

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Engineering

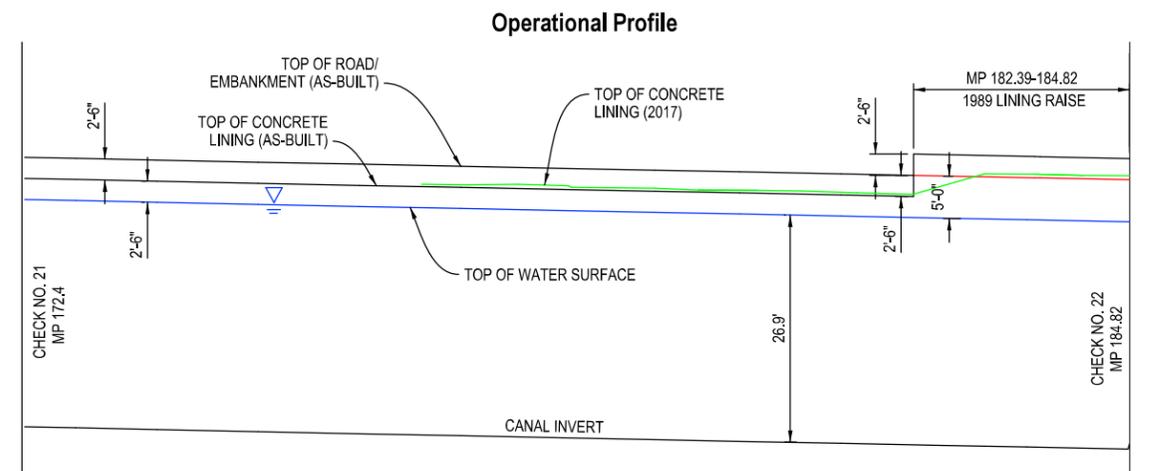
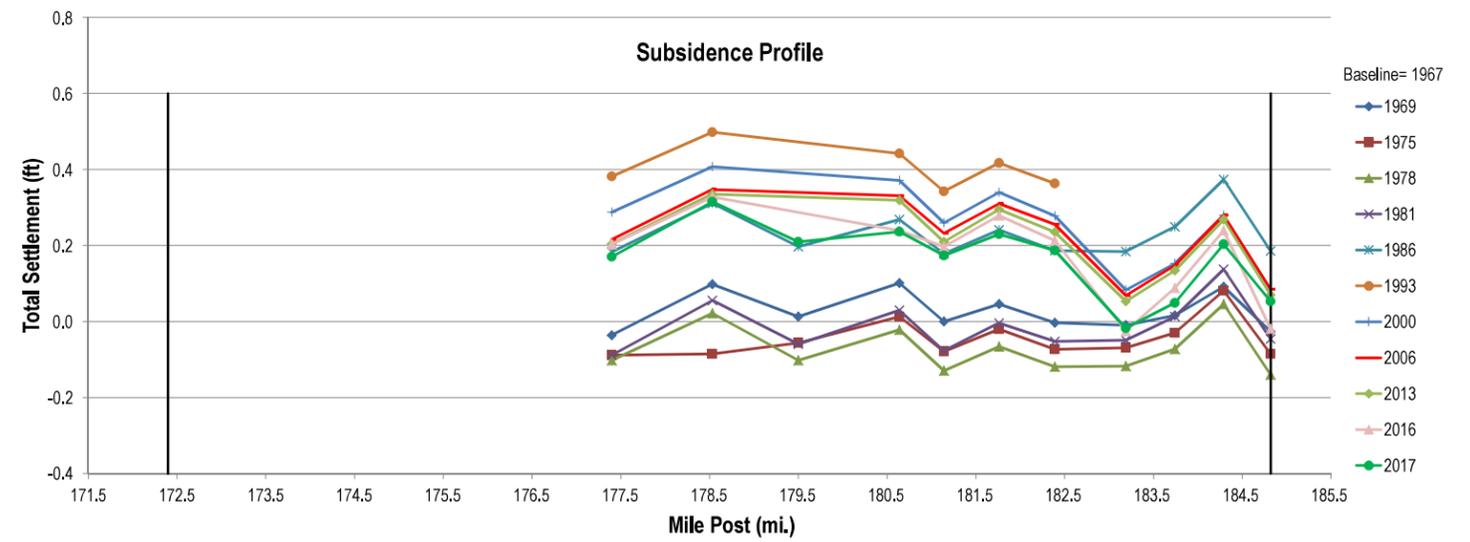
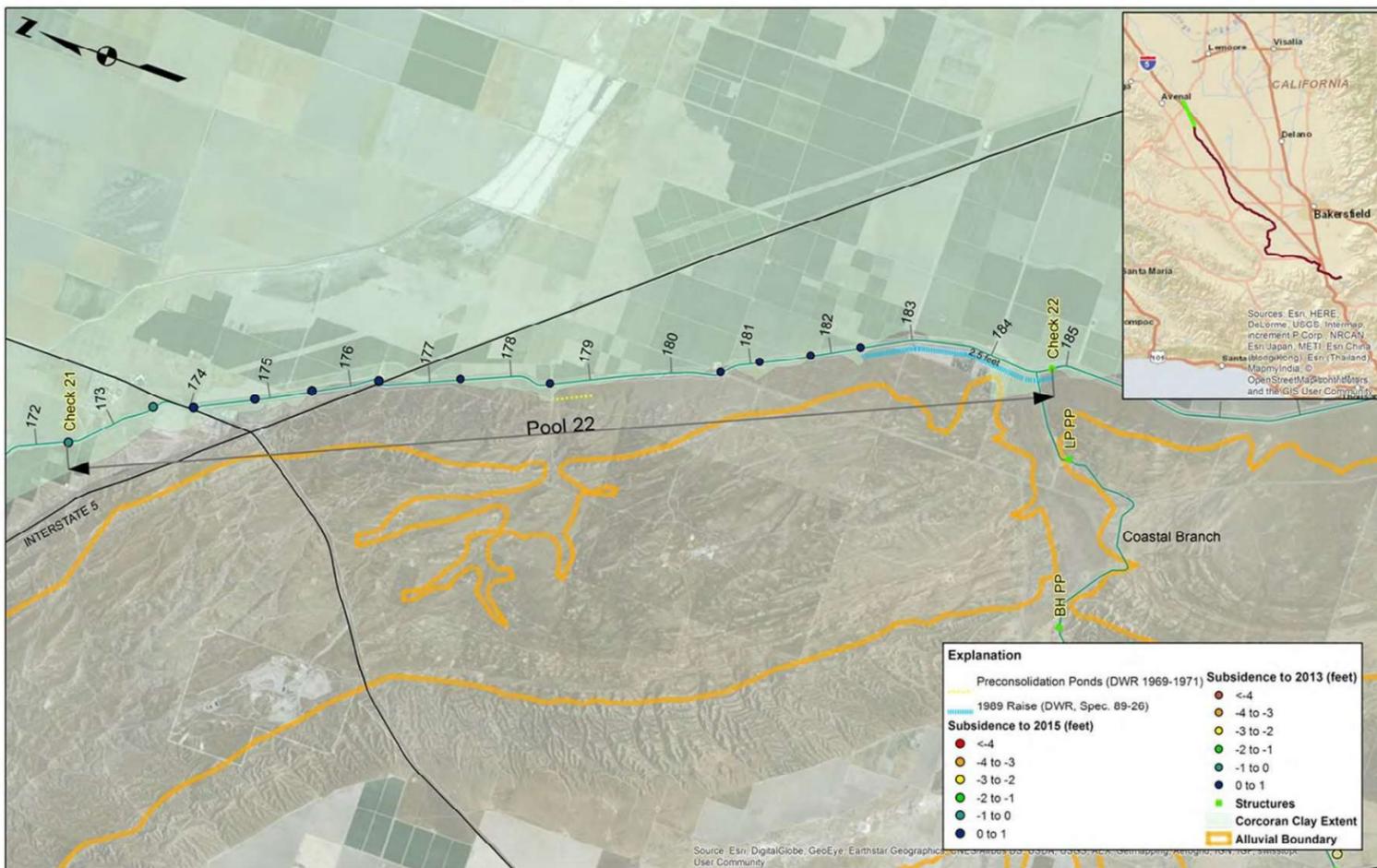
CALIFORNIA AQUEDUCT SUBSIDENCE STUDY: SUPPLEMENTAL REPORT

San Luis Field Division

San Joaquin Field Division



March 2019



STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 21		172.4	POWERLINE CROSSING		173.7	OVERCHUTE CROSSING		178.57
END OF SAN LUIS FIELD DIVISION		172.44	POWERLINE CROSSING		173.77	OVERCHUTE CROSSING		179.5
POWERLINE CROSSING		172.49	PIPELINE CROSSING		173.78	OVERCHUTE CROSSING		179.98
MILHAM AVE. BRIDGE		172.58	PIPELINE CROSSING		173.91	POWERLINE CROSSING		180
TURNOUT	L	172.66	OVERCHUTE CROSSING		174.07	POWERLINE CROSSING		180.62
CULVERT CROSSING		172.72	POWERLINE CROSSING		174.07	BRIDGE/POWERLINE		180.64
PIPELINE CROSSING (4)		172.8	HIGHWAY 41 BRIDGE		174.08	TURNOUT	R	180.64
POWERLINE CROSSING		172.84	POWERLINE CROSSING		174.13	TURNOUT	L	180.65
PIPELINE CROSSING		172.93	POWERLINE CROSSING		174.15	OVERCHUTE CROSSING		181.14
CULVERT CROSSING		172.96	POWERLINE CROSSING		174.4	OVERCHUTE CROSSING		182.39
POWERLINE CROSSING		172.97	PIPELINE CROSSING		174.51	TURNOUT	L	182.99
PIPELINE CROSSING		173.13	POWERLINE CROSSING		174.65	TURNOUT	L	183
4TH STREET BRIDGE		173.13	PIPELINE CROSSING (2)		175.03	POWERLINE CROSSING		183.01
POWERLINE CROSSING		173.36	TURNOUT	L	175.18	OVERCHUTE CROSSING		183.19
CULVERT CROSSING		173.37	CULVERT CROSSING		175.2	POWERLINE CROSSING		184.05
BRIDGE		173.56	PIPELINE CROSSING		175.2	AVENAL GAP		184.3
POWERLINE CROSSING		173.65	OVERCHUTE CROSSING		175.55	SIPHON/BRIDGE		184.31
POWERLINE CROSSING (2)		173.67	INTERSTATE 5 BRIDGE		176.39	BRIDGE		184.31
POWERLINE CROSSING (2)		173.68	CULVERT CROSSING		176.52	COASTAL BRANCH AQUEDUCT		184.63
			OVERCHUTE CROSSING		177.41	TURNOUT	L	184.78
			TURNOUT	L	177.54	POWERLINE CROSSING		184.8
			UTICA AVENUE BRIDGE		178.54	STILLING WELL	L	184.8
						CHECK NUMBER 22		184.82

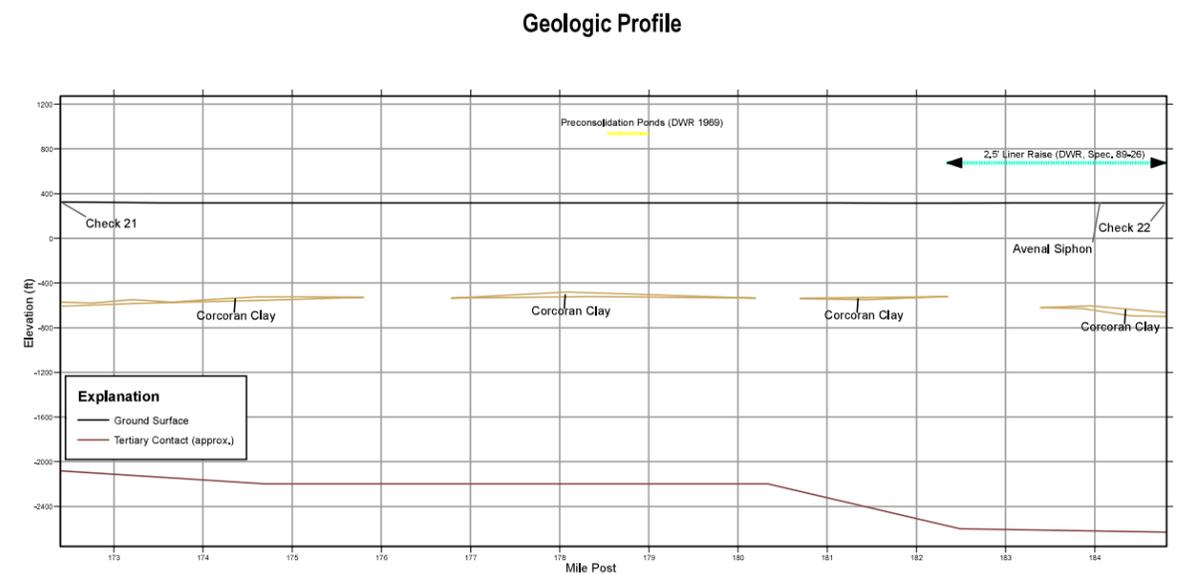
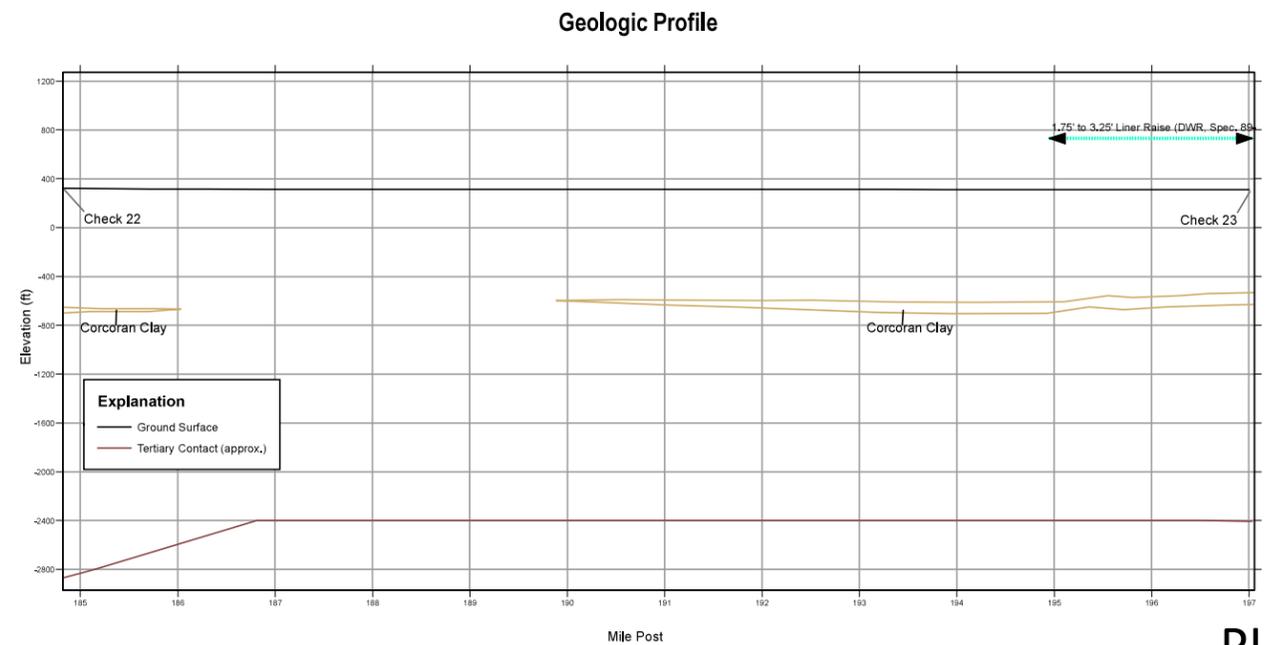
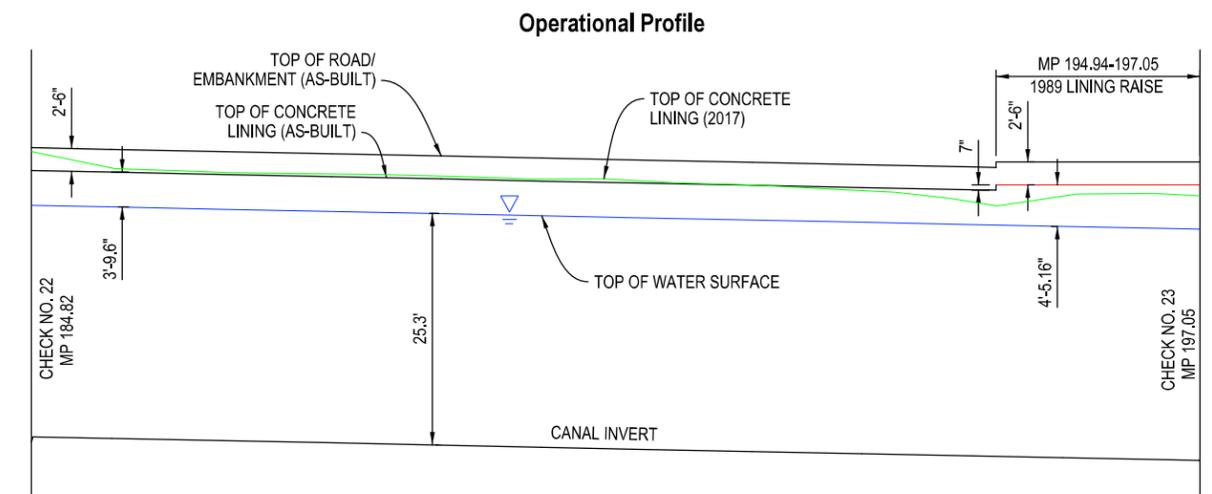
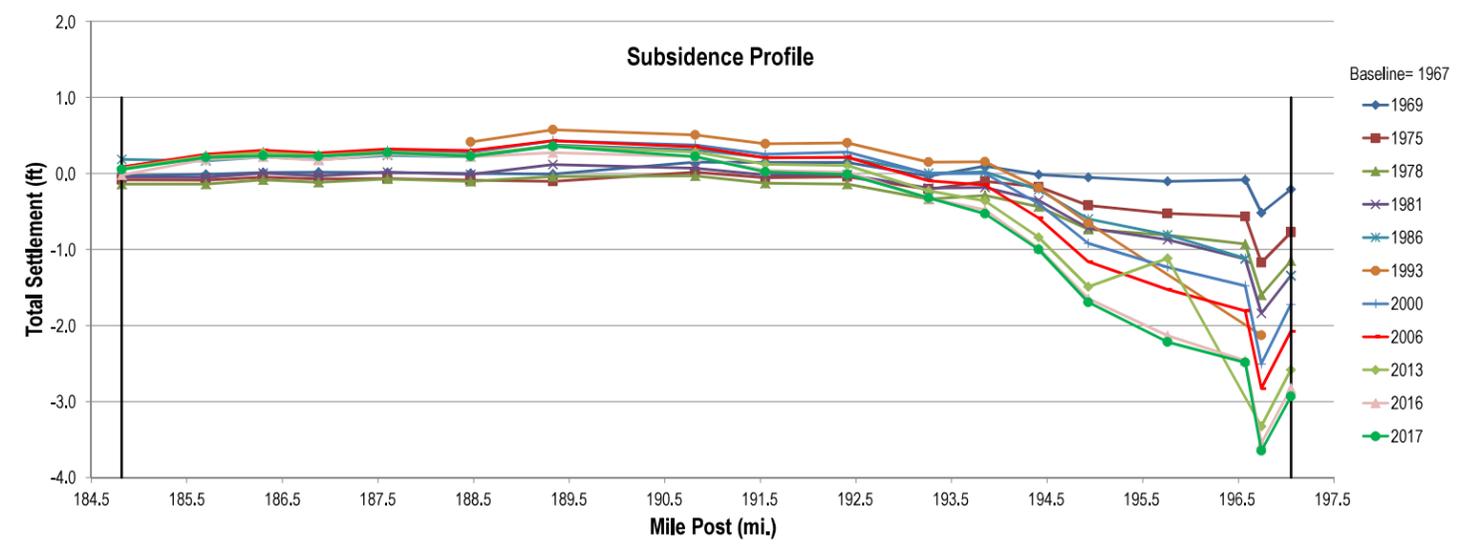
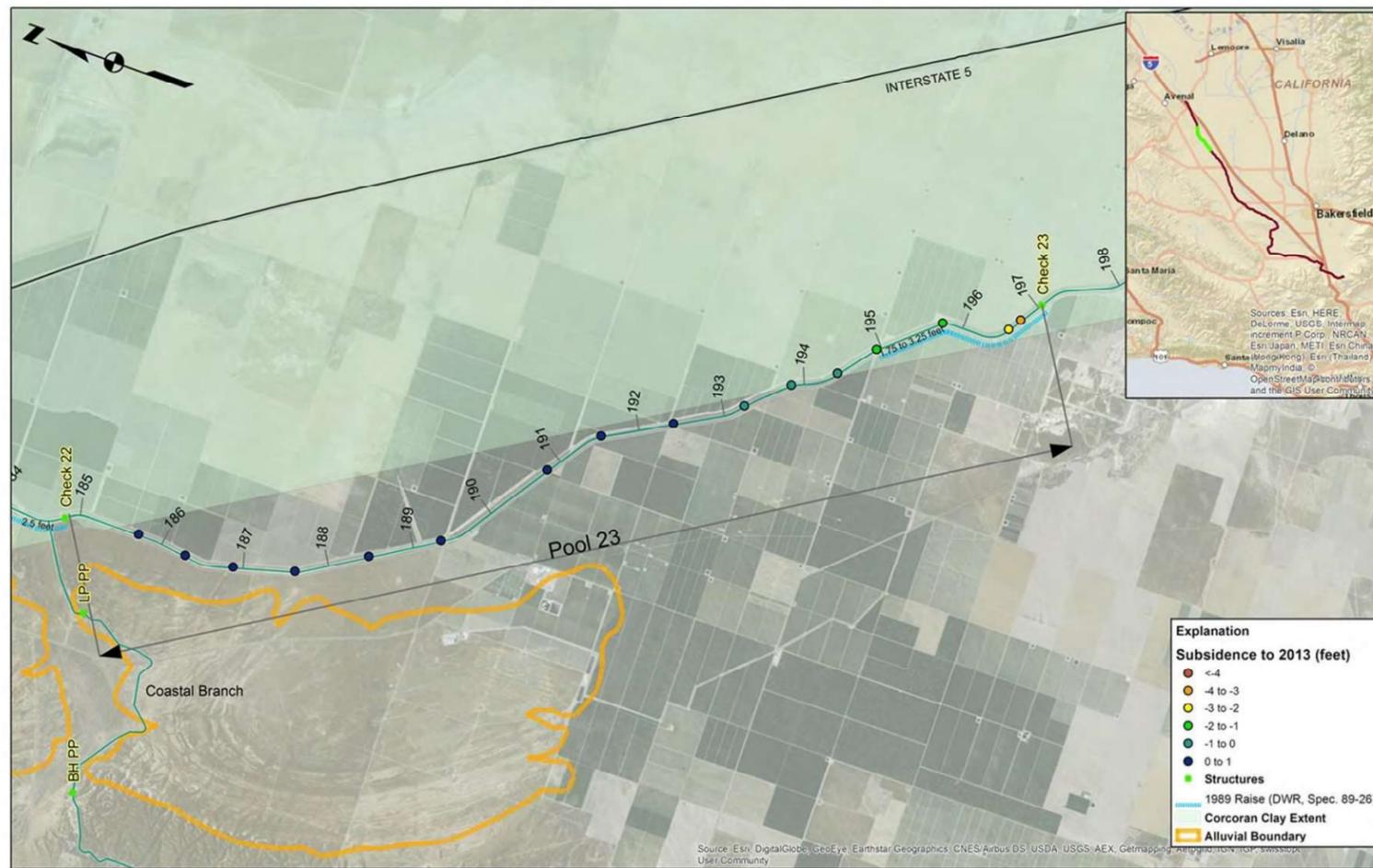
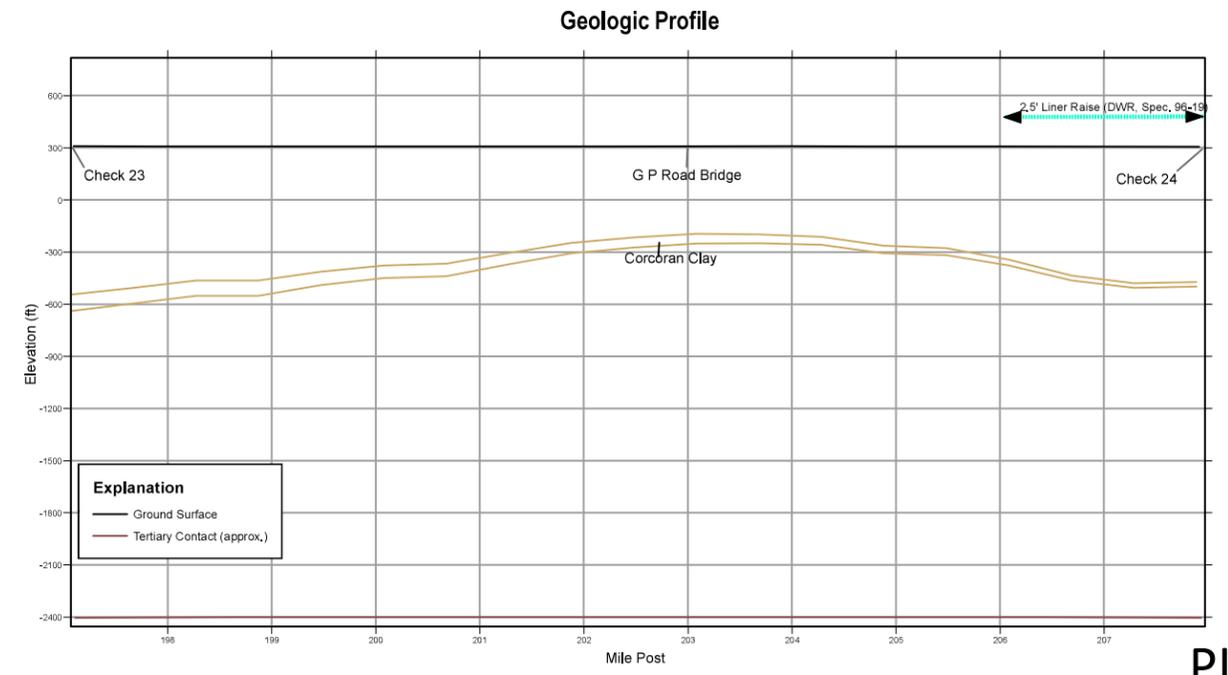
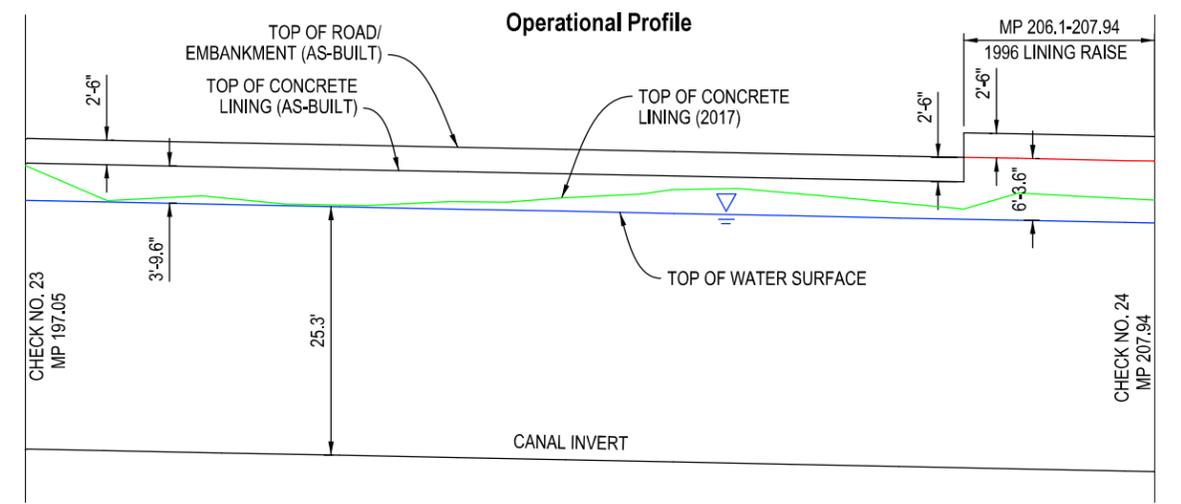
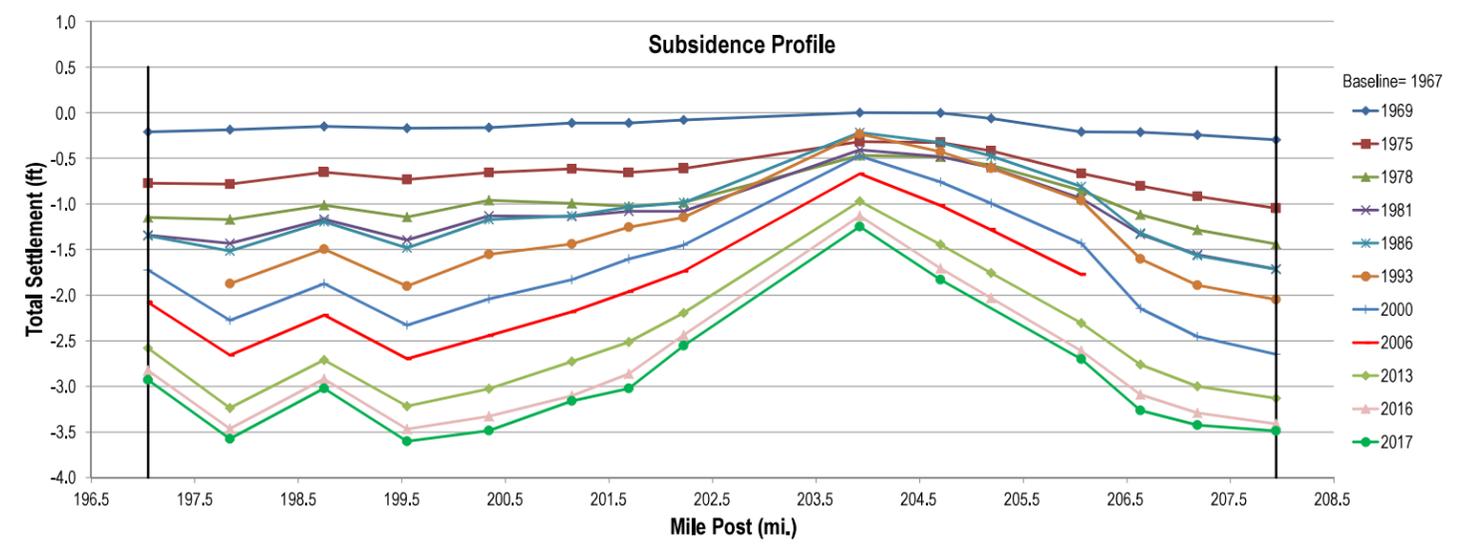


PLATE 11

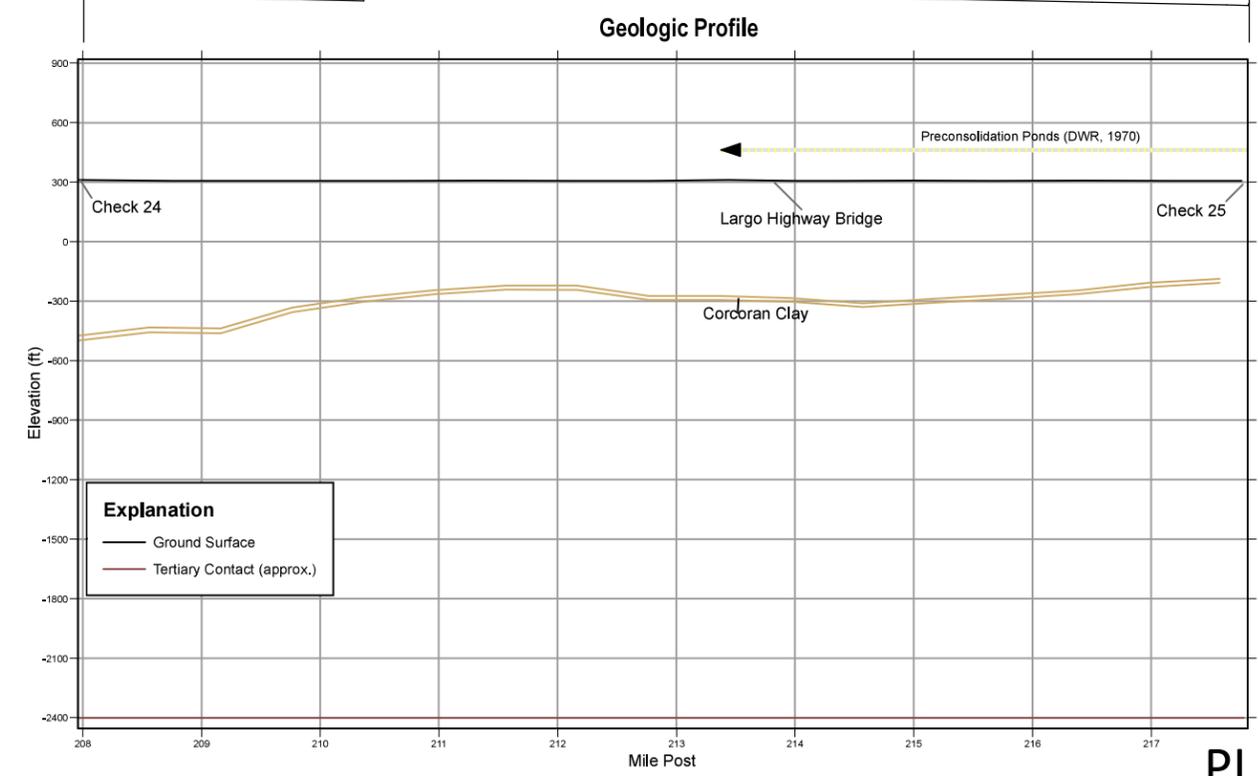
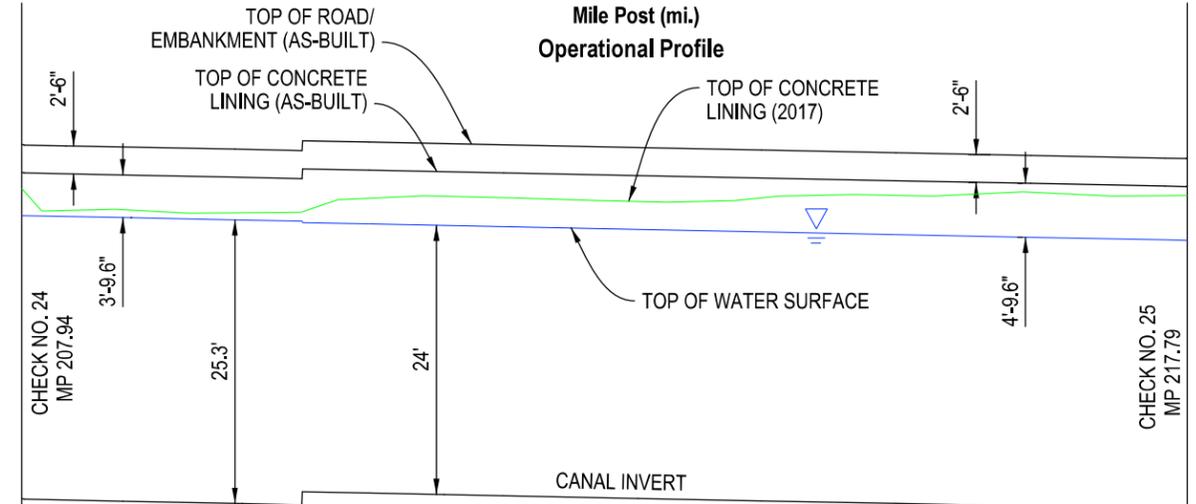
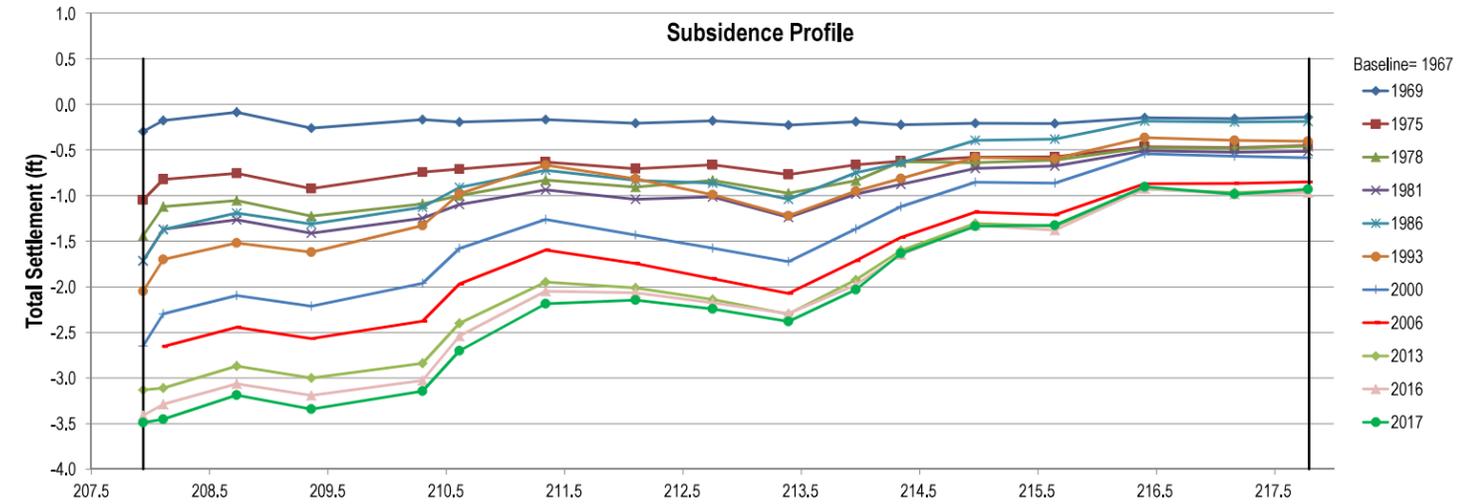
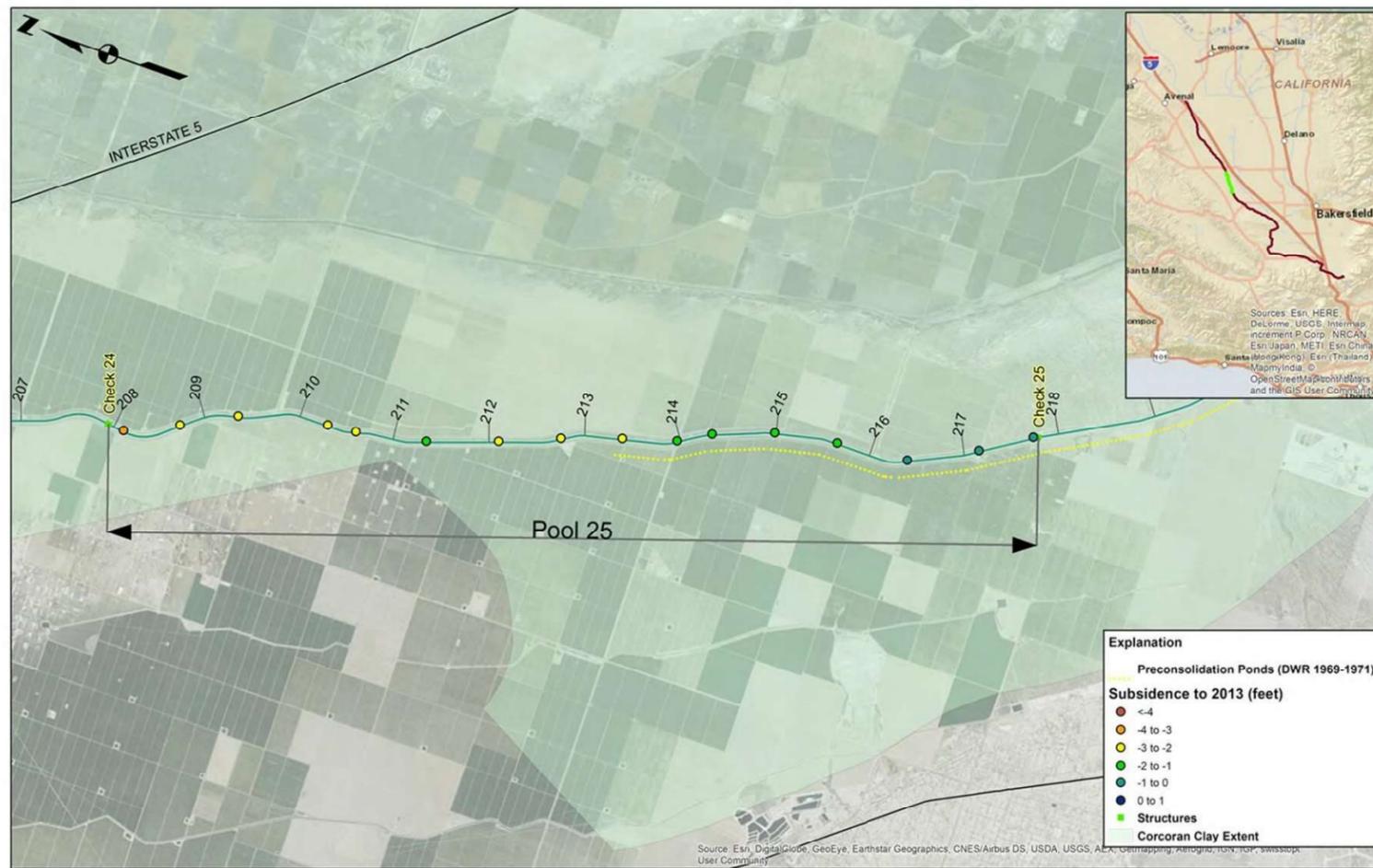




STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 22		184.82
STILLING WELL	L	184.88
OVERCHUTE CROSSING		185.71
OVERCHUTE CROSSING		186.88
OVERCHUTE CROSSING		187.6
CULVERT CROSSING		189.1
POWERLINE CROSSING		189.12
BRIDGE		189.34
TURNOUT	R	189.69
OVERCHUTE CROSSING		190.09
TURNOUT	L	191.18
OVERCHUTE CROSSING		191.56
OVERCHUTE CROSSING		192.41
OVERCHUTE CROSSING		193.26
TURNOUT	L	194.22
OVERCHUTE CROSSING		194.42
POWERLINE CROSSING		194.93
TWISSELMAN ROAD BRIDGE		194.94
POWERLINE CROSSING		196.39
TURNOUT	R	196.4
OVERCHUTE CROSSING		196.58
TURNOUT	L	196.75
STILLING WELL	L	197.03
CHECK NUMBER 23		197.05

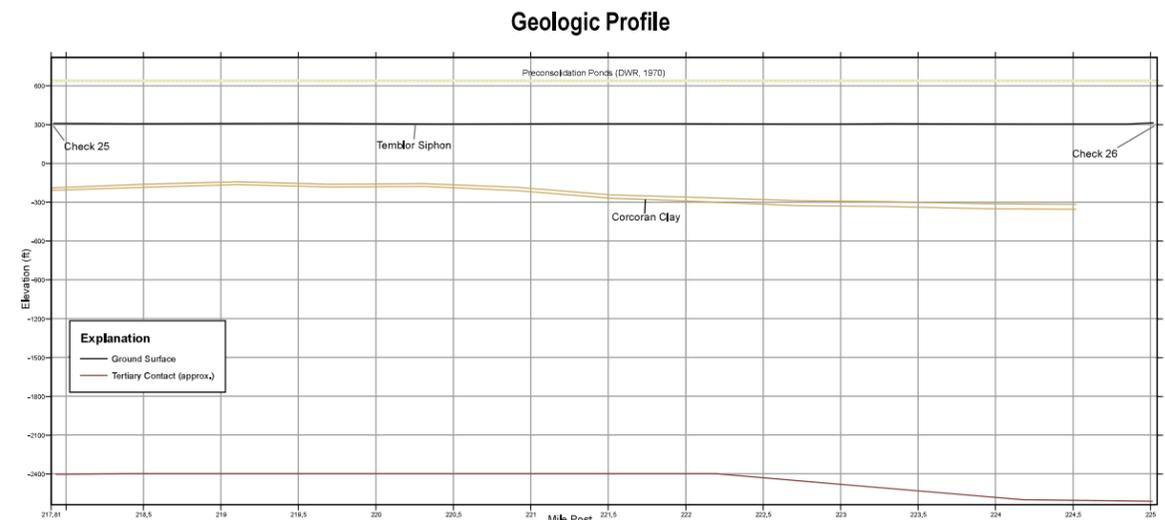
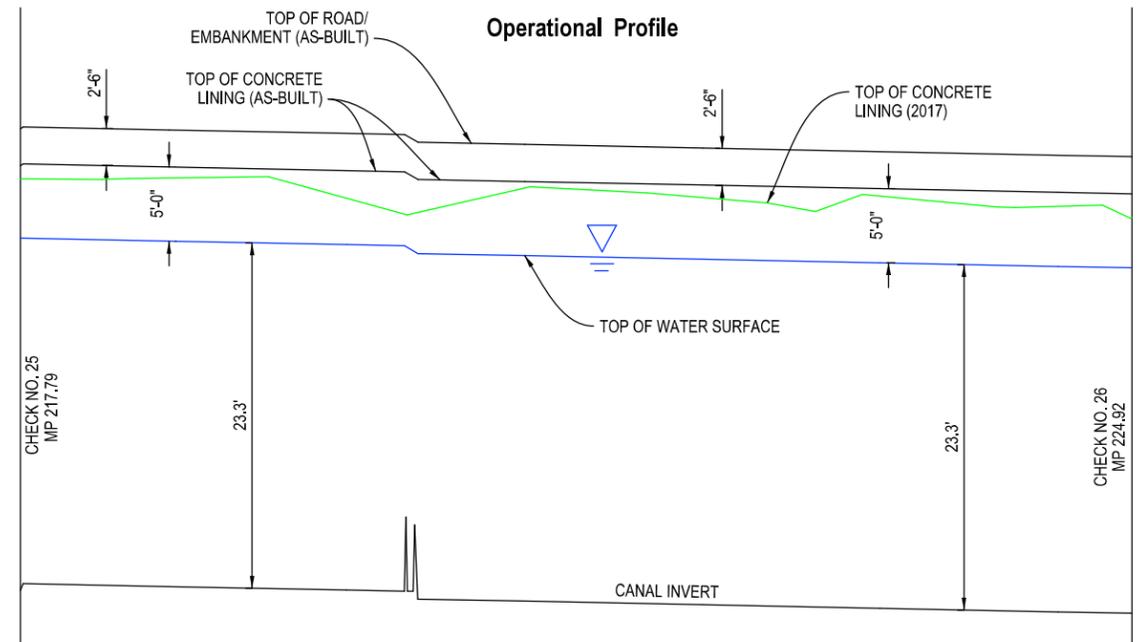
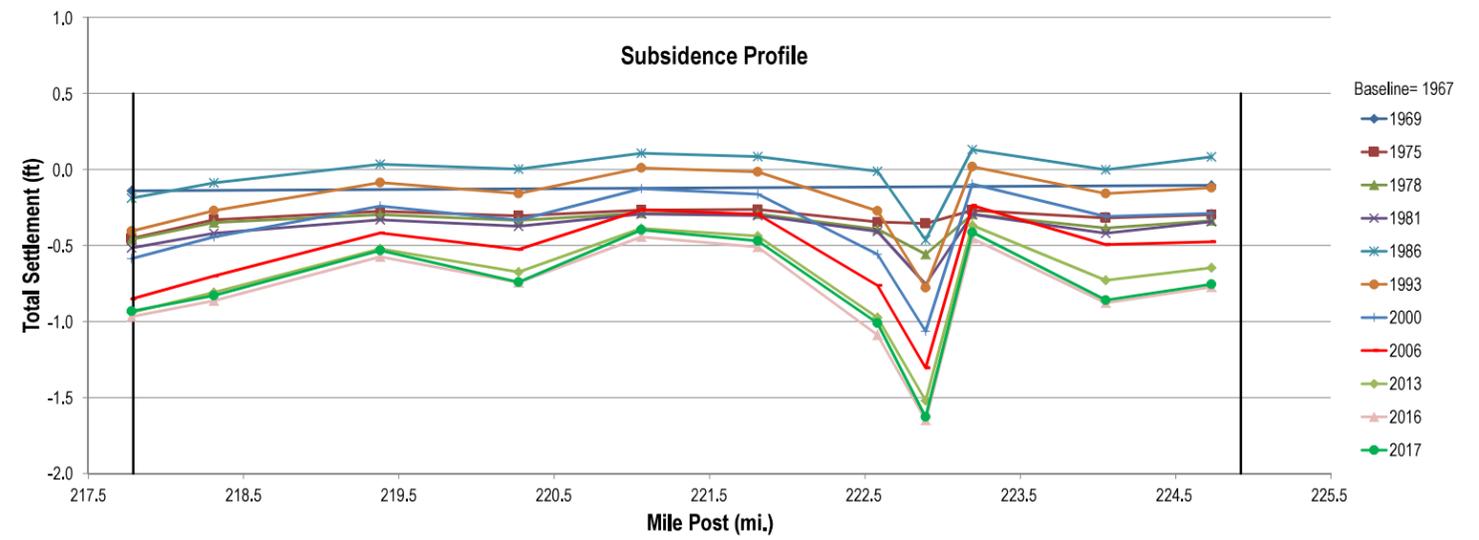
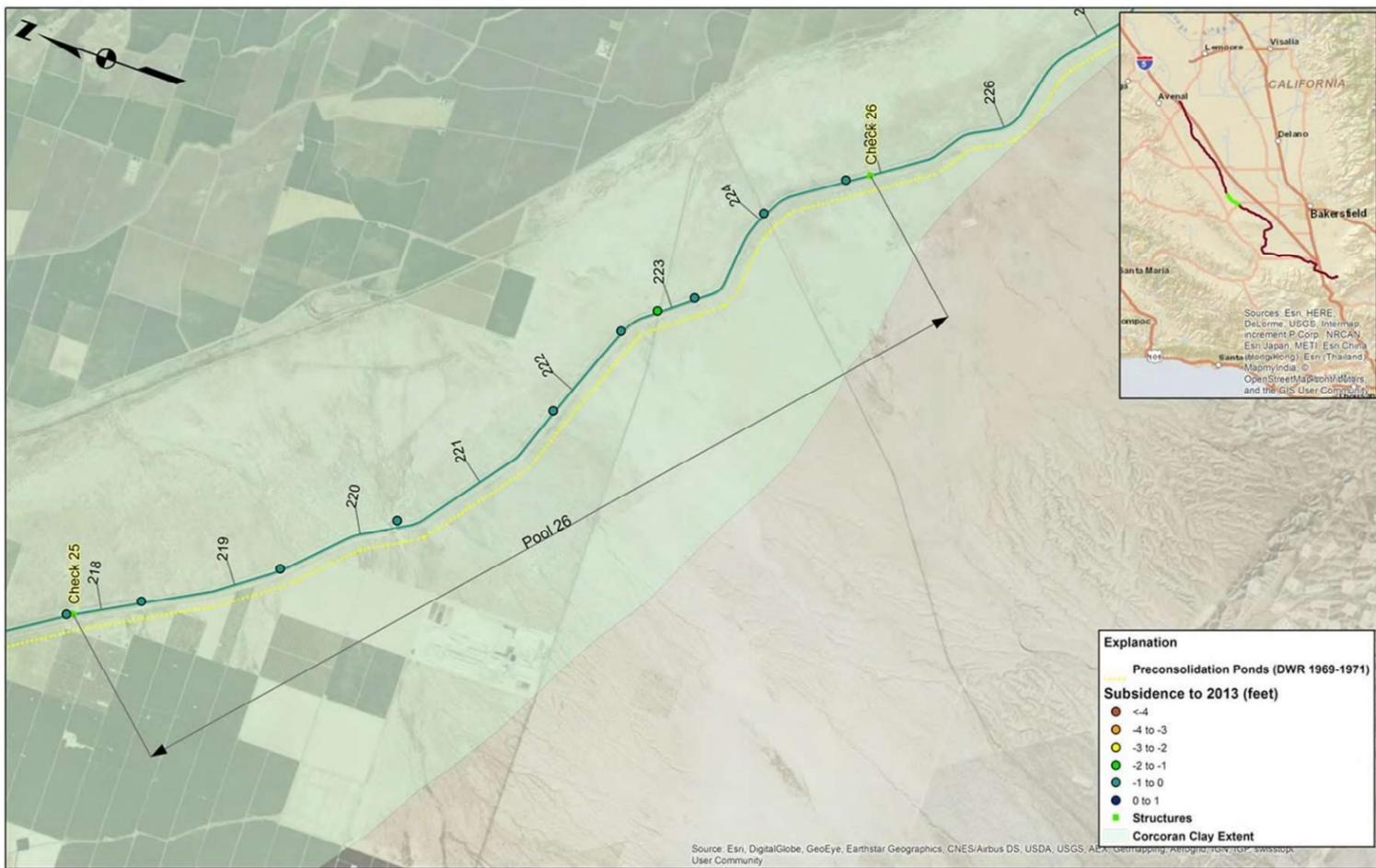


STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 23		197.05	TURNOUT	L	204.7
STILLING WELL	L	197.1	POWERLINE CROSSING		205.18
OVERCHUTE CROSSING		197.84	PHONE LINES		205.19
BRIDGE		198.75	PIPELINE CROSSING (3)		205.19
POWERLINE CROSSING		198.92	HIGHWAY 46 BRIDGE		205.19
CULVERT CROSSING		199.76	PHONE LINES (2)		205.2
PIPELINE CROSSING		200.56	POWERLINE CROSSING		205.25
POWERLINE CROSSING		200.72	TURNOUT	R	205.26
OVERCHUTE CROSSING		201.14	POWERLINE CROSSING		206.05
TURNOUT (2)	R	201.24	LOST HILLS ROAD BRIDGE		206.06
TURNOUT	L	202.05	OVERCHUTE CROSSING		206.1
OVERCHUTE CROSSING		202.22	POWERLINE CROSSING		206.43
PIPELINE CROSSING		202.77	TURNIN	L	206.99
POWERLINE CROSSING		202.99	TURNOUT	L	206.99
G P ROAD BRIDGE		203	PHONE LINES		207.14
OVERCHUTE CROSSING		203.28	OVERCHUTE CROSSING		207.18
OVERCHUTE CROSSING		203.92	STILLING WELL	L	207.92
OVERCHUTE CROSSING		204.7	CHECK NUMBER 24		207.94



STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 24		207.94	OVERCHUTE CROSSING		212.11
STILLING WELL	L	207.99	PIPELINE CROSSING (4)		212.64
POWERLINE CROSSING		208.06	OVERCHUTE CROSSING		213.4
OVERCHUTE CROSSING		208.11	POWERLINE CROSSING		213.96
TURNOUT	L	208.85	LERDO HIGHWAY BRIDGE/PIPELINE		213.97
POWERLINE CROSSING		209.2	POWERLINE CROSSING		213.98
OVERCHUTE CROSSING		209.36	TURNOUT	L	214.11
TURNOUT	L	209.71	OVERCHUTE CROSSING		214.34
POWERLINE CROSSING		209.73	OVERCHUTE CROSSING		215.65
TURNOUT	L	209.78	CANAL DRAIN		216.03
TURNIN	L	209.8	TURNOUT	L	216.62
TURNOUT	L	209.8	TURNOUT	R	217.13
BRIDGE		210.31	OVERCHUTE CROSSING		217.16
OVERCHUTE CROSSING		210.61	CONDUIT CROSSING		217.16
TURNOUT	L	210.75	STILLING WELL	L	217.77
PIPELINE CROSSING (2)		211.8	SAND TRAP		217.79
			CHECK NUMBER 25		217.79

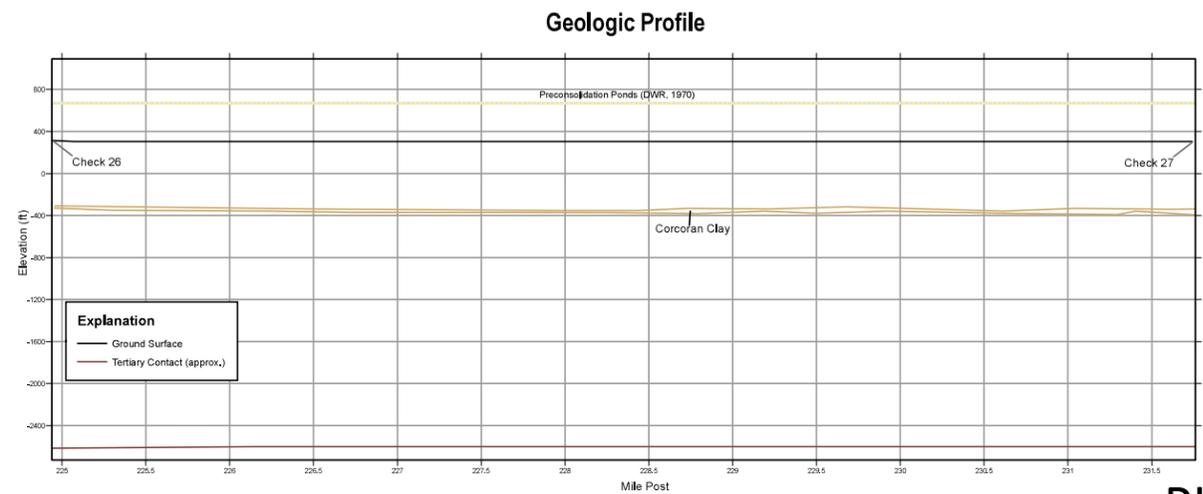
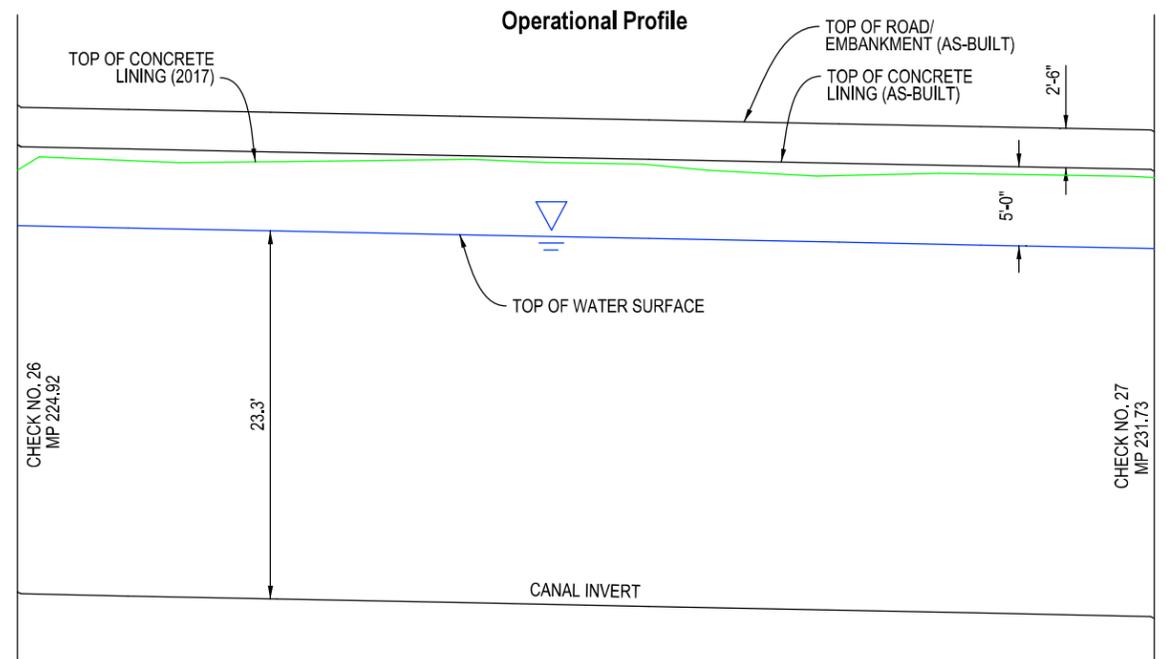
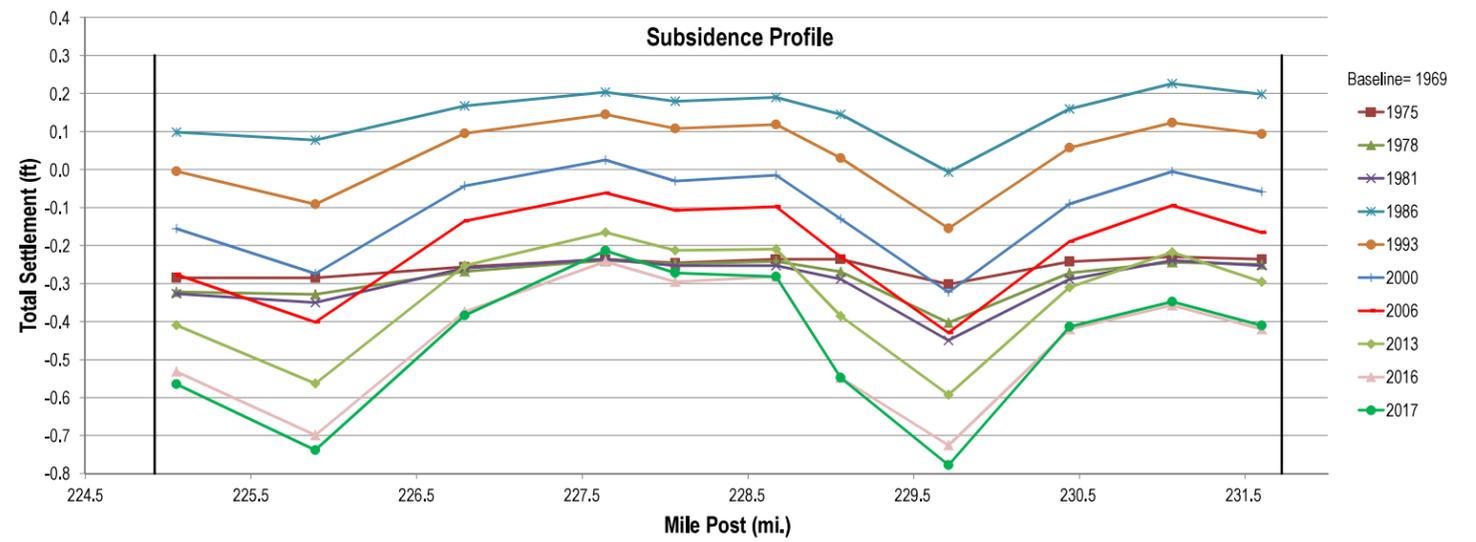
PLATE 14



STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 25		217.79
STILLING WELL	L	217.84
7TH STANDARD ROAD BRIDGE		218.32
POWERLINE CROSSING		218.33
OVERCHUTE CROSSING		218.49
TURNOUT	L	219.58
BRIDGE		220.28
TEMBLOR CREEK SIPHON		220.28
OVERCHUTE CROSSING		222.6
LOKERN ROAD BRIDGE		222.91
PIPELINE CROSSING (2)		222.91
PHONE LINE CROSSING (2)		222.96
OVERCHUTE CROSSING		223.2
POWERLINE CROSSING		223.27
POWERLINE CROSSING		224.04
HIGHWAY 58 BRIDGE		224.06
POWERLINE CROSSING		224.15
OVERCHUTE CROSSING		224.18
PIPELINE CROSSING		224.45
POWERLINE CROSSING		224.8
STILLING WELL	L	224.87
CHECK NUMBER 26		224.92

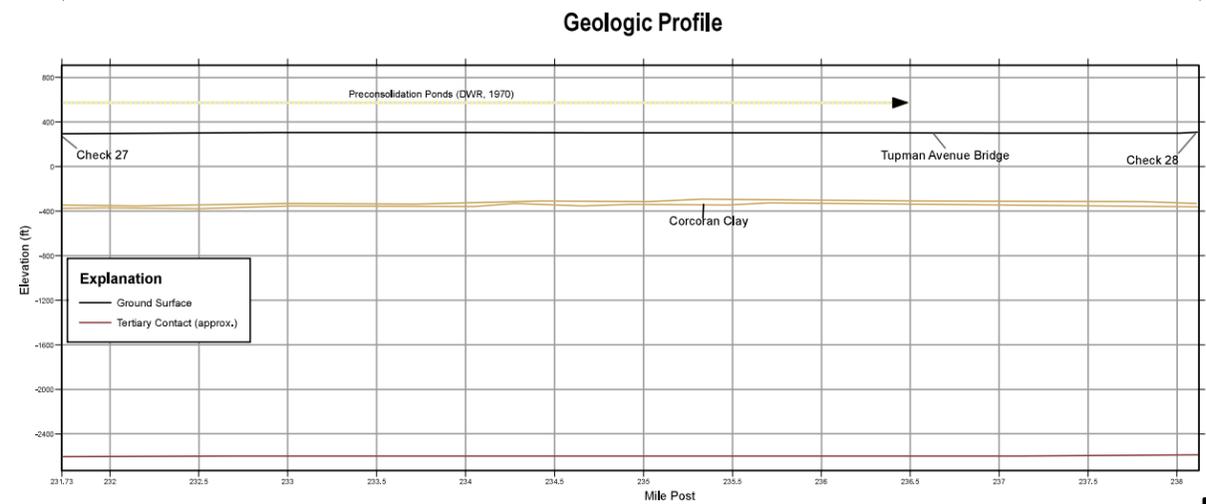
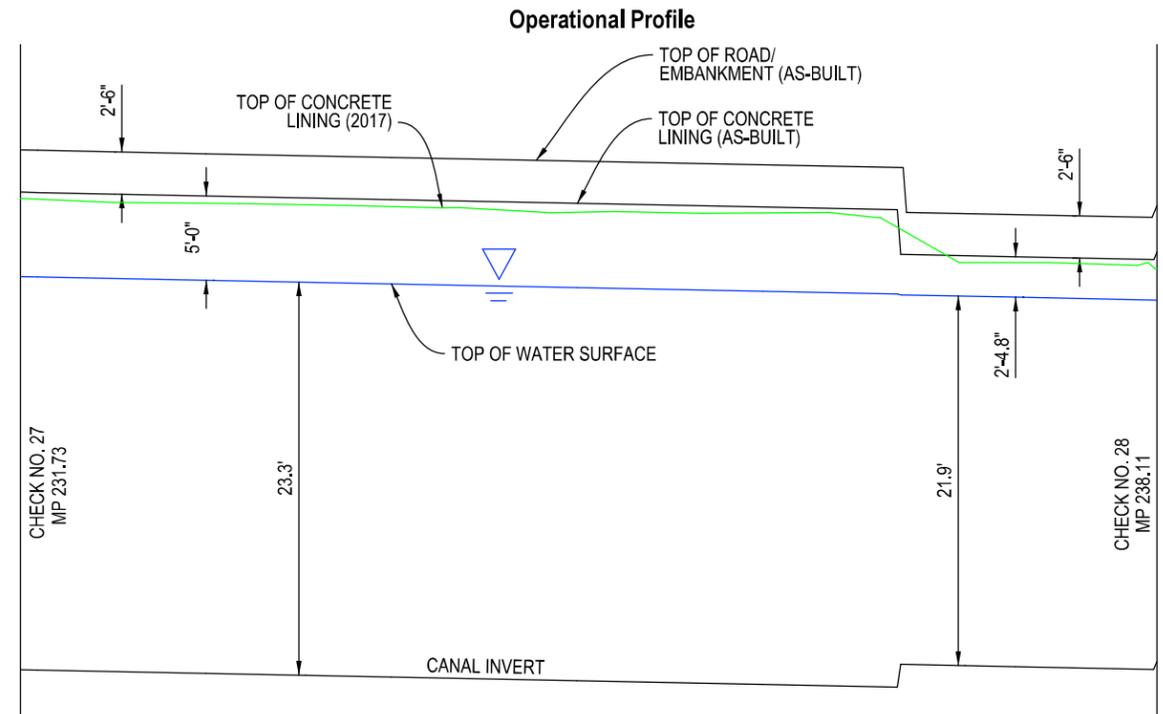
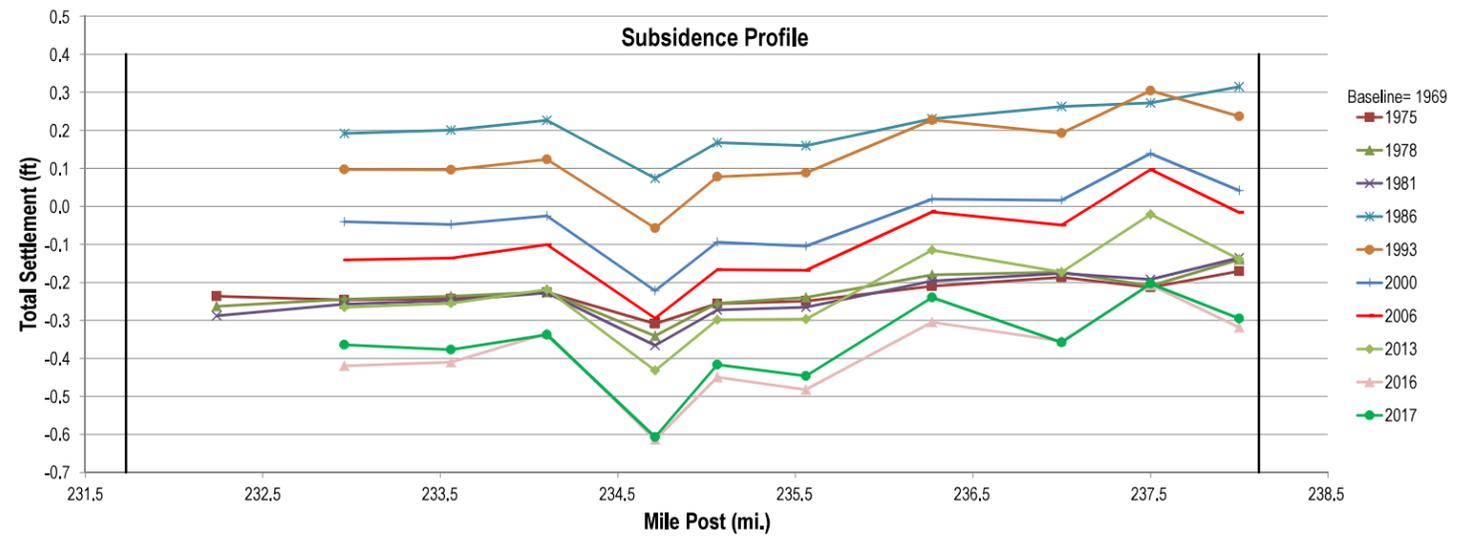
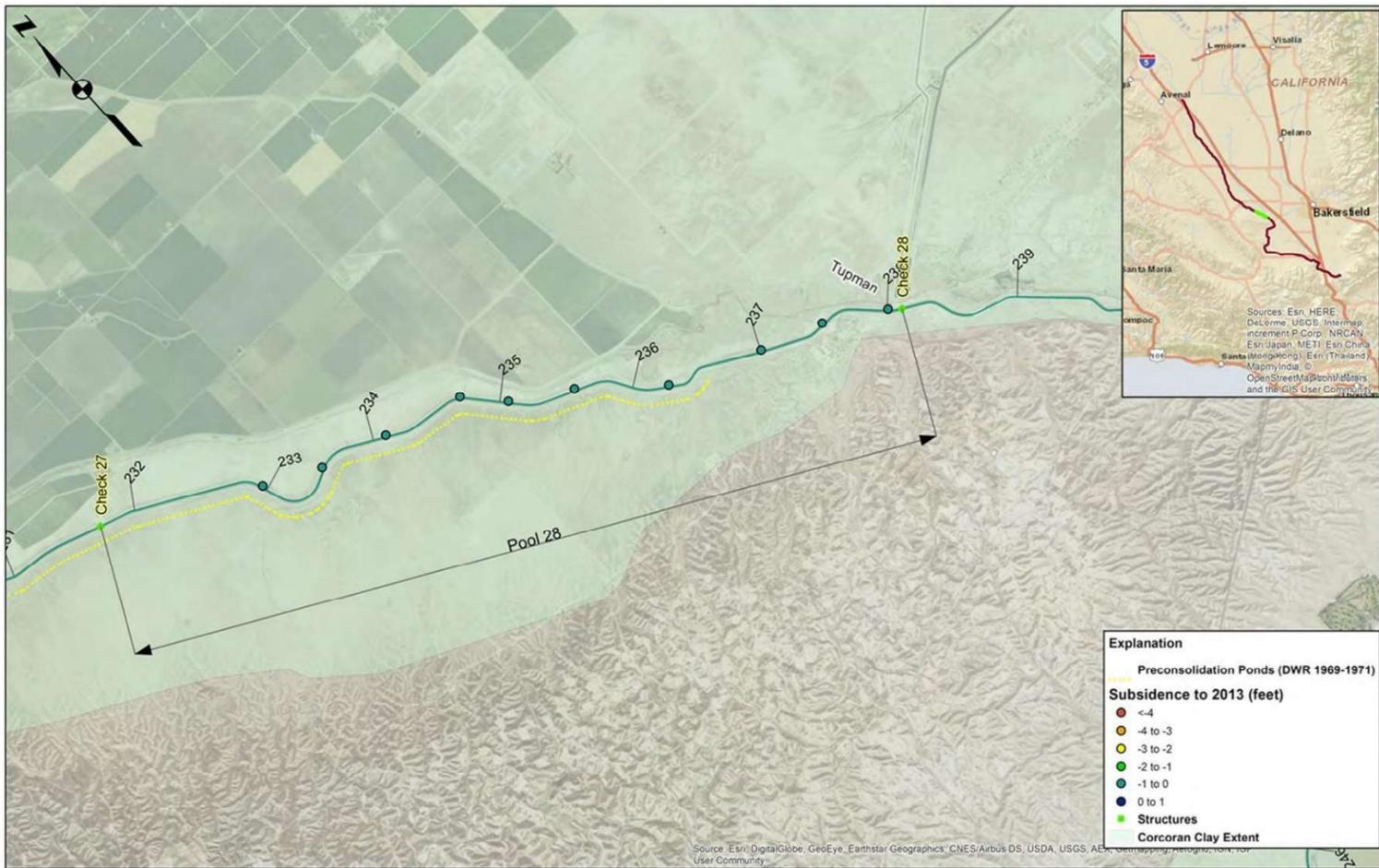
PLATE 15





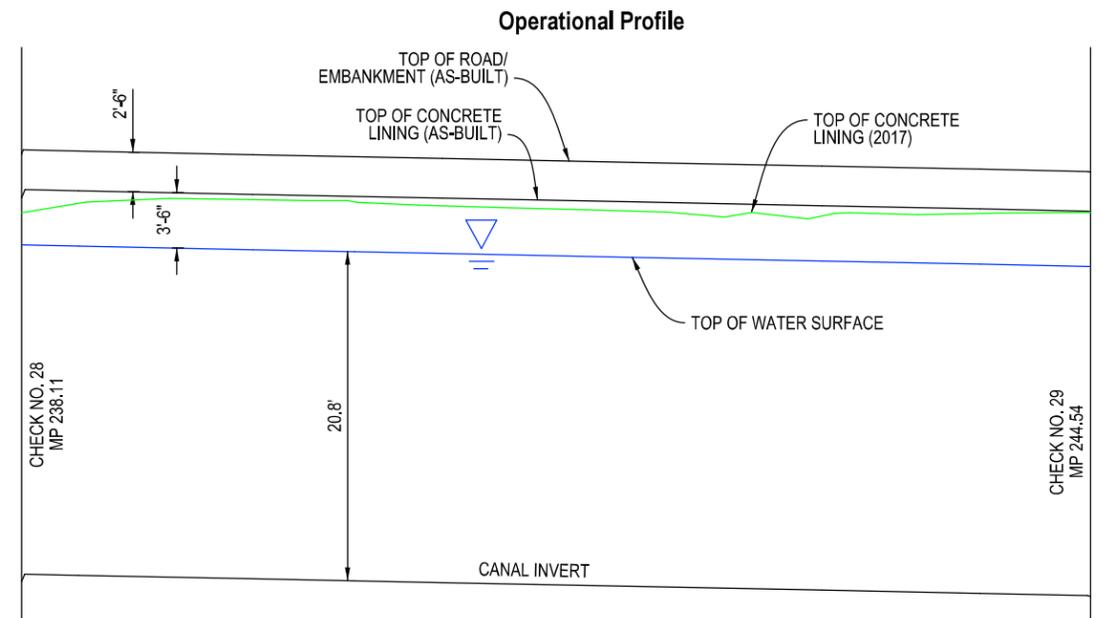
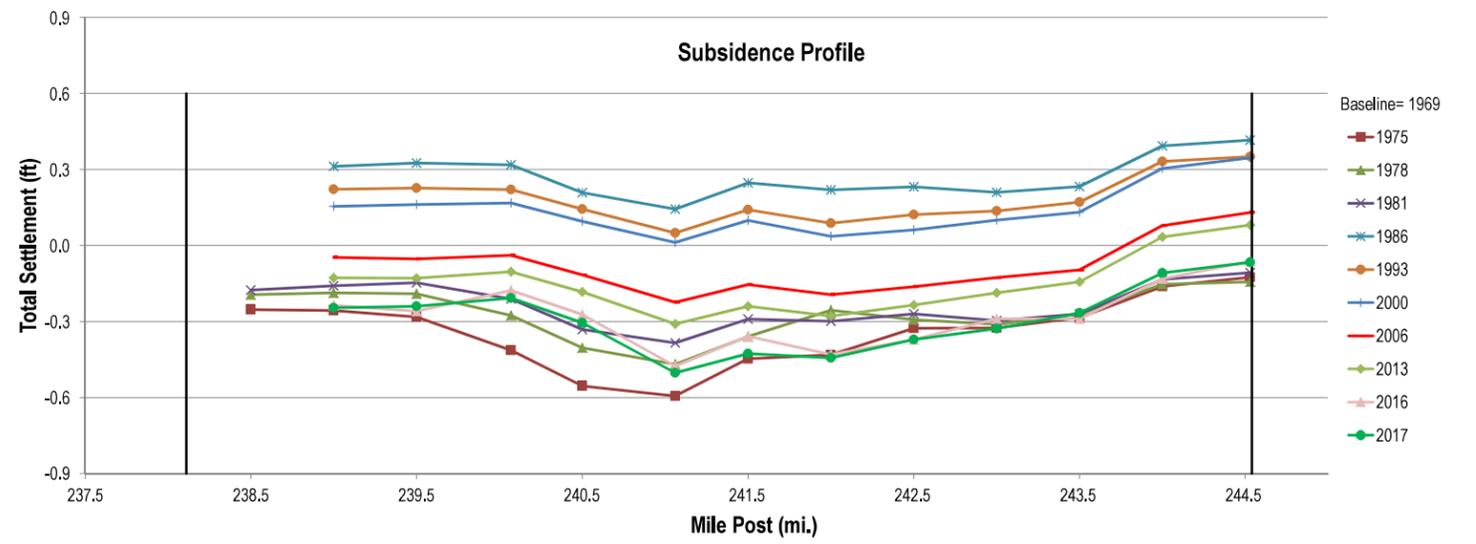
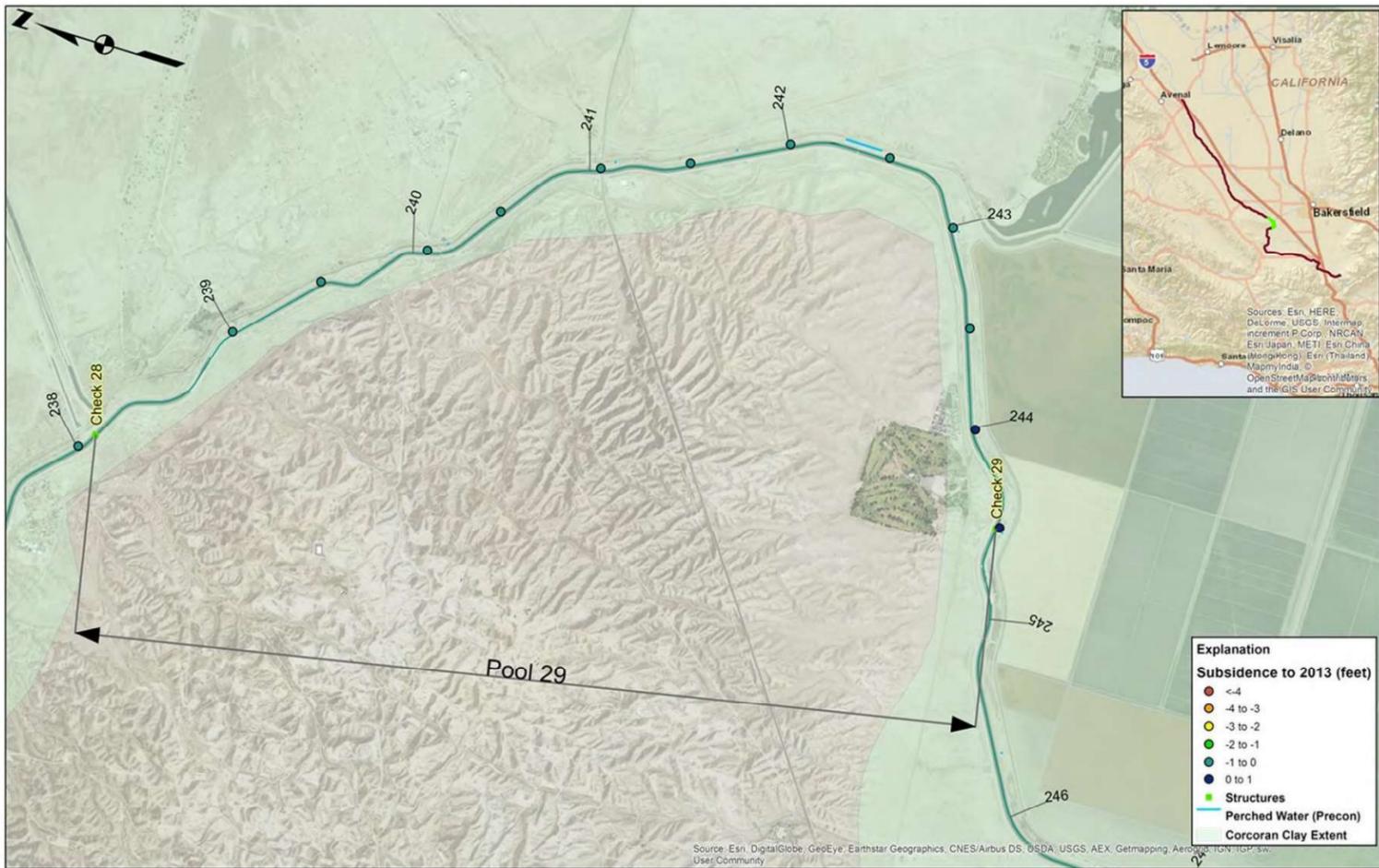
STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 26		224.92
STILLING WELL	L	224.94
OVERCHUTE CROSSING		225.05
POWERLINE CROSSING		225.45
POWERLINE CROSSING		225.55
OVERCHUTE CROSSING		225.89
PHONE LINE CROSSING		226.06
OVERCHUTE CROSSING		226.79
OVERCHUTE CROSSING		227.64
OVERCHUTE CROSSING		228.67
POWERLINE CROSSING		229.05
PIPELINE CROSSING		229.15
ELK HILLS ROAD BRIDGE		229.71
PHONE LINE CROSSING		229.75
TURNOUT	L	230.37
OVERCHUTE CROSSING		230.44
PIPELINE CROSSING		230.44
PIPELINE CROSSING		230.7
POWERLINE CROSSING		231.09
POWERLINE CROSSING		231.14
POWERLINE CROSSING		231.17
OVERCHUTE CROSSING		231.59
STILLING WELL	L	231.69
CHECK NUMBER 27		231.73





STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 27		231.73
STILLING WELL	L	231.76
BRIDGE		232.23
PIPELINE CROSSING		232.77
POWERLINE CROSSING		232.81
OVERCHUTE CROSSING		232.96
OVERCHUTE CROSSING		234.09
OVERCHUTE CROSSING		235.06
TURNOUT	L	235.75
POWERLINE CROSSING		235.78
POWERLINE CROSSING		235.88
OVERCHUTE CROSSING		236.27
TUPMAN ROAD BRIDGE		236.47
POWERLINE CROSSING		237.11
PHONE LINE CROSSING		237.12
PIPELINE CROSSING		237.12
PHONE LINE CROSSING		237.13
SUMP PUMP	R	237.16
OVERCHUTE CROSSING		237.16
POWERLINE CROSSING		237.75
PIPELINE CROSSING (2)		237.8
CROSS VALLEY CANAL TURNIN	L	238.04
CROSS VALLEY CANAL TURNOUT	L	238.04
TURNOUT	L	238.06
STILLING WELL	L	238.07
POWERLINE CROSSING		238.08
CHECK NUMBER 28		238.11





STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 28		238.11	KERN RIVER INTERTIE		241
STILLING WELL	L	238.14	HIGHWAY 119 BRIDGE		241.06
OVERCHUTE CROSSING		238.54	TURNOUT	R	241.17
SUMP PUMP	R	238.54	SUMP PUMP	R	241.39
POWERLINE CROSSING		238.83	OVERCHUTE CROSSING		241.39
PIPELINE CROSSING (3)		238.97	PIPELINE CROSSING		241.61
POWERLINE CROSSING		239.06	PIPELINE CROSSING (2)		241.74
OVERCHUTE CROSSING		239.26	POWERLINE CROSSING		242.06
SUMP PUMP	R	239.26	PIPELINE CROSSING (4)		242.35
PIPELINE CROSSING (10)		239.81	BRIDGE		242.35
SUMP PUMP	R	240.05	TURNOUT	L	242.65
OVERCHUTE CROSSING		240.05	TURNOUT	L	242.85
PIPELINE CROSSING (17)		240.07	IRONBARK ROAD BRIDGE		243.01
POWERLINE CROSSING		240.1	TURNOUT	L	243.09
BRIDGE		240.14	PHONE LINE CROSSING		243.14
PIPELINE CROSSING		240.2	PHONE LINE CROSSING		243.15
TURNIN	R	240.2	POWERLINE CROSSING		243.57
PHONE LINE CROSSING		240.24	STILLING WELL	L	244.47
OVERCHUTE CROSSING		240.35	CHECK NUMBER 29		244.54
SUMP PUMP	R	240.35			
POWERLINE CROSSING		240.6			

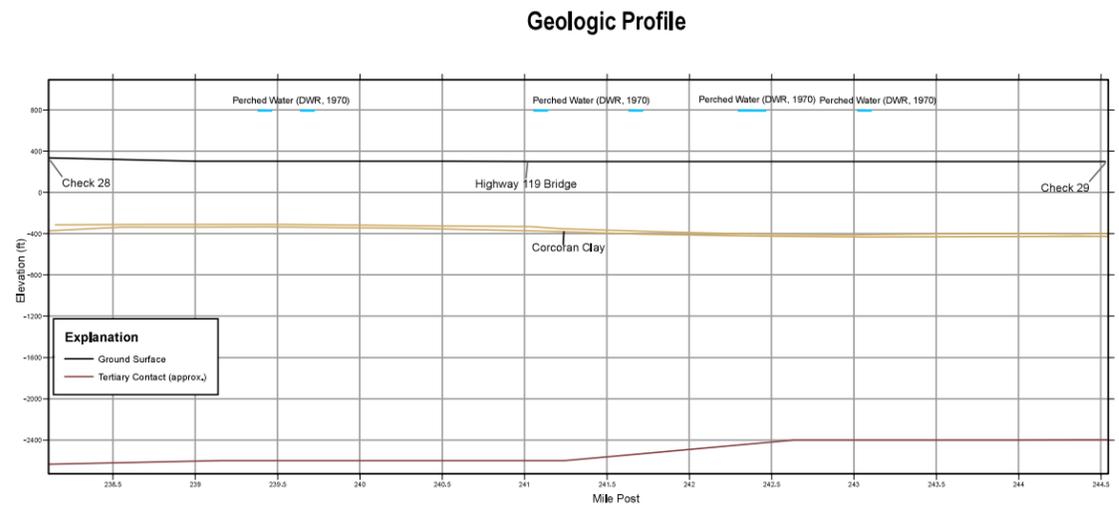
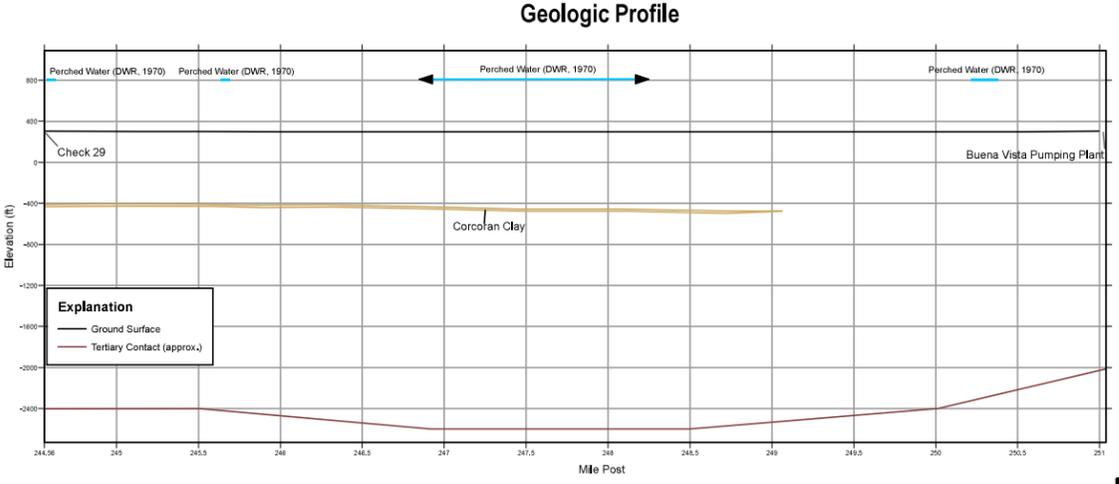
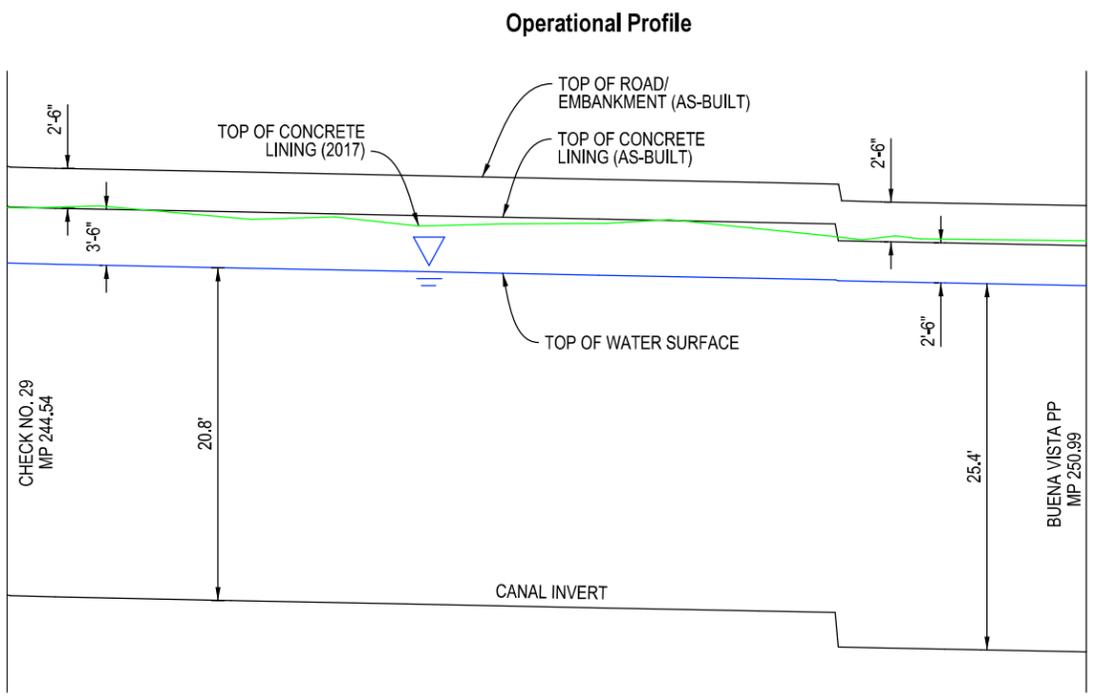
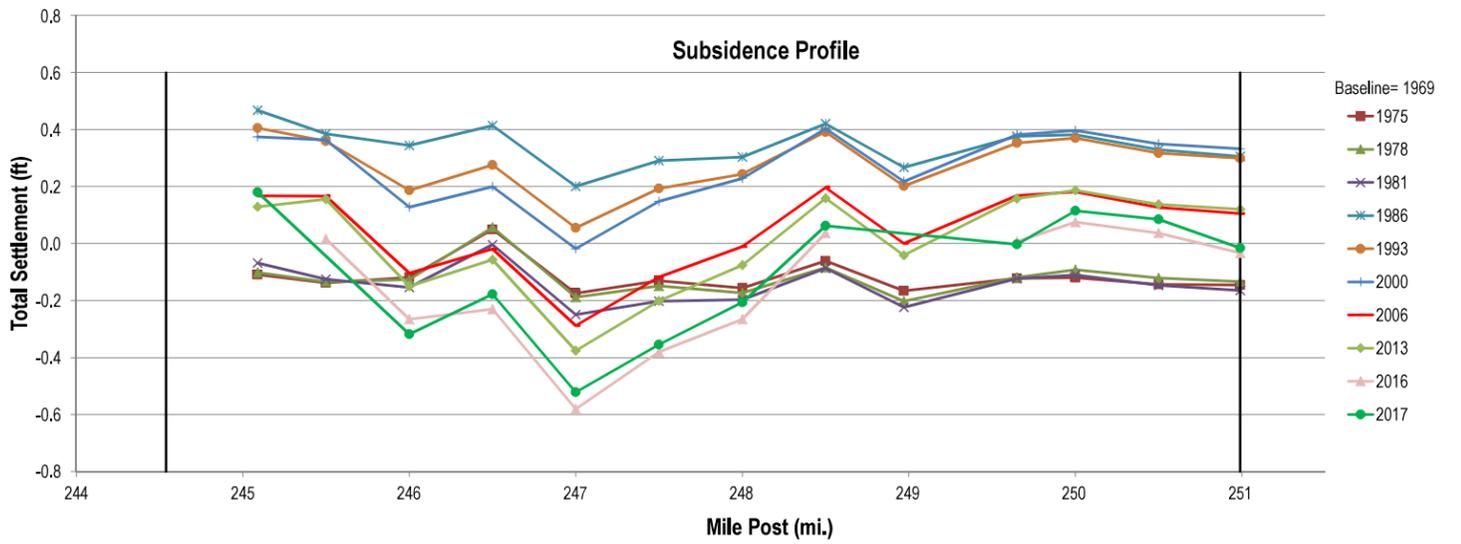
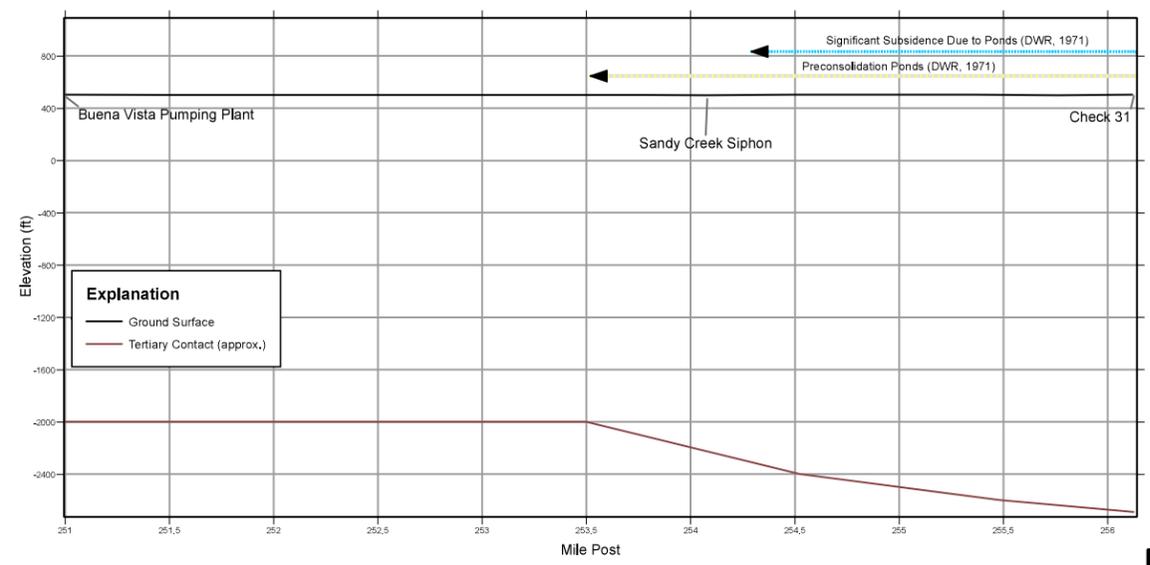
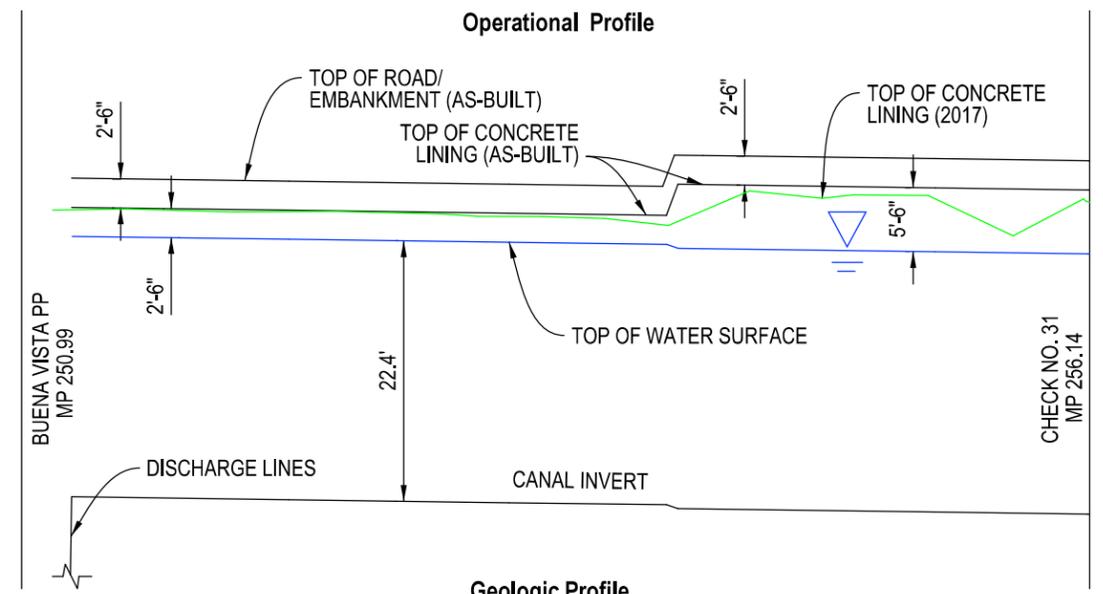
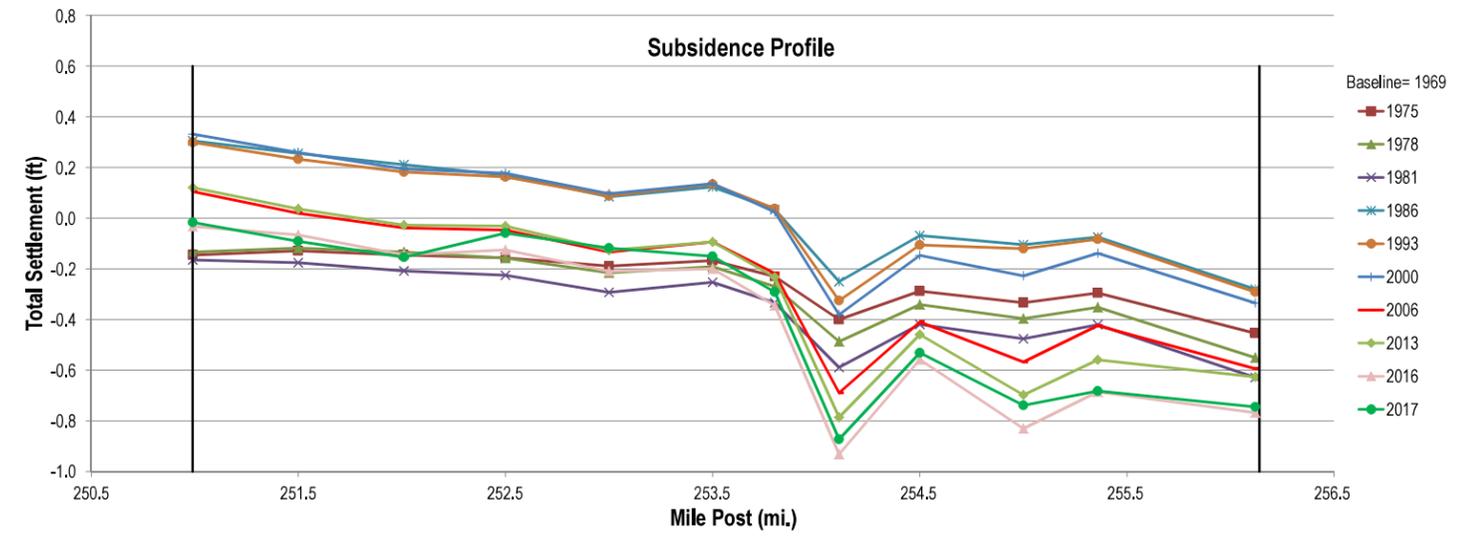
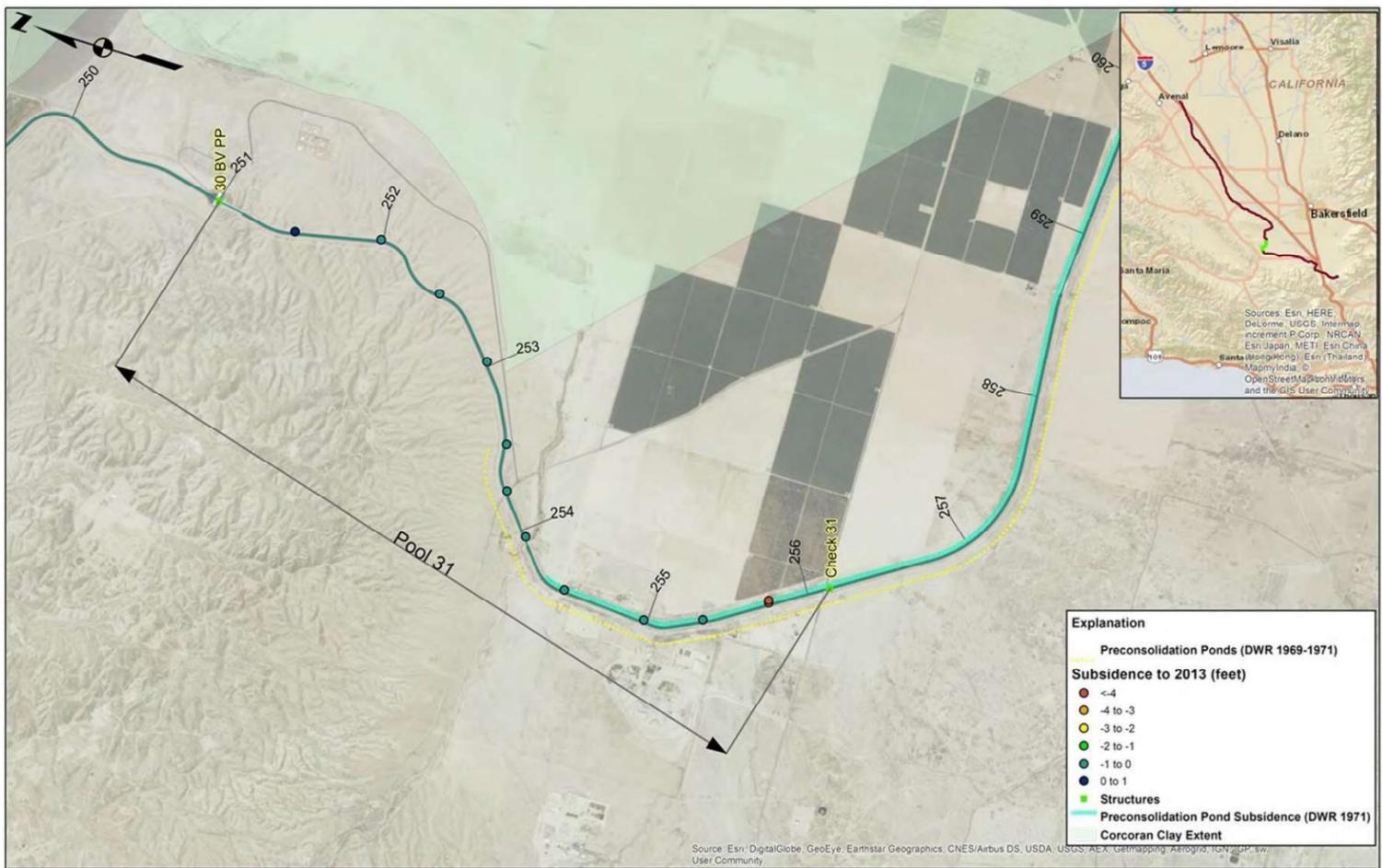


PLATE 18

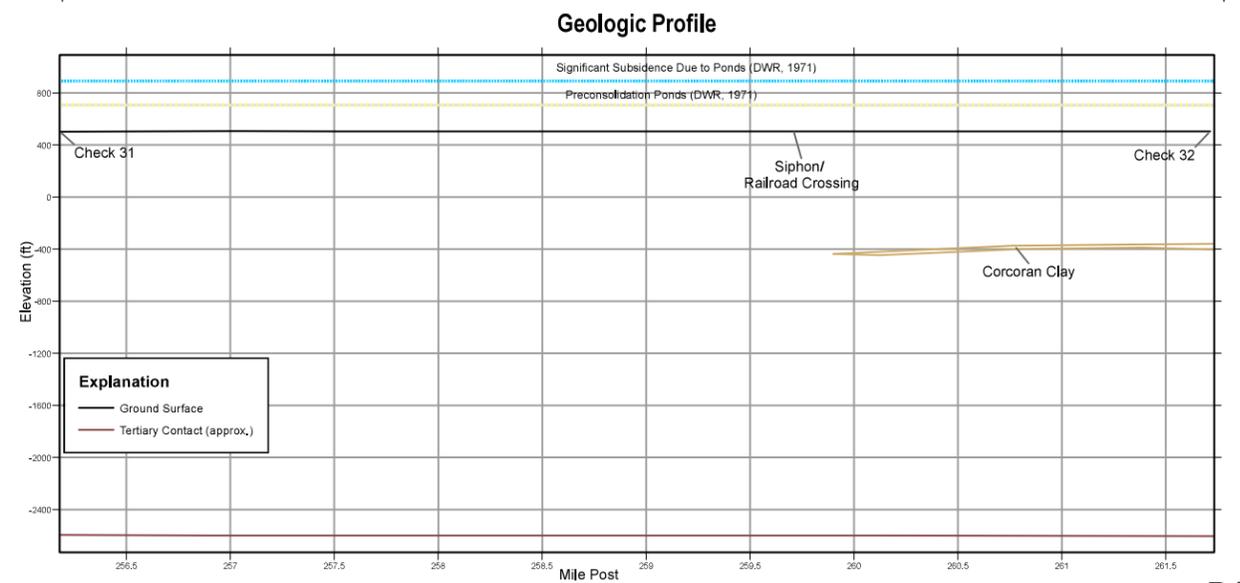
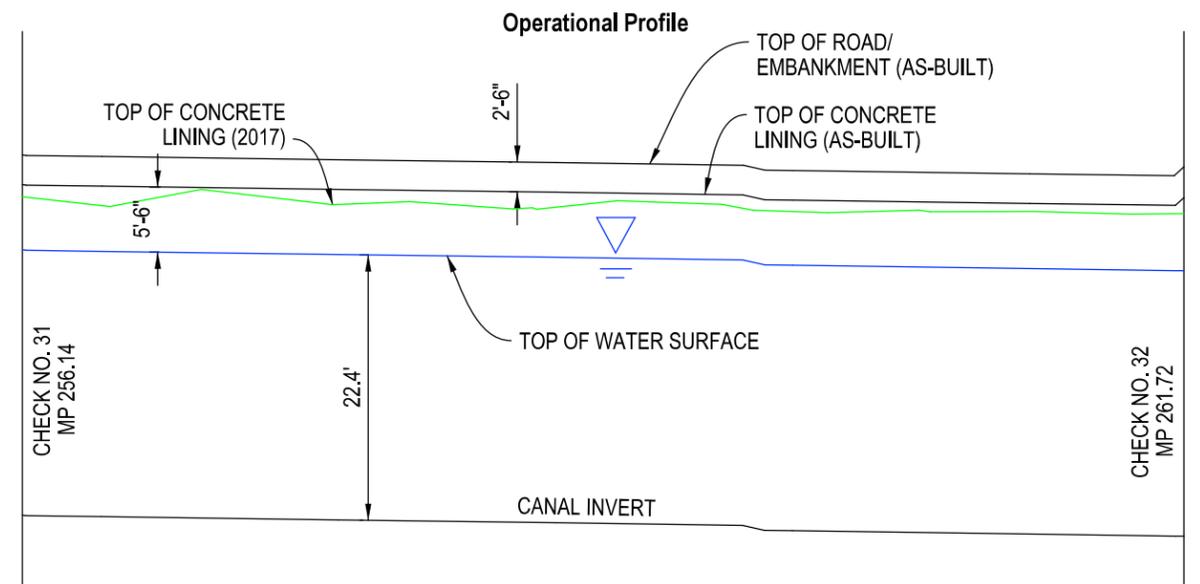
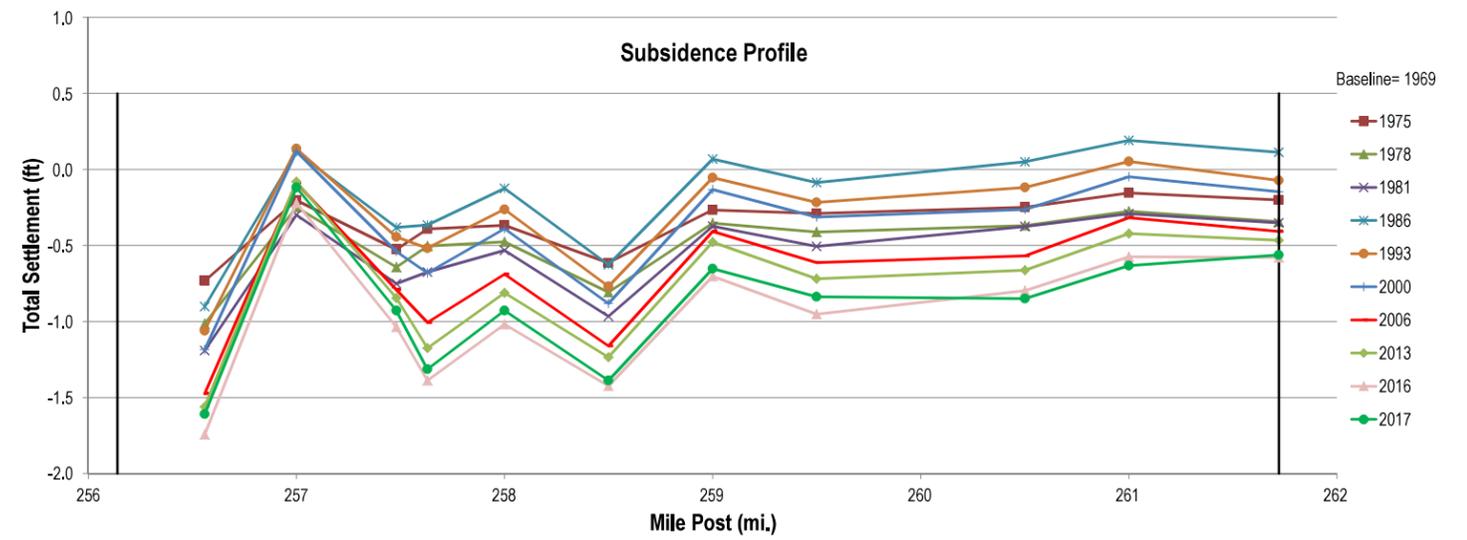




STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 29		244.54	SUMP PUMP	R	247.52
STILLING WELL	L	244.55	SUMP PUMP	R	247.64
OVERCHUTE CROSSING		244.65	SUMP PUMP	R	247.75
PIPELINE CROSSING		245.09	SUMP PUMP	R	247.86
BRIDGE		245.09	SUMP PUMP	R	247.98
POWERLINE CROSSING		245.15	SUMP PUMP	R	248.07
SUMP PUMP	R	245.71	OVERCHUTE CROSSING		248.13
SUMP PUMP	R	245.85	SUMP PUMP	R	248.19
SUMP PUMP	R	245.98	SUMP PUMP	R	248.3
SUMP PUMP	R	246.11	SUMP PUMP	R	248.41
SUMP PUMP	R	246.24	SUMP PUMP	R	248.54
SUMP PUMP	R	246.38	SUMP PUMP	R	248.67
SUMP PUMP	R	246.5	SUMP PUMP	R	248.8
OVERCHUTE CROSSING		246.51	BRIDGE		248.97
SUMP PUMP	R	246.61	PIPELINE CROSSING		248.97
SUMP PUMP	R	246.73	OVERFLOW WEIR/BRIDGE	L	249.65
SUMP PUMP	R	246.84	SAND TRAP		249.71
SUMP PUMP	R	246.95	TURNOUT	L	249.85
SUMP PUMP	R	247.07	POWERLINE CROSSING		249.97
SUMP PUMP	R	247.18	SUMP PUMP	R	250.23
SUMP PUMP	R	247.3	BUENA VISTA PUMPING PLANT		250.99
SUMP PUMP	R	247.41			

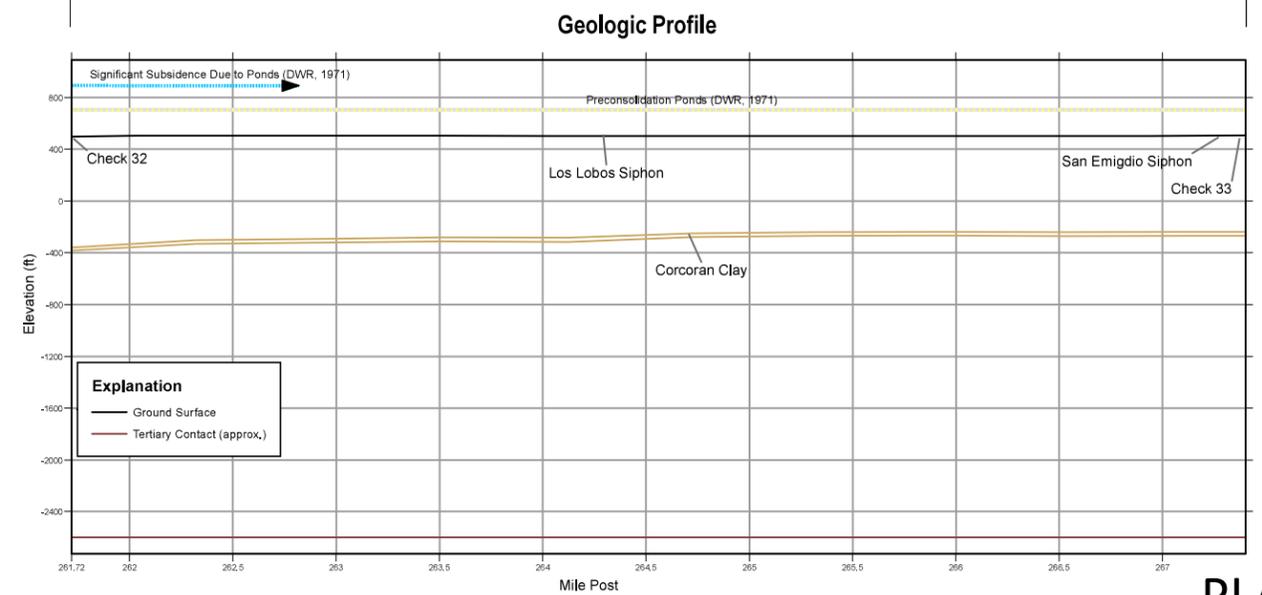
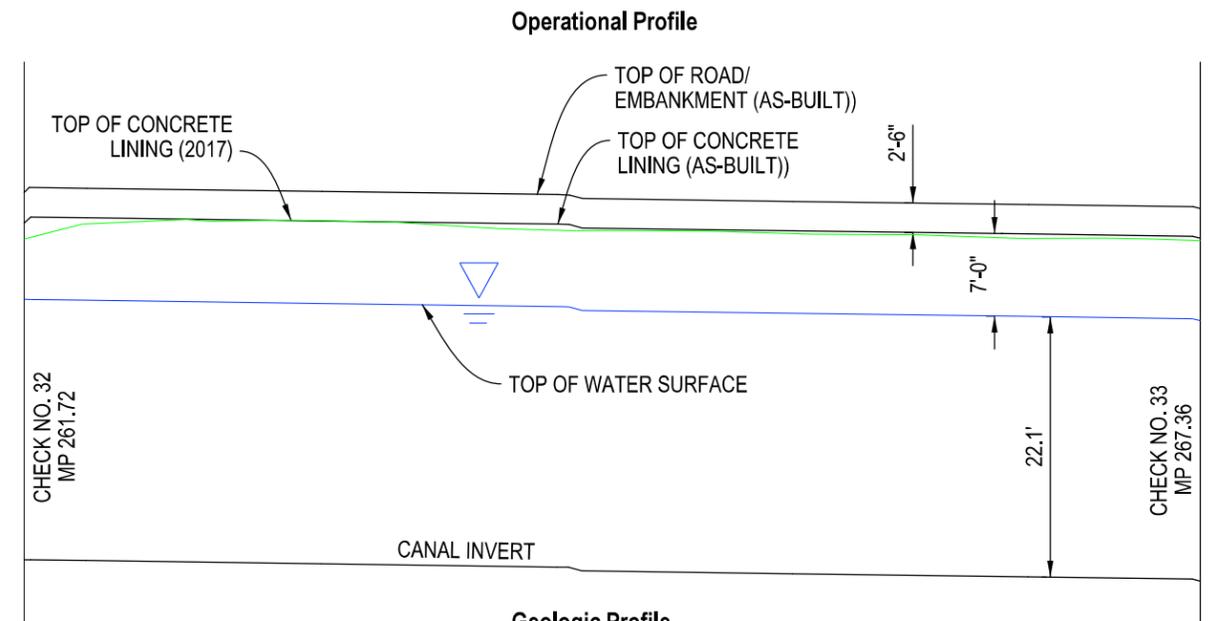
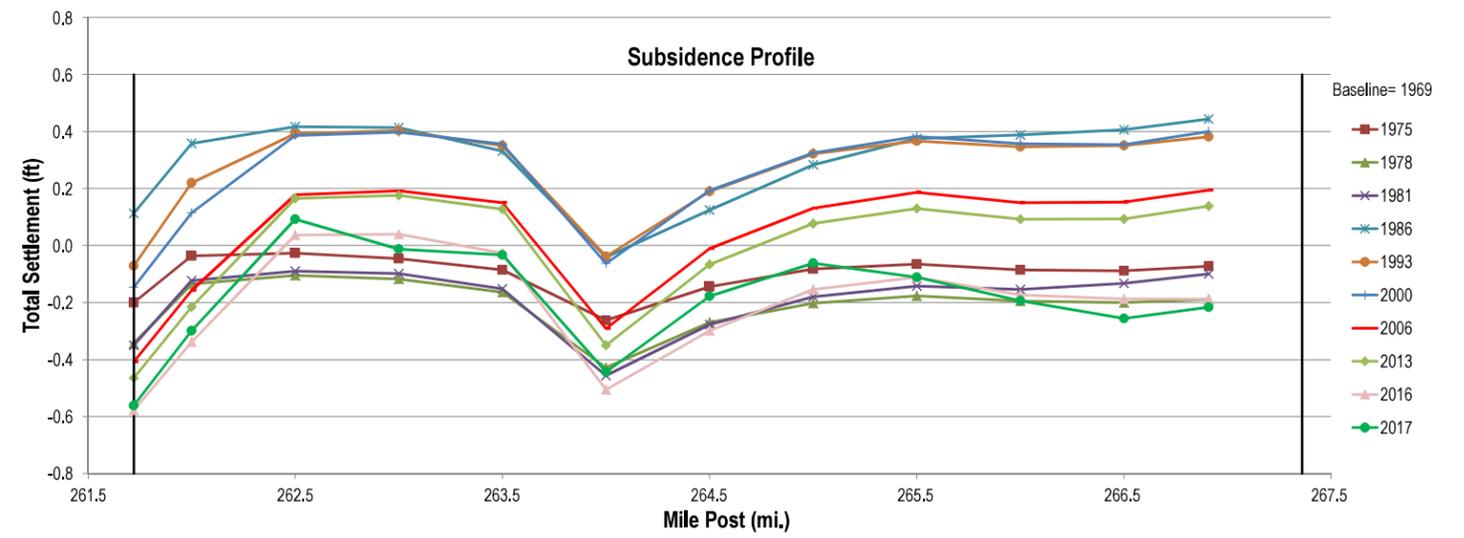


STRUCTURE	SIDE OF EMBANKMENT	MP	STRUCTURE	SIDE OF EMBANKMENT	MP
BUENA VISTA PUMPING PLANT		250.99	SUMP PUMP	R	253.6
PIPELINE CROSSING (4)		251.16	PIPELINE CROSSING		253.8
CULVERT CROSSING		251.35	GARDNER FIELD ROAD BRIDGE		253.8
PHONE LINE CROSSING		251.43	BRIDGE		254.11
CULVERT CROSSING		251.54	SANDY CREEK SIPHON		254.11
SUMP PUMP	R	251.66	PIPELINE CROSSING		254.12
CULVERT CROSSING		251.73	TURNOUT	R	254.47
CULVERT CROSSING		251.84	POWERLINE CROSSING		254.83
PIPELINE CROSSING		252.01	PIPELINE CROSSING		254.85
CULVERT CROSSING		252.03	PHONE LINE CROSSING		255.34
CULVERT CROSSING		252.36	PIPELINE CROSSING		255.36
SUMP PUMP	R	252.63	POWERLINE CROSSING		255.55
CULVERT CROSSING		252.95	OVERCHUTE CROSSING		255.78
PIPELINE CROSSING		253.19	TURNOUT	L	256.11
CULVERT CROSSING		253.26	CADET ROAD BRIDGE		256.13
CULVERT CROSSING		253.49	STILLING WELL	L	256.14
			CHECK NUMBER 31		256.14



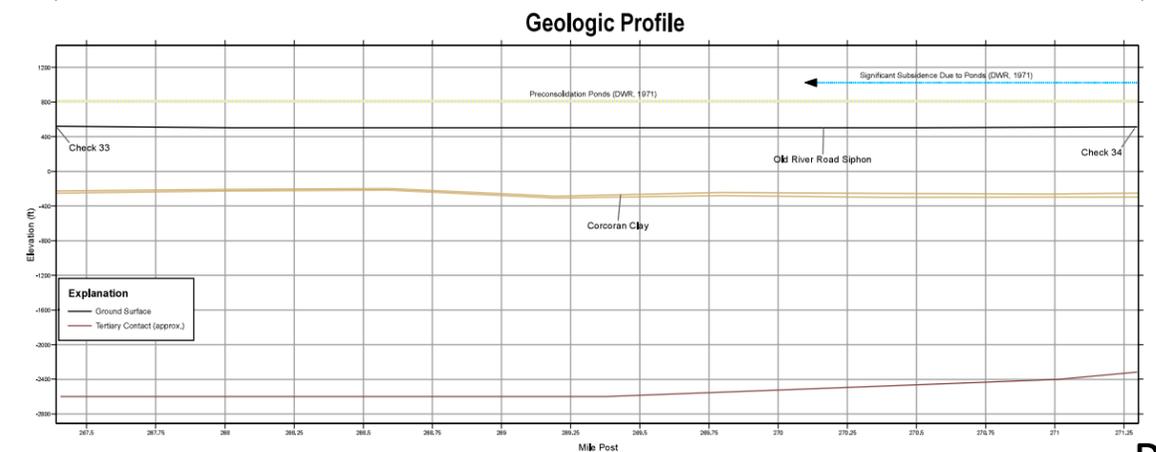
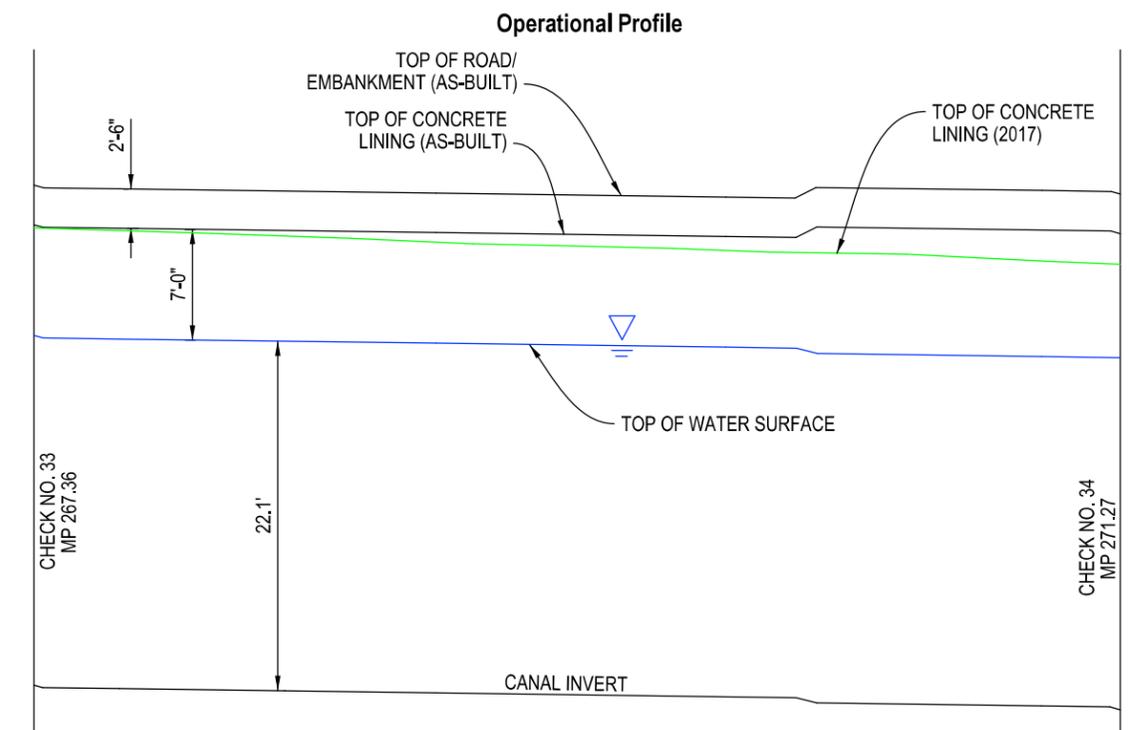
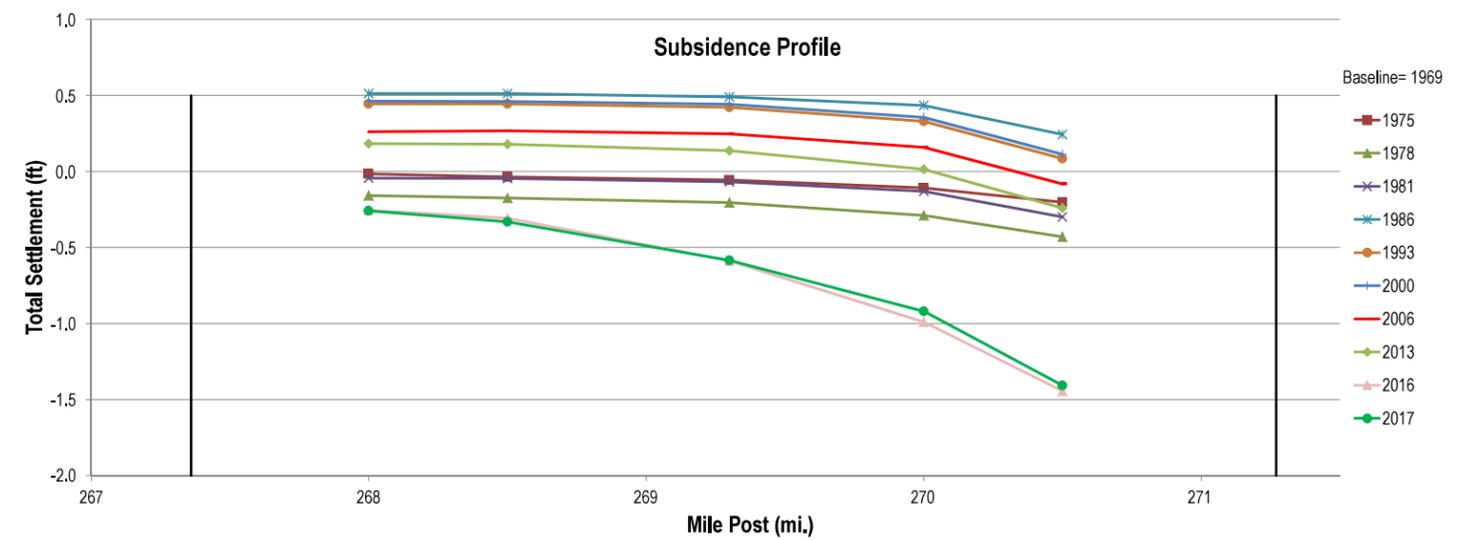
STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 31		256.14
STILLING WELL	L	256.21
POWERLINE CROSSING		256.36
OVERCHUTE CROSSING		256.56
OVERCHUTE CROSSING		257.48
PIPELINE CROSSING		257.63
OVERCHUTE CROSSING		258.59
TURNOUT	L	258.61
PHONE LINE CROSSING		259.45
PIPELINE CROSSING		259.64
BRIDGE (2)		259.65
SUNSET RAIL ROAD SIPHON		259.65
PIPELINE CROSSING (2)		260.01
POWERLINE CROSSING		260.11
TURNOUT	L	260.44
PIPELINE CROSSING (3)		260.45
POWERLINE CROSSING (2)		260.66
PIPELINE CROSSING		261.47
STILLING WELL	L	261.68
PIPELINE CROSSING		261.72
SANTIAGO CREEK SIPHON		261.72
BRIDGE (2)		261.72
CHECK NUMBER 32		261.72





STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 32		261.72
POWERLINE CROSSING		261.74
STILLING WELL	L	261.8
PHONE LINE CROSSING		262.5
PIPELINE CROSSING		262.61
BRIDGE		262.61
POWERLINE CROSSING		263.6
BRIDGE		264.37
POWERLINE CROSSING		264.37
LOS LOBOS SIPHON/BRIDGE		264.37
PIPELINE CROSSING		264.38
TURNOUT	L	264.42
POWERLINE CROSSING		264.9
POWERLINE CROSSING		265.12
TURNOUT	R	266.91
PIPELINE CROSSING		267.14
POWERLINE CROSSING		267.14
SAN EMIGDIO CREEK SIPHON		267.36
STILLING WELL	L	267.36
CHECK NUMBER 33		267.36

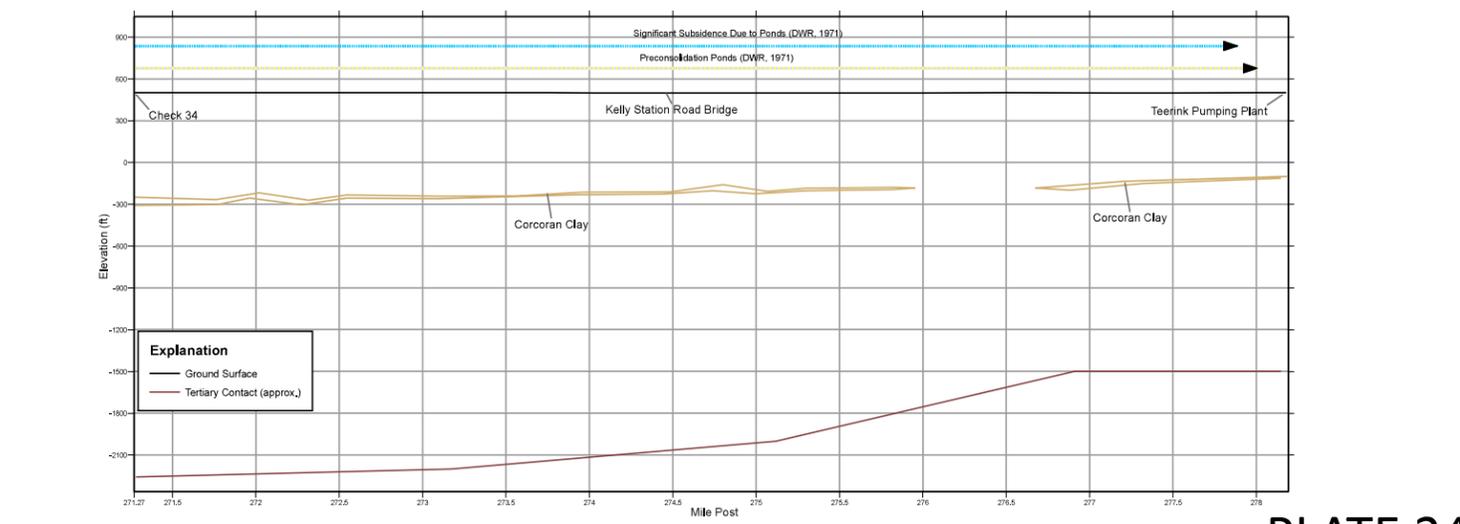
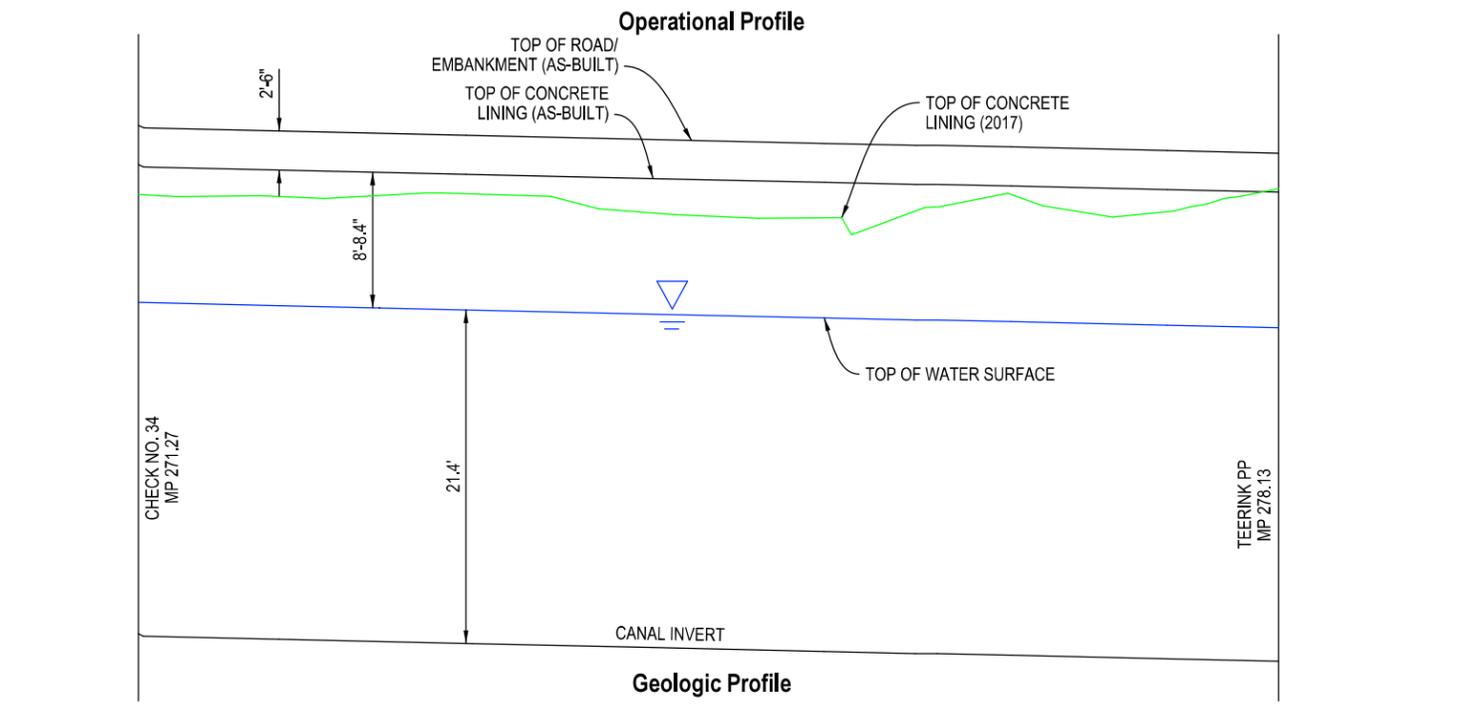
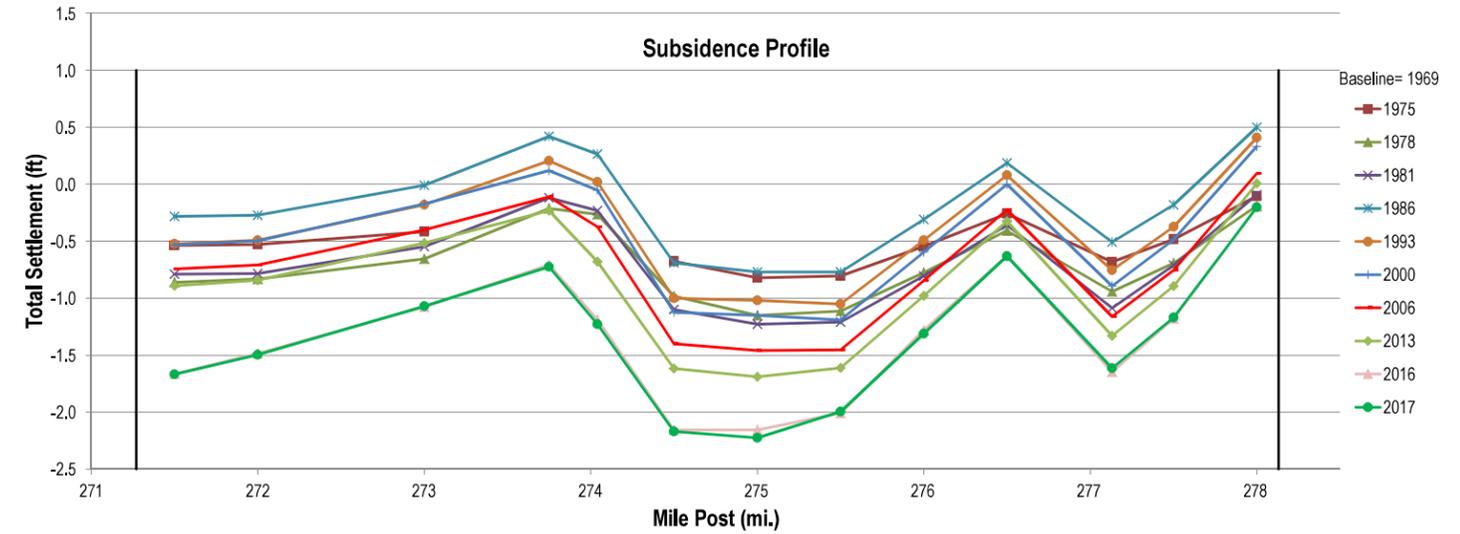
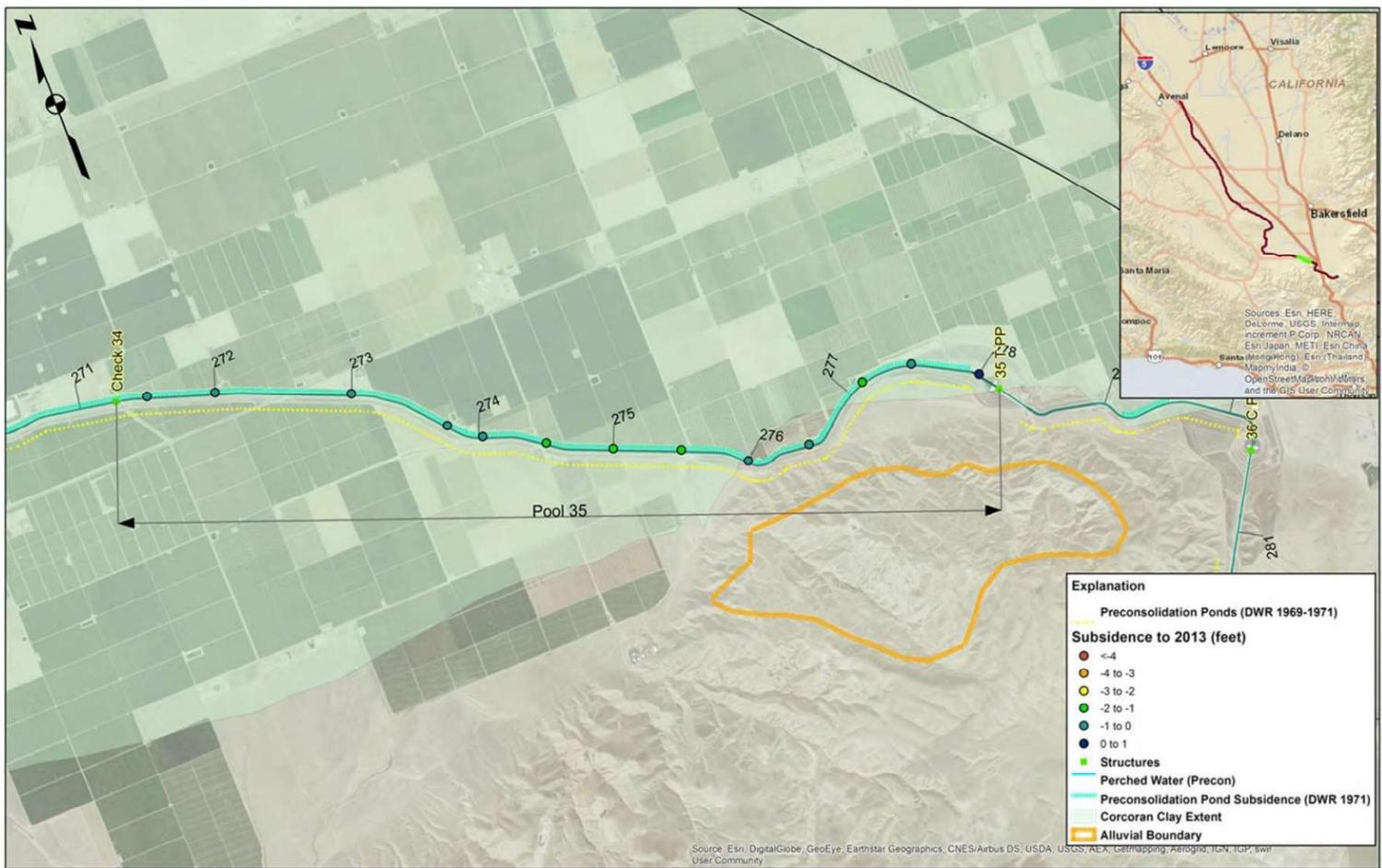




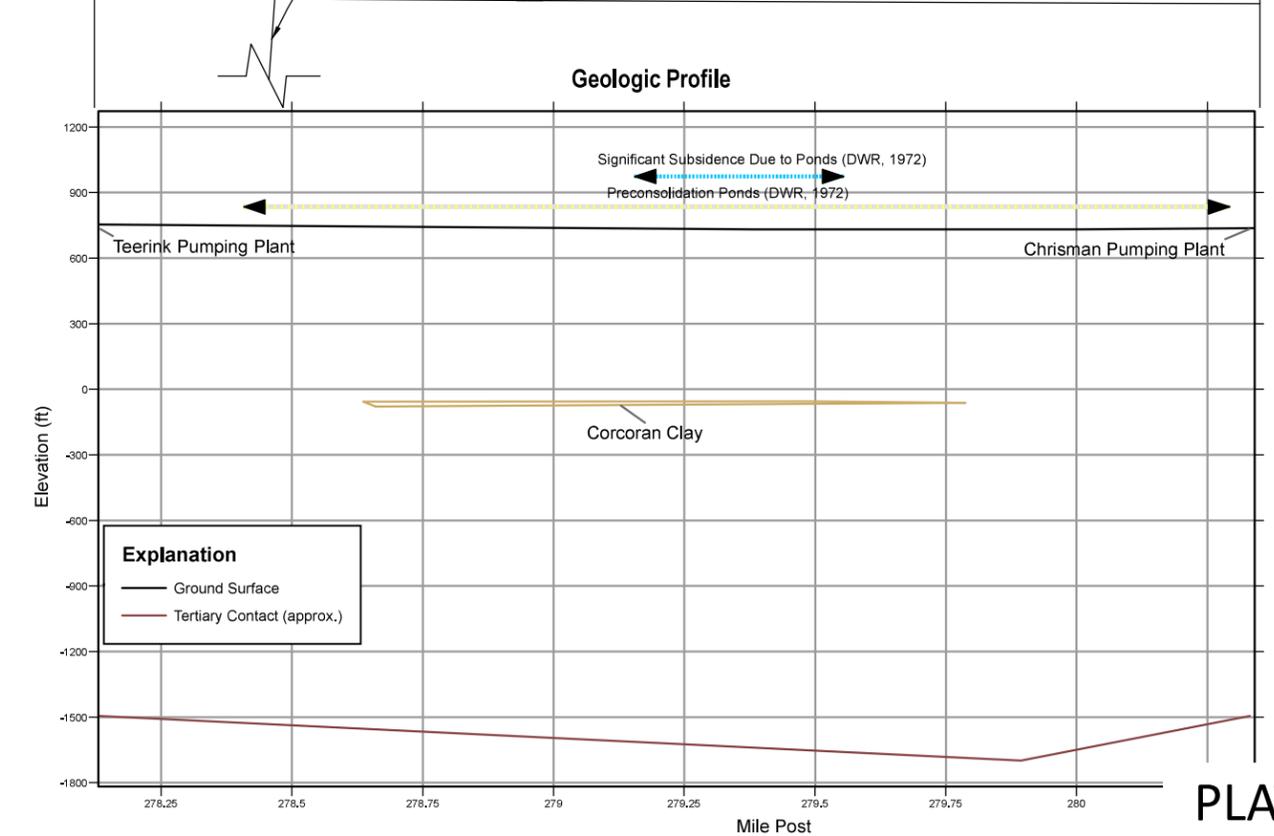
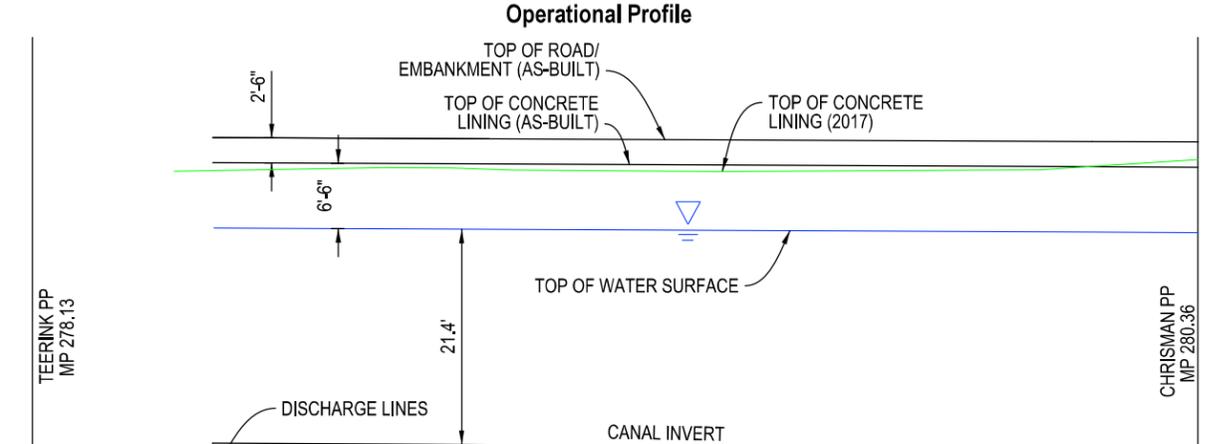
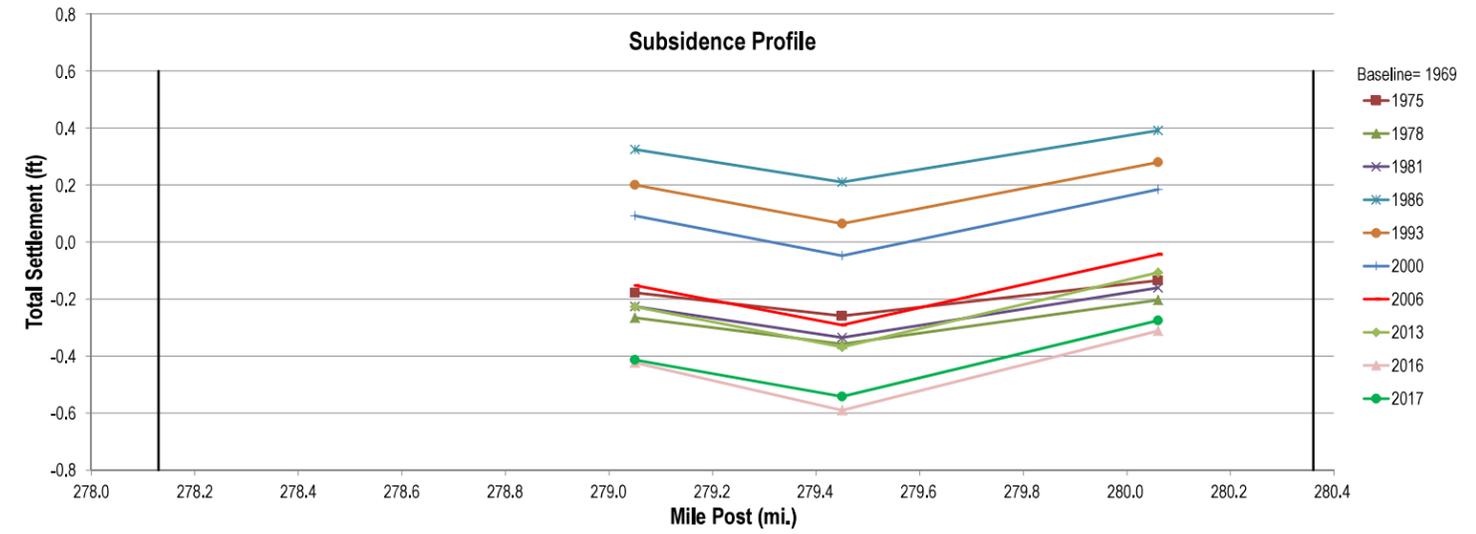
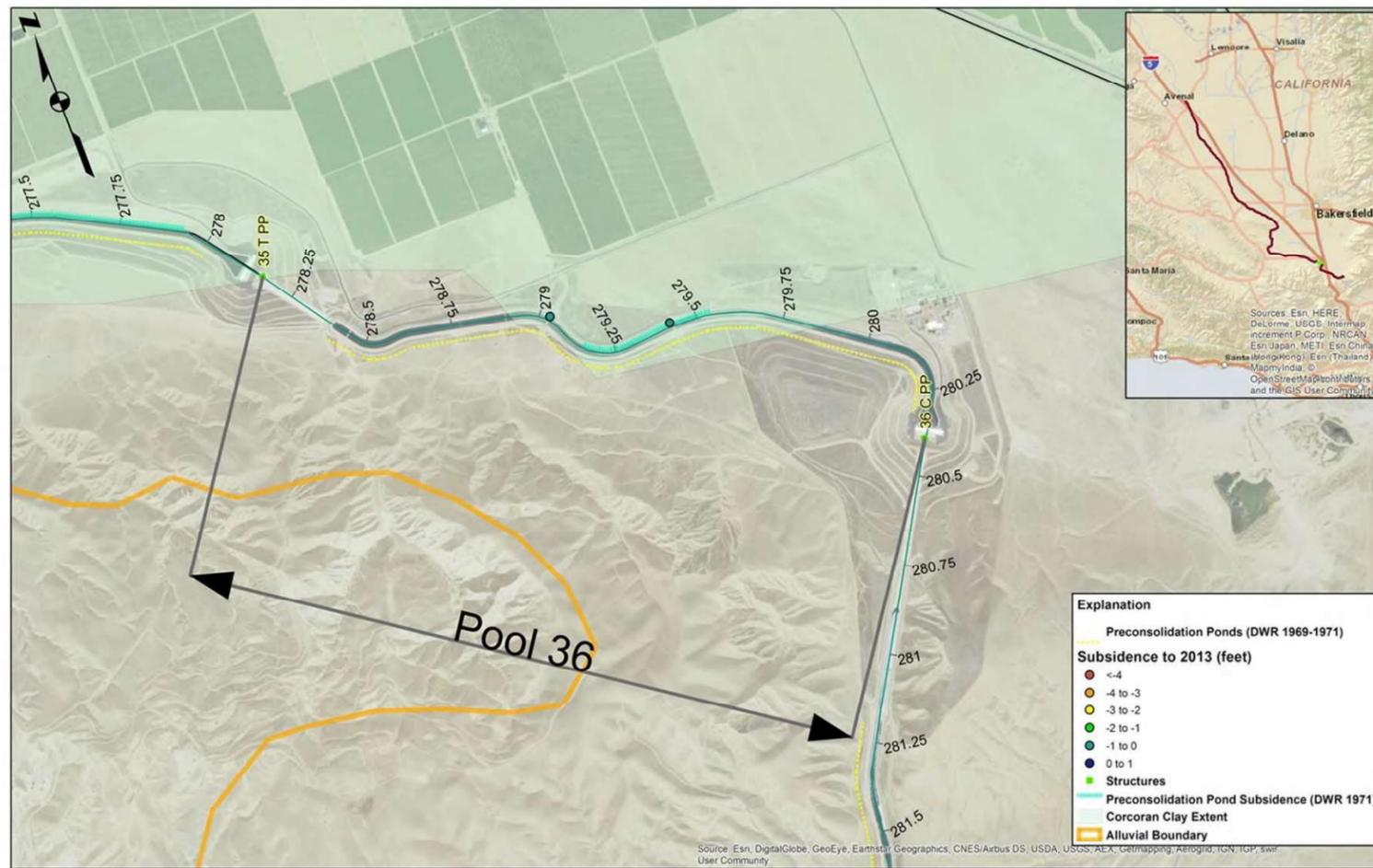
STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 33		267.36
BRIDGE (2)		267.39
PHONE LINE CROSSING		267.44
STILLING WELL	L	267.47
POWERLINE CROSSING		267.58
PIPELINE CROSSING (3)		267.6
PIPELINE CROSSING (2)		268.54
BRIDGE		268.94
PHONE LINE CROSSING		268.95
PIPELINE CROSSING		269.3
PIPELINE CROSSING		269.66
OLD RIVER ROAD SIPHON		270.14
BRIDGE (2)		270.16
POWERLINE CROSSING		270.17
PIPELINE CROSSING		270.18
TURNOUT	L	270.24
STILLING WELL	L	271.26
PLEITITO CREEK SIPHON		271.27
CHECK NUMBER 34		271.27

PLATE 23



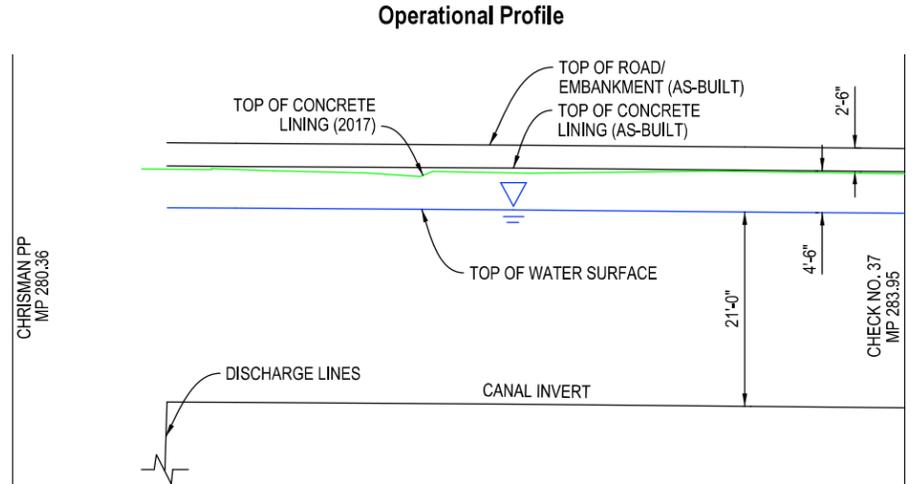
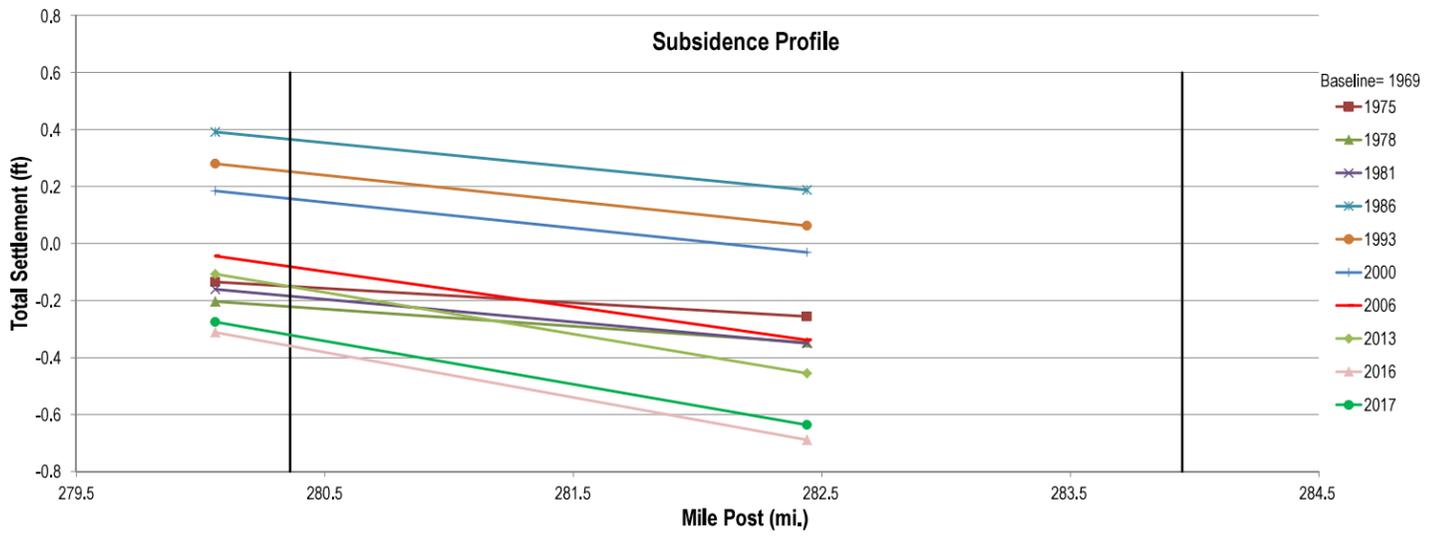
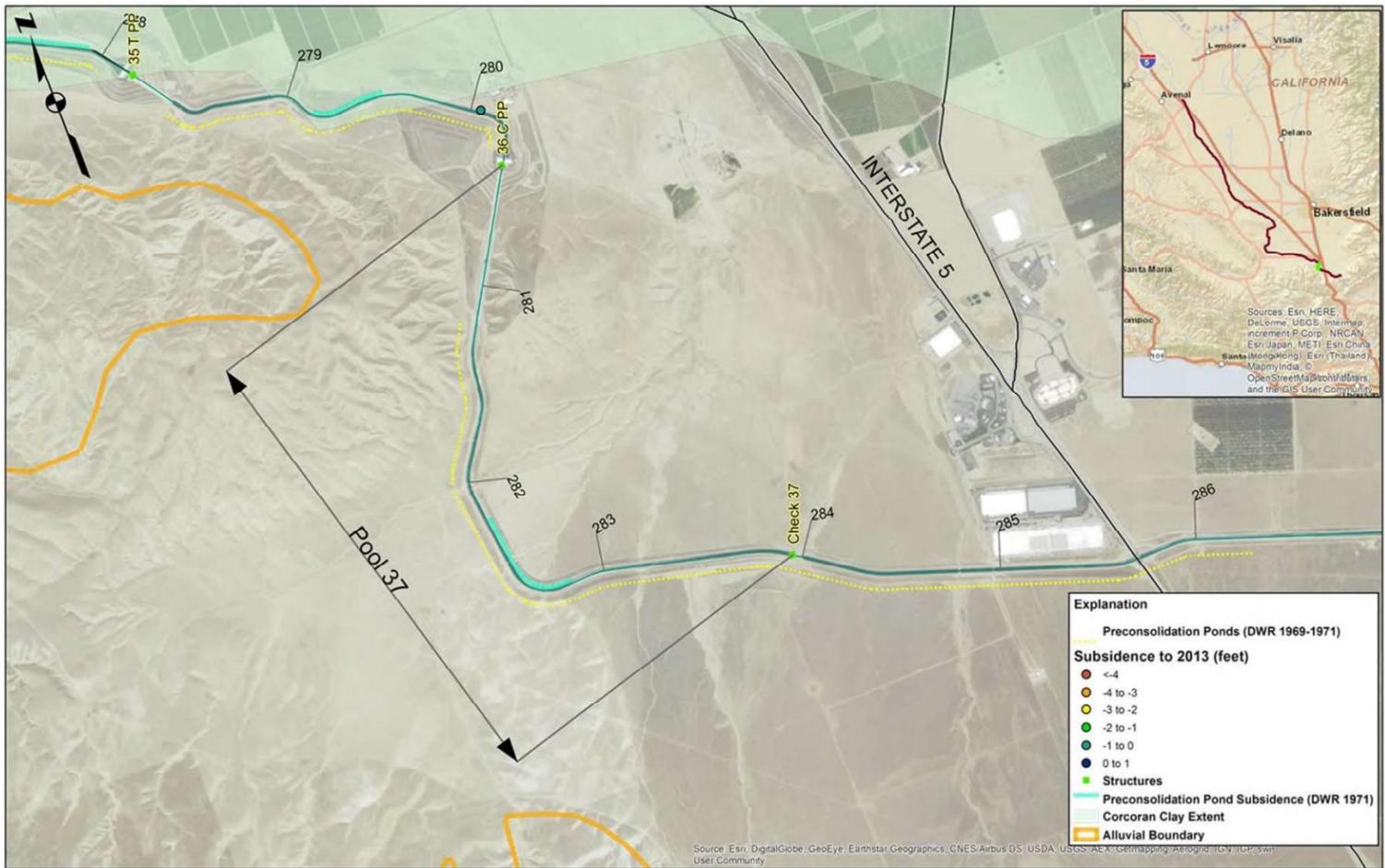


STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 34		271.27
BRIDGE		271.3
STILLING WELL	L	271.37
PIPELINE CROSSING		271.85
TURNOUT	L	272.39
PIPELINE CROSSING (4)		272.4
HIGHWAY 166 BRIDGE		272.53
POWERLINE CROSSING		272.59
PIPELINE CROSSING (2)		273.09
PIPELINE CROSSING (2)		273.48
PIPELINE CROSSING		273.75
POWERLINE CROSSING		273.85
OVERCHUTE CROSSING		274.04
KELLY STATION ROAD BRIDGE		274.45
PIPELINE CROSSING		274.45
OVERCHUTE CROSSING		275.56
TURNOUT	L	276.09
OVERCHUTE CROSSING		276.5
PIPELINE CROSSING		276.71
PHONE LINE CROSSING		276.73
SAND TRAP		276.84
OVERCHUTE CROSSING		277.13
TURNOUT	L	277.31
TEERINK PUMPING PLANT		278.13



STRUCTURE	SIDE OF EMBANKMENT	MP
TEERINK PUMPING PLANT		278.13
PIPELINE CROSSING		278.41
OVERCHUTE CROSSING		278.47
SUMP PUMP	R	278.78
OVERCHUTE CROSSING		278.8
POWERLINE CROSSING		278.85
OVERCHUTE CROSSING		278.93
TURNOUT	L	279.03
BRIDGE		279.05
POWERLINE CROSSING		279.21
CULVERT CROSSING		279.39
SUMP PUMP	R	279.42
PIPELINE CROSSING		279.44
OVERCHUTE CROSSING		279.44
SUMP PUMP	R	280.03
TURNOUT	L	280.06
SAN JOAQUIN O&M CENTER	L	280.06
CHRISMAN PUMPING PLANT		280.36

PLATE 25



STRUCTURE	SIDE OF EMBANKMENT	MP
CHRISMAN PUMPING PLANT		280.36
BRIDGE		281.16
SUMP PUMP	R	281.18
OVERCHUTE /PIPELINE		281.41
POWERLINE CROSSING		281.72
OVERCHUTE CROSSING		281.78
PIPELINE CROSSING (3)		281.78
SUMP PUMP	R	281.92
OVERCHUTE CROSSING		282
BRIDGE		282.03
PIPELINE CROSSING (3)		282.03
PIPELINE CROSSING		282.04
TURNOUT	L	282.06
OVERCHUTE CROSSING		282.44
OVERCHUTE CROSSING		283.19
STILLING WELL	L	283.93
BRIDGE		283.95
SALT CREEK SIPHON		283.95
CHECK NUMBER 37		283.95

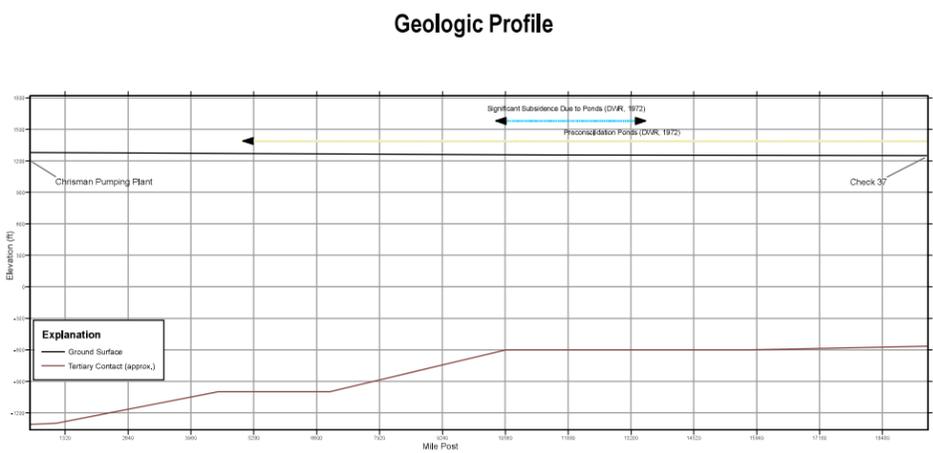
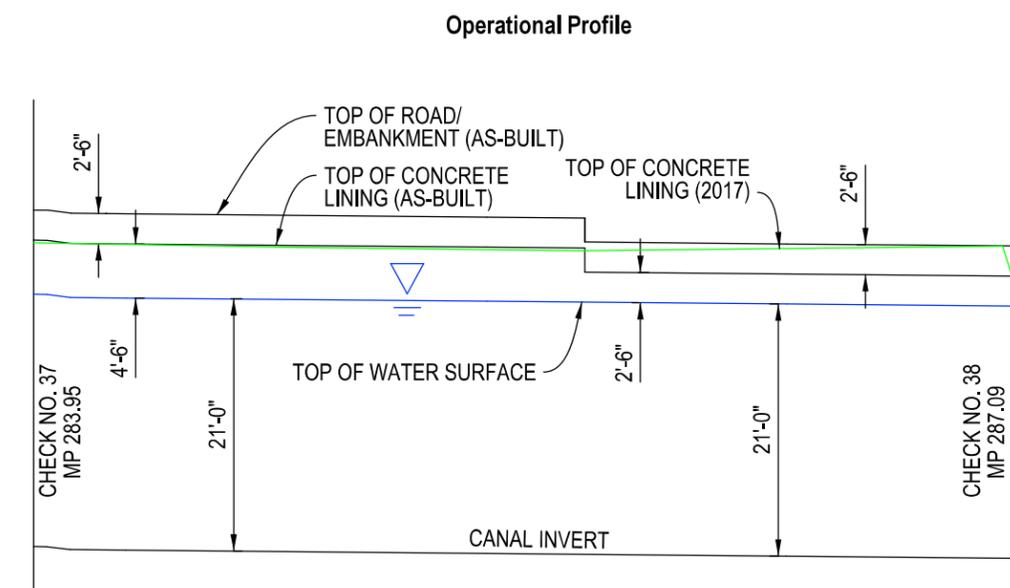
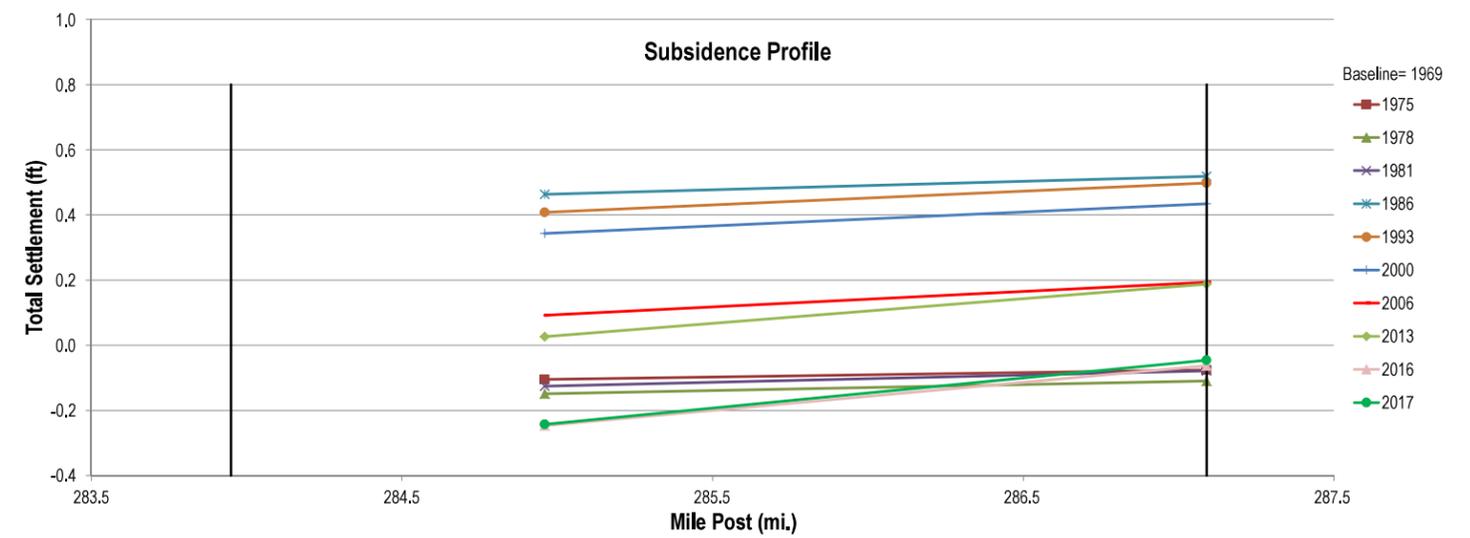
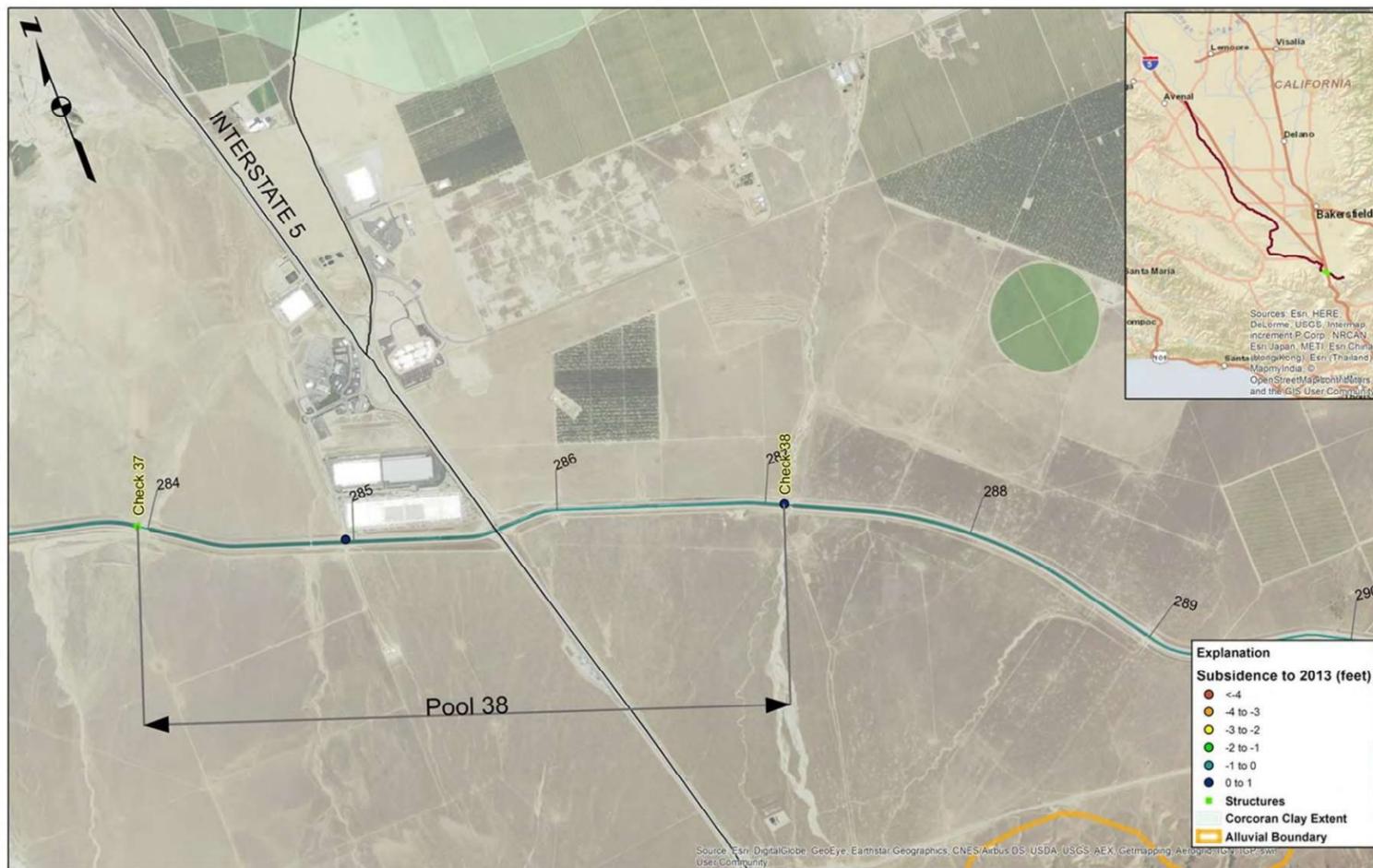


PLATE 26



STRUCTURE	SIDE OF EMBANKMENT	MP
CHECK NUMBER 37		283.95
PIPELINE CROSSING		283.97
STILLING WELL	L	284.05
OVERCHUTE CROSSING		284.8
POWERLINE CROSSING		284.95
BRIDGE		284.97
PIPELINE CROSSING		284.97
TURNOUT	L	285.01
INTERSTATE 5 OVERPASS		285.69
INTERSTATE 5 BRIDGE		285.71
POWERLINE CROSSING		285.76
PIPELINE CROSSING (3)		285.99
PHONE LINE CROSSING		285.99
TURNOUT	L	286.39
CULVERT CROSSING		286.42
PIPELINE CROSSING		286.56
STILLING WELL	L	287.02
TURNOUT	L	287.06
GRAPEVINE CREEK SIPHON		287.09
CHECK NUMBER 38		287.09

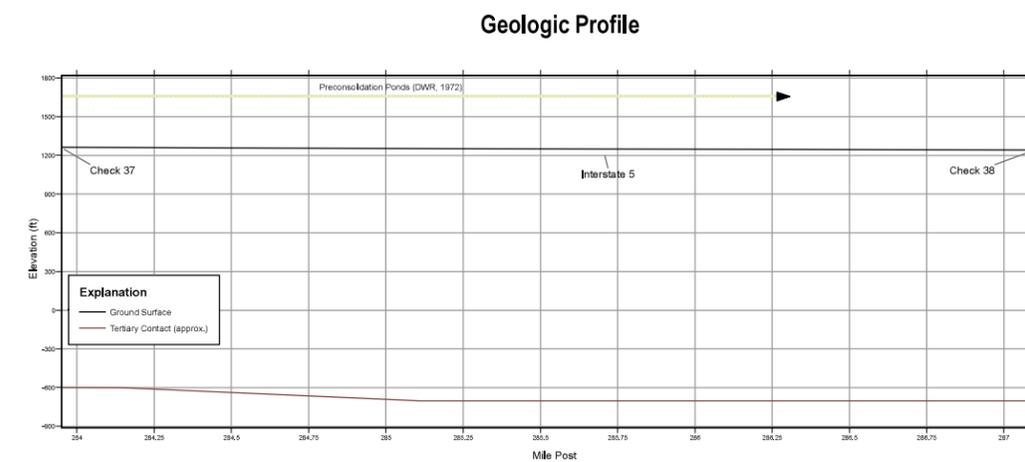
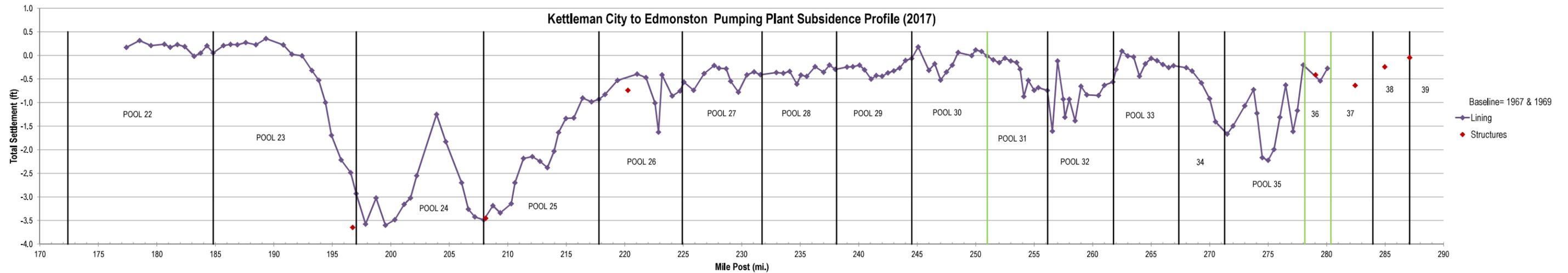
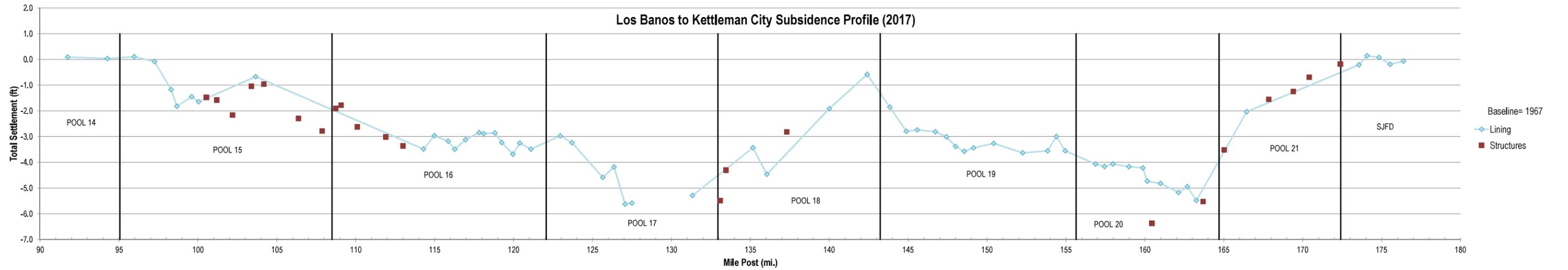
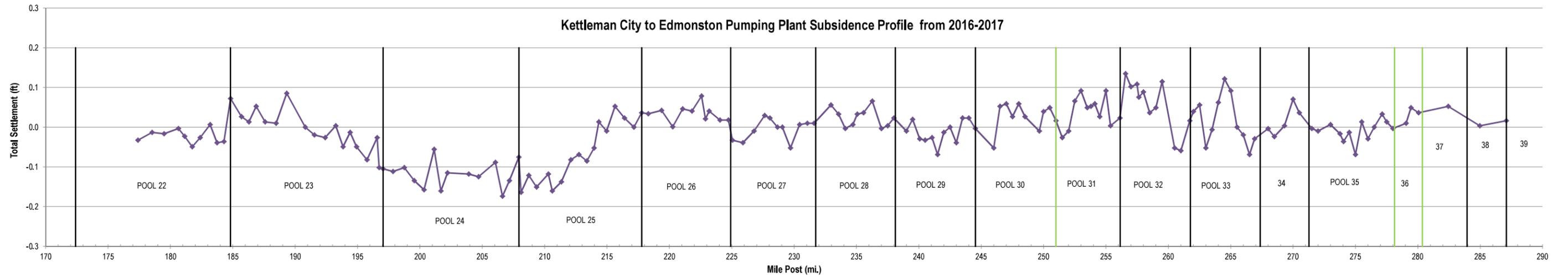
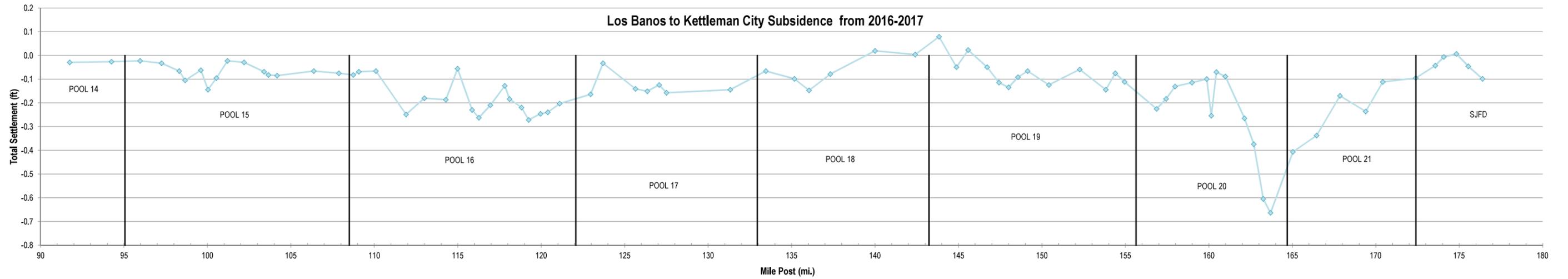
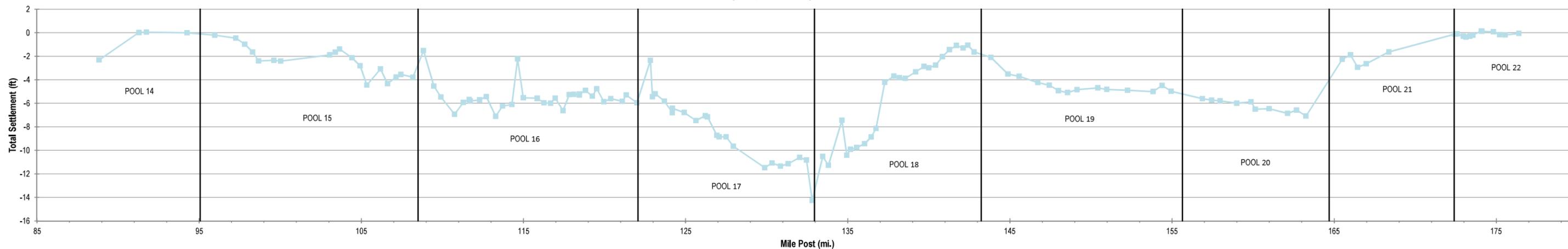


PLATE 27

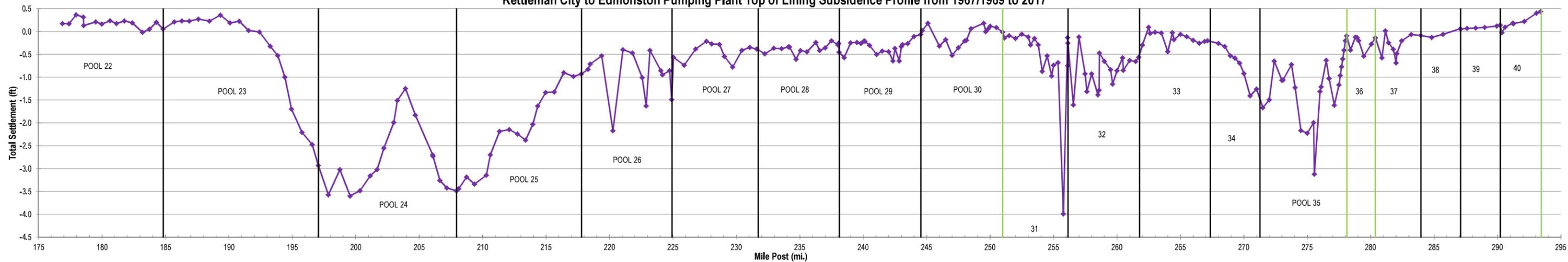




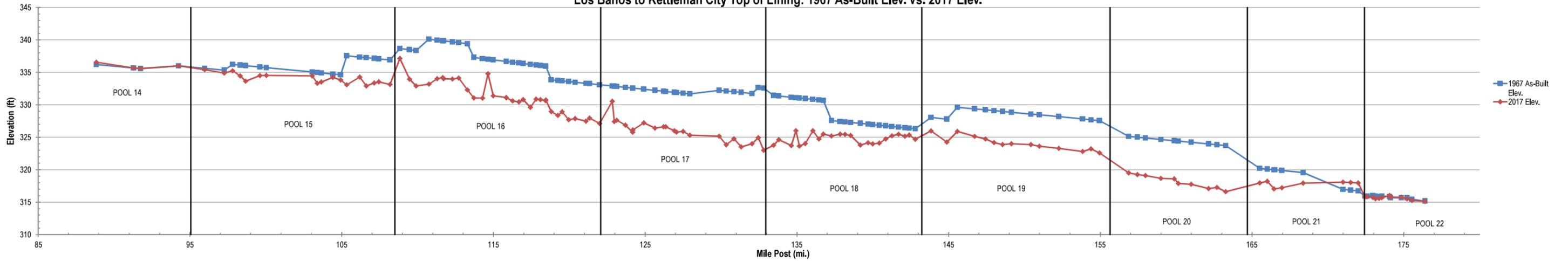
Los Banos to Kettleman City Top of Lining Subsidence Profile from 1967-2017



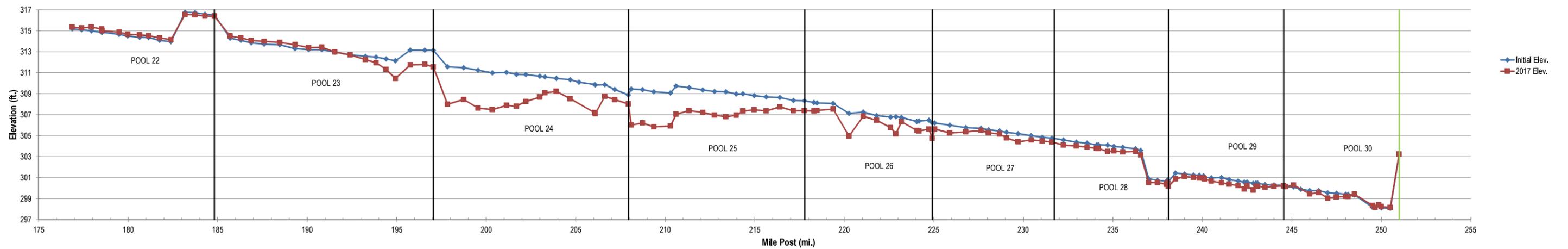
Kettleman City to Edmonston Pumping Plant Top of Lining Subsidence Profile from 1967/1969 to 2017



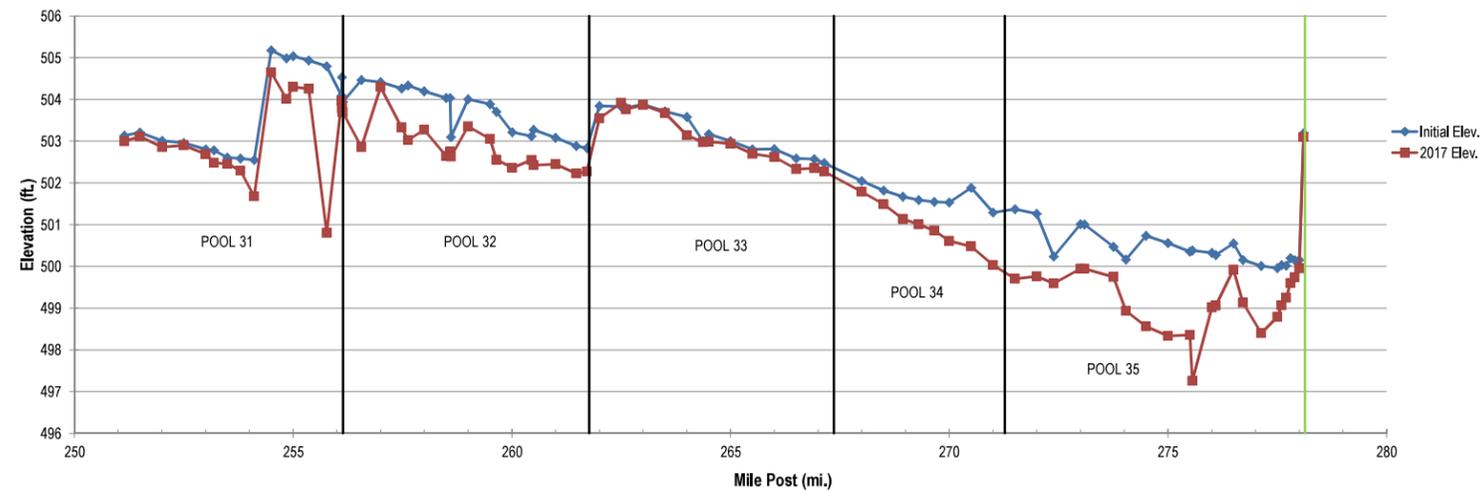
Los Banos to Kettleman City Top of Lining: 1967 As-Built Elev. vs. 2017 Elev.



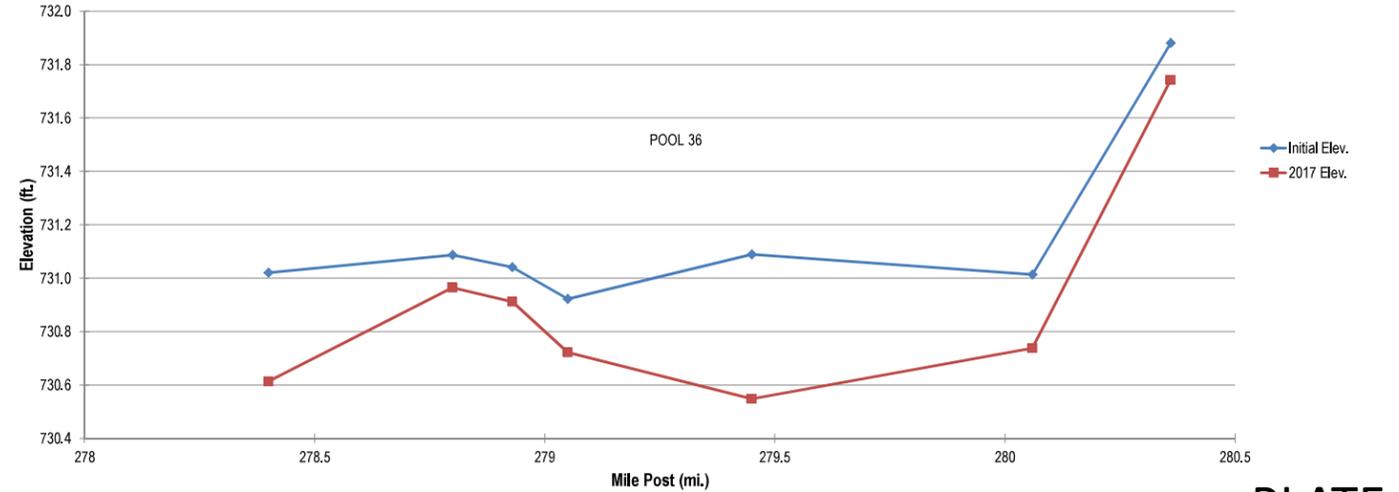
Kettleman City to Edmonston Pumping Plant Top of Lining: As-Built Elev. vs. 2017 Elev. (1 of 4)



Kettleman City to Edmonston Pumping Plant Top of Lining: As-Built Elev. vs. 2017 Elev. (2 of 4)



Kettleman City to Edmonston Pumping Plant Top of Lining: As-Built Elev. vs. 2017 Elev. (3 of 4)



Kettleman City to Edmonston Pumping Plant Top of Lining: As-Built Elev. vs. 2017 Elev. (4 of 4)

