

Prado Basin Habitat Sustainability Committee Meeting

Review of the Prado Basin Habitat Sustainability Program Scope, Schedule, and Budget for Fiscal Year 2017-18

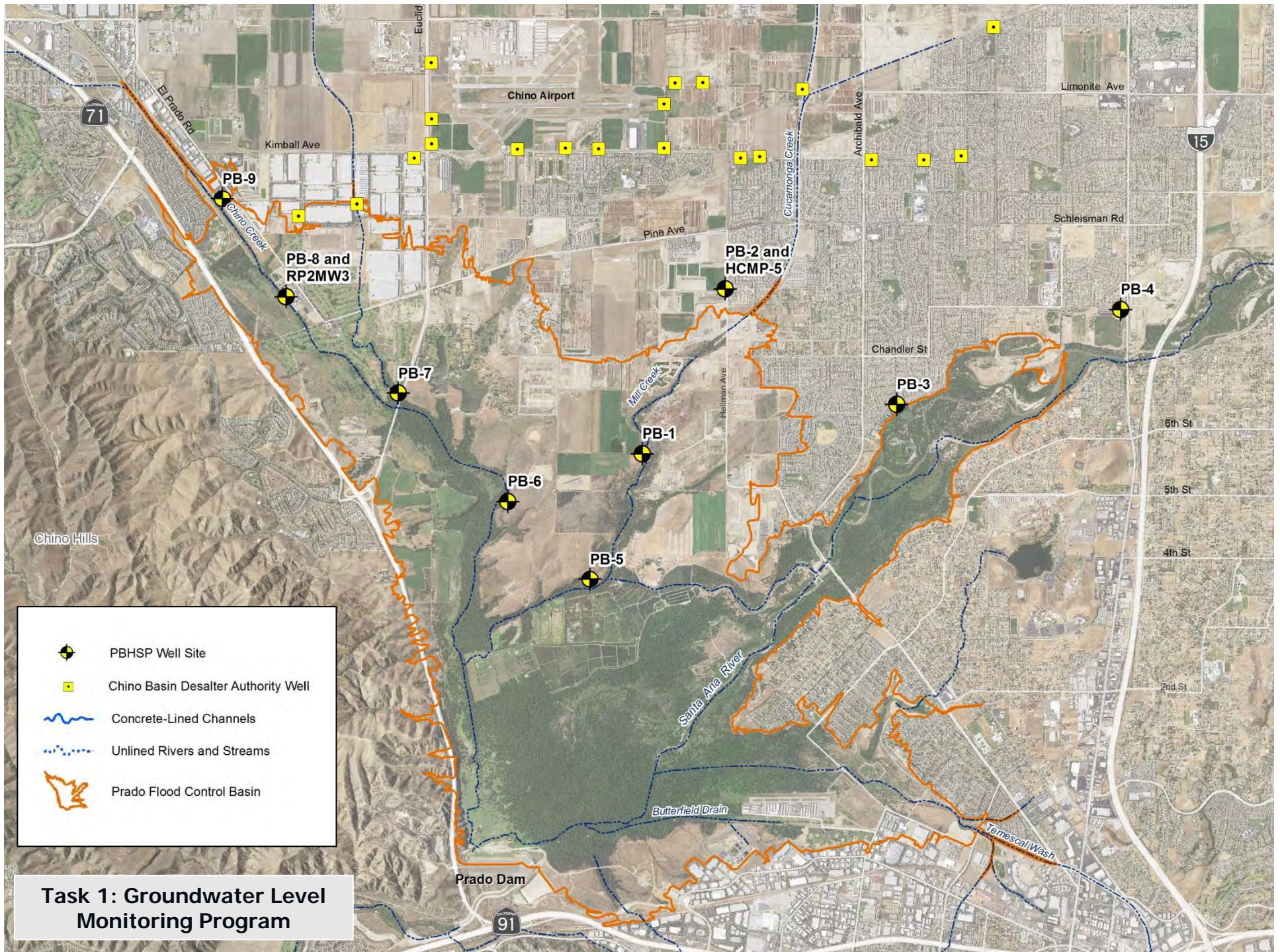
March 21, 2017

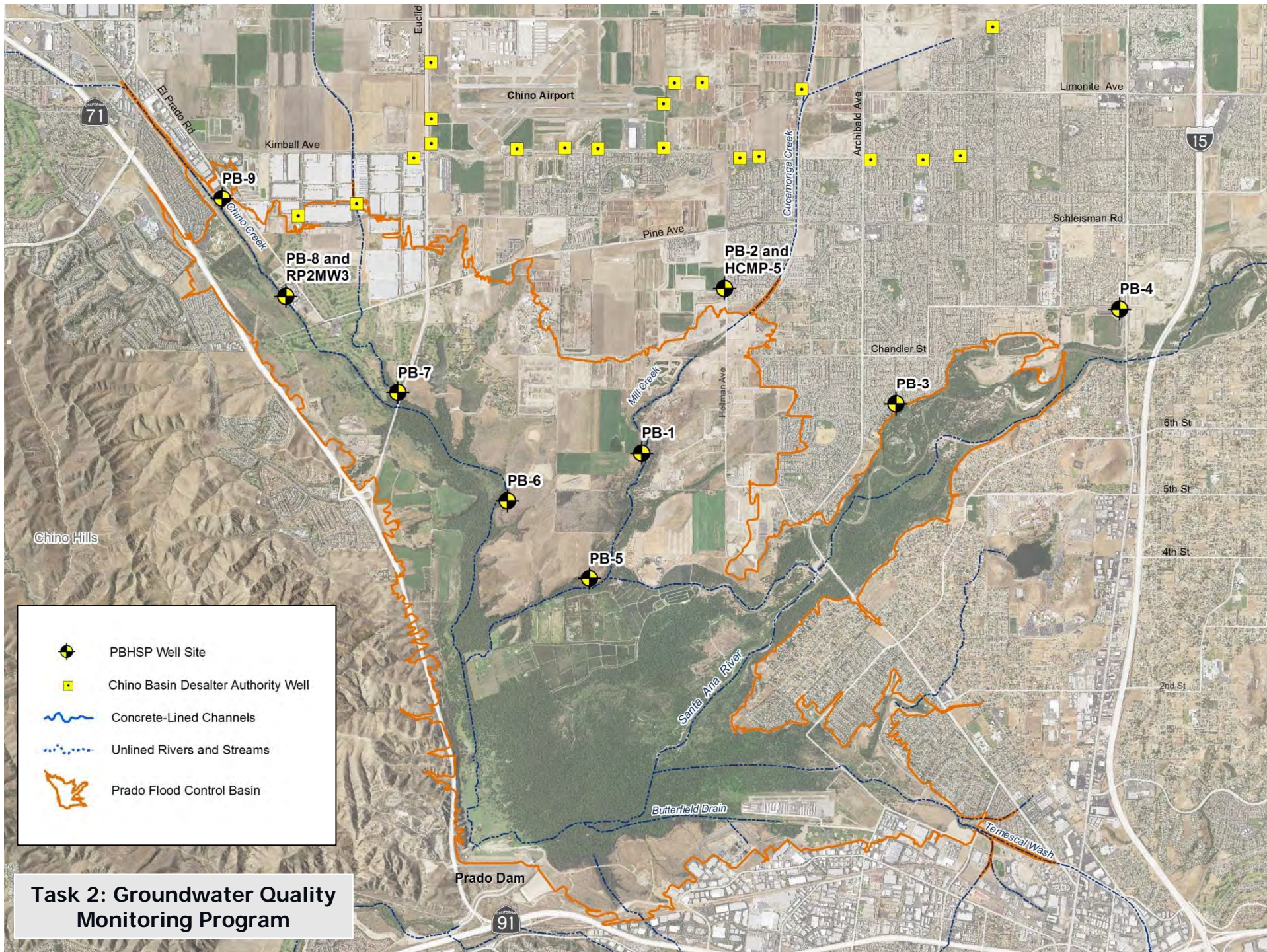


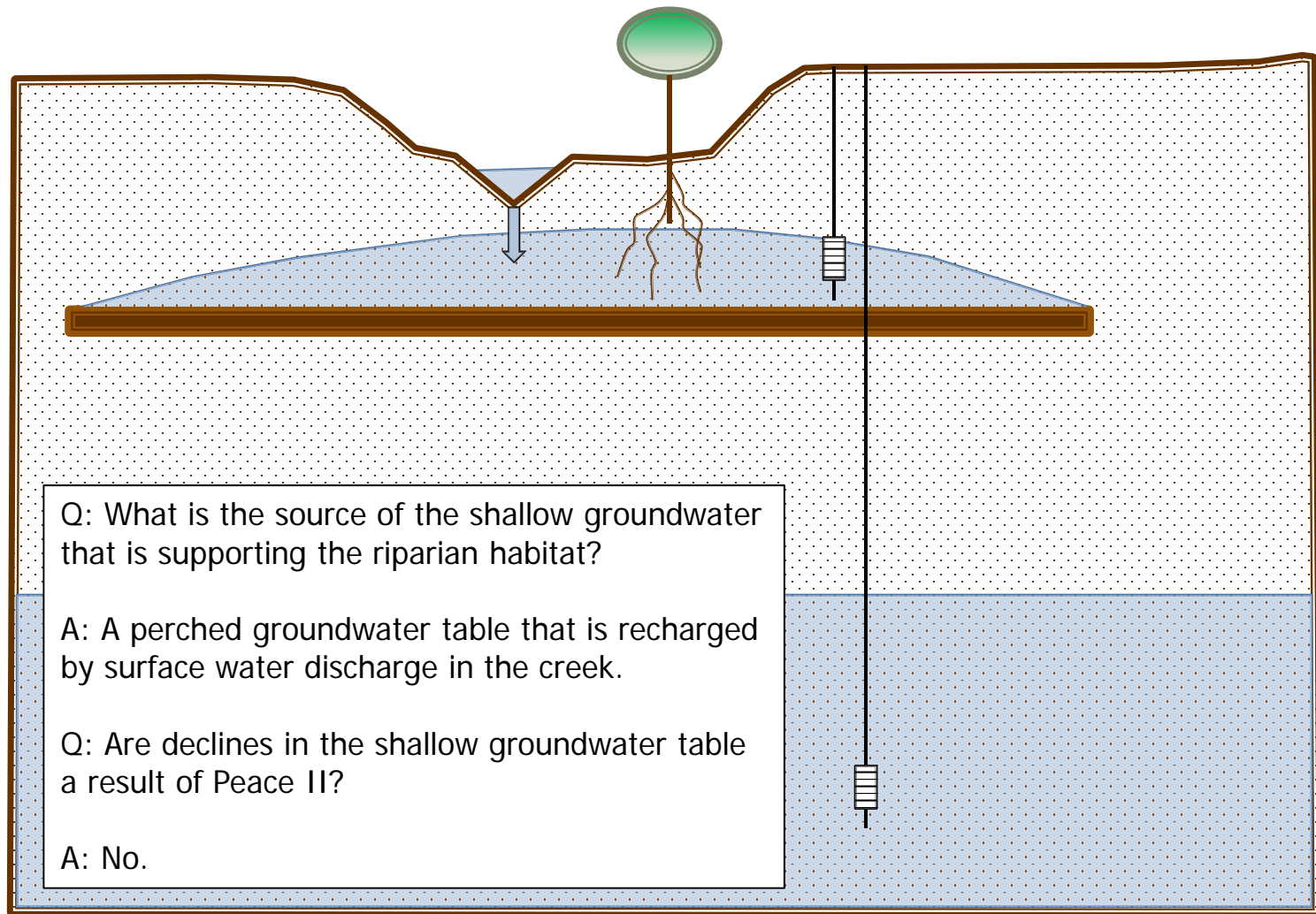
Table 1
Work Breakdown Structure, Cost Estimate, and Schedule
PBHSP Monitoring Program – FY2017-18

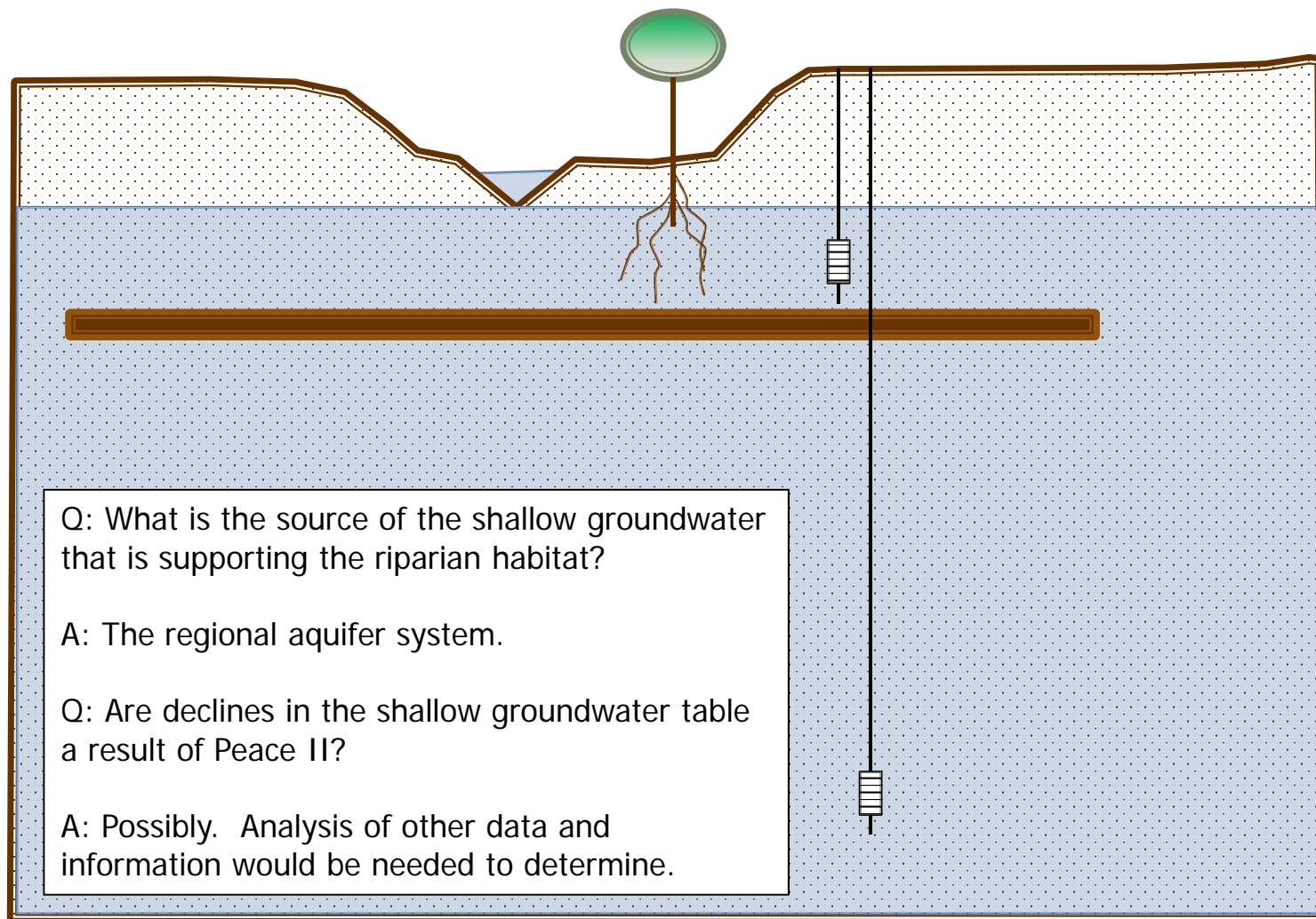
Task Description	Labor Total		Other Direct Costs					Notes	Totals				
	Person Days	Total	Travel	Equip. Rental	Lab	Outside Pro	Total		FY 2017-18	FY 2016-17	Difference	IEUA Portion FY 2017-18	CBWM Portion FY 2017-18
Task 1: Groundwater Level Monitoring Program	10.4	\$11,152					\$779		\$11,931	\$11,721	\$210	-	\$11,931
1.1 Collect Transducer Data from PBHSP Wells (Quarterly)	4.8	\$4,304	\$587	\$192			\$779		\$5,083				
1.2 Collect, Check, and Upload Transducer Data from PBHSP Wells (Quarterly)	5.6	\$6,848					\$0		\$6,848				
Task 2: Groundwater Quality Monitoring Program	25.6	\$24,400					\$24,655		\$49,055	\$77,160	-\$28,105	-	\$49,055
2.1 Collect Groundwater-Quality from PBHSP Wells (Quarterly)	18.4	\$15,472	\$2,035	\$4,120	\$18,500		\$24,655		\$40,127				
2.2 Check and Upload Groundwater Quality Field and Lab Data from PBHSP Wells (Quarterly)	7.2	\$8,928					\$0		\$8,928				
Task 3: Surface Water Monitoring Program	3.2	\$3,744					\$0		\$3,744	\$3,230	\$514	-	\$3,744
3.1 Quality Data from POTWs, and Dam level data from the ACOE (Annual)	2.2	\$2,608					\$0		\$2,608				
3.2 Collect, Check, and Upload Surface Water Discharge and Quality Data from USGS gaging stations (Annual)	1.0	\$1,136					\$0		\$1,136				
Task 4: Riparian Habitat Monitoring Program	28.8	\$40,342					\$10,000		\$50,342	\$199,794	-\$149,452	\$25,171.0	\$25,171.0
4.1 Manage and Perform Custom Flight to Collect a High-Resolution Air Photo of the Prado Basin Region	1.0	\$1,816				\$10,000	\$10,000	1	\$11,816				
4.2 Collect, Check, Catalog, and Digitize the 2017 Air Photo for Prado Basin Region	4.3	\$5,682					\$0		\$5,682				
4.3 Collect, Check, and Upload 2017 Landsat NDVI Data in the Prado Basin	3.8	\$5,262					\$0		\$5,262				
4.4 Collect, Check, and Upload Historical Landsat NDVI Data in the Prado Basin	12.2	\$16,074					\$0		\$16,074				
4.5 Design a Site-Specific Vegetation Monitoring Program to Ground-Truth NDVI data	7.5	\$11,508					\$0		\$11,508				
Task 5: Climate Monitoring Program	1.0	\$1,456					\$300		\$1,756	\$1,368	\$388	\$878.20	\$878.20
5.1 Collect, Check, and Upload Climatic Data (Annual)	1.0	\$1,456				\$300	\$300		\$1,756				
Task 6: Prepare Annual Report of the PBHSC	60.5	\$90,872					\$210		\$91,082	\$141,436	-\$50,354	\$45,541.0	\$45,541.0
6.1 Analyze Data and Prepare Admin Draft Report for CBWM/IEUA	47.0	\$70,308					\$0		\$70,308				
6.2 Meet with CBWM/IEUA to Review Admin Draft Report	2.5	\$4,148	\$105				\$105		\$4,253				
6.3 Incorporate CBWM/IEUA Comments and Prepare Draft Report: Submit Draft Report to PBHSC	5.0	\$7,200					\$0		\$7,200				
6.4 Meet with PBHSC to Review Draft Report	3.0	\$4,898	\$105				\$105		\$4,993				
6.5 Incorporate PBHSC Comments and Finalize Report	3.0	\$4,328					\$0		\$4,328				
Task 7: Project Management and Administration	11.8	\$18,898					\$105		\$19,003	\$18,444	\$559	\$9,501.30	\$9,501.30
7.1 Ad-Hoc Meetings (one meeting)	3.0	\$4,888	\$105				\$105		\$4,993				
7.2 Prepare Scope and Budget for FY 2018-19	4.0	\$6,368					\$0		\$6,368				
7.3 Project Administration and Financial Reporting	4.8	\$7,642					\$0		\$7,642				
Totals	267	\$190,864	\$2,350	\$4,120	\$18,500	\$10,300	\$36,049		\$226,913	\$453,153	-\$226,240	\$81,092	\$145,822

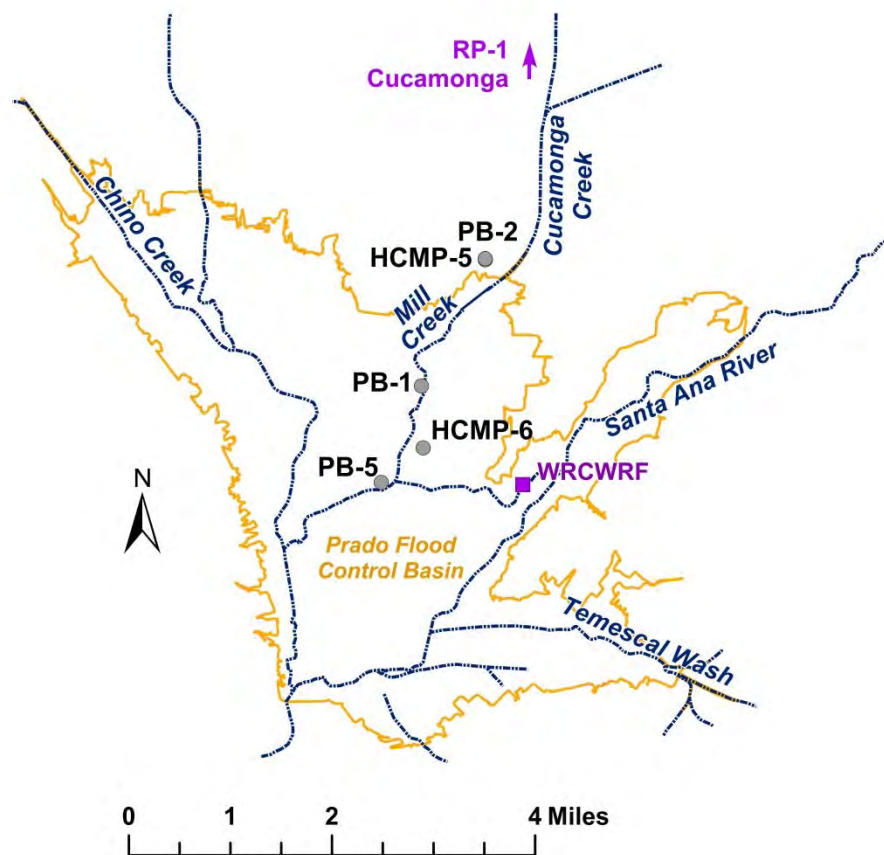
1- This is half of the cost for the outside professional. OCWD will be paying the other half.











Piper Points

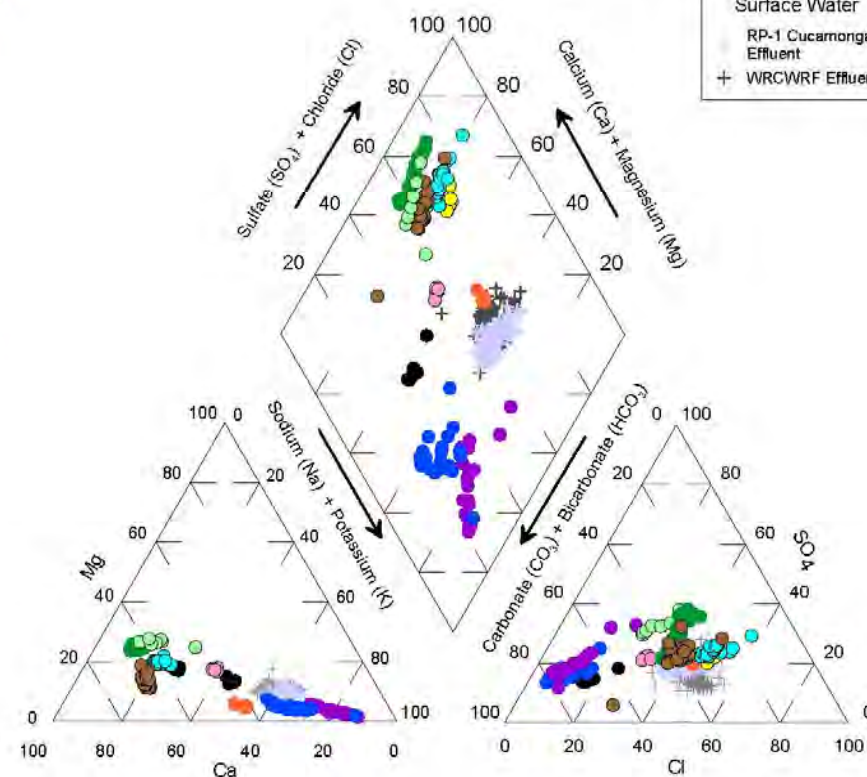
Wells (casing depth in ft-bgs)

- PB-2 (42-62)
- HCMP-5/1 (90-130)
- HCMP-5/2 (160-180)
- HCMP-6/1 (60-100)
- HCMP-6/2 (276-296)
- HCMP-6/3 (464-482)
- PB-1/1 (25-55)
- PB-1/2 (75-95)
- PB-5/1 (30-50)
- PB-5/2 (60-80)

Piper Points

Surface Water

- RP-1 Cucamonga Effluent
- WRCWRF Effluent



Task 2:

Groundwater Quality Monitoring Program

Quarterly Parameters Fiscal Year 2017-18

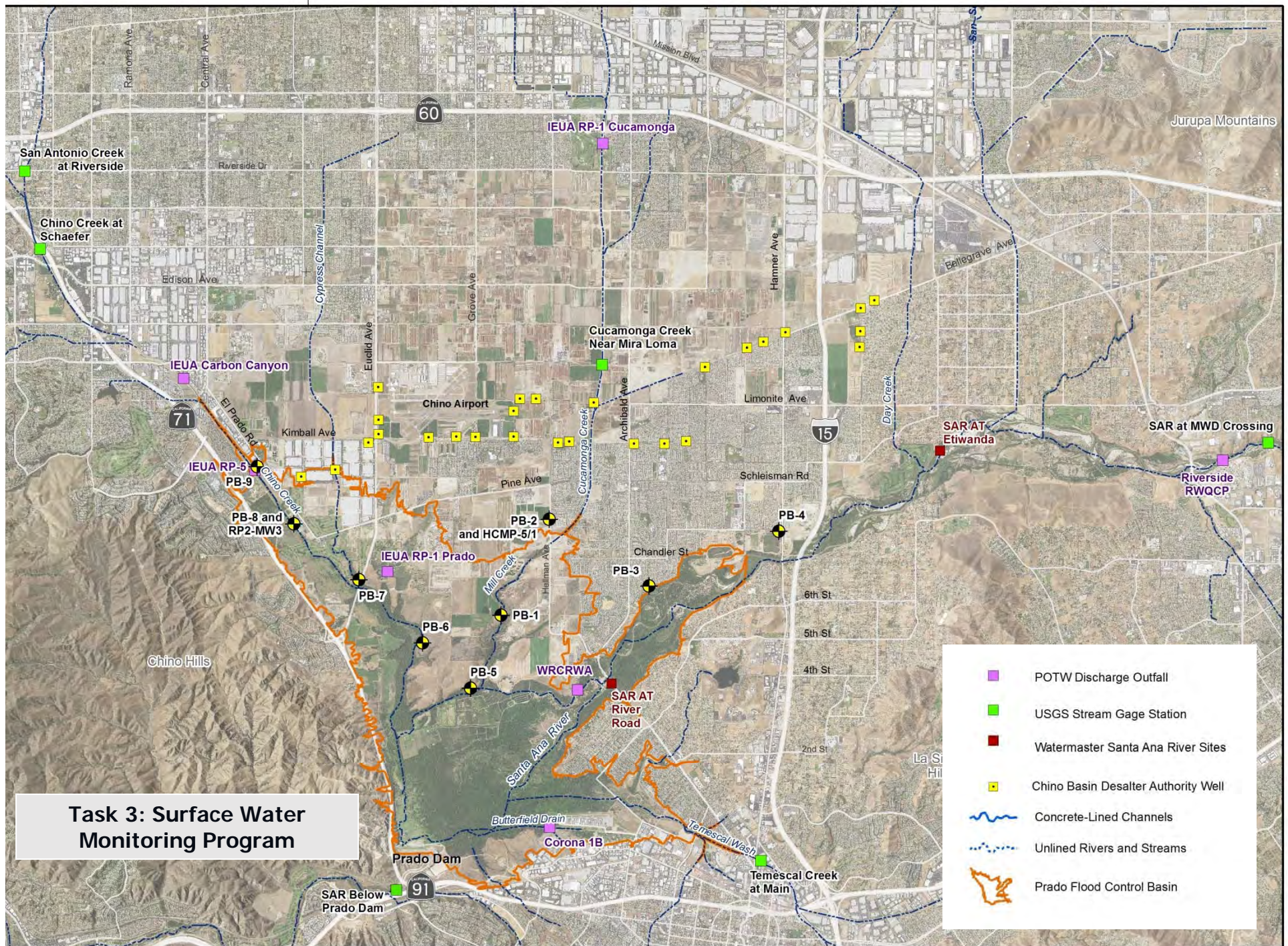
Analyte	MRL	Units	Analysis Method
Alkalinity in CaCO ₃ units	2	mg/L	SM2320B
Ammonia Nitrogen	0.05	mg/L	EPA 350.1
Bicarbonate as HCO ₃ <i>Calculated</i>	2	mg/L	SM2320B
Boron Total ICAP	0.05	mg/L	EPA 200.7
Calcium Total ICAP	1	mg/L	EPA 200.7
Carbonate as CO ₃ <i>Calculated</i>	2	mg/L	SM2320B
Chloride	1	mg/L	EPA 300.0
Flouride	0.05	mg/L	SM 4500-C
Hydroxide as OH <i>Calculated</i>	2	mg/L	SM2320B
Kjeldahl Nitrogen	0.2	mg/L	EPA 351.2
Magnesium Total ICAP	0.1	mg/L	EPA 200.7
Nitrate as Nitrogen by IC	0.1	mg/L	EPA 300.0
Nitrate as NO ₃ <i>Calculated</i>	0.44	mg/L	EPA 300.0
Nitrite as Nitrogen by IC	0.05	mg/L	EPA 300.0
Organic Nitrogen <i>Calculated</i>	0.2	mg/L	EPA 351.2
PH (H3=past HT not compliant)	0.1	Units	SM4500-HB
Potassium Total ICAP	1	mg/L	EPA 200.7
Sodium Total ICAP	1	mg/L	EPA 200.7
Specific Conductance, 25 C	2	umho/cm	SM2510B
Sulfate	0.5	mg/L	EPA 300.0
Silica	0.5	mg/L	EPA 200.7
Total Dissolved Solids (TDS)	10	mg/L	E160.1/SM2540C
Total Hardness as CaCO ₃ by ICP <i>Calculated</i>	3	mg/L	SM 2340B
Total Organic Carbon	0.3	mg/L	SM5310C/E415.3
Turbidity	0.05	NTU	EPA 180.1

MRL = Method Reporting Limit

Quarterly Parameters Fiscal Year 2016-17

Analyte	MRL	Units	Analysis Method
Alkalinity in CaCO ₃ units	2	mg/L	SM2320B
Ammonia Nitrogen	0.05	mg/L	EPA 350.1
Arsenic Total ICAP/MS	1	ug/L	EPA 200.8
Bicarbonate as HCO ₃ <i>Calculated</i>	2	mg/L	SM2320B
Boron Total ICAP	0.05	mg/L	EPA 200.7
Calcium Total ICAP	1	mg/L	EPA 200.7
Carbonate as CO ₃ <i>Calculated</i>	2	mg/L	SM2320B
Chloride	1	mg/L	EPA 300.0
Chromium Total ICAP/MS	1	ug/L	EPA 200.8
Flouride	0.05	mg/L	SM 4500-C
Hexavalent Chromium (Dissolved)	0.02	ug/L	EPA 218.6
Hydroxide as OH <i>Calculated</i>	2	mg/L	SM2320B
Kjeldahl Nitrogen	0.2	mg/L	EPA 351.2
Magnesium Total ICAP	0.1	mg/L	EPA 200.7
Nitrate as Nitrogen by IC	0.1	mg/L	EPA 300.0
Nitrate as NO ₃ <i>Calculated</i>	0.44	mg/L	EPA 300.0
Nitrite as Nitrogen by IC	0.05	mg/L	EPA 300.0
Organic Nitrogen <i>Calculated</i>	0.2	mg/L	EPA 351.2
Perchlorate	4	ug/L	EPA 314.0
PH (H3=past HT not compliant)	0.1	Units	SM4500-HB
Potassium Total ICAP	1	mg/L	EPA 200.7
Sodium Total ICAP	1	mg/L	EPA 200.7
Specific Conductance, 25 C	2	umho/cm	SM2510B
Sulfate	0.5	mg/L	EPA 300.0
Silica	0.5	mg/L	EPA 200.7
Total Dissolved Solids (TDS)	10	mg/L	E160.1/SM2540C
Total Hardness as CaCO ₃ by ICP <i>Calculated</i>	3	mg/L	SM 2340B
Total Organic Carbon	0.3	mg/L	SM5310C/E415.3
Turbidity	0.05	NTU	EPA 180.1
Volatile Organic Compounds		ug/L	EPA 524.2
1,2,3-Trichloropropane (Low Level)	0.005	ug/L	CASRL-524M-TCP

MRL = Method Reporting Limit

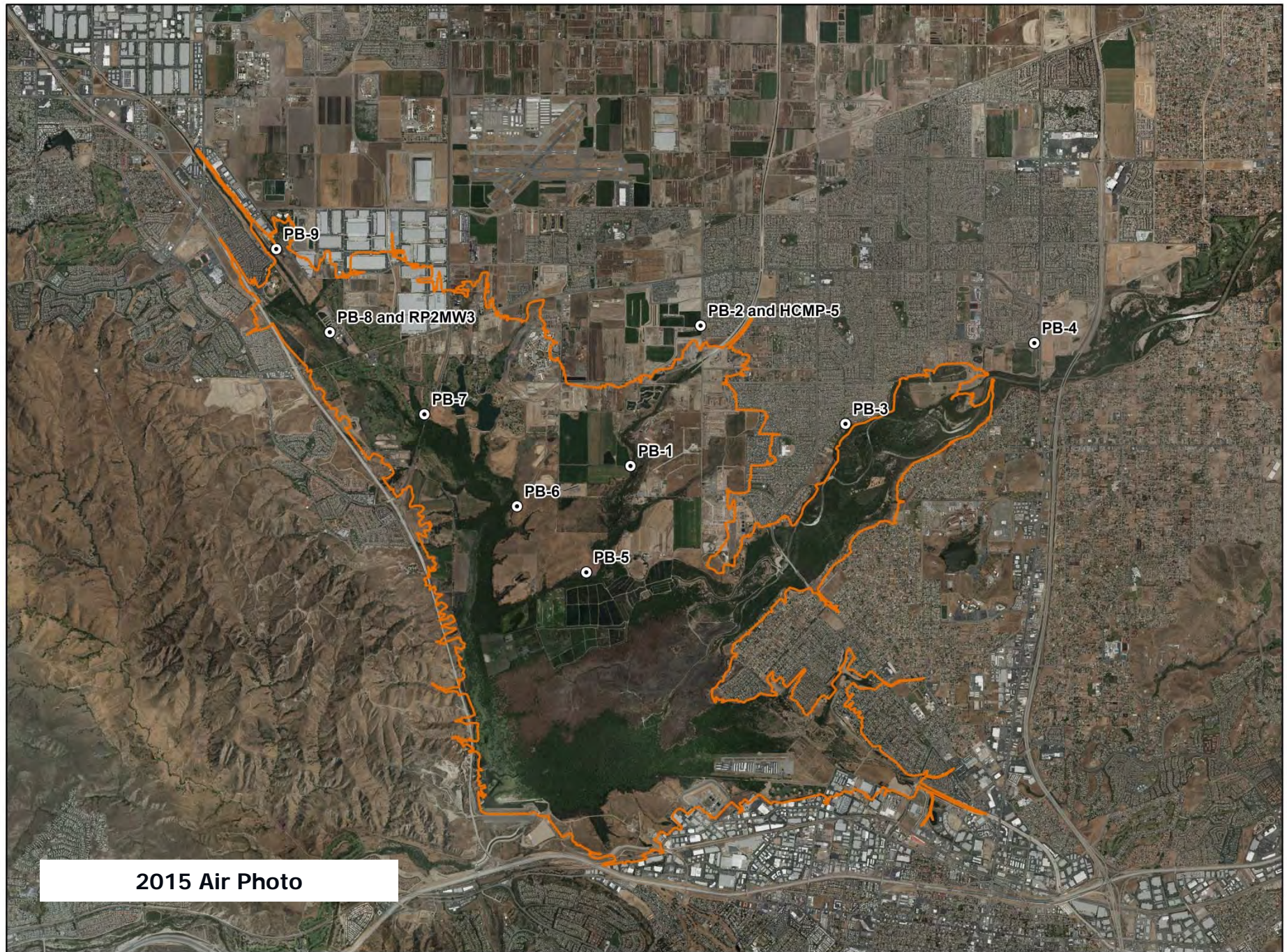


Task 4:

Riparian Habitat Monitoring Program

- Objective: Monitor the extent and quality of the riparian habitat
 - Pre- and post-Peace II implementation
 - Ongoing
- ▶ Two Types:
 - Regional Assessment (sub tasks 4.1 – 4.4)
 - Mapping and analysis using air photos
 - Landsat remote sensing data (NDVI)
 - Site-Specific Assessment (sub task 4.5)
 - Vegetation Surveys





2015 Air Photo



2015 Air Photo

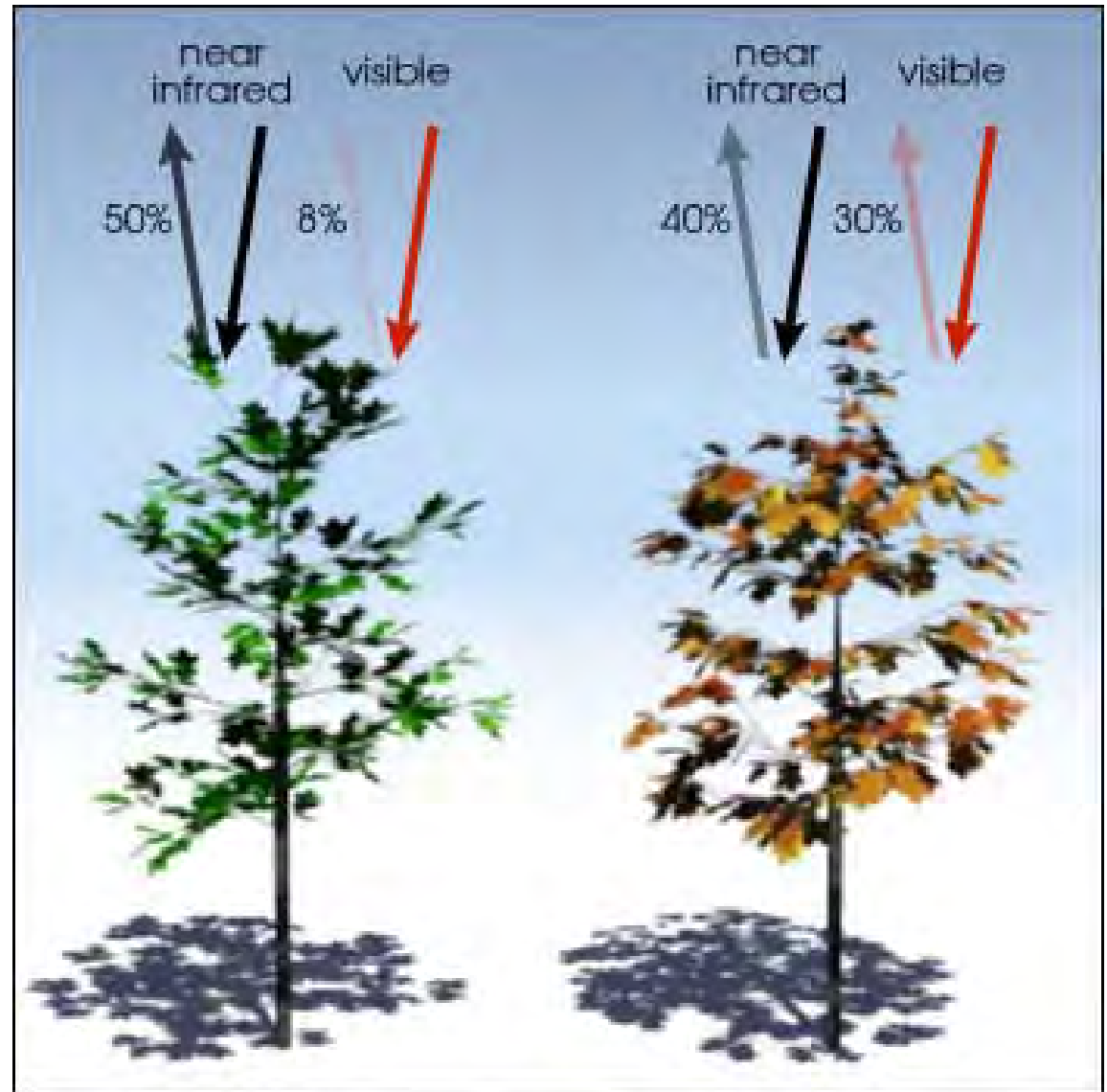
Normalized Difference Vegetation Index (NDVI)

Numerical Indicator – ratio of visible light and near infrared light.

Indication of plant health - greenness correlated with photosynthesis

$$NDVI = \frac{NIR - VIS}{NIR + VIS}$$

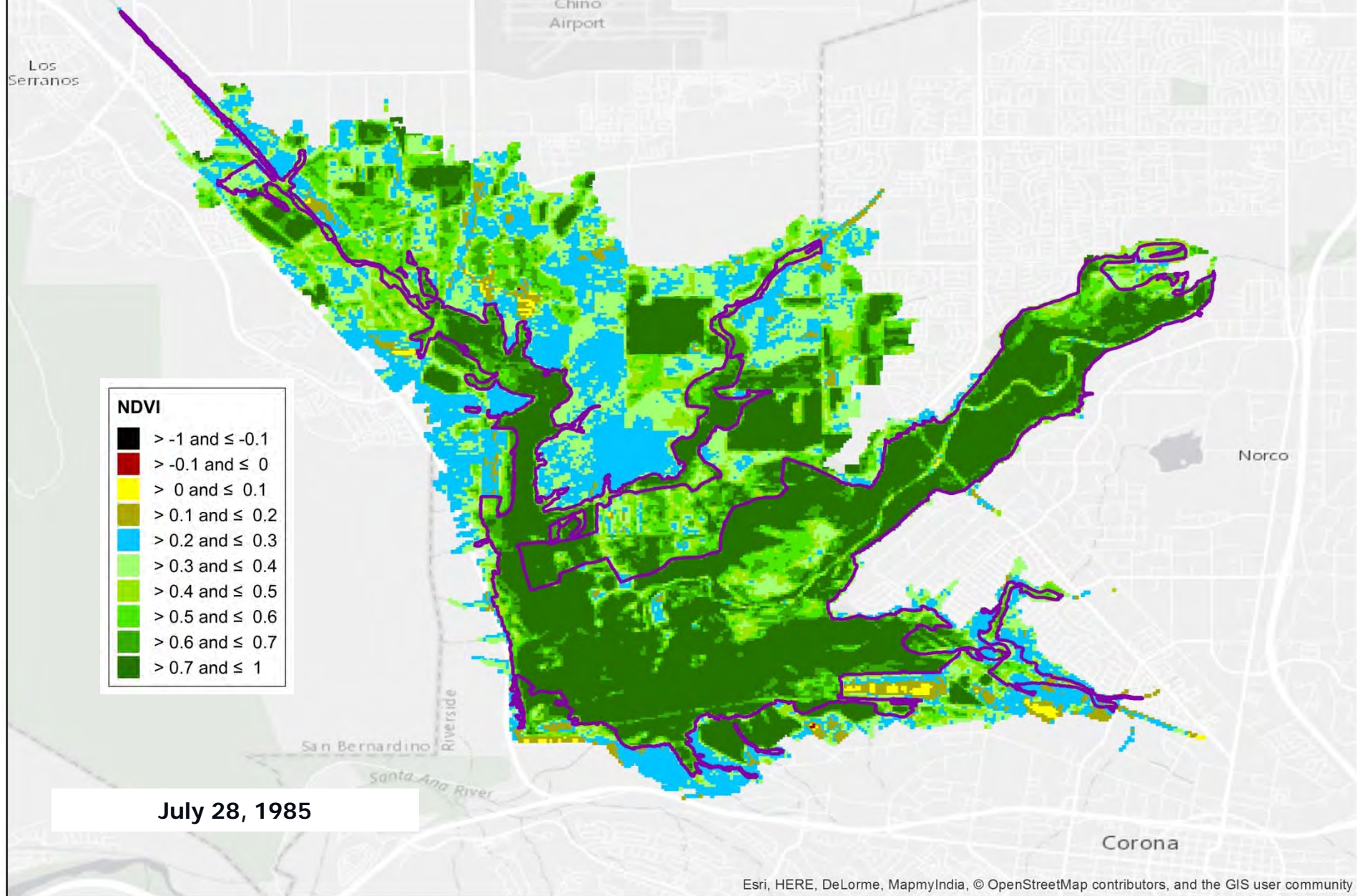
Image source:
http://earthobservatory.nasa.gov/Features/MeasuringVegetation/measuring_vegetation_2.php

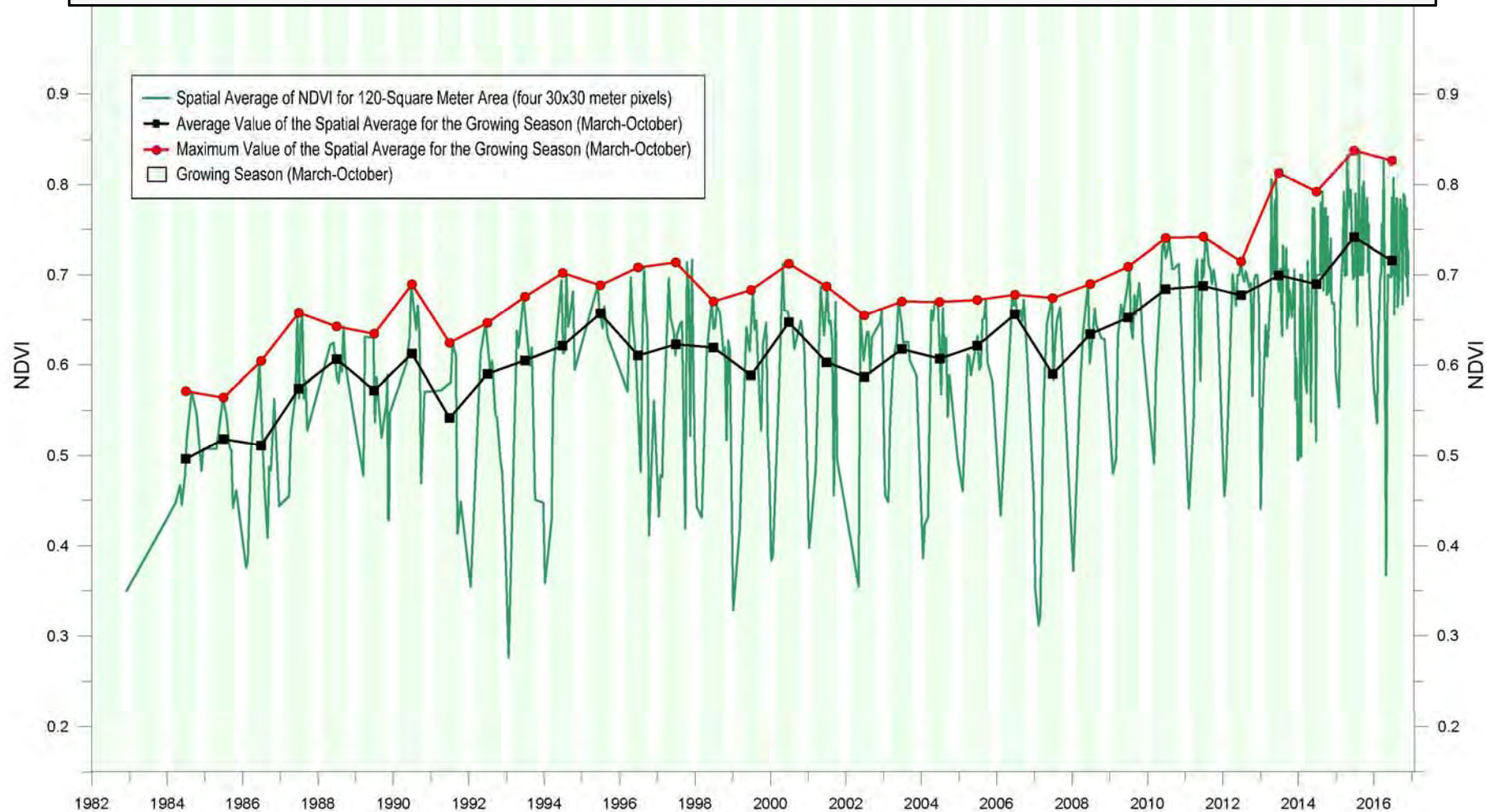
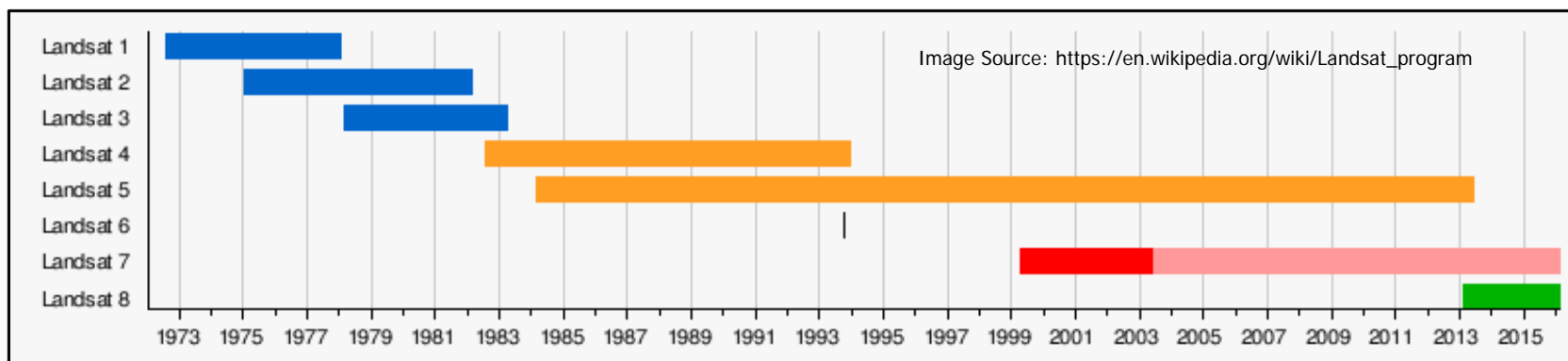


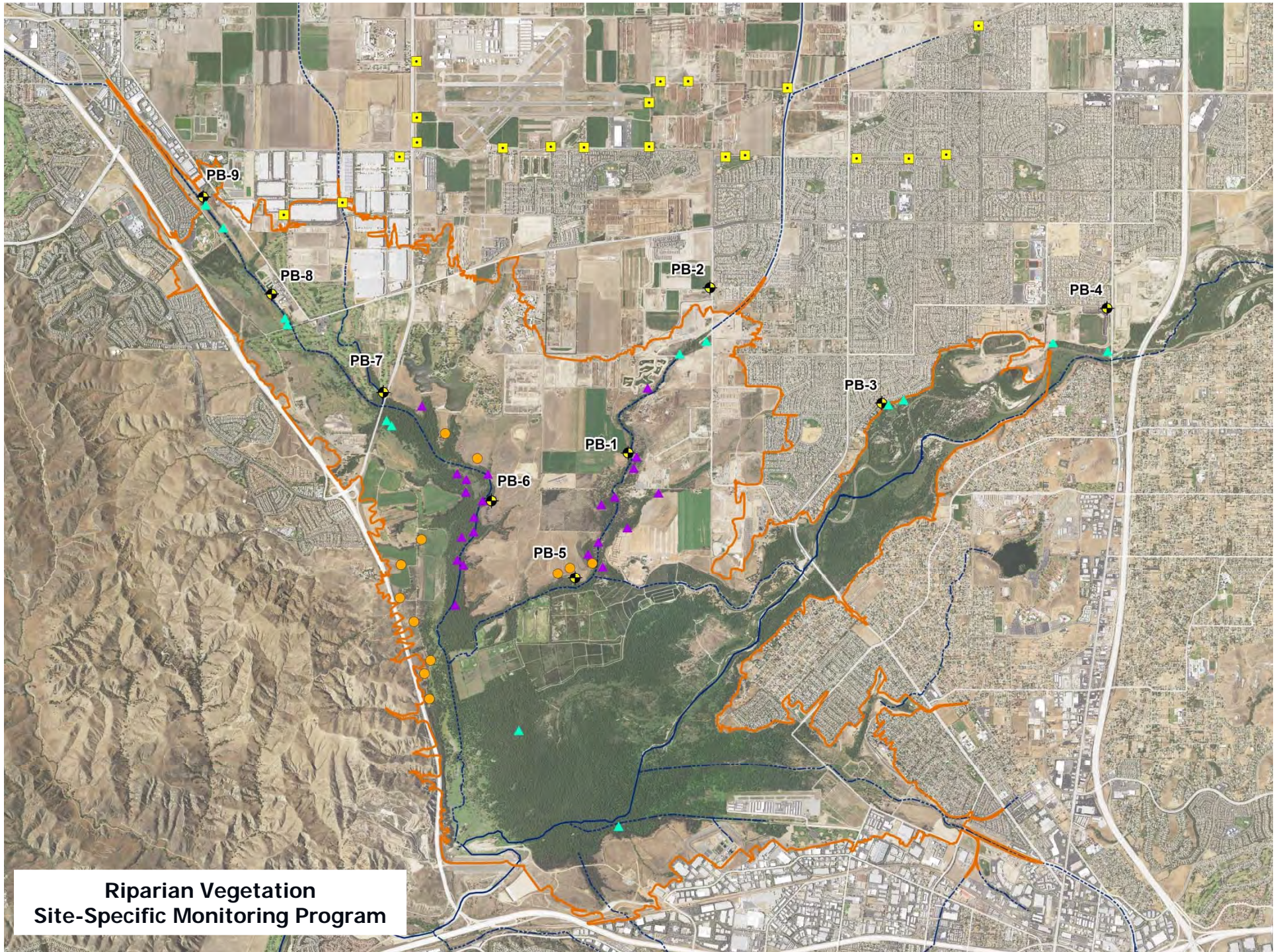
$$\frac{(0.50 - 0.08)}{(0.50 + 0.08)} = 0.72$$

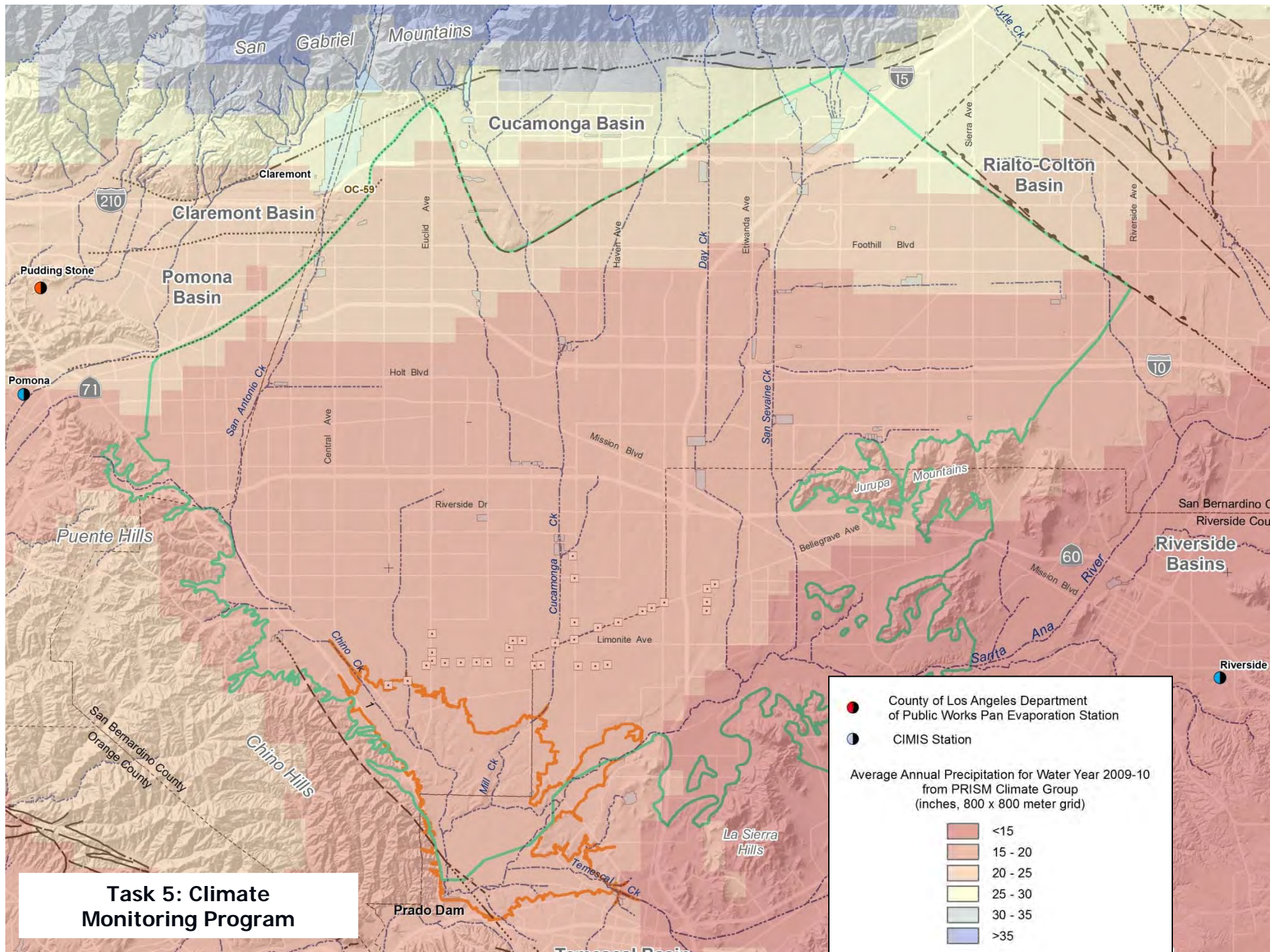
$$\frac{(0.4 - 0.30)}{(0.4 + 0.30)} = 0.14$$

NVDI in the Prado Basin Area









Task 6: Annual Reporting

- **Section 1** – Introduction
- **Section 2** – Monitoring and Modeling Activities
- **Section 3** – Result and Interpretations
- **Section 4** – Conclusions and Recommendations
- **Section 5** – Mitigation Measures
- **Section 6** – References
- **Appendix A** – Monitoring and Reporting Program for FY 18/19



Task 7:

Project Management and Administration

- Ad-Hoc Meetings (one meeting)
- Prepare Scope and Budget for FY 2018-19
- Project Administration and Financial Reporting



Next Steps

- April 4, 2017 – Committee comments on the PBHSC FY 2017–18 Budget
- April/May 2017 – PBHSC Budget for FY 2017–18 goes through Watermaster and IEUA budgeting processes for approval.
- April 21, 2017 – Draft 2016 Annual Report of the PBHSC
- April 25, 2017 – PBHSC Meeting – Draft 2016 Annual Report of the PBHSC



End

Questions ?



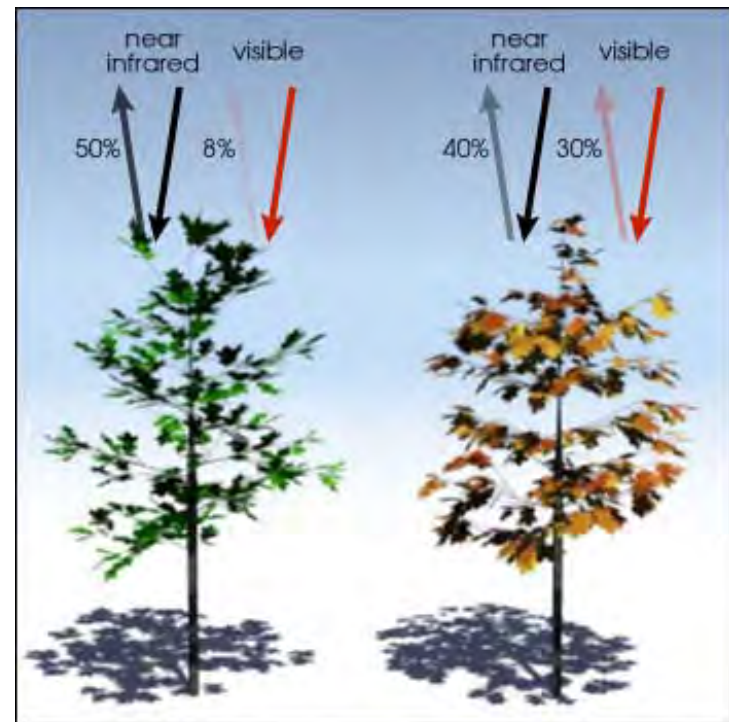
PBHSP- Riparian Habitat Monitoring Program

Regional Assessment - Remote Sensing Data

- Normalized Difference Vegetation Index (NDVI)
 - Analyzed from remote sensing measurements
 - Numerical indicator of ratio of visible light and near-infrared radiances.
- Green plants absorb solar radiation for photosynthesis.

$$NDVI = \frac{NIR - VIS}{NIR + VIS}$$

- Range from -1 to 1

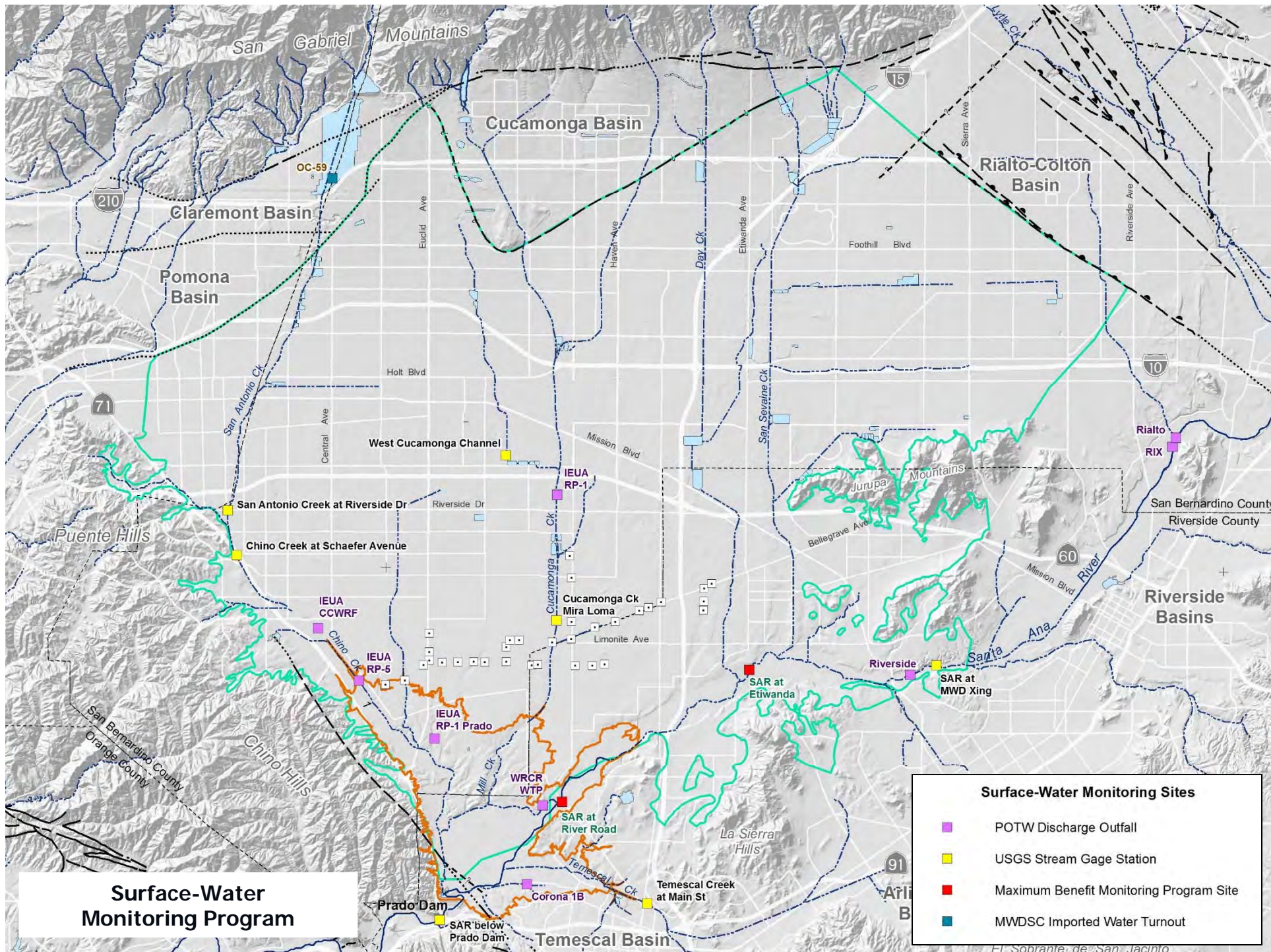


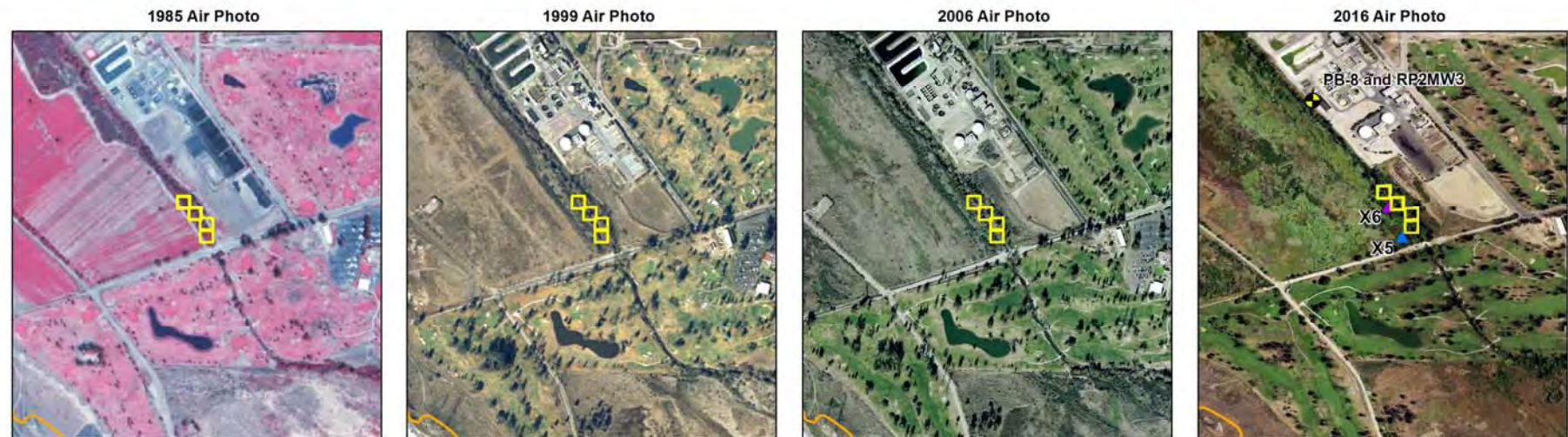
$$\frac{(0.50 - 0.08)}{(0.50 + 0.08)} = 0.72$$

$$\frac{(0.4 - 0.30)}{(0.4 + 0.30)} = 0.14$$

Image source:
http://earthobservatory.nasa.gov/Features/MeasuringVegetation/measuring_vegetation_2.php







Map Properties:

0 0.1 0.2 Miles

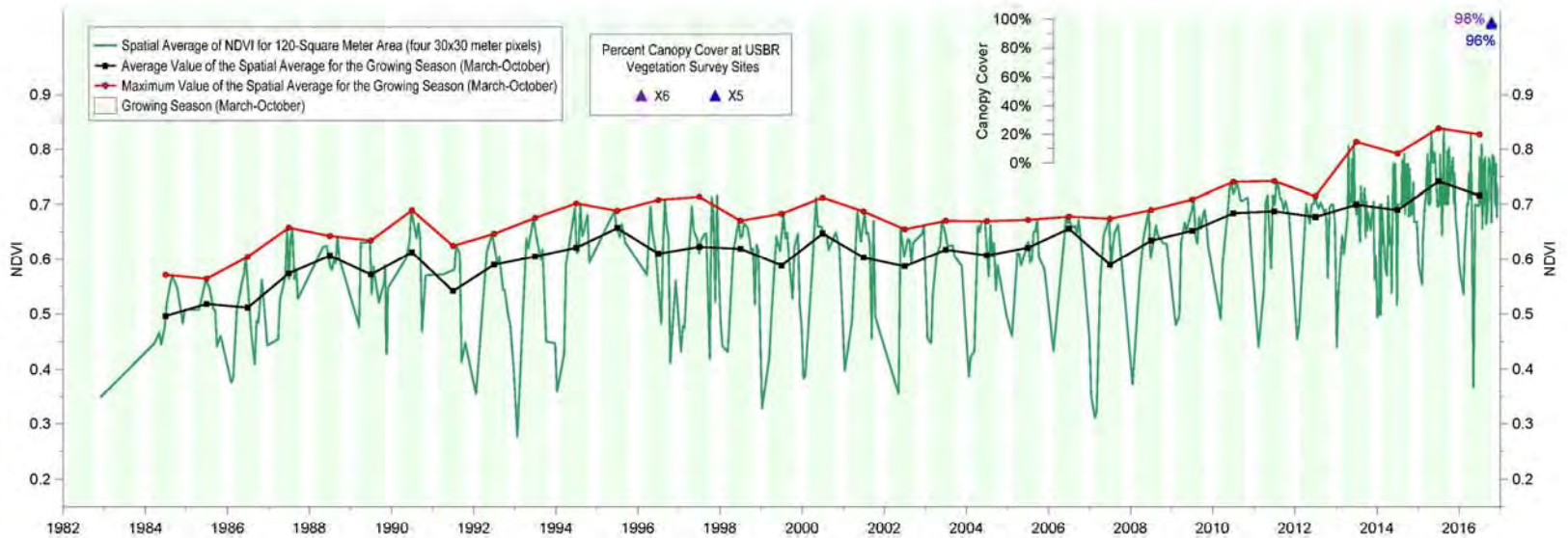
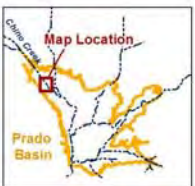
NDVI 30 x 30 Meter Pixel

USBR Vegetation Survey Site:

X6

X5

PBHSP Monitoring Well



Prepared by:



Author: VMM/RT
Date: 20170314
Filename: ndvi_time_series_Chino Creek 2.grf

Prado Basin Habitat
Sustainability Committee
2016 Annual Report



Time Series of NDVI and
Air Photos at Chino Creek 2 Site
1982 to 2016

Figure 3-6