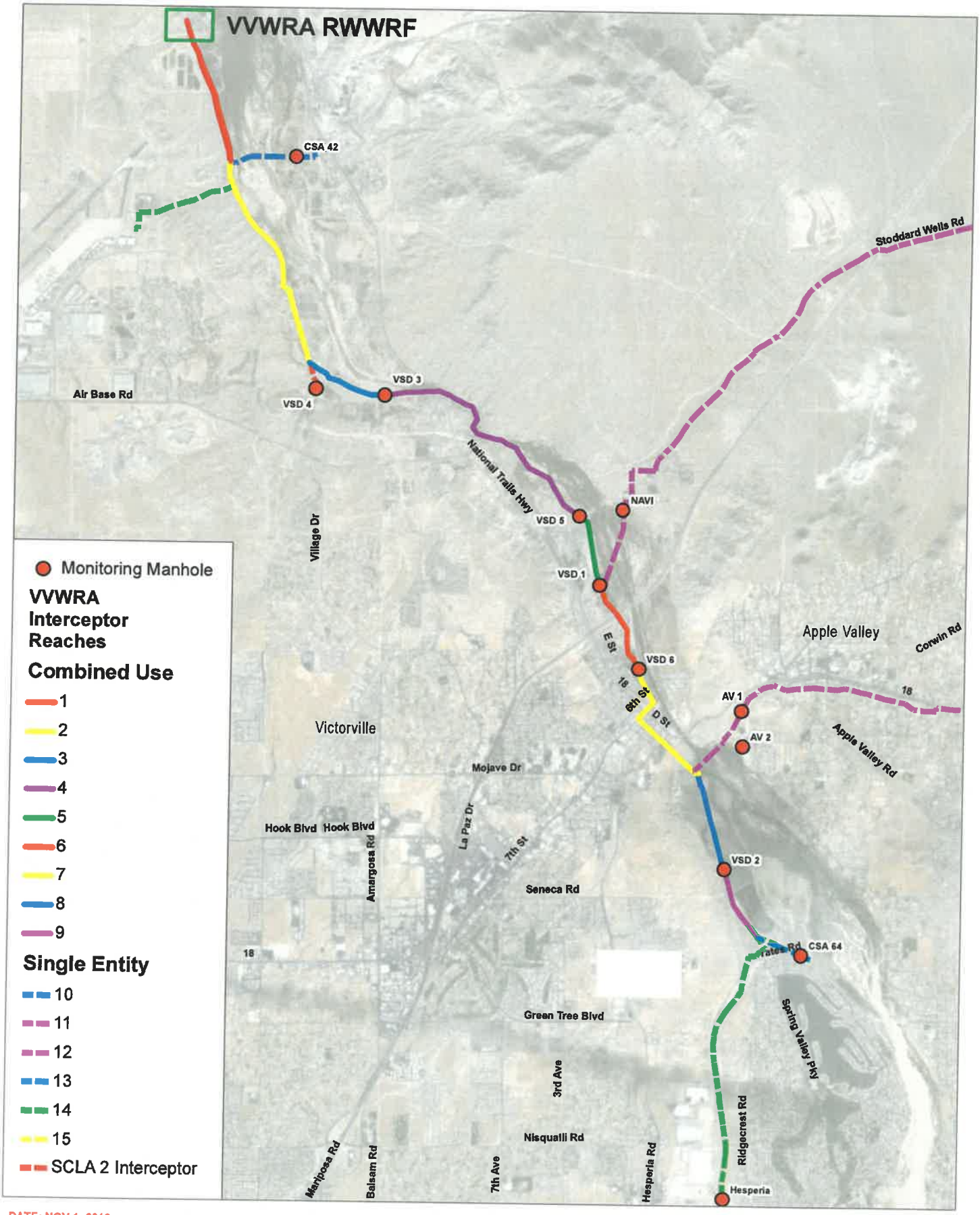
Prepared for:

VICTOR VALLEY WASTEWATER RECLAMATION AUTHORITY
20111 Shay Road
Victorville, CA 92394
Contact: Logan Olds

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Elizabeth Caliva

NOVEMBER 2018



DATE: NOV 1, 2018

DRAFT

DUDEK

0 2,500 5,000 Feet

INTERCEPTOR REACH SUMMARY

VVWRA Interceptor Capacity Study

Reach Analysis Summary

Reach	Total Length (ft)	Dia. Range (in)	No. of Pipes w/ Design d/D Exceeded		Length of Pipe Exceeding Design d/D (ft)	
			PWWF	With Scalping	PWWF	With Scalping
1	12,257	36 - 42	0	0	0	0
2	19,028	36 - 42	0	0	0	0
3	7,304	36 - 42	1	0	500	0
4	11,100	27 - 36	11	5	4,653	2,147
5	2,911	27	6	5	2,911	2,533
6	4,342	27	10	1	4,342	496
7	6,184	27 - 48	10	2	2,976	797
8	4,338	21 - 27	0	0	0	0
9	3,250	21	0	0	0	0
10	3,792	8	1	0	389	0
		Total:	**39**	**13**	**15,772**	**5,974**
		Reduction by Scalping:	**26**		**9,797**	

ATTACHMENT FOUR

27-Nov-18

Total EDU's per Member Entity

Year	Victorville EDU's	Adelanto EDU's	Apple Valley EDU's	SB County Special Districts EDU's	Hesperia EDU's
FY 1983	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 1984	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 1985	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 1986	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 1987	1,323.97	43.50	303.76	584.20	56.41
FY 1988	1,114.39	46.65	306.35	334.45	198.89
FY 1989	1,359.97	117.50	485.20	377.40	209.27
FY 1990	2,447.58	60.05	671.89	272.81	201.79
FY 1991	1,398.62	179.15	412.66	168.23	225.04
FY 1992	1,075.02	492.30	187.63	48.23	90.20
FY 1993	1,134.11	772.81	321.43	79.70	213.96
FY 1994	1,216.29	566.00	177.75	36.43	316.46
FY 1995	682.89	237.35	297.66	88.40	228.58
FY 1996	451.91	555.04	209.81	70.05	229.73
FY 1997	314.15	93.15	74.59	48.50	127.27
FY 1998	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 1999	Data Not Available	Data Not Available	Data Not Available	Data Not Available	Data Not Available
FY 2000	535.66	0.00	355.28	71.05	110.50
FY 2001	730.58	0.00	264.15	105.17	77.54
FY 2002	909.69	0.00	416.70	121.81	195.00
FY 2003	1,929.07	0.00	419.89	136.86	266.55
FY 2004	3,324.63	0.00	465.23	163.55	778.88
FY 2005	3,227.71	0.00	1,146.82	187.10	1,213.85
FY 2006	4,191.25	0.00	1,296.04	68.88	1,711.04
FY 2007	2,325.10	0.00	576.77	57.85	841.52
FY 2008	1,310.39	0.00	550.23	10.25	654.92
FY 2009	503.03	0.00	331.47	113.57	339.24
FY 2010	340.62	0.00	151.75	2.90	349.21
FY 2011	258.01	0.00	203.93	26.45	99.78
FY 2012	244.13	0.00	181.19	93.17	18.15
FY 2013	154.72	0.00	208.96	59.47	9.05
FY 2014	196.25	0.00	136.65	12.55	61.10
FY 2015	56.34	0.00	193.79	20.15	76.51
FY 2016	0.00	0.00	186.24	19.10	81.18
FY 2017	443.92	0.00	195.67	32.30	66.03
FY 2018	198.22	0.00	204.70	46.40	271.23
	33,398.23	**3,163.51**	**10,934.20**	**3,456.99**	**9,318.86**

	EDU's	Percentage (%)	Proportional	Proportional Percentage (%)	Proportional EDU Allocation
Victorville	33,398.23	55.4%	33,398.23	**58.5%**	35,248.32
Adelanto	3,163.51	5.2%	Not Applicable	**Not Applicable**	Not Applicable
Apple Valley	10,934.20	18.1%	10934.20	**19.1%**	11,539.90
SB County	3,456.99	5.7%	3,456.99	**6.1%**	3,648.49
Hesperia	9,318.86	15.5%	9318.86	**16.3%**	9,835.08
TOTAL	60,271.80	100.0%	57,108.29	100.0%	60,271.80