

MEMO

TO: Gateway Water Management Authority

FROM: Craftwater Engineering, Inc.

SUBJECT: Gateway Area Pathfinding Phase 2 Stormwater Project Considerations

DATE: October 2024

This document (1) puts into context a process of project evaluation that was begun in Phase 1 of the Gateway Area Pathfinding (GAP) Study funded through the Safe, Clean Water Program (SCWP), (2) sheds light on the various options available to the participating agencies, and (3) points to the next generation of projects to potentially pursue. Initial deliverables in Phase 1 and 2 of this effort provided insight to help understand the past, showing how existing or under-construction projects contribute to overall watershed goals; the present, providing context to help weigh project options in Years 4 and 5 of the SCWP funding rounds (Funding Years 2023/24 and 2024/25 respectively); and the future, pointing to future opportunities and contextualizing these using a range of metrics to help guide project developers and decision makers to the most impactful projects and areas of the Lower San Gabriel River and Lower Los Angeles River Watershed Areas. This memo focuses on the future and considerations in taking these next steps. Key deliverables are as follows:

- **Stormwater Project Considerations** – This memo presents key data, assumptions, and summaries of the current state of these watersheds and what may be the next great projects to pursue.
- **Filterable Project Workbook** – A simple, filterable worksheet has been provided as a snapshot of all of the data contained in the Memo to help evaluate project options in a tabular manner.
- **Updated Project Opportunity Dashboard** – Projects, metrics, and locational information are aided by spatial and visual representation that provides the opportunity for exploration and filtering to explore the next great projects and how they relate to those already in place or slated to be soon.

These deliverables together can provide a wealth of information to evaluate potential project benefits pursuant to overall watershed goals. As planning is an ever-evolving process, the information contained within these resources has the potential to be adapted further to respond to evolving regional emphases, needs, goals, and challenges. **Funding for this study has been provided in full from the Los Angeles County Flood Control District's Safe, Clean Water Program.**



I.0 STORMWATER PROJECT CONSIDERATIONS OVERVIEW

This section provides a broad overview of the Stormwater Project Considerations projects, metrics, evaluations methods, assumptions, and project benefits—both realized and potential. Later sections provide more focused details, summary, and considerations by key assessment areas to highlight differences across the watershed that pertain to potential projects, treatment area coverage, planning, and alternative next projects and project types to pursue.

A few notes of definition about the projects included in these assessments and how they are presented are provided here for clarity:

1. **Stormwater Planning Baseline projects include opportunities that are either constructed, under construction, funded for design and/or construction, or those most recently considered for funding during Year 5 of the SCWP submissions.** These were set as the baseline as they are either already in operation or the highest probability opportunities to be operational in the near term. This baseline provides a means to assess all other opportunities to ensure that their benefits are evaluated as a net value that might be delivered to the watersheds given that baseline projects are ultimately implemented.
2. **The Next Project Opportunities assessed represent additional regional project opportunities that could be pursued and have been evaluated herein to assist in those decision-making projects.** These include opportunities on public parcels adjacent to storm drains for maximum runoff capture potential. These locations as potential projects have not yet been confirmed nor coordinated with any public landowners to date. They have simply been evaluated to determine prospective locations where impactful projects could contribute to overall water quality goals.
3. **Project buildout scenarios have been evaluated by adding a percentage of these Next Project Opportunities (by count) to the Stormwater Planning Baseline to highlight how benefits may be achieved in the future.** These scenarios do not account for cost or funding realities and are meant to illuminate overall project system potential in terms of water quality benefits that might be achieved. Future phases of this work will look more closely at planning around funding schedules and evaluating those types of decisions if desired.

I.1 Stormwater Planning Baseline

Before evaluating the next great stormwater projects, a baseline was set to include all existing projects, projects nearing construction, SCWP-funded projects, and those considered in Year 5 of the Program. These high-probability projects are either in the ground or have momentum that will make them likely to be constructed. These baseline projects represent past and present pursuits, and they have been “locked in” to the system of analysis as an evaluative starting point. By locking them into the modeling assessment system, additional potential opportunities were then evaluated in this context to account for potential interactions with the existing and high-likelihood baseline projects. This provides a more realistic assessment of their potential future benefits as net contributions to watershed metrics and will make decision-making more system realistic. Baseline projects are shown in the map in **Figure 1-1** (and in **Figure 1-3** with Additional Project Opportunities) and listed in **Table 1-1** by assessment area for reference.

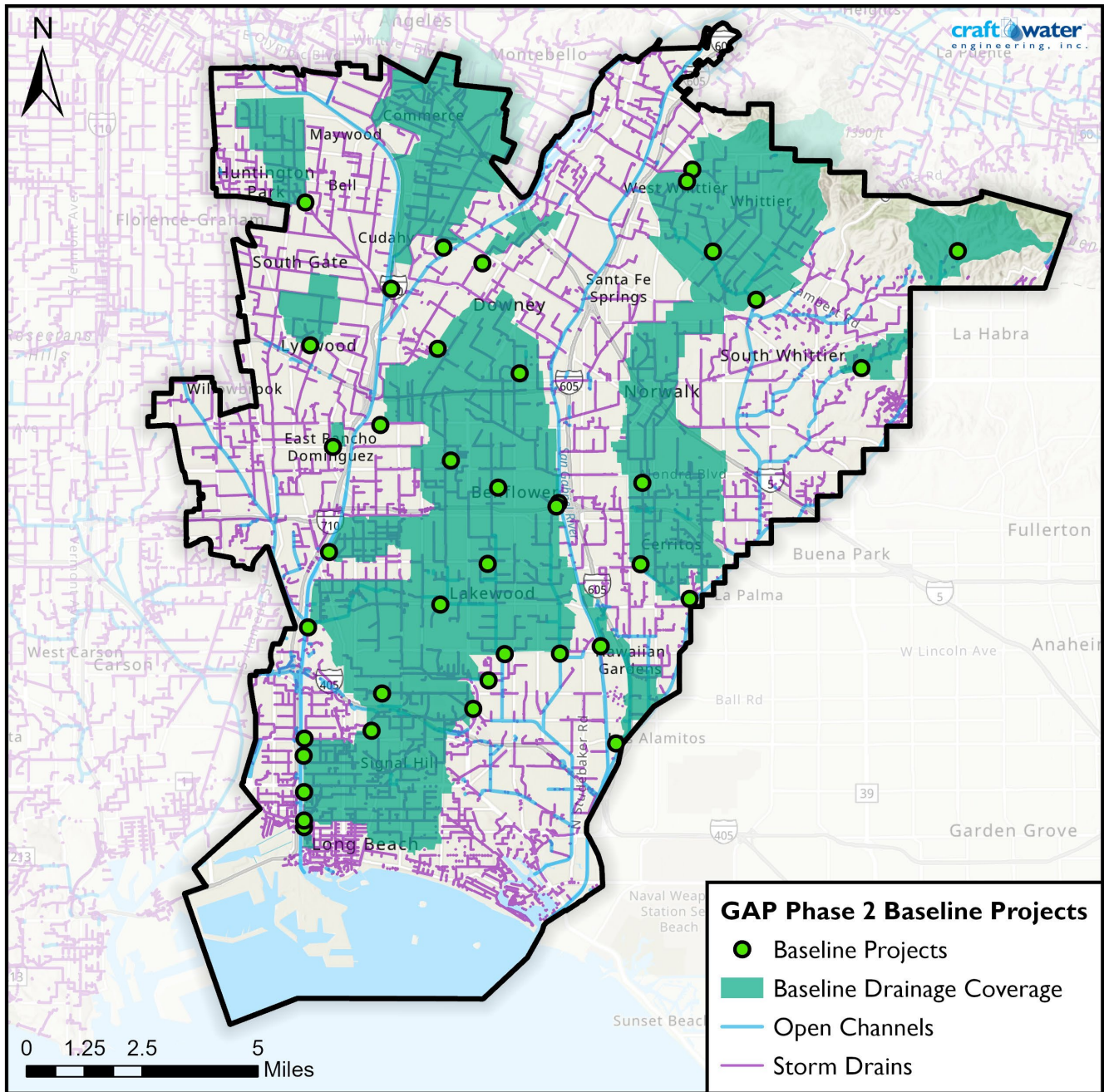


Figure 1-1. Map of all Baseline Projects and drainage area coverage

Table 1-1. Baseline Projects included, by assessment area

Assessment Area	Baseline Project	Assessment Area	Baseline Project
Coyote Creek	Adventure Park Multi Benefit Stormwater Capture Project	Lower L. A. River	Compton Blvd Et. Al. Project
Coyote Creek	Artesia Park Stormwater Capture Project	Lower L. A. River	DeForest Park
Coyote Creek	Cerritos Sports Complex	Lower L. A. River	Dominguez Gap
Coyote Creek	El Dorado Regional Project	Lower L. A. River	Furman Park Stormwater Capture and Infiltration Project
Coyote Creek	Hermosillo Park	Lower L. A. River	John Anson Ford Park Infiltration Cistern
Coyote Creek	La Mirada Creek Park Project	Lower L. A. River	Long Beach Municipal Urban Stormwater Treatment (LB MUST) - Phase 1
Coyote Creek	Sorensen Park Multi-Benefit Stormwater Capture Project (Coyote Creek)	Lower L. A. River	Long Beach MUST Phase 2 - LA02 Diversion
Coyote Creek	Stormwater Treatment and Reuse System (STAR System) Hacienda Park	Lower L. A. River	Long Beach MUST Phase 2 - LA03 Diversion
Coyote Creek	York Field Stormwater Capture Project	Lower L. A. River	Long Beach MUST Phase 2 - LAF14 Diversion
Los Cerritos Channel	Airport Water Capture	Lower L. A. River	Long Beach MUST Phase 2 - SD06 Diversion
Los Cerritos Channel	Bellflower Simms Park Stormwater Capture Project (Construction)	Lower L. A. River	Lynwood Park Stormwater Capture Project
Los Cerritos Channel	Bolivar Park	Lower L. A. River	Salt Lake Park Infiltration Cistern
Los Cerritos Channel	Caruthers Park (LCC)	Lower L. A. River	Spane Park
Los Cerritos Channel	Heartwell Park at Clark Channel Stormwater Capture Project	Lower L. A. River	Urban Orchard Project
Los Cerritos Channel	Heartwell Park at Palo Verde Channel Stormwater Capture Project	Lower L. A. River	Willow Springs Park Wetland Restoration and Expansion Project
Los Cerritos Channel	Mayfair Park	San Gabriel River	Caruthers Park (SGR)
Los Cerritos Channel	Progress Park	San Gabriel River	Independence Park
Los Cerritos Channel	Reservoir Park	San Gabriel River	Lakewood Equestrian Center
Los Cerritos Channel	Skylinks Golf Course at Wardlow Stormwater Capture Project	San Gabriel River	Sorensen Park Multi-Benefit Stormwater Capture Project (SGR)
Lower L. A. River	Apollo Park Stormwater Capture Project		

1.2 Next Project Opportunity Evaluation

Against the context of the baseline group of projects, the full inventory of additional project opportunities that were identified during the GAP study were assessed to determine what their potential benefits would be if they were added to the overall watershed stormwater management system. This evaluation included an assessment of both regional projects and distributed surface projects, detailed below. All project evaluations were performed using the Loading Simulation Program in C++ (LSPC) baseline hydrology and water quality model from the most recent Gateway Watershed Management Plans (WMP; 2021) over the years these models were calibrated (WY'10 to WY'19) to produce long-term average annual estimates of project performance.

1.2.1 Additional Regional Project Opportunities

Regional projects that were identified during the GAP study were modeled according to their position relative to the baseline group of projects described above. These projects were modeled across a range of diversion rates and storage sizes up to initial estimates of feasible project footprints to estimate a maximum cost-effective sizing that would be recommended if they were implemented alongside the other baseline projects. Potential regional projects were all modeled as filtration projects to provide initial benefits estimates. Infiltration rates at project sites are highly uncertain, not well-predicted by available datasets, and require geotechnical investigation to accurately estimate. Project modeling and performance estimates are highly sensitive to this key parameter, so any assumptions may be highly influential on final benefits estimates. By modeling all additional projects as filtration BMPs, this levels the playing field and evaluates them in terms of the site capture potential to point to the best sites for projects, and once selected and advanced for Feasibility Studies, infiltration options can be more closely assessed if warranted. Potential regional projects evaluated are summarized below by assessment area (discussed more below) in **Table 1-2** and shown spatially in **Figure 1-3**.

1.2.2 Maintenance Friendly Regional Projects

As more and more projects are moving from design into construction and operation, the maintenance of these projects and the challenges associated with that are coming into focus. To acknowledge this and begin to assess regional project opportunities with this in mind from the start, the additional regional project opportunities were analyzed to identify a subset of projects that might be considered more maintenance friendly. This designation was made based on an assessment of sediment loading and potential capture by these projects to identify those that would require at a **maximum two pretreatment cleanouts per year on average**. This analysis assessed captured sediment loads against prevailing pretreatment device efficiencies, sediment sump size, and a typical stormwater sediment density to determine how often a typical pretreatment device (**Figure 1-2**) would fill up and need to be emptied given estimated pollutant loading. Analysis was not restricted to these maintenance friendly projects, but project developers may want to begin thinking about this type of eventual operational reality when planning

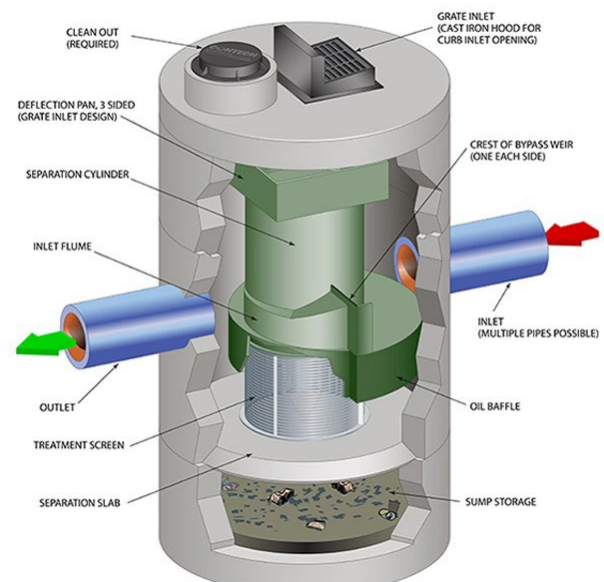


Figure 1-2. Example pretreatment device (Source = Stormwater Solution Source, LLC)

and selecting projects from the start so that the realized stormwater system is manageable by design. **NOTE:** Baseline projects were defined as maintenance-friendly in accompanying datasets given their prior selection by project developers and were not analyzed for this designation since they are already likely to be implemented.

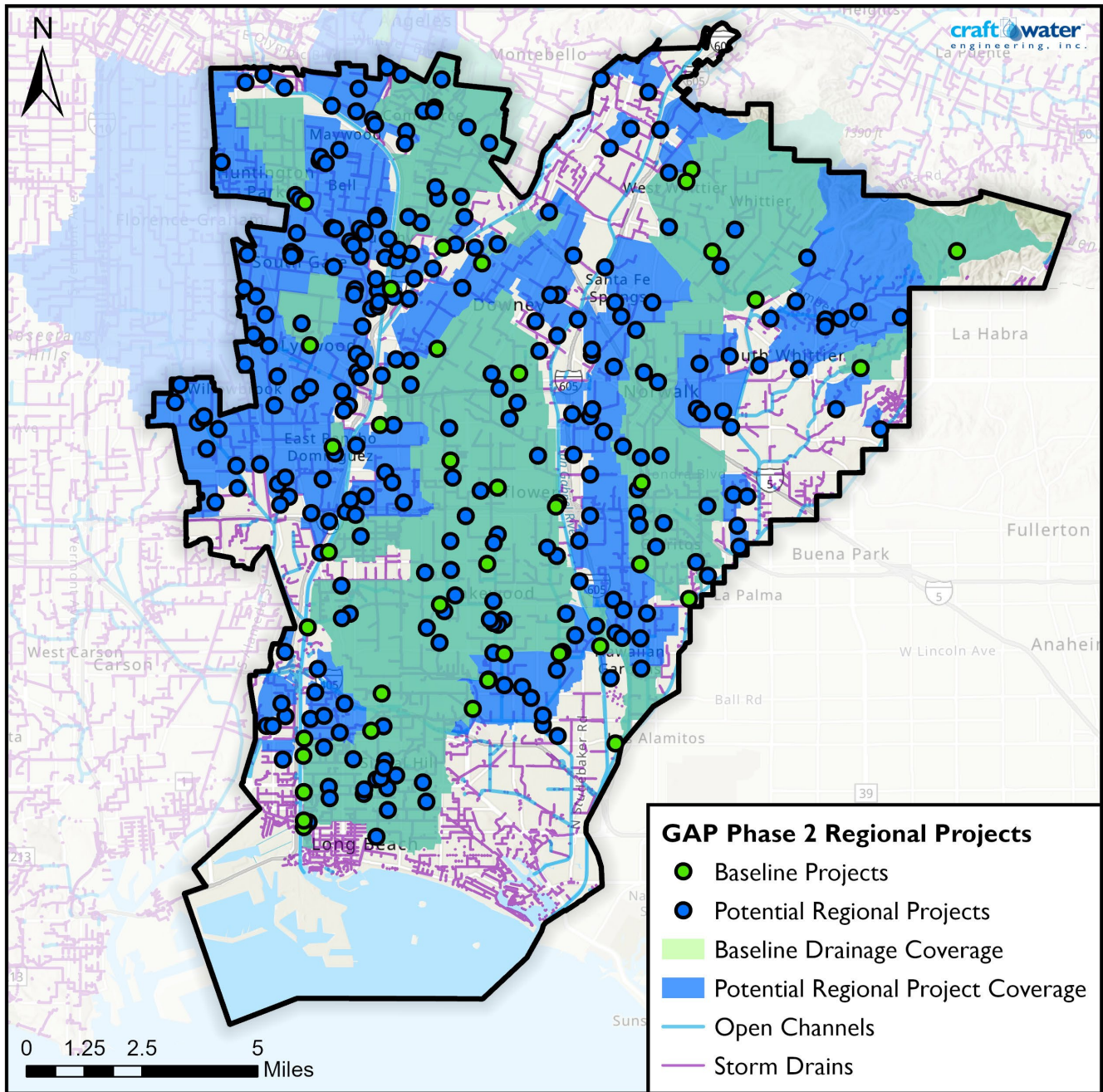


Figure 1-3. Map of all Regional Project Opportunities included in the modeling evaluation

Table 1-2. Number of Additional Regional Project Opportunities by Assessment Area

Assessment Area	# of Additional Regional Projects Evaluated	Assessment Area	# of Additional Regional Projects Evaluated
Coyote Creek	45	Lower L. A. River	156
Los Cerritos Channel	32	San Gabriel River (mainstem)	36

1.2.3 Distributed Project Opportunities

In seeking to fill in the “gaps” in the study watersheds, potential distributed project footprints were identified in initial phases of the study. These distributed project opportunities were further assessed during this phase, using GIS analysis to delineate potential catch basin drainage areas, estimate a cost-effective footprint for distributed projects that might treat runoff in each of these catch basin drainage areas, and provide a magnitude of benefits that might be realized if they were implemented. Distributed opportunities offer a multi-benefit way to treat runoff in areas of the watershed where regional project opportunities may not exist on public parcels or may be more challenging to implement due to engineering constraints. Pursuant to this reality, ***distributed projects treating runoff outside of the drainage areas that are or might be managed by the baseline projects or additional regional project opportunities have been highlighted and included in potential benefits estimates and planning considerations.*** This information is useful because it highlights areas of the watersheds where these types of projects can offer a full net benefit to the watersheds with no potential interactions with regional project opportunities. Bundling projects in these areas and along associated roadway corridors could yield impactful watershed benefits that may be difficult to achieve with regional project options alone. ***If pursued, these distributed project options have the potential to treat an estimated 30,000+ acres of the study watershed areas outside of evaluated regional project drainage areas, which includes a total of 20,000+ acres of impervious surfaces.*** Areas where potential distributed surface capture projects could fill in watershed runoff treatment gaps and have been evaluated herein are highlighted below in ***Figure 1-4.***

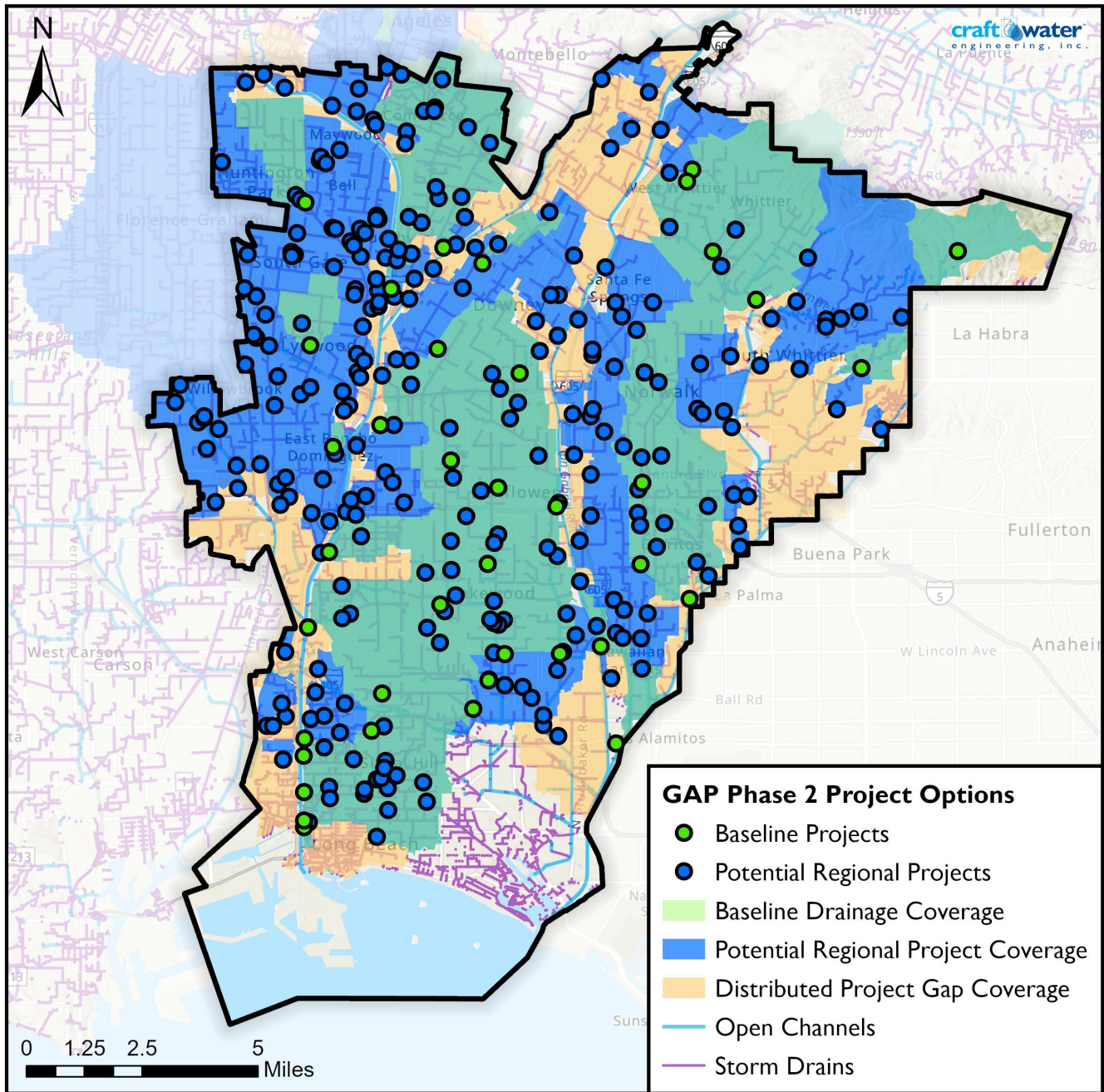


Figure 1-4. Map of all regional and distributed projects and drainage area coverage included in the evaluation

1.3 Project Performance Metrics

Stormwater planning is aided by developing an understanding of what it means to treat runoff and deliver improved water quality in a given watershed, establishing metrics for success that can be tracked to highlight progress towards cleaner water goals and also to evaluate options to focus project development efforts.

Towards this, baseline projects and the next project opportunities were all evaluated according to four key metrics. These metrics are summarized as follows with some detail on their assumptions and interpretation:



Average Annual Wet-Day Zinc Reduction: Towards the goal of providing cleaner water, projects were evaluated to determine the average annual Zinc load reduced on wet days in these watersheds. This evaluation was done using the most recent WMP baseline models over the long-term period covering Water Years 2010 to 2019 and assessed zinc as it has been identified as the limiting pollutant in these areas. Wet days were defined based on TMDL-specific flow conditions and BMP contributions to load reductions on these days were summed over the 10-year period and averaged to provide an average estimate of each projects benefits as well as for the watershed as a whole. ***This metric directly measures the magnitude of contribution of projects towards providing cleaner water.***



Structural BMP Capacity: This is the first of three compliance equivalency metrics provided in the most recent WMP updates (2021) to track progress towards an overall goal. Project storage volume can be summed easily, and this metric offers a glimpse at how much “work” had been done to date in the watershed. However, this surrogate measure does not discern between projects that might treat runoff from more pollutant-heavy areas of the watershed and should be viewed as a high-level indicator of watershed program action that is not necessarily tied directly to water quality outcomes.



Water Year 2015 Runoff Managed: This is the second of the compliance equivalency metrics provided in the most recent WMP updates (2021) and reflects an intermediate tracking metric evaluated over a single year period through modeling. Water Year 2015 was chosen in the WMPs because it represents an average water year in terms of rainfall and runoff production. For this metric, runoff managed by baseline and potential BMPs was summed over Water Year 2015 and reported in acre-feet. While this metric does not directly measure differences in water quality treated, it does capture more of the intent of stormwater management, to capture and treat runoff, and also accounts for some of the baseline loading dynamics a BMP experiences over a given year, relating that to overall BMP performance.



Impervious Area Managed: This is the last of the compliance equivalency metrics provided in the recent WMP updates (2021) and demonstrates the coverage of projects across the watershed. This metric indicates how much of the watershed impervious areas may be managed by baseline or potential BMPs. Impervious areas are generally the largest sources of runoff and non-point source pollution, so managing runoff from more of these areas is beneficial. The degree that these areas are effectively managed by BMPs, however, is difficult to fully contextualize and direct estimates of pollutant reduction may be a more effective metric to emphasize.

Each of these metrics are valuable to pursue in developing new projects and tracking progress, but differences between them are typical as they do not necessarily scale in the same way subject to drainage area differences in runoff production and pollutant loading. **NOTE:** Projects were not yet evaluated against potential SCWP scoring because scoring methods, scales, and metrics are currently undergoing review with potential changes likely. Additionally, scores are very sensitive to assumptions made at the planning stages of project configuration that are not likely to reflect future project development details. Because of this uncertainty, exploration of upcoming watershed efforts can focus on projects that rank highly according to the metrics above until more project-specific definitions can be developed.

1.4 Assessment Areas and Targets

The watershed areas covered in the GAP Study, the Lower LA River and Lower San Gabriel River, were broken into four distinct assessment areas for target setting and planning considerations (**Figure 1-5**). These assessment areas reflect the same divisions used in recent WMP updates (2021) and consist of the Lower LA River as a whole and the subareas of Coyote Creek, Los Cerritos Channel, and the San Gabriel River mainstem in the Lower San Gabriel River area. Metrics have been assessed according to these delineations and targets for each of these metrics corresponding to the assessment areas are summarized below in **Table 1-2**. Additionally, planning considerations in this memo are broken down by assessment area to highlight differences between these areas that might benefit from slightly different strategies depending on watershed conditions and needs.

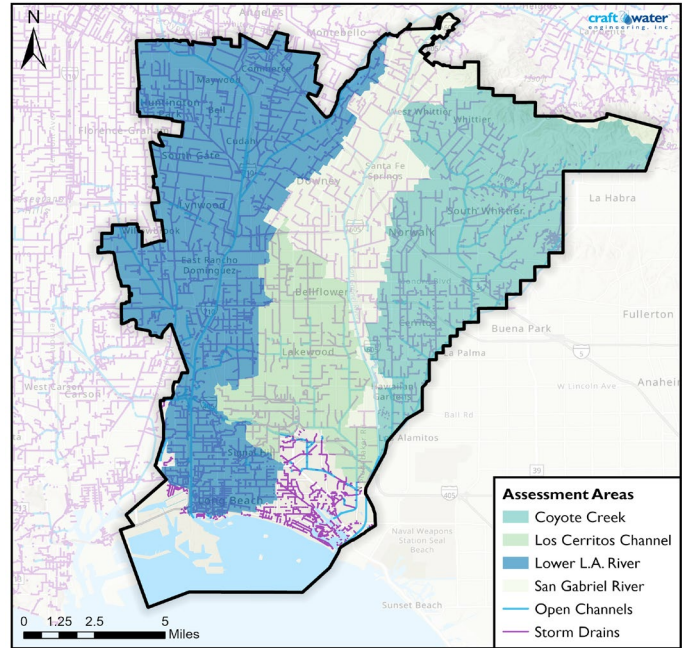


Figure 1-5. Map of assessment areas within study area

Table 1-3. Summary of project performance metric targets.

Assessment Area	Average Annual Wet-Day Zinc Reduction (lbs/yr)	Structural BMP Capacity (ac-ft)	Water Year 2015 Runoff Volume Managed (ac-ft)	Impervious Area Managed (acres)
Lower L.A. River	5,514	347	6,633	14,627
Coyote Creek	5,962	208	6,276	13,021
Los Cerritos Channel	2,719	245	3,625	7,751
Lower San Gabriel River (mainstem)	1,153	165	5,478	9,130

Targets for the three WMP equivalency metrics were adapted from workbooks developed for that effort and represent the most conservative values presented for the watersheds to meet the Bacteria Final Milestones in 2036 for the Lower San Gabriel River watershed and 2037 for the Lower LA River. Zinc reduction targets were developed by calculating the wet-day zinc reduction totals needed to be reduced to bring assessment area outflow concentrations down to water quality objective (WQOs) concentrations from the WMPs for 90% of all wet-days over the long-term 10-year period. These Zinc WQOs are summarized in **Table 1-4**.

Table 1-4. Water Quality Objective concentrations for Zinc in the study assessment areas

Lower LA River	Coyote Creek	Los Cerritos Channel	Lower San Gabriel River
159 µg/L	192.5 µg/L	95.6 µg/L	192.5 µg/L

1.5 Baseline Watershed Progress

Before considering the next best projects for these watersheds, it is good to understand progress to date provided by the baseline group of projects included in the analysis. The overall contributions of these projects towards each of the four project performance metrics were assessed through modeling and drainage area analysis that takes into context any project or drainage area nesting and provides the expected net benefits. These benefits were then normalized to each assessment areas’ targets for a given metric to show the percentage of the target that would be (or soon will be) met by these existing or high-probability projects to date. These are summarized below in **Figure 1-6**.

One important thing to note from these plots is that progress is not equivalent for each assessment area across metrics, with some metrics indicating greater progress than others. Additionally, while comparative progress between assessment areas is generally similar among metrics (ie, one assessment area showing greater progress than another assessment area), it is not universally true (see Structural BMP Capacity, where Coyote Creek shows greater progress than Los Cerritos Channel while this does not hold true for other metrics). These discrepancies likely harken to differences in watershed pollutant loading and overall project efficiency. **Focusing on pollutant reduction metrics and progress may be a better strategy given that they directly measure the overall goal of many of these projects, which is to contribute to improved water quality for these watersheds.**

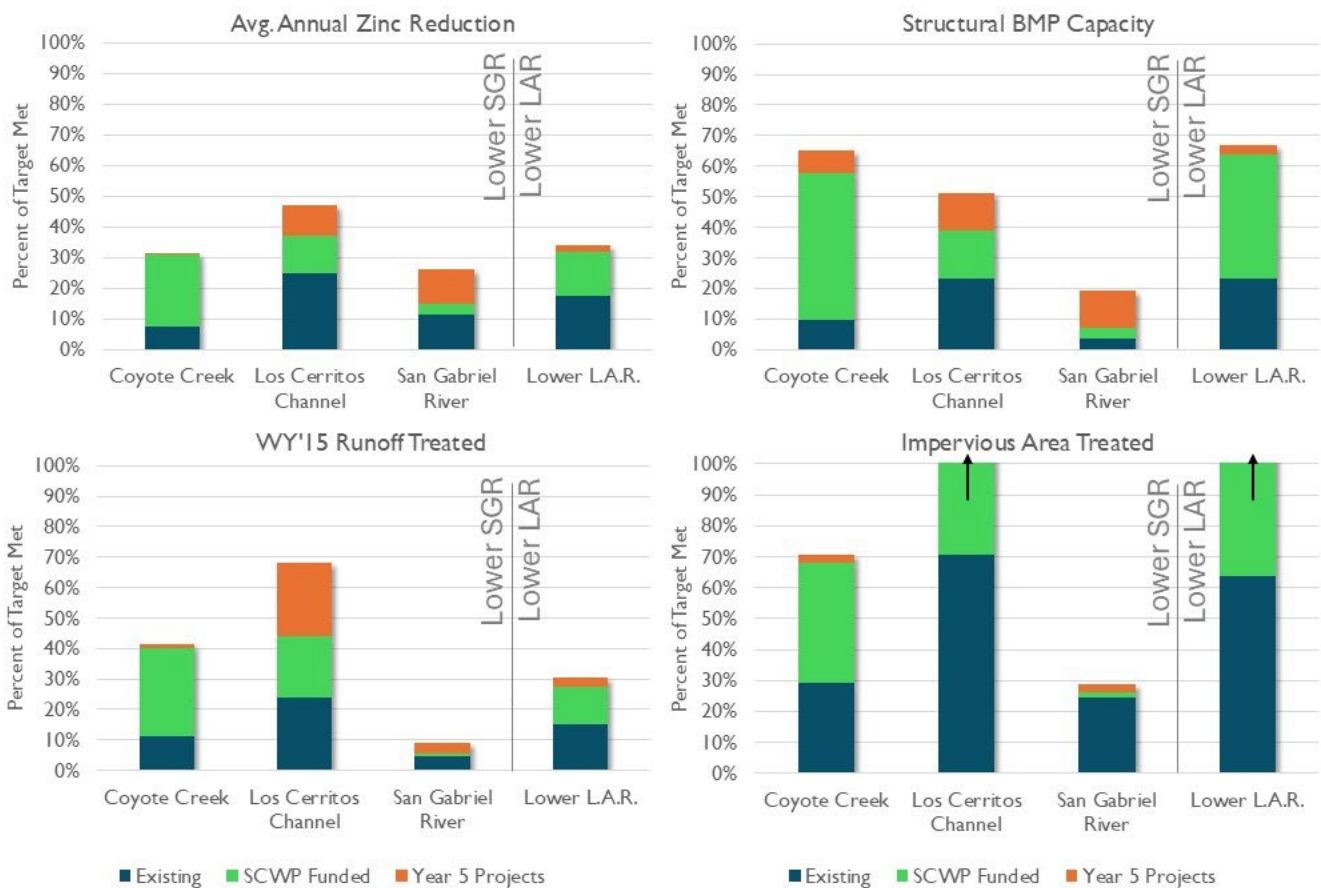


Figure 1-6. Baseline project progress towards each of the evaluated metrics

1.6 Prioritizing Next Steps

Beyond the baseline group of projects, decision-making around the next great projects to pursue in these watersheds can be informed by the initial considerations provided for each assessment area in later sections of this memo and in working with the provided worksheet and accompanying project dashboard. Pollutant reduction targets can be met in most assessment areas over time, and this is possible by employing a mixture of regional and surface capture projects as demonstrated in **Figure 1-7** (plots presented in greater detail in assessment area sections). Watershed managers and project developers should consult the results in later sections as well as the accompanying datasets to focus their efforts on the best options in these watersheds. This can be accomplished by:

1. **Considering Top Tier Regional Projects in each Assessment Area, Jurisdiction, or Area of Interest**
2. **Considering High-Performing Maintenance-Friendly Options First to Reduce Future Burdens**
3. **Filling in Watershed Gaps with Bundled Surface Capture Opportunities**

This type of approach will focus watershed efforts on the most impactful and cost-effective project solutions, provide a diverse portfolio of watershed projects, and help ensure implemented projects are manageable from an operations and maintenance standpoint from the start. **NOTE:** Target-setting is very sensitive to baseline model estimates of pollutant concentrations and water quality objectives used. Targets appear to be difficult to meet in the Los Cerritos Channel, and it may be valuable to investigate this reality through refining baseline models or adjusting WQOs to reflect the most up to date observations at compliance points in this area. It is also acknowledged that shifting from California Toxics Rule criteria to a biotic ligand model could drastically change targets and relative progress.

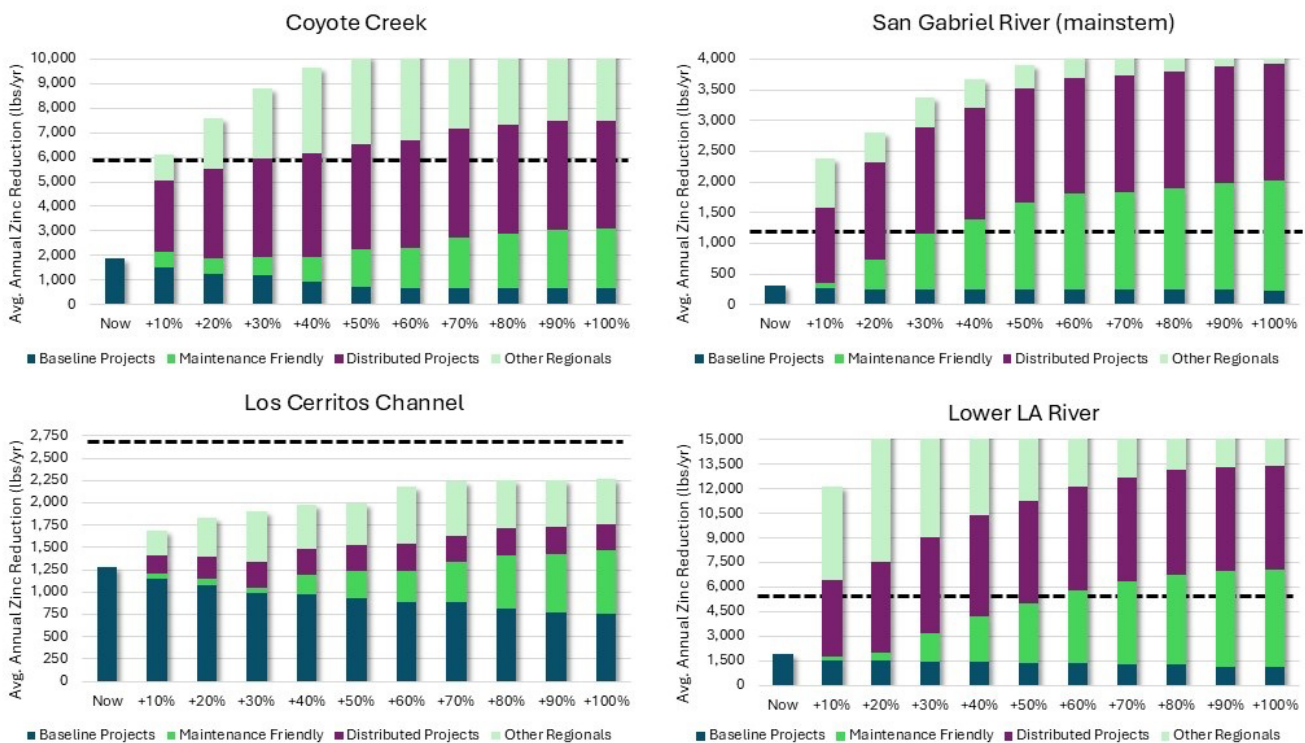


Figure 1-7. Project buildout scenarios by assessment area demonstrate how targets might be met.

2.0 COYOTE CREEK

This section provides a summary of progress towards metrics from baseline projects and the potential for contributions from additional regional projects and/or distributed projects in areas difficult to treat with regional options in the Coyote Creek assessment area. Key project development areas in this assessment area have been highlighted and can be used in conjunction with the supplementary Project Workbook and Dashboards to further explore. Some suggested planning considerations for project selection and implementation are also included to help guide future efforts.

2.1 Baseline Starting Point

Within the Coyote Creek assessment area, efforts have already been made regarding project planning and implementation. **Figure 2-1** illustrates the progress made towards each of the project performance metrics by baseline projects within this assessment area. While these efforts have resulted in significant progress towards pollutant reduction goals, projects within this assessment area do not yet meet targets. Across the four (4) performance metrics, the baseline projects in the Coyote Creek assessment area reach only ~30-70% of target reduction values. **Figure 2-2** shows the spatial distribution of baseline projects along with their drainage areas.

Baseline regional projects in this assessment area:

- Capture drainage from a relatively small proportion of the assessment area overall,
- Are concentrated in the most upstream and most downstream portions of the assessment area, leaving a large gap for additional opportunities in the central part of the assessment area,
- Make more progress towards Storage and Impervious Area Treated targets than Average Annual Zinc Reduction and WY '15 runoff treated, and
- Do not yet achieve any of the four (4) performance targets alone.



Figure 2-1. Plot indicating progress towards pollution reduction targets to date given regional projects

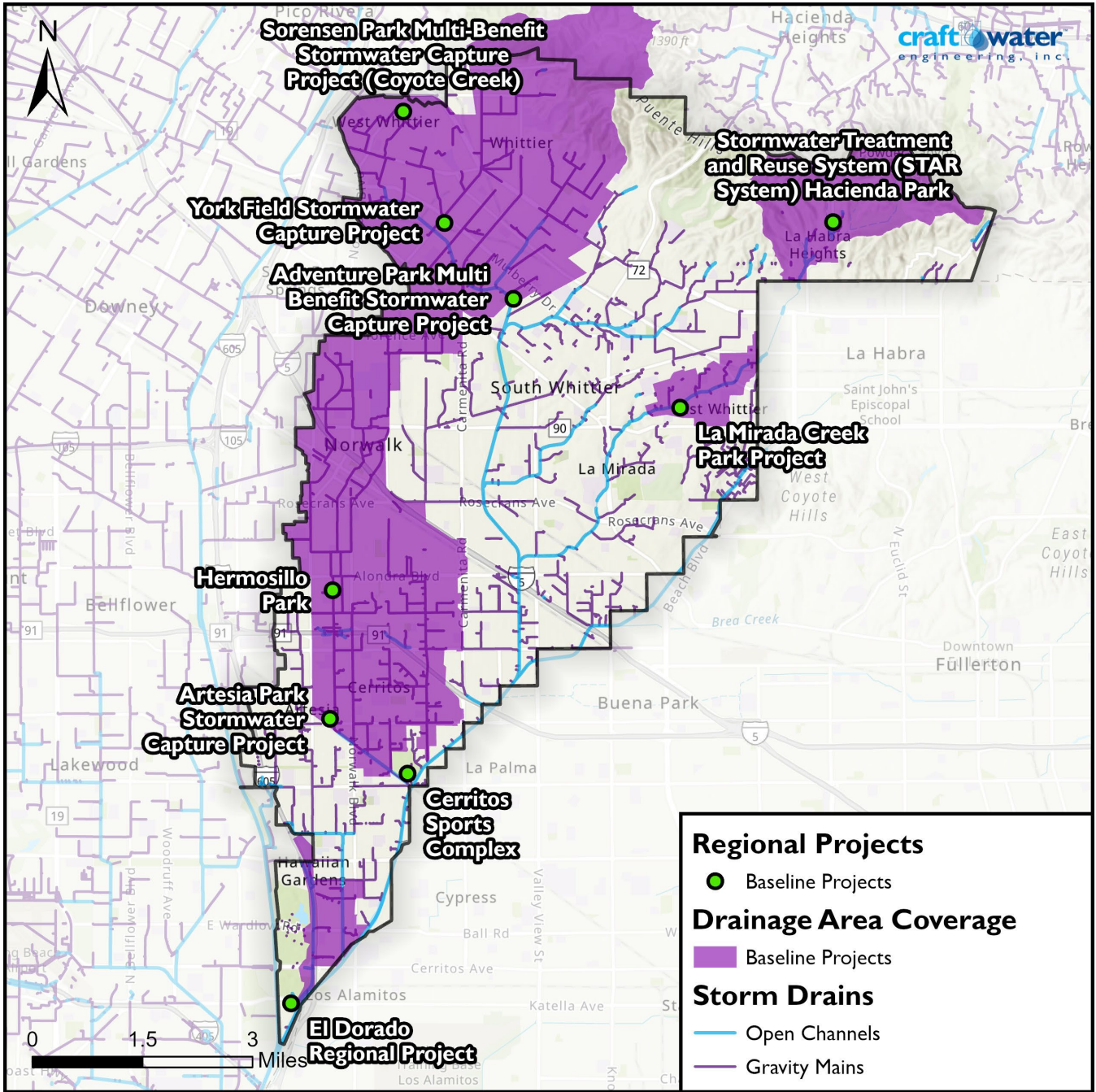


Figure 2-2. Map of Baseline Regional Projects and their respective drainage area coverage for Coyote Creek

2.2 Regional Project Opportunities – Next Great Options

In addition to existing and planned projects, potential future regional projects were identified and added into the analysis. **Figure 2-3** illustrates that with the addition of these potential regional opportunities, all four (4) performance targets could be met for the Coyote Creek assessment area.

Due to the high costs, efforts, and amount of time it takes to construct regional projects, regional project opportunities have been prioritized into tiers based on their performance. **Table 2-1** provides performance metrics for the top two tiers of regional project opportunities in this assessment area. Note that while these projects are modeled to remove large amounts of Zinc from the watershed, some are located upstream of existing regional projects. This means that those projects treat zero (0) net additional impervious area and therefore would not contribute towards that target at all. For this reason, regional opportunities located downstream of existing projects and in gaps between existing project drainage areas should be prioritized for development. **Figure 2-4** and **Figure 2-5** highlight regional project opportunities that are both in the top tiers of performance and are situated either downstream of baseline projects drainage areas or in gaps between them and serve as a good starting point for prioritizing the most effective opportunities.

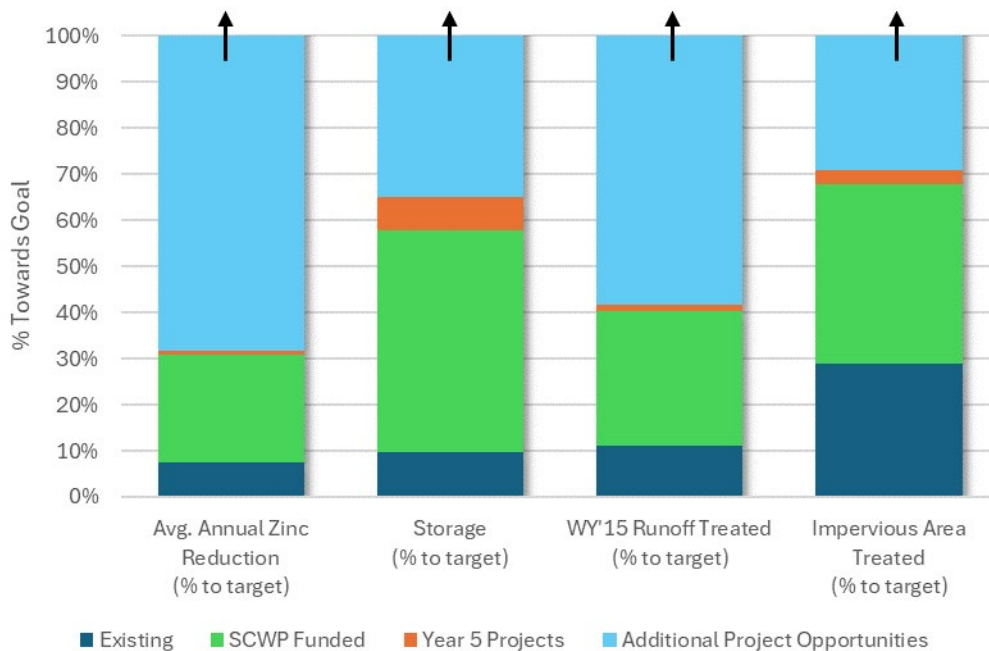


Figure 2-3. Plot indicating progress towards pollution reduction targets including project opportunities

Table 2-1. Regional Project Opportunities from the top 2 performance tiers with performance statistics. An asterisk after the project name (*) denotes maintenance-friendly design specifications. **NOTE: These are conceptual opportunities identified through an engineer-informed desktop analysis; coordinate has not been conducted with property owners to verify commitment nor feasibility.**

Project Name	Net Additional Zinc Reduction (lbs/yr)	Net Additional Storage Volume (ac-ft)	Net Additional Runoff Managed (WY'15 ac-ft)	Net Additional Impervious Area Treated (ac)
Rosecrans Ave Green Street	418	17	295	618
Ferguson ES	283	17	448	1228
Whittier Union HS	271	18	502	0
Carmenita Rd Green Street*	237	8	154	304
Haskell MS	211	11	352	941
Glenn HS*	191	5	169	468
Hargitt MS	190	5	167	454
Sanchez ES	180	18	504	0
Hillview MS	174	14	654	1035
Orchard Dale ES	153	12	625	1037
Aeolian ES*	150	6	143	0
Ceres ES	148	11	661	1144
Juarez ES	145	14	440	0
Willow ES*	134	6	225	527
Kennedy ES	120	9	425	0
Elliott ES	120	9	430	0
Leal ES	115	8	342	0
Gretchen Whitney HS	105	6	265	0
Centralia 533*	96	6	141	259
Aloha ES*	77	4	124	275
Shoemaker Ave Green Street*	66	1	64	176
166th St Green Street*	62	3	65	93
Behringer Park	42	1	554	1496

One section within the Coyote Creek Assessment Area that contains concentrated, high-impact project opportunities is the area that drains to the Artesia Norwalk Channel. There are several top performing projects there whose drainage areas make up a very large proportion of the total area draining to the channel. **Figure 2-4** shows the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps.

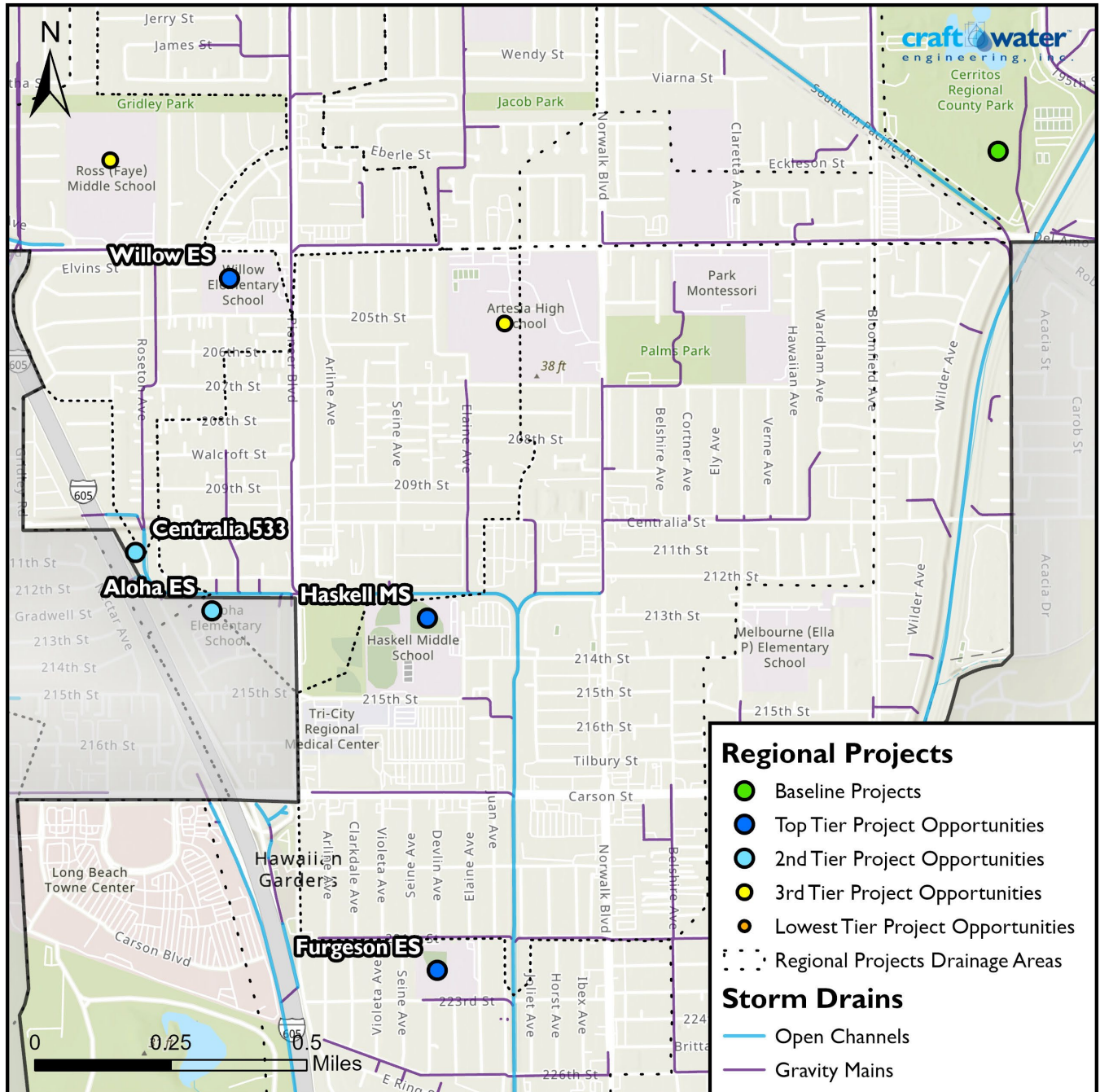


Figure 2-4. Map highlighting Regional Project Opportunities

Another section within the Coyote Creek Assessment Area that contains concentrated, high-impact project opportunities is the area that drains directly to Coyote Creek. There are several top performing projects there whose drainage areas make up a very large proportion of the drainage area west of the creek. **Figure 2-5** shows the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps.

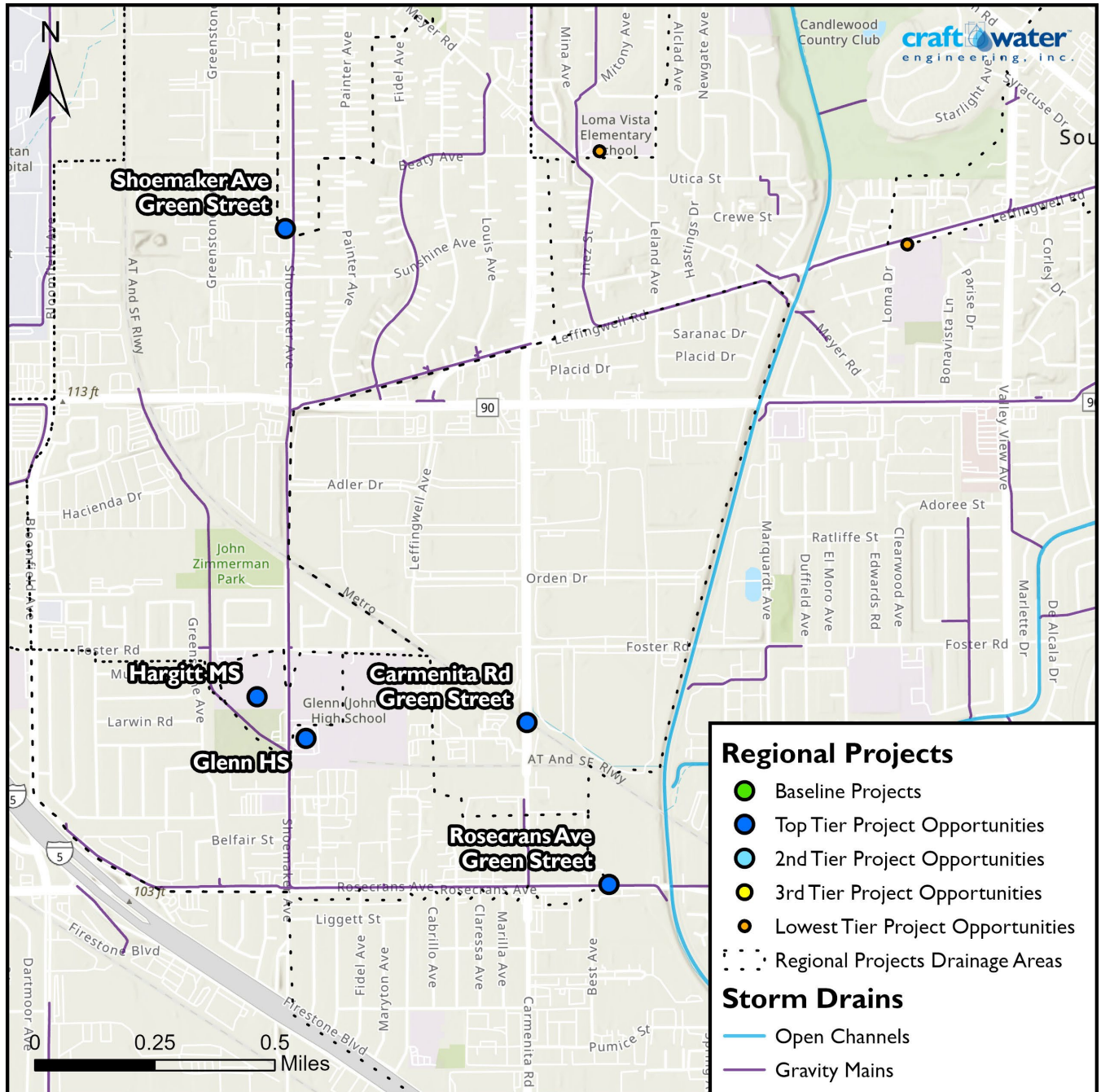


Figure 2-5. Map highlighting Regional Project Opportunities

2.3 Distributed Project Opportunities – Fill in the Gaps

In addition to existing and planned projects, potential surface capture projects were identified and added to the analysis. **Figure 2-6** illustrates that with the addition of these surface capture opportunities, all four performance targets could be met for the Coyote Creek assessment area using only surface capture projects as opposed to regional projects.

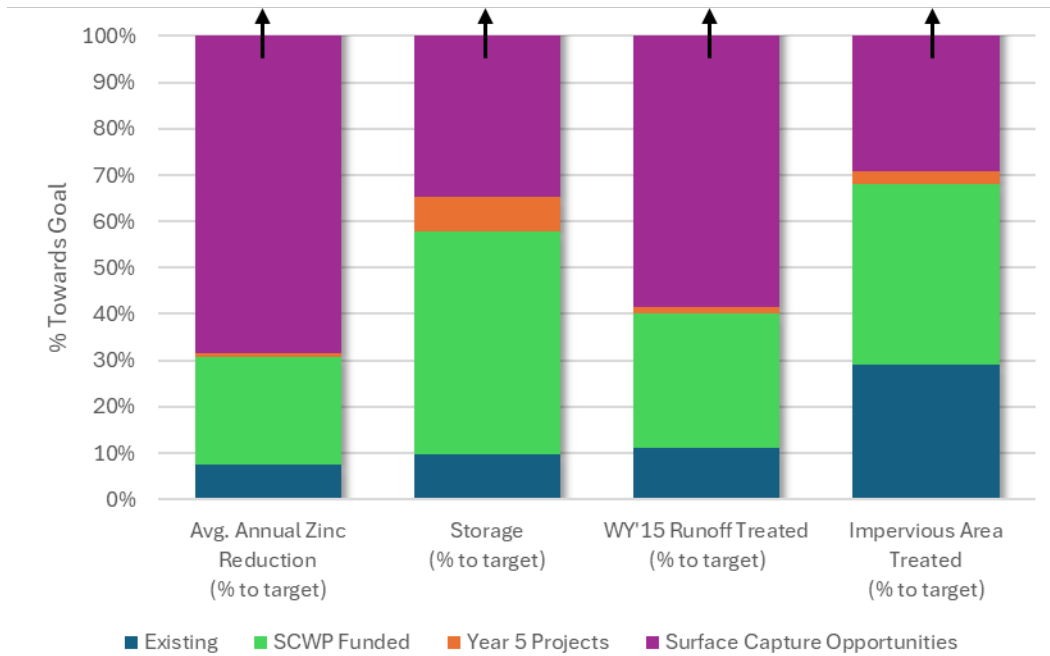


Figure 2-6. Plot indicating progress towards pollution reduction targets

The central section of the Coyote Creek assessment area could be a good place to start implementing Surface Capture Opportunities. **Figure 2-7** shows how there are a significant amount of project locations within this gap in regional project drainage areas that should be able to reduce larger amounts of Zinc. For further exploration, please see the Project Dashboard.

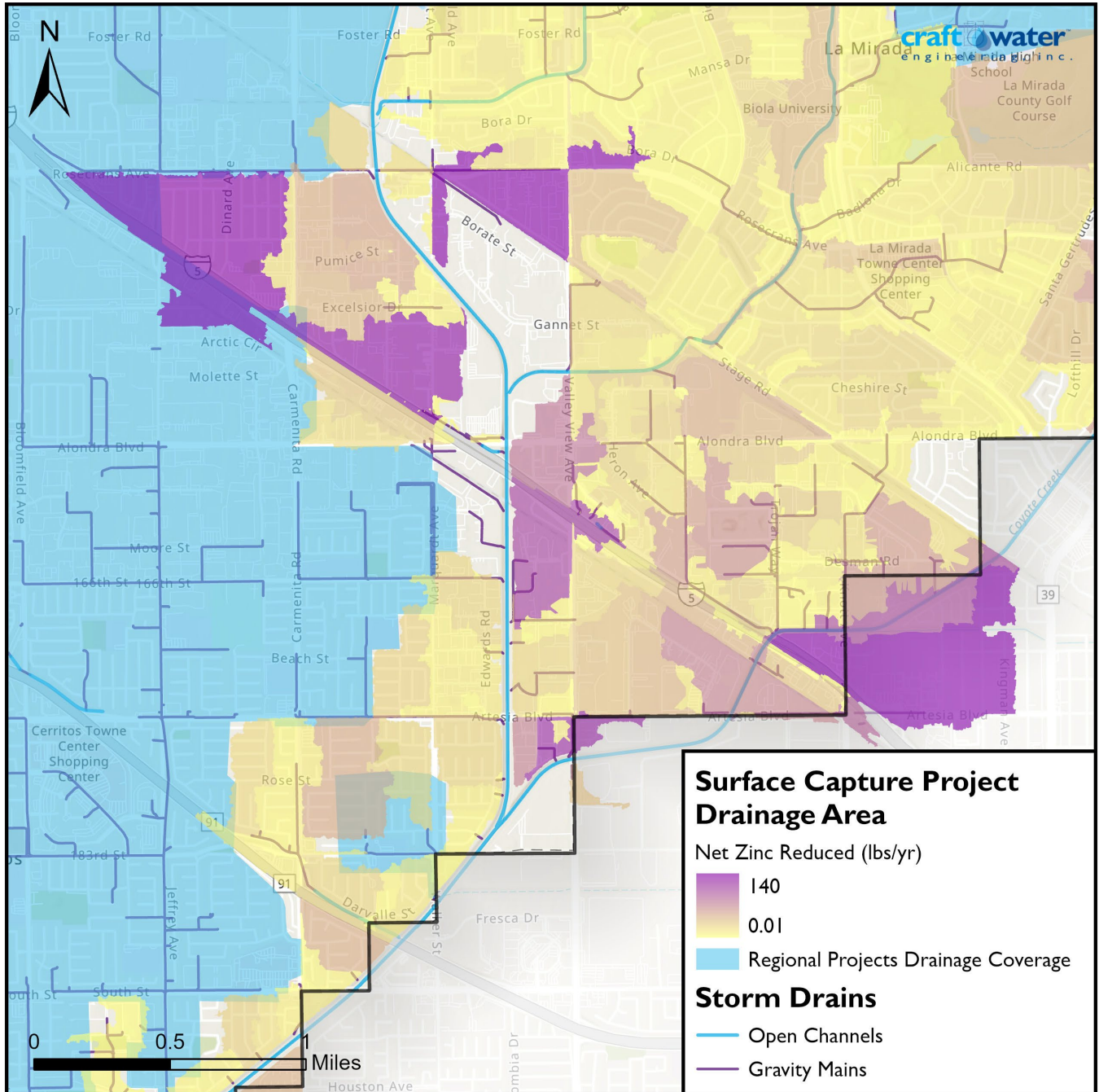


Figure 2-7. Map highlighting Surface Capture Opportunity Drainage Areas, colored by Net Zinc Reduced.

2.4 Planning Considerations

Based on the results of the Next Project Opportunity Analysis, the following considerations provide a tiered strategy to dynamically prioritize the most effective projects over time:

- Focus next regional project opportunities on those that perform best, are maintenance-friendly, and are either downstream of or in gaps between baseline regional project drainage areas
 - Beginning with maintenance-friendly options will provide the most efficient use of limited resources and prevent runaway future maintenance costs
 - Examples of these projects include but are not limited to: Carmenita Rd Green Street, Glenn HS, Willow ES, Centralia 533, Aloha ES, Shoemaker Ave Green Street, and 166th St Green Street
- Combine best performing, feasible regional projects with lumped distributed surface capture projects in drainage capture gaps (see initial 10% addition of regional opportunities in **Figure 2-8**)
 - A mix of some regional projects
 - Use Project Dashboard to explore opportunities
- As time progresses and projects come online, pursue remaining regional project opportunities for marginal progress towards targets (continued addition of regional opportunities shown in **Figure 2-8**)
 - Periodically evaluate the net effect of adding projects to the system

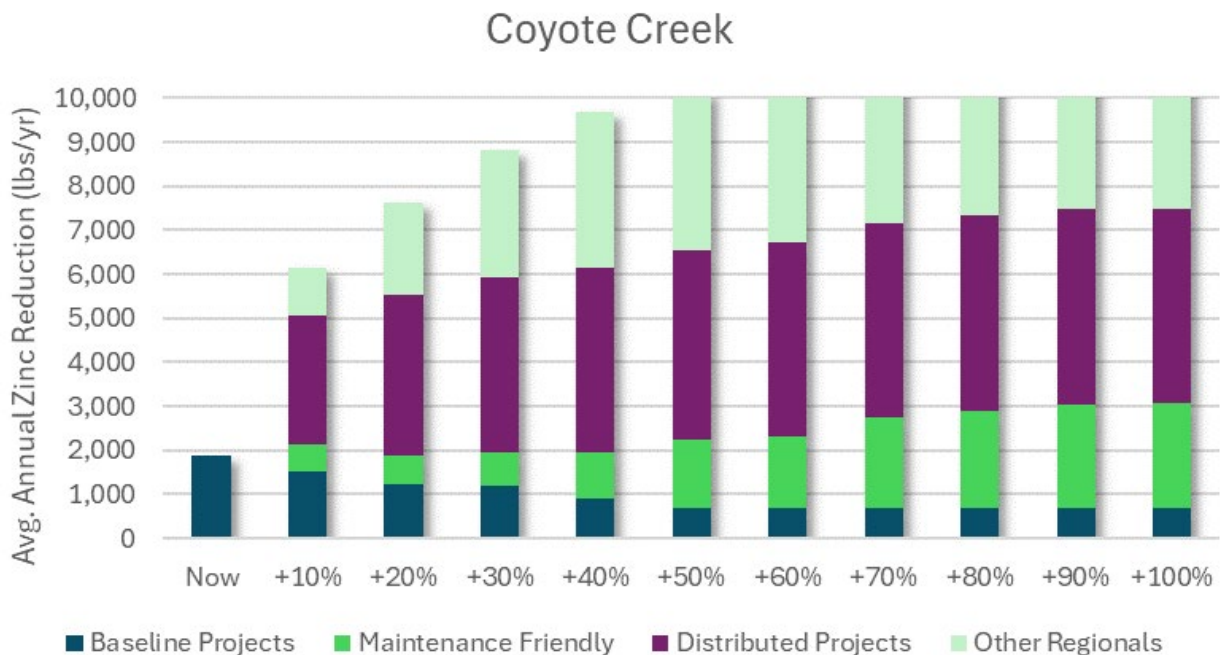


Figure 2-8. Plot of Average Annual Zinc Reduction as regional projects are incrementally added to the system.

NOTE: As more projects are implemented upstream of Baseline Projects, the overall performance of these Baseline Projects is expected to decline due to shared capture between all projects due to nested drainage coverage. However, any decline in baseline project contributions has been factored into the net benefits estimated for potential project options in accompanying Project Workbook and Dashboard to orient these metric values around **additions** to the overall watershed progress.

3.0 LOS CERRITOS CHANNEL

This section provides a summary of progress towards metrics from baseline projects and the potential for contributions from additional regional projects and/or distributed projects in areas difficult to treat with regional options in the Los Cerritos Channel assessment area. Key project development areas in this assessment area have been highlighted and can be used in conjunction with the supplementary Project Workbook and Dashboards to further explore. Some suggested planning considerations for project selection and implementation are also included to help guide future efforts.

3.1 Baseline Starting Point

Within the Los Cerritos Channel assessment area, efforts have already been made in regard to project planning and implementation. **Figure 3-1** illustrates the progress made towards each of the project performance metrics by baseline projects within this assessment area. While these efforts have resulted in significant progress towards pollutant reduction goals, projects within this assessment area do not meet targets. Across three (3) out of four (4) performance metrics, the baseline projects in the Los Cerritos Channel assessment area reach only ~47-75% of target reduction values. However, the amount of Impervious Area Treated by baseline projects is enough to meet that target. **Figure 3-2** shows the spatial distribution of baseline projects along with their drainage areas.

Baseline regional projects in this assessment area:

- Capture drainage from a moderate proportion of the assessment area overall,
- Are spread fairly evenly across the assessment area, leaving small gaps for additional opportunities throughout,
- Are situated downstream of many additional regional project opportunities, making certain potential regional projects less effective when considering whole-system interactions,
- Do not yet achieve three (3) out of four (4) performance targets (though do for Impervious Area Treated), and
- Are most deficient in Average Annual Zinc Reduction related to defined metric targets at this point.



Figure 3-1. Plot indicating progress towards pollution reduction targets to date given regional projects

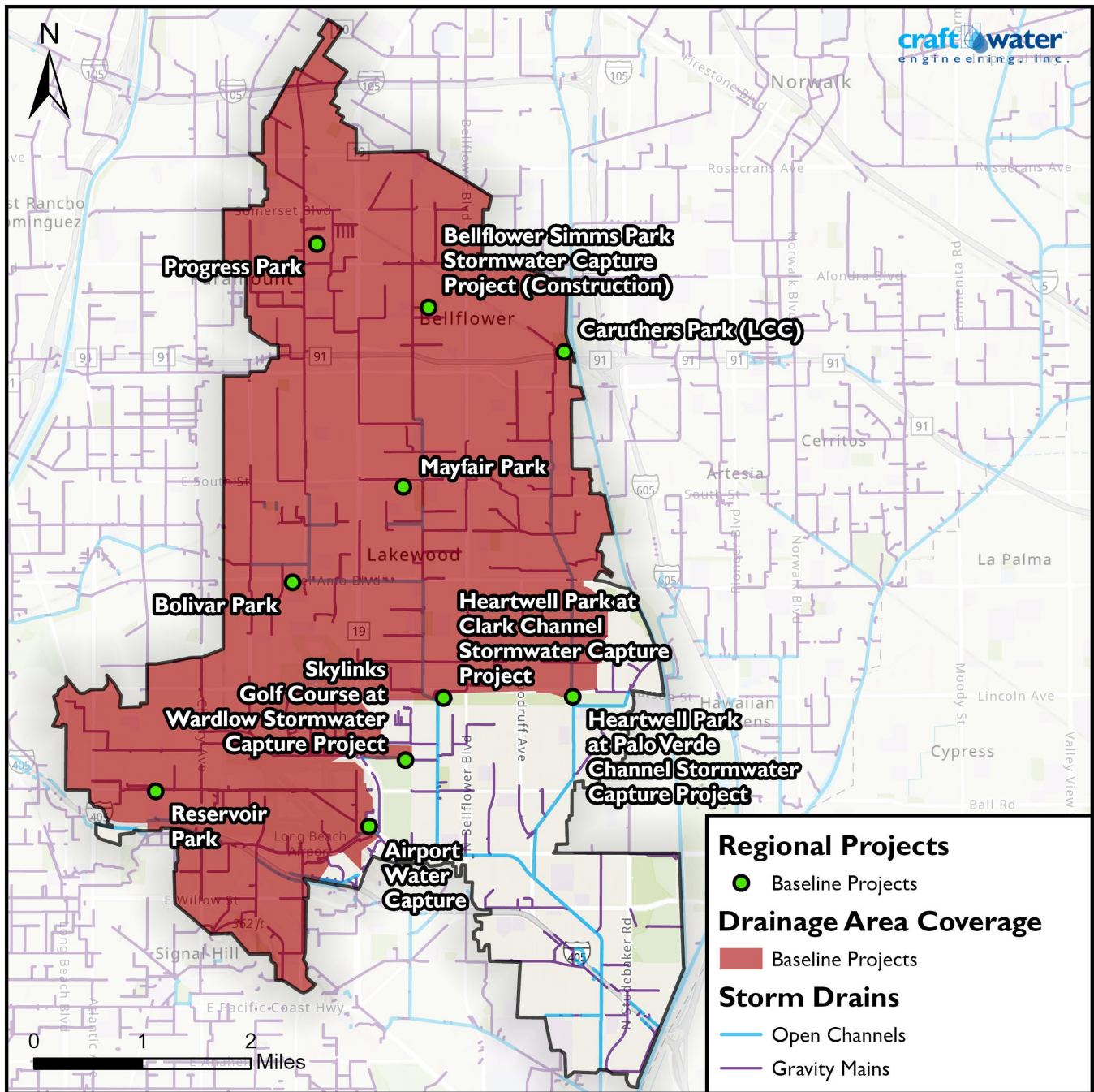


Figure 3-2. Map of Baseline Regional Projects and their drainage area coverage for Los Cerritos Channel

3.2 Regional Project Opportunities – Next Great Options

In addition to existing and planned projects, potential future regional projects were identified and added into the analysis. **Figure 3-3** illustrates that with the addition of these potential regional opportunities, three (3) out of four (4) performance targets could be met for the Los Cerritos Channel assessment area.

Due to the high costs, efforts, and amount of time it takes to construct regional projects, regional project opportunities have been prioritized into tiers based on their performance. **Table 3-1** provides performance metrics for the top two tiers of regional project opportunities in this assessment area. Note that while these projects are modeled to remove large amounts of Zinc from the watershed, some are located upstream of existing regional projects. This means that those projects treat zero (0) net additional impervious area and therefore would not contribute towards that target at all. For this reason, regional opportunities located downstream of existing projects and in gaps between existing project drainage areas should be prioritized for development. **Figure 3-4** highlights regional project opportunities that are both in the top tiers of performance and are situated either downstream of baseline projects drainage areas or in gaps between them and serve as a good starting point for prioritizing the most effective opportunities.

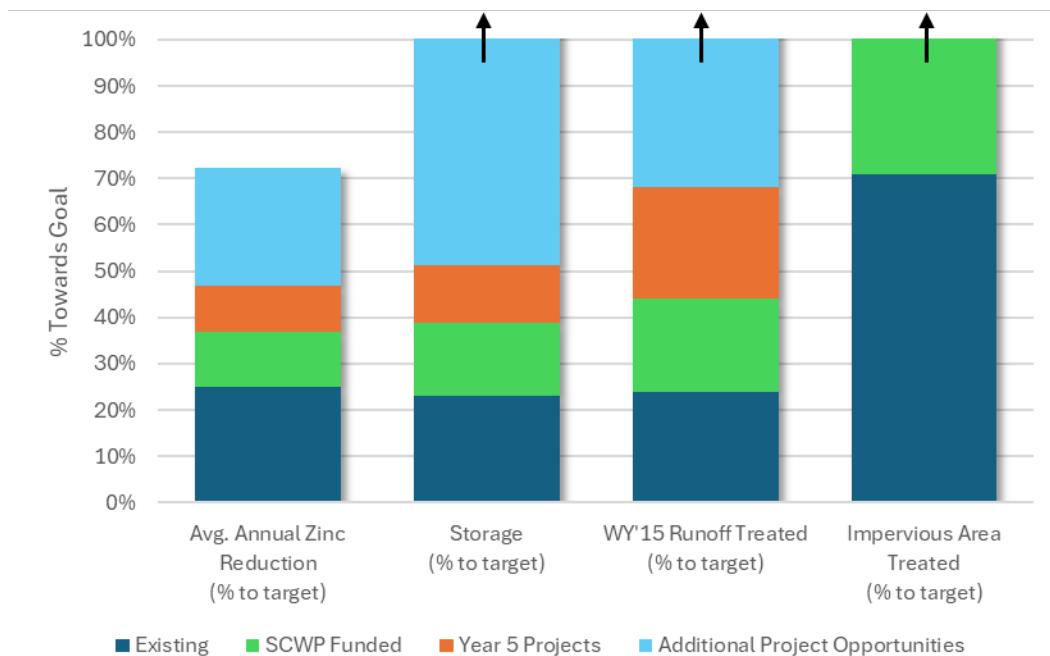


Figure 3-3. Plot indicating progress towards pollution reduction targets including project opportunities

Table 3-1. Regional Project Opportunities from the top 2 tiers with performance statistics. An asterisk after the project name (*) denotes maintenance-friendly design specifications. **NOTE: These are conceptual opportunities identified through an engineer-informed desktop analysis; coordinate has not been conducted with property owners to verify commitment nor feasibility.**

Project Name	Net Additional Zinc Reduction (lbs/yr)	Net Additional Storage Volume (ac-ft)	Net Additional Runoff Managed (WY'15 ac-ft)	Net Additional Impervious Area Treated (ac)
Hubert H Bancroft MS	124	27	758	0
Mark Twain ES (East)	105	22	675	0
South PV Channel LACFCD 1	102	17	341	427
South PV Channel LACFCD 3	101	16	390	429
Wardlow Park	88	22	503	793
Holmes ES	79	14	334	0
Pan American Park	71	14	543	0
Lakewood City Hall Parking Lot	66	14	425	0
Riley ES	66	11	363	0
Patrick Henry K-8 School*	64	10	322	190
Long Beach Fire Station Open Space	56	1	114	0
Captain Raymond Collins ES*	39	5	178	0
David Burcham K-8 School*	25	0	295	5892
John Marshall Middle School*	25	0	296	5910
Long Beach Junior Golf Course*	24	2	119	767
Lakewood Golf Course Driving Range*	20	1	21	0

One section within the Los Cerritos Channel Assessment Area that contains concentrated, high quality project opportunities is the area that drains to the channels: Unit 3, Line A and Unit 2, Line E, prior to their convergence with the Los Cerritos Channel. There are several top performing projects there whose drainage areas make up a very large proportion of the total area draining to those channels. **Figure 3-4** shows the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps, except for the Long Beach Fire Station Open Space project (highlighted with orange oval), which is upstream of an existing regional project.

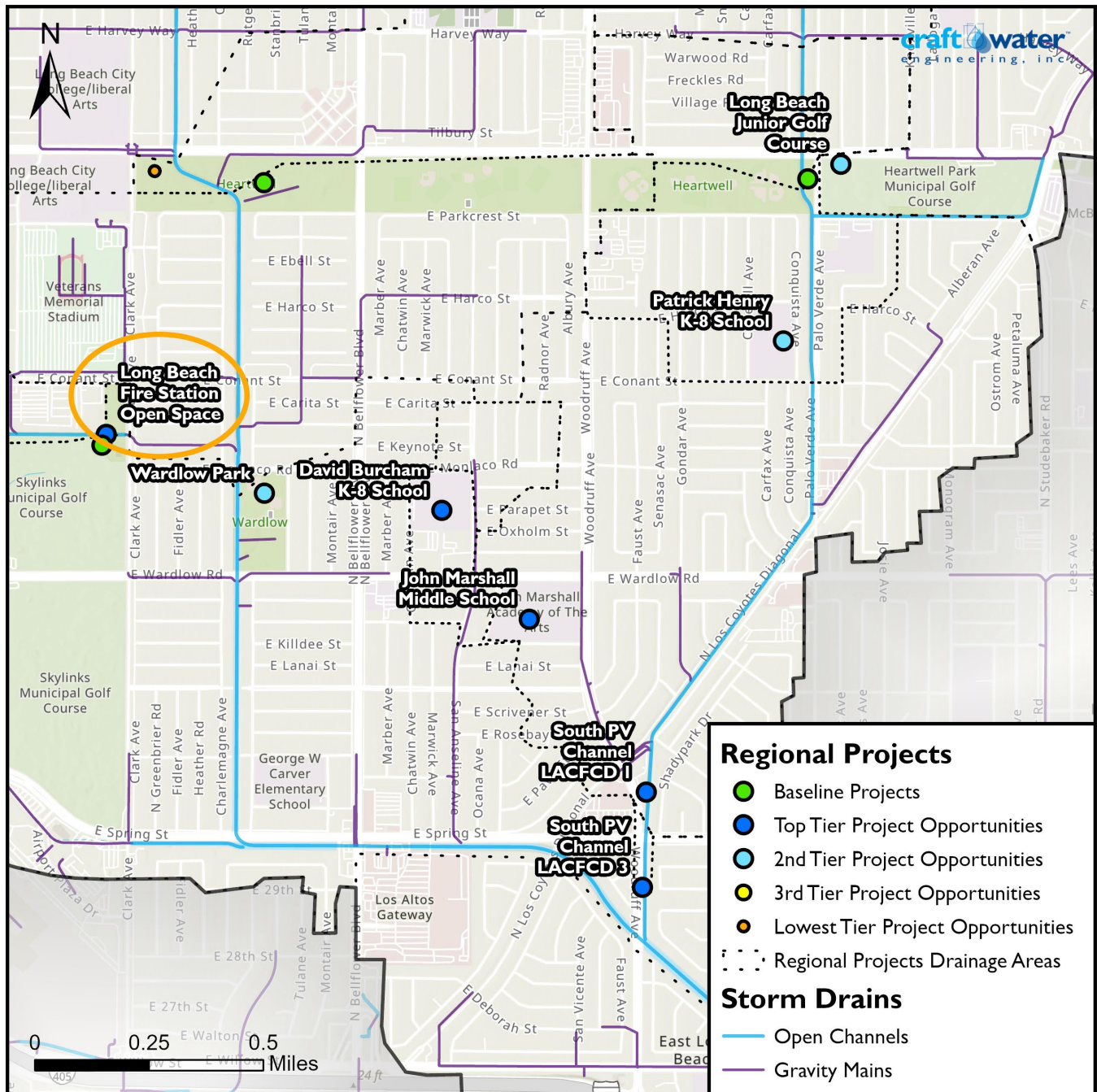


Figure 3-4. Map highlighting Regional Project Opportunities

3.3 Distributed Project Opportunities – Fill in the Gaps

In addition to existing and planned projects, potential surface capture projects were identified and added to the analysis. **Figure 3-5** illustrates that with the addition of these surface capture opportunities, no additional performance targets could be met for the Los Cerritos Channel assessment area beyond what is met by the baseline projects using only surface capture projects as opposed to regional projects.

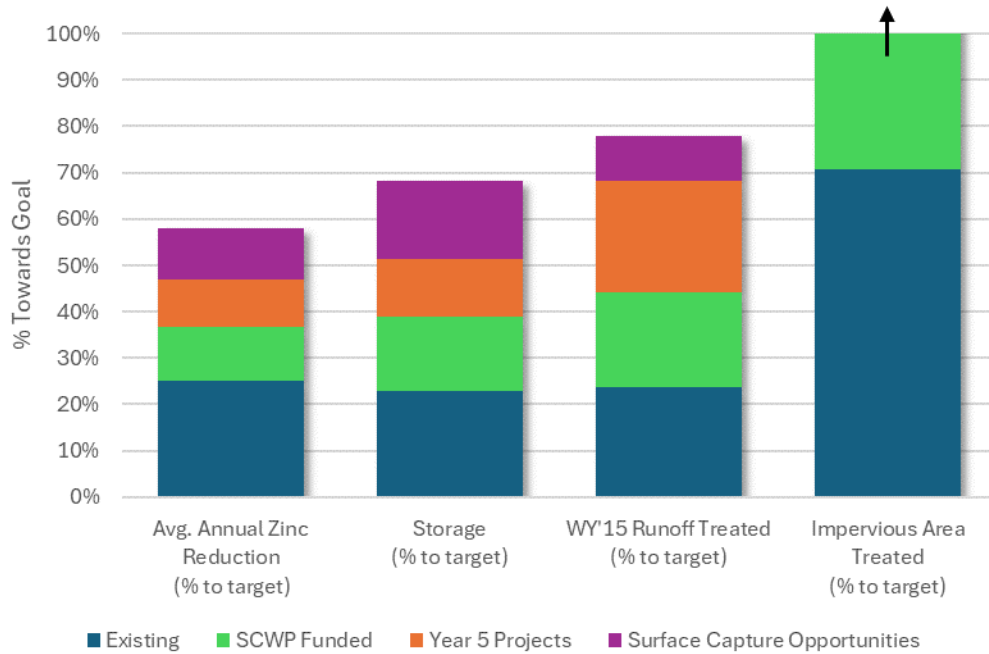


Figure 3-5. Plot indicating progress towards pollution reduction targets

The most downstream section of the Los Cerritos Channel assessment area could be a good place to start looking for Surface Capture Opportunities. **Figure 3-6** shows how there are a significant amount of project locations within this gap in regional project drainage areas that should be able to reduce large amounts of Zinc. For further exploration, please see the Project Dashboard.

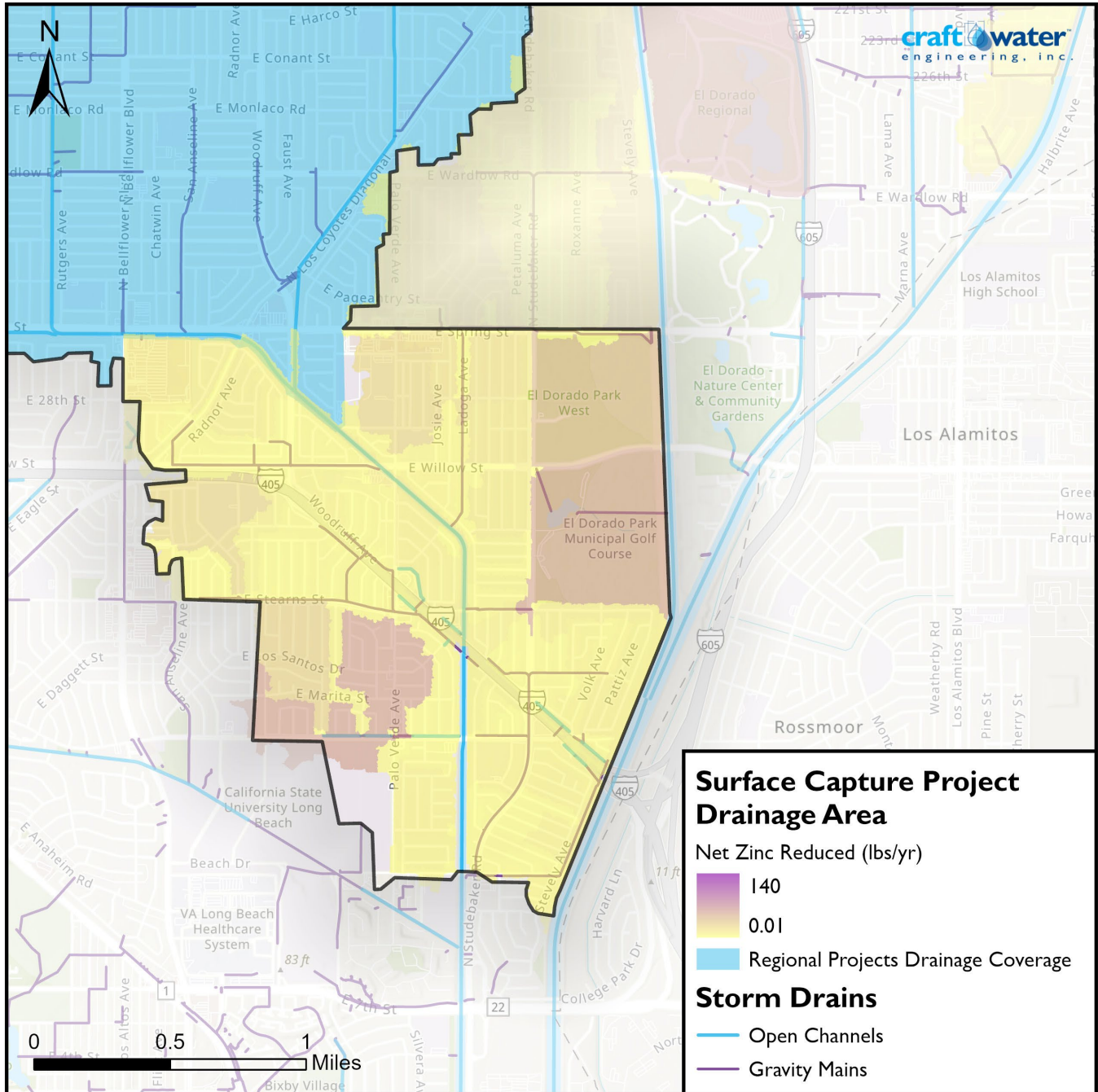


Figure 3-6. Map highlighting Surface Capture Opportunity Drainage Areas, colored by Net Zinc Reduced.

3.4 Planning Considerations

Based on the results of the Next Project Opportunity Analysis, the following considerations provide a tiered strategy to dynamically prioritize the most effective projects over time:

- Focus next regional project opportunities on those that perform best, are maintenance-friendly, and either downstream of or are in gaps between baseline regional project drainage areas
 - Beginning with maintenance-friendly options will provide the most efficient use of limited resources and prevent runaway future maintenance costs
 - Examples of these projects include but are not limited to: Patrick Henry K-8 School, David Burcham K-8 School, John Marshall Middle School, and Long Beach Junior Golf Course.
- Combine best performing, feasible regional projects with lumped distributed surface capture projects in drainage capture gaps (see initial 10% addition of regional opportunities in **Figure 3-7**)
 - A mix of some regional projects
 - Use Project Dashboard to explore opportunities
- As time progresses and projects come online, pursue remaining regional project opportunities for marginal progress towards targets (continued addition of regional opportunities shown in **Figure 3-7**)
 - Periodically evaluate the net effect of adding projects to the system

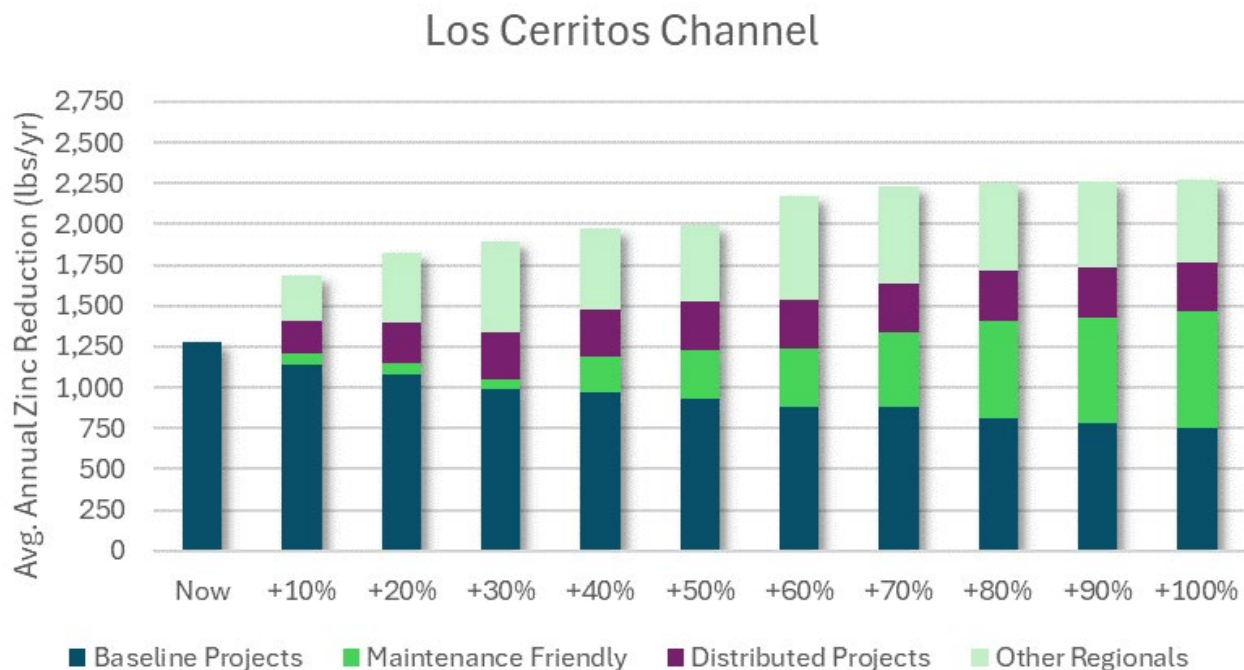


Figure 3-7. Plot of Average Annual Zinc Reduction as regional projects are incrementally added to the system.

NOTE: As more projects are implemented upstream of Baseline Projects, the overall performance of these Baseline Projects is expected to decline due to shared capture between all projects due to nested drainage coverage. However, any decline in baseline project contributions has been factored into the net benefits estimated for potential project options in accompanying Project Workbook and Dashboard to orient these metric values around **additions** to the overall watershed progress.

4.0 LOWER L.A. RIVER

This section provides a summary of progress towards metrics from baseline projects and the potential for contributions from additional regional projects and/or distributed projects in areas difficult to treat with regional options in the Lower LA River assessment area. Key project development areas in this assessment area have been highlighted and can be used in conjunction with the supplementary Project Workbook and Dashboards to further explore. Some suggested planning considerations for project selection and implementation are also included to help guide future efforts.

4.1 Baseline Starting Point

Within the Lower L.A. River assessment Area, efforts have already been made in regard to project planning and implementation. **Figure 4-1** illustrates the progress made towards each of the project performance metrics by baseline projects within this assessment area. While these efforts have resulted in significant progress towards pollutant reduction goals, projects within this assessment area do not meet targets. Across three (3) out of four (4) performance metrics, the baseline projects in the Lower L.A. River assessment area reach only ~30-75% of target reduction values. However, the amount of Impervious Area Treated by baseline projects is enough to meet that target. **Figure 4-2** shows the spatial distribution of baseline projects along with their drainage areas.

Baseline regional projects in this assessment area:

- Capture drainage from a moderate proportion of the assessment area overall,
- Are spread evenly across the assessment area, leaving small gaps for additional opportunities throughout, with the exception of Compton Creek and the uppermost reaches of the L.A. River within the assessment area, which lack projects thus far, and
- Do not achieve three (3) out of four (4) performance targets (though do for Impervious Area Treated).

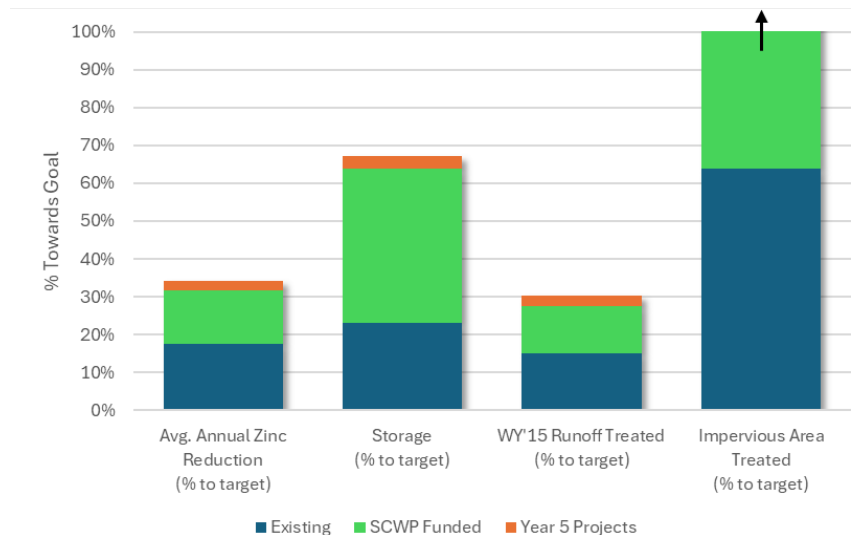


Figure 4-1. Plot indicating progress towards pollution reduction targets to date given regional projects

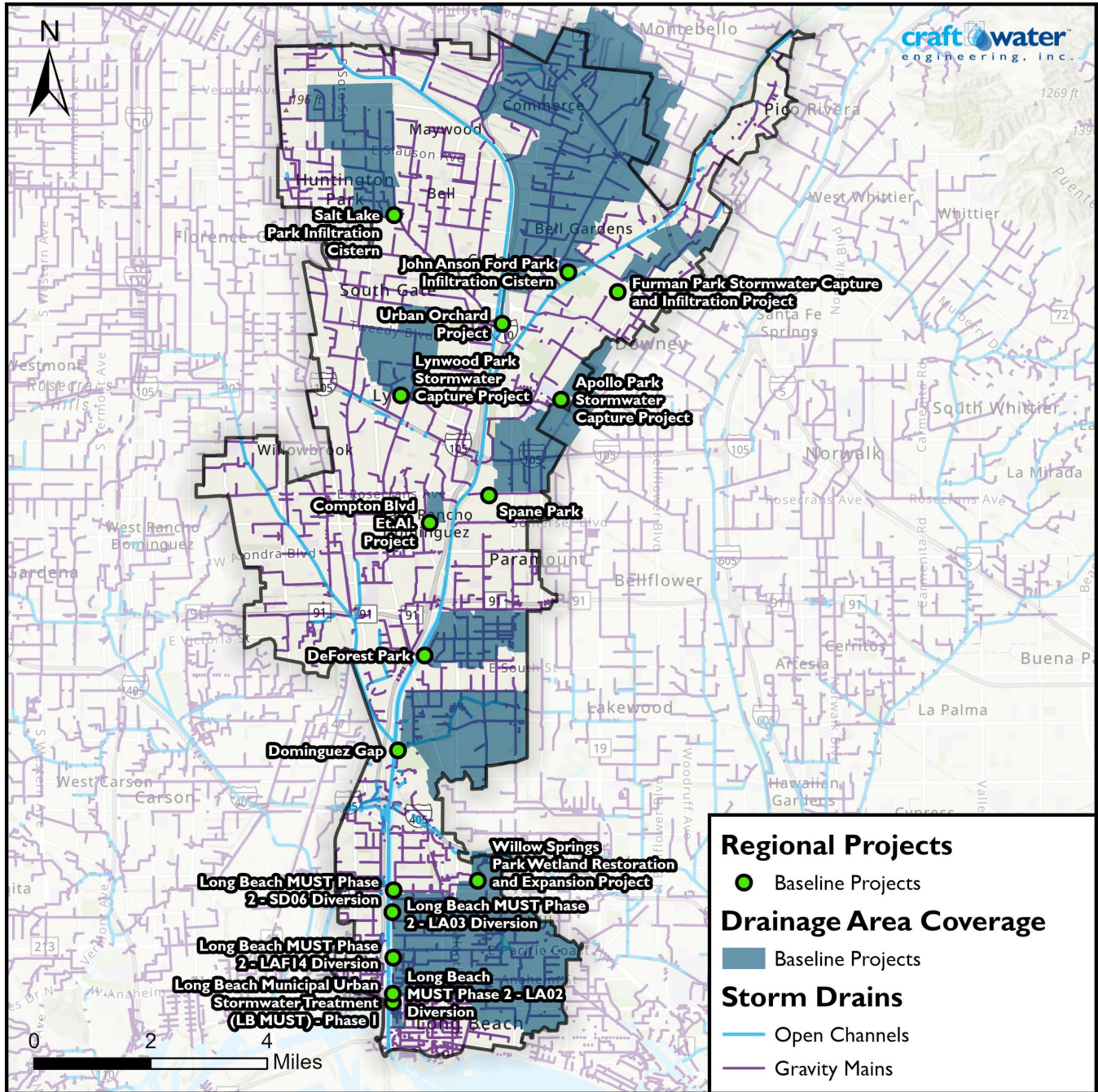


Figure 4-2. Map of Baseline Regional Projects and their respective drainage area coverage for Lower LA River

4.2 Regional Project Opportunities – Next Great Options

In addition to existing and planned projects, potential future regional projects were identified and added into the analysis. **Figure 4-3** illustrates that with the addition of these potential regional opportunities, all four performance targets could be met for the Lower L.A. River assessment area.

Due to the high costs, efforts, and amount of time it takes to construct regional projects, regional project opportunities have been prioritized into tiers based on their performance. **Table 4-1** provides performance metrics for a subset of the top two tiers of regional project opportunities in this assessment area. Note that while these projects are modeled to remove large amounts of Zinc from the watershed, some are located upstream of existing regional projects. This means that those projects treat zero (0) net additional impervious area and therefore would not contribute towards that target at all. For this reason, regional opportunities located downstream of existing projects and in gaps between existing project drainage areas should be prioritized for development. **Figure 4-4** through **Figure 4-8** highlight regional project opportunities that are both in the top tiers of performance and are situated either downstream of baseline projects drainage areas or in gaps between them and serve as a good starting point for prioritizing the most effective opportunities.

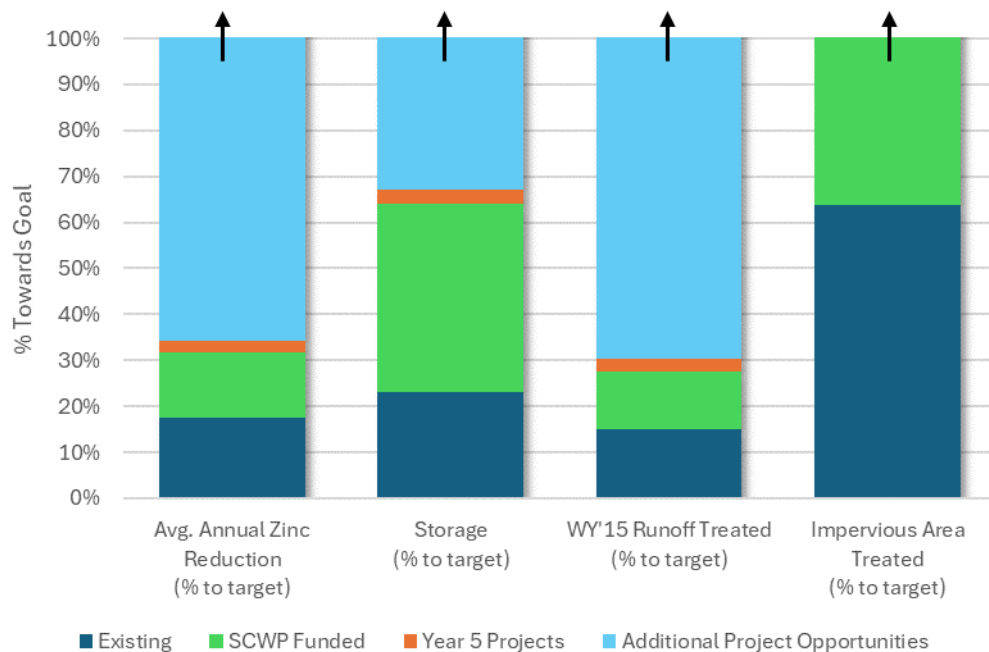


Figure 4-3. Plot indicating progress towards pollution reduction targets including project opportunities

Table 4-1. Subset of regional Project Opportunities from the top 2 tiers with performance statistics (shortened for space). An asterisk after the project name (*) denotes maintenance-friendly design specifications. **NOTE: These are conceptual opportunities identified through an engineer-informed desktop analysis only; coordination has not been conducted with property owners to seek interest nor feasibility.**

Project Name	Net Additional Zinc Reduction (lbs/yr)	Net Additional Storage Volume (ac-ft)	Net Additional Runoff Managed (WY'15 ac-ft)	Net Additional Impervious Area Treated (ac)
Bell Gardens MS	619	32	676	0
Laguna Nueva ES	466	27	497	0
E Washington Blvd & Telegraph Rd Open Space	416	22	404	0
710 & S Atlantic Blvd ROW	412	25	674	3172
McCallum Ave & Salt Lake Ave Maintenance Yard	401	29	561	2132
Shull St & Jaboneria Rd Open Space	395	18	521	0
Fedex Parking Lot	394	23	657	3171
Davis MS	299	31	878	6907
Bandini Blvd Rail ROW	297	20	331	1351
Santa Ana St Green Street	282	23	425	1242
Bunche MS	268	18	392	988
Rosewood Park (North)*	249	12	254	0
State Street Corridor	239	14	313	1365
Bell Gardens HS	228	9	330	0
Compton Community College Parking Lot (West)	227	20	495	3156
Rosewood Park (South)	205	9	225	0
Bell Gardens ES	190	6	335	0
S Tamarind Ave & E Cypress St Open Space	188	14	375	1600
Saia LTL Freight*	187	7	101	195
Rayo Ave Green Street	187	11	350	2082
Atlantic Ave & E Artesia Blvd*	171	6	151	555
Long Beach Poly HS	169	13	242	0
Park Ave. Elementary School	169	11	217	898
John G Whittier ES	163	12	230	0
Union Pacific Ave Parking Lot*	155	7	144	0
Chavez ES	149	4	265	0

One section within the Lower L.A. River Assessment Area that contains concentrated, high quality project opportunities is the area that drains to Compton Creek. There are several top performing projects there whose drainage areas make up a very large proportion of the total area draining to the creek. **Figure 4-4** and **Figure 4-5** show the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps.

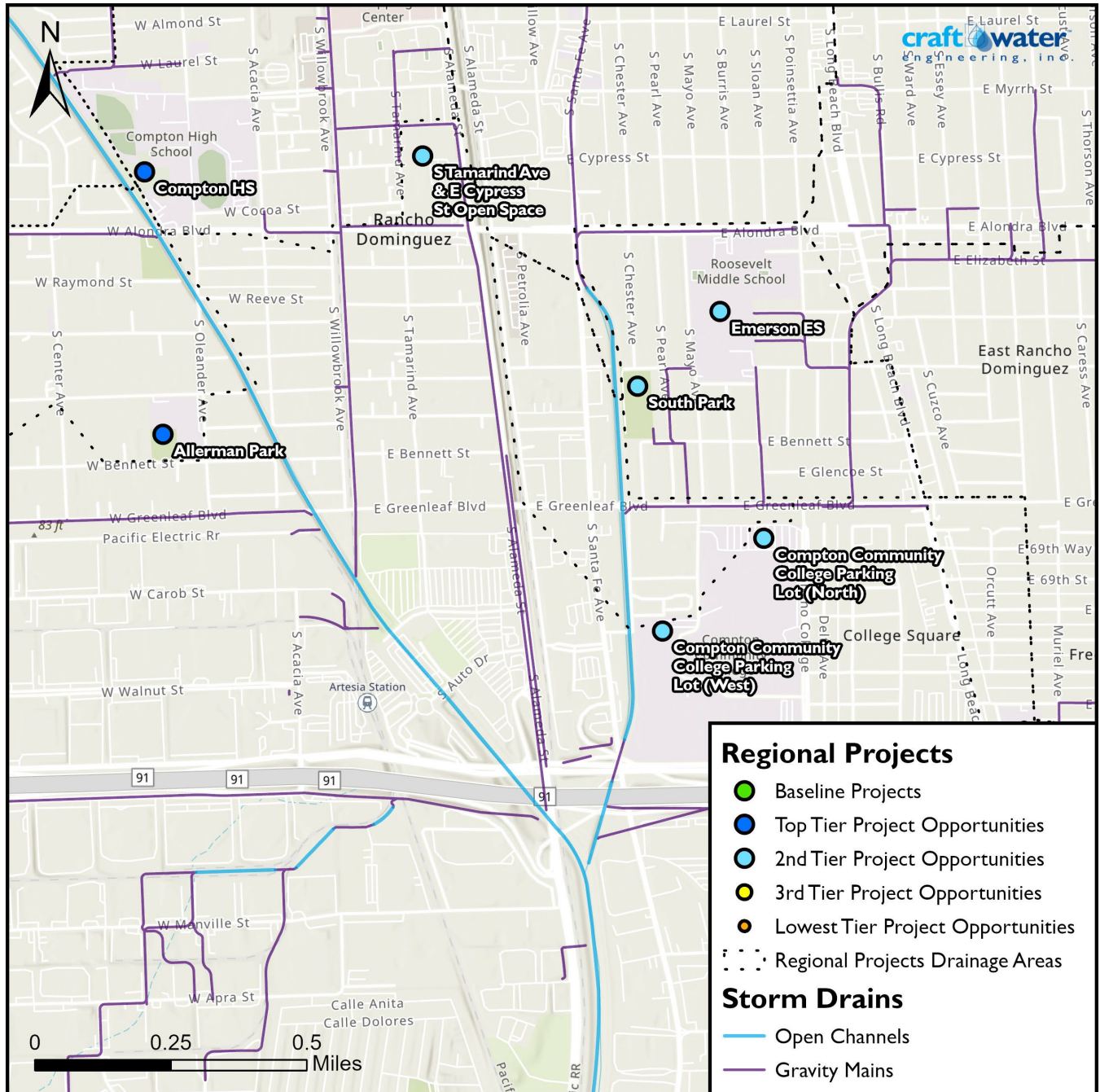


Figure 4-4. Map highlighting Regional Project Opportunities

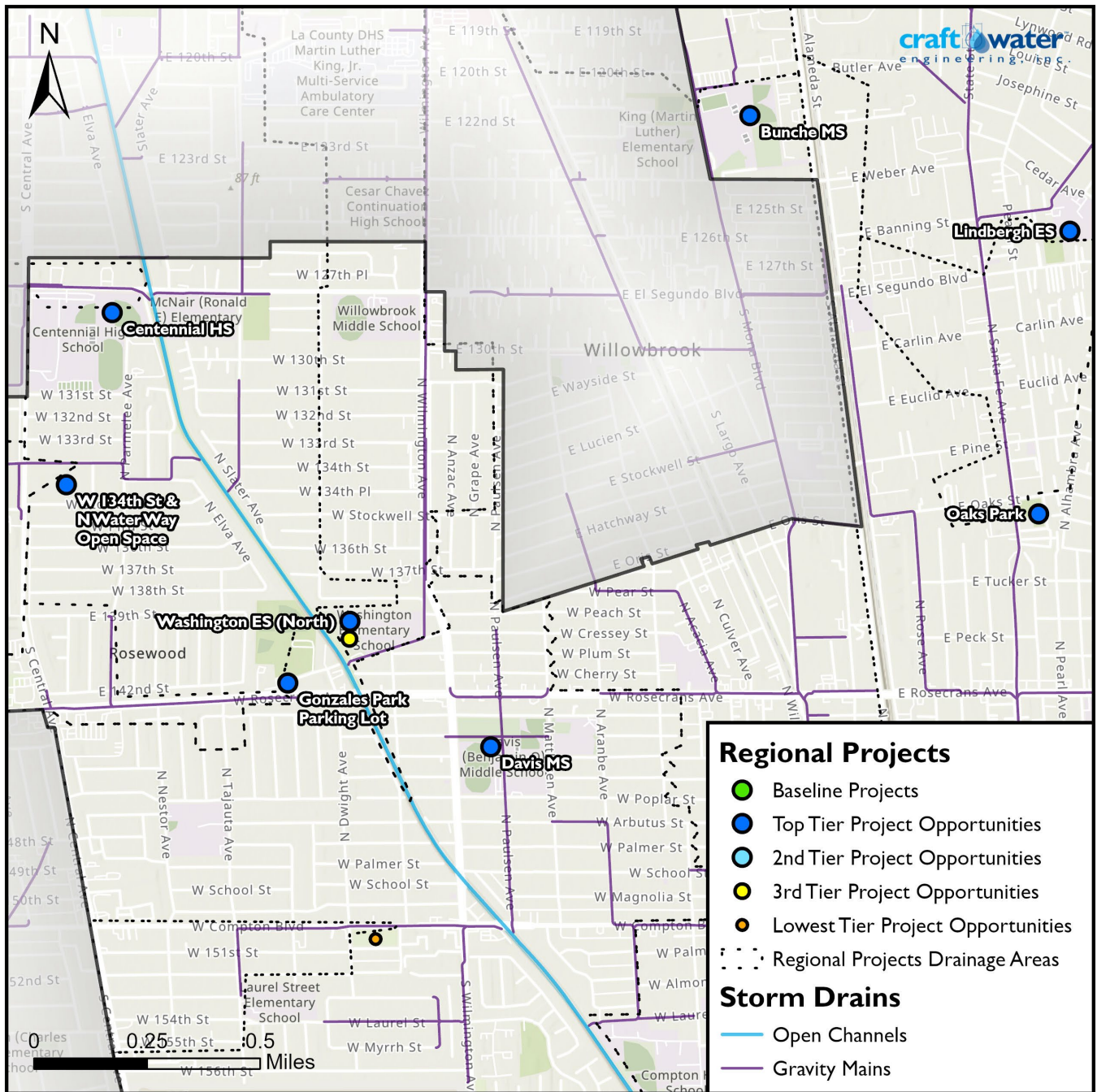


Figure 4-5. Map highlighting Regional Project Opportunities

Another section within the Lower L.A. River Assessment Area that contains concentrated, high quality project opportunities is the area that drains directly to the L.A. River. There are several top performing projects there whose drainage areas make up a very large proportion of the total area directly adjacent to the river. **Figure 4-6** through **Figure 4-8** show the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps, except for those circled in orange, which are upstream of existing projects.

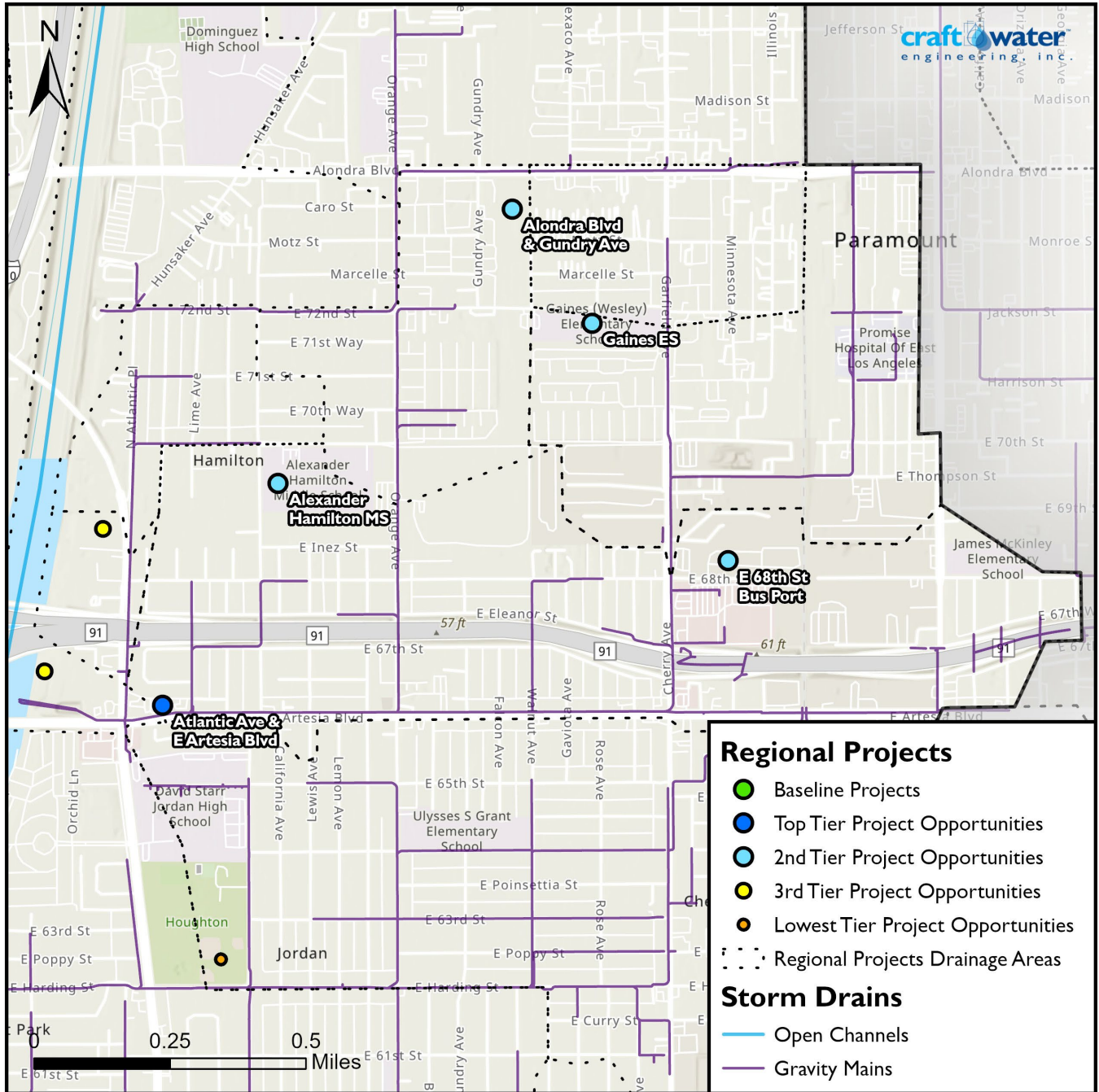


Figure 4-6. Map highlighting Regional Project Opportunities

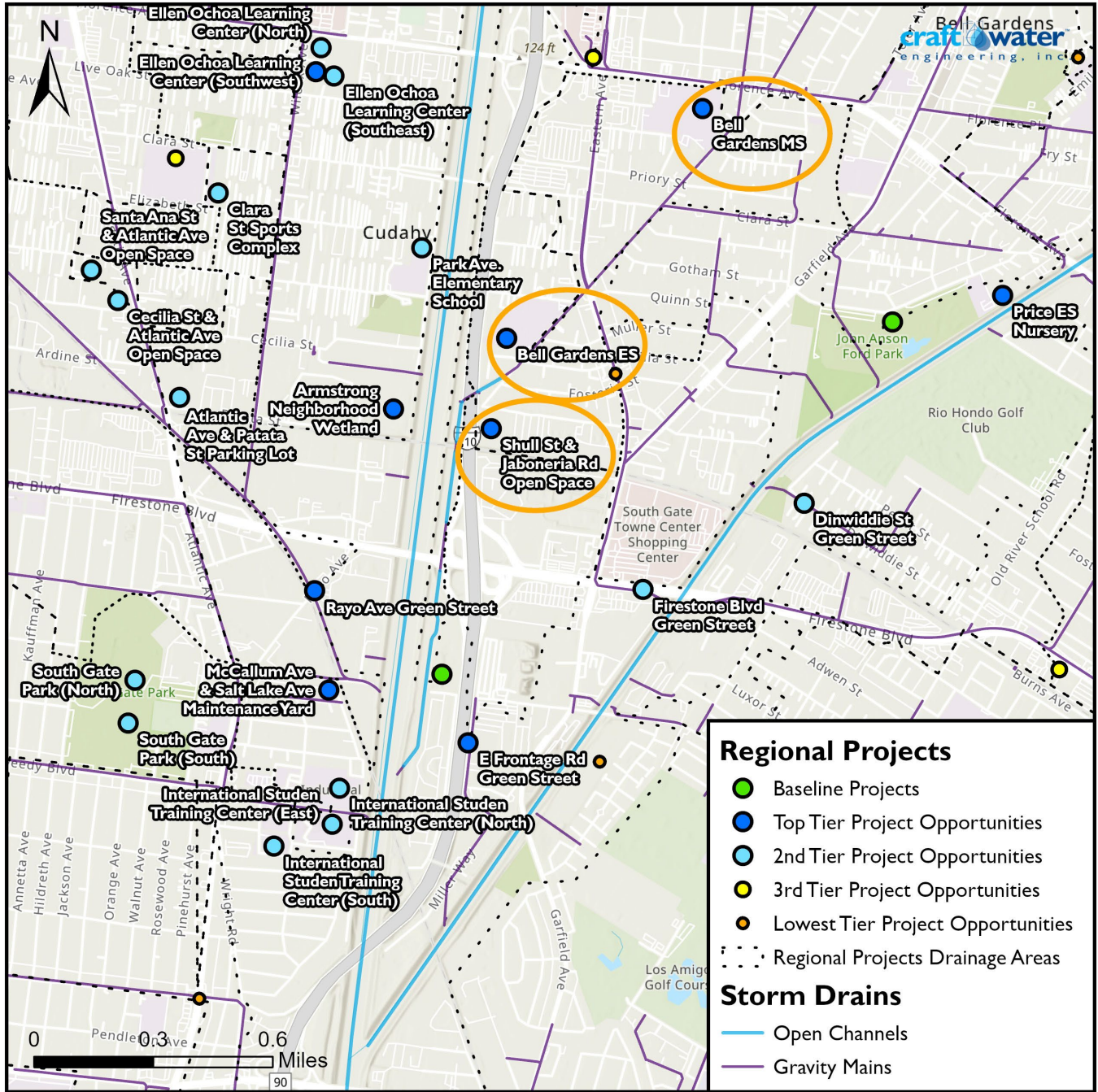


Figure 4-7. Map highlighting Regional Project Opportunities

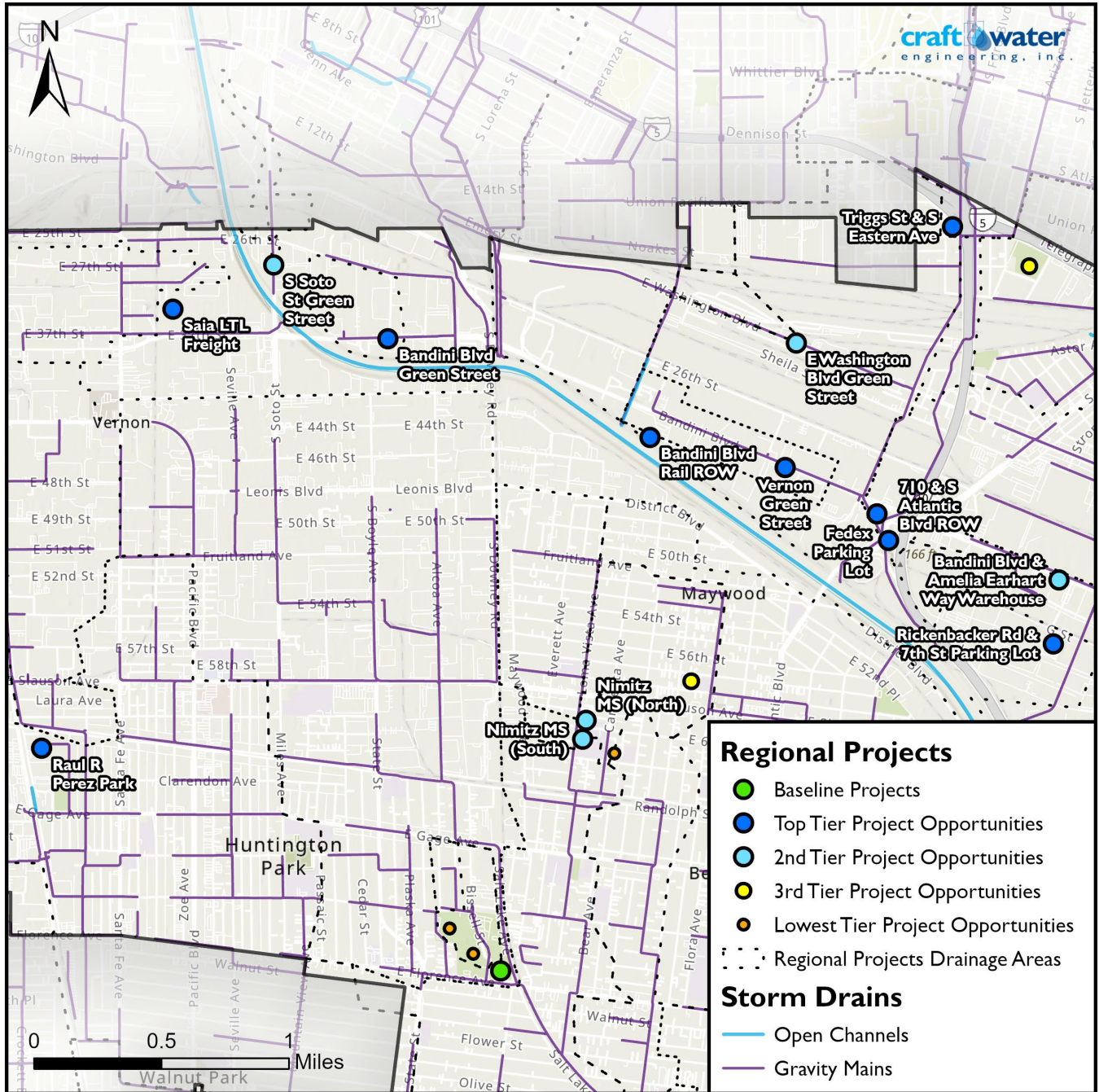


Figure 4-8. Map highlighting Regional Project Opportunities

4.3 Distributed Project Opportunities – Fill in the Gaps

In addition to existing and planned projects, potential surface capture projects were identified and added to the analysis. **Figure 4-9** illustrates that with the addition of these surface capture opportunities, two (2) out of four (4) additional performance targets could be met for the Los Cerritos Channel assessment area beyond what is met by the baseline projects using only surface capture projects as opposed to regional projects.

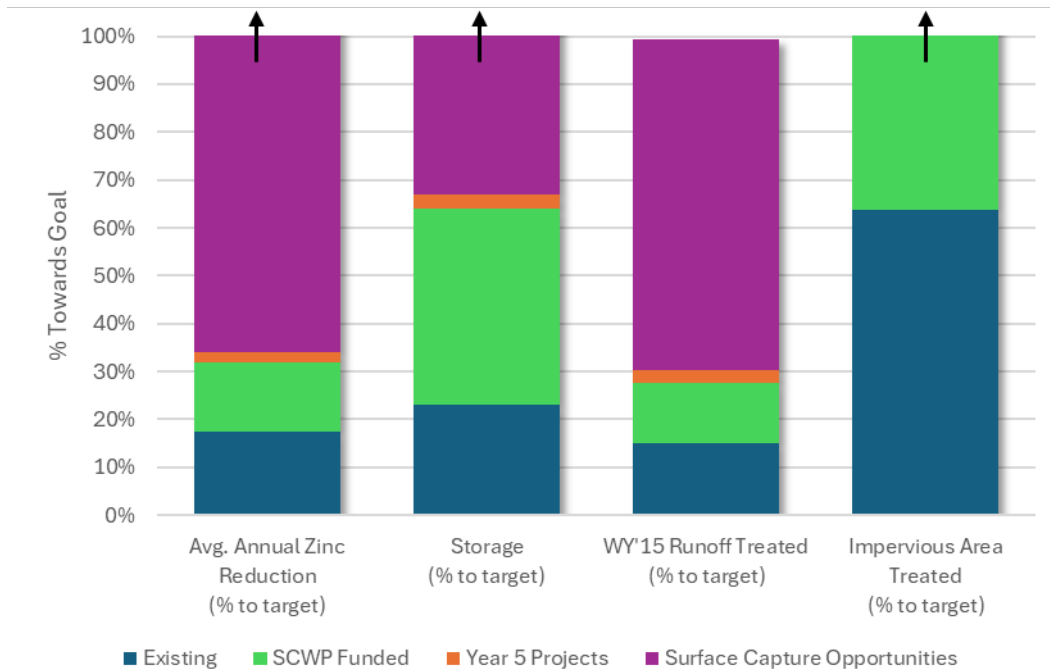


Figure 4-9. Plot indicating progress towards pollution reduction targets

A section of the Lower L.A. River assessment area that could be a good place to start looking for Surface Capture Opportunities is the upper sections of Compton Creek. **Figure 4-10** shows how there are a significant amount of project locations within this gap in regional project drainage areas that should be able to reduce larger amounts of Zinc. For further exploration, please see the Project Dashboard.

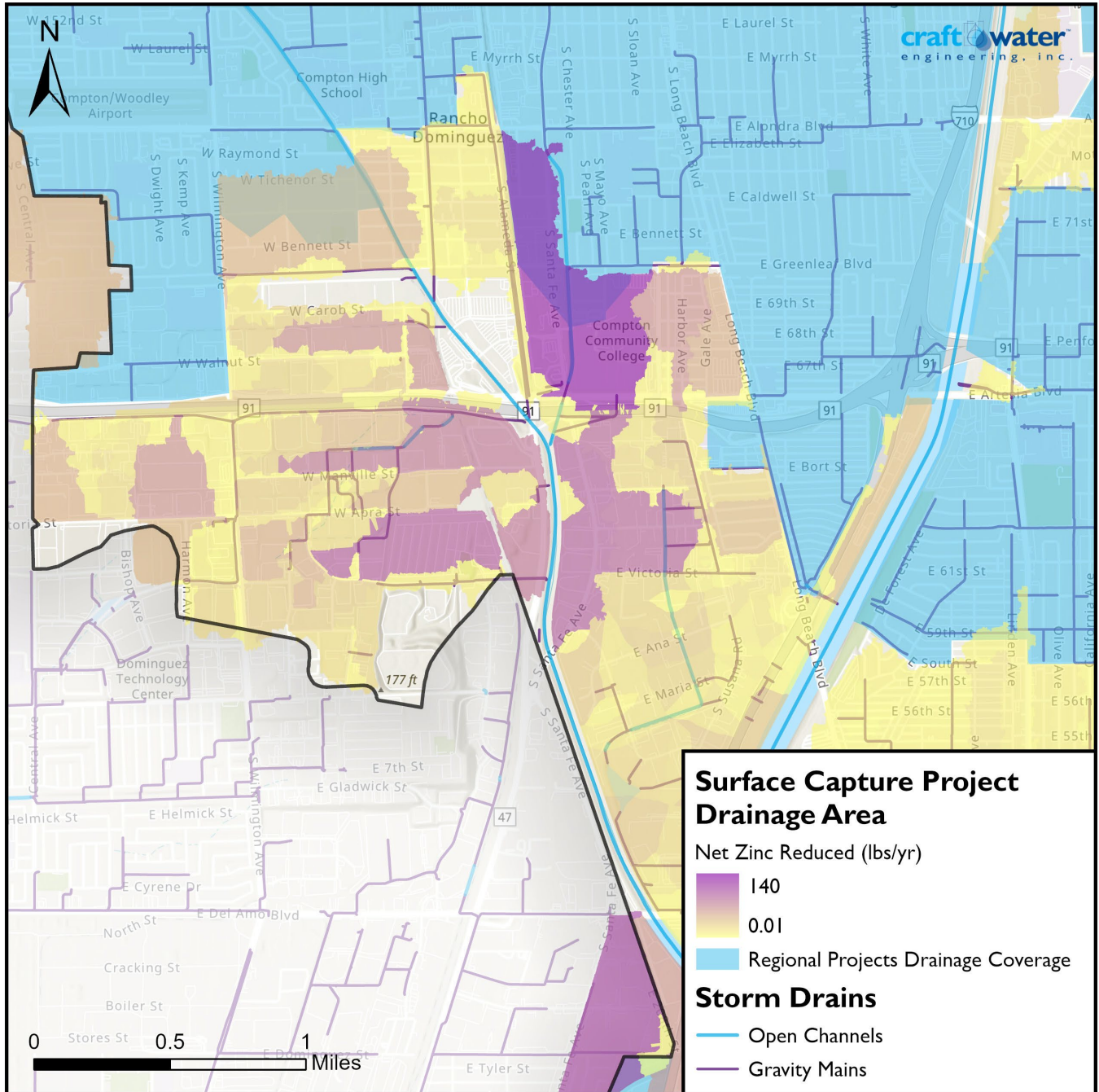


Figure 4-10. Map highlighting Surface Capture Opportunity Drainage Areas, colored by Net Zinc Reduced.

4.4 Planning Considerations

Based on the results of the Next Project Opportunity Analysis, the following considerations provide a tiered strategy to dynamically prioritize the most effective projects over time:

- Prioritize next regional project opportunities on those that perform best, are maintenance-friendly, and either downstream of or are in gaps between baseline regional project drainage areas
 - Beginning with maintenance-friendly options will provide the most efficient use of limited resources and prevent runaway future maintenance costs
 - Examples of these projects include but are not limited to: Saia LTL Freight and Atlantic Ave & E Artesia Blvd
- Combine best performing, feasible regional projects with lumped distributed surface capture projects in drainage capture gaps (see initial 10% addition of regional opportunities in **Figure 4-11**)
 - A mix of some regional projects
 - Use Project Dashboard to explore opportunities
- As time progresses and projects come online, pursue remaining regional project opportunities for marginal progress towards targets (continued addition of regional opportunities shown in **Figure 4-11**)
 - Periodically evaluate the net effect of adding projects to the system

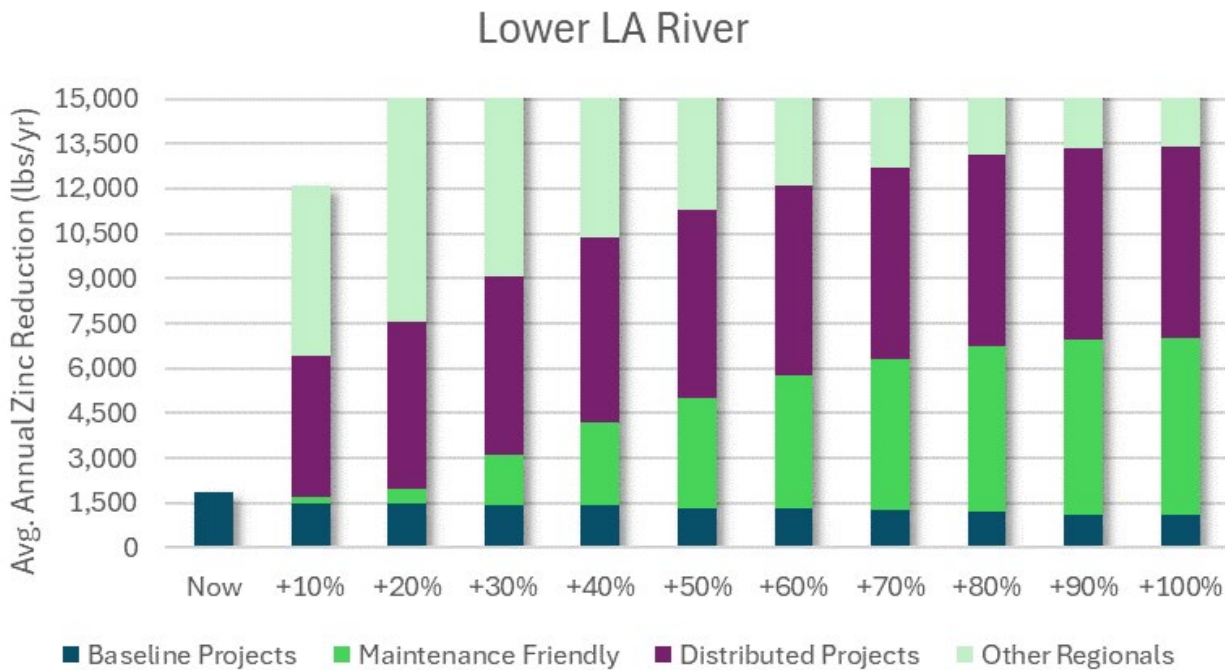


Figure 4-11. Plot of Average Annual Zinc Reduction as regional projects are incrementally added to the system.

NOTE: As more projects are implemented upstream of Baseline Projects, the overall performance of these Baseline Projects is expected to decline due to shared capture between all projects due to nested drainage coverage. However, any decline in baseline project contributions has been factored into the net benefits estimated for potential project options in accompanying Project Workbook and Dashboard to orient these metric values around **additions** to the overall watershed progress.

5.0 SAN GABRIEL RIVER (MAINSTEM)

This section provides a summary of progress towards metrics from baseline projects and the potential for contributions from additional regional projects and/or distributed projects in areas difficult to treat with regional options in the San Gabriel River (mainstem) assessment area. Key project development areas in this assessment area have been highlighted and can be used in conjunction with the supplementary Project Workbook and Dashboards to further explore. Some suggested planning considerations for project selection and implementation are also included to help guide future efforts.

5.1 Baseline Starting Point

Within the San Gabriel River assessment Area, efforts have already been made in regard to project planning and implementation. **Figure 5-1** illustrates the progress made towards each of the project performance metrics by baseline projects within this assessment area. While these efforts have resulted in significant progress towards pollutant reduction goals, projects within this assessment area do not meet targets. Across the four (4) performance metrics, the baseline projects in the San Gabriel River assessment area reach only ~10-30% of target reduction values. **Figure 5-2** shows the spatial distribution of baseline projects along with their drainage areas.

Baseline regional projects in this assessment area:

- Capture drainage from a rather small proportion of the assessment area overall,
- Are spread fairly evenly across the assessment area, leaving gaps for additional opportunities throughout,
- Do not yet achieve any of the four (4) performance targets, and
- Are most deficient in WY'15 Runoff Treated yet seem to be treating more polluted areas based on pollutant reduction estimates.

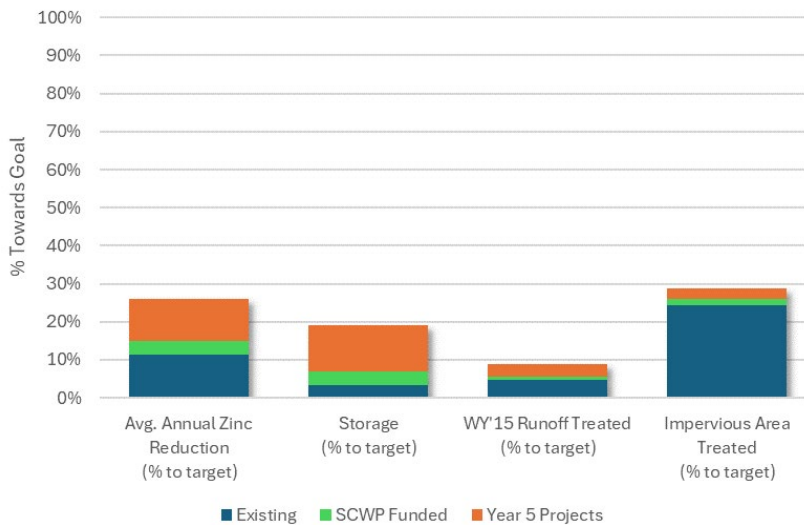


Figure 5-1. Plot indicating progress towards pollution reduction targets to date given regional projects

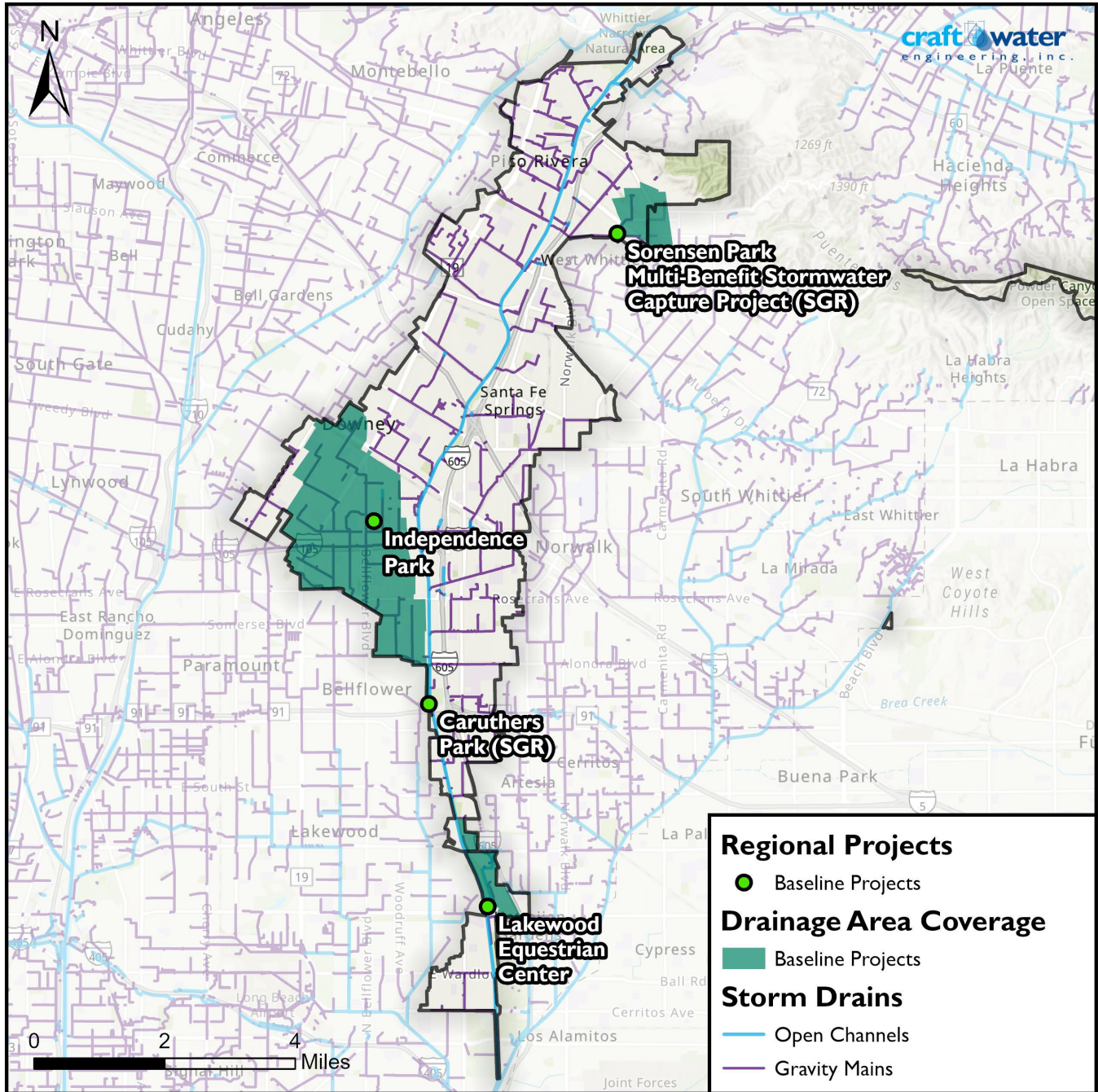


Figure 5-2. Map of Baseline Regional Projects and their drainage area coverage for San Gabriel River mainstem

5.2 Regional Project Opportunities – Next Great Options

In addition to existing and planned projects, potential future regional projects were identified and added into the analysis. **Figure 5-3** illustrates that with the addition of these potential regional opportunities, three (3) out of four (4) performance targets could be met for the San Gabriel River assessment area.

Due to the high costs, efforts, and amount of time it takes to construct regional projects, regional project opportunities have been prioritized into tiers based on their performance. **Table 5-1** provides performance metrics for the top two tiers of regional project opportunities in this assessment area. Note that while these projects are modeled to remove large amounts of Zinc from the watershed, some are located upstream of existing regional projects. This means that those projects treat zero (0) net additional impervious area and therefore would not contribute towards that target at all. For this reason, regional opportunities located downstream of existing projects and in gaps between existing project drainage areas should be prioritized for development. **Figure 5-4** and **Figure 5-5** highlight regional project opportunities that are both in the top tiers of performance and are situated either downstream of baseline projects drainage areas or in gaps between them and serve as a good starting point for prioritizing the most effective opportunities.

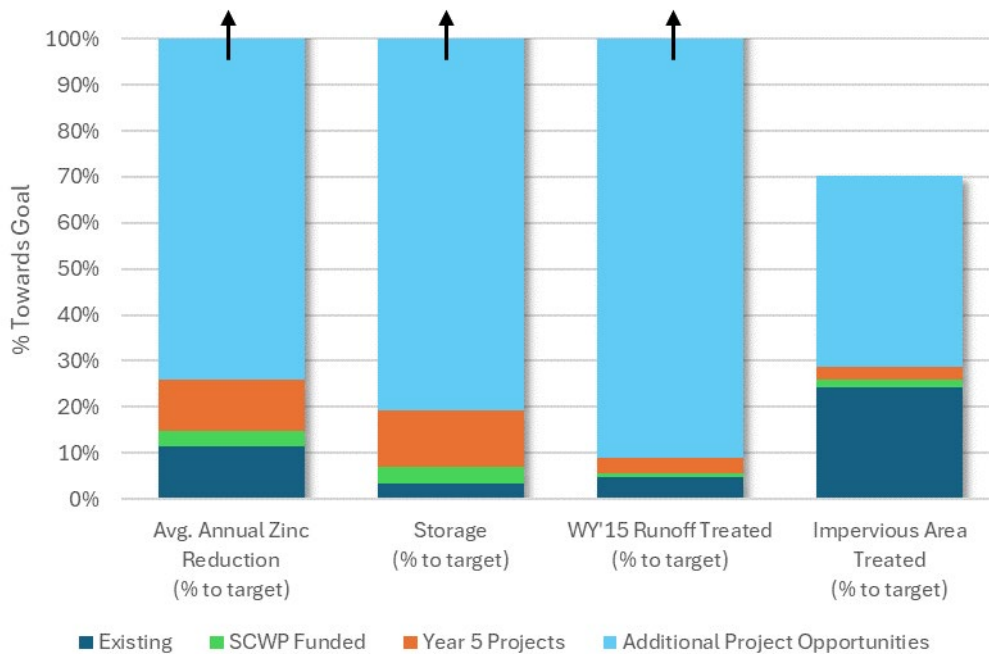


Figure 5-3. Plot indicating progress towards pollution reduction targets including project opportunities

Table 5-1. Regional Project Opportunities from the top 2 tiers with performance statistics. An asterisk after the project name (*) denotes maintenance-friendly design specifications. **NOTE: These are conceptual opportunities identified through an engineer-informed desktop analysis only; coordination has not been conducted with property owners to seek interest nor feasibility.**

Project Name	Net Additional Zinc Reduction (lbs/yr)	Net Additional Storage Volume (ac-ft)	Net Additional Runoff Managed (WY'15 ac-ft)	Net Additional Impervious Area Treated (ac)
Lake Center Athletic Park	407	16	255	636
Little Lake Park	371	14	232	571
Elmcroft Ave Green Street	337	15	279	781
Lakeside MS	261	10	237	781
Bellflower HS	210	17	491	0
Telegraph Rd & Norwalk Blvd Park*	186	7	112	231
Liberty Park*	151	9	175	331
183rd St & Studebaker Rd Parking Lot*	134	8	157	275
Corvallis MS*	94	4	153	353
Johnston ES*	90	3	150	349
LA County Office of Education Parking Lot*	87	5	158	0
Dinsdale St & Downey Sanford Bridge Rd*	84	6	147	220
East MS*	68	5	120	171
Glazier ES*	66	3	159	321
Gahr HS*	65	3	82	127
Telegraph Rd Green Street*	58	3	76	174
Leibacher Ave Green Street*	38	2	48	94
Woodruff Ave Commercial Parking Lot*	26	1	166	0

One section within the San Gabriel River Assessment Area that contains concentrated, high quality project opportunities is in the gap in regional project drainages near the center of the assessment area. There are several top performing projects there whose drainage areas make up a very large proportion of the total area draining to the river. **Figure 5-4** and **Figure 5-5** show the locations of these projects, where all labelled projects are in the top two (2) tiers of performance and are located downstream of baseline projects or are in drainage area gaps, except for the Woodruff Ave Commercial Parking lot and Bellflower HS, which are both upstream of regional projects.

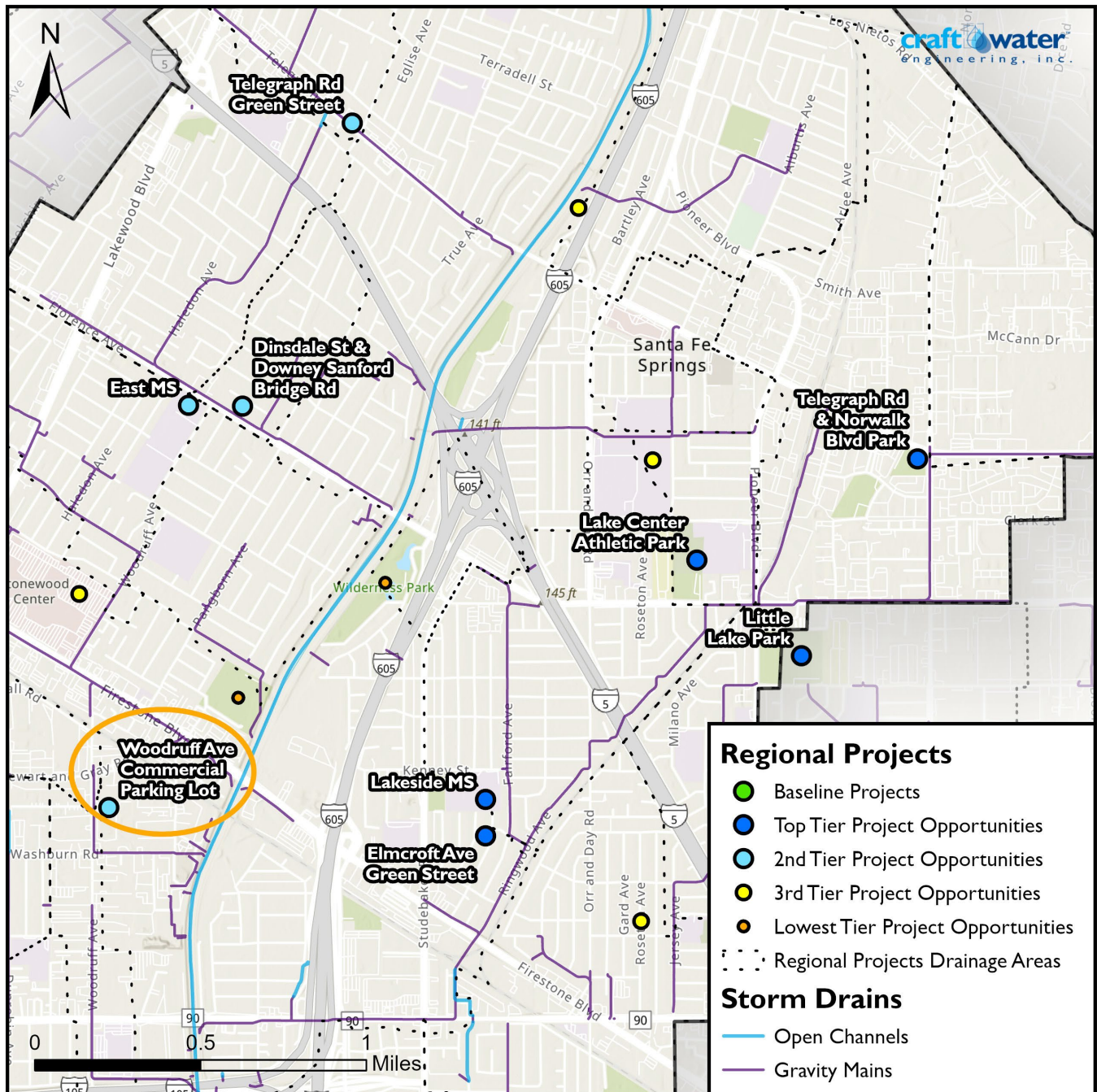


Figure 5-4. Map highlighting Regional Project Opportunities

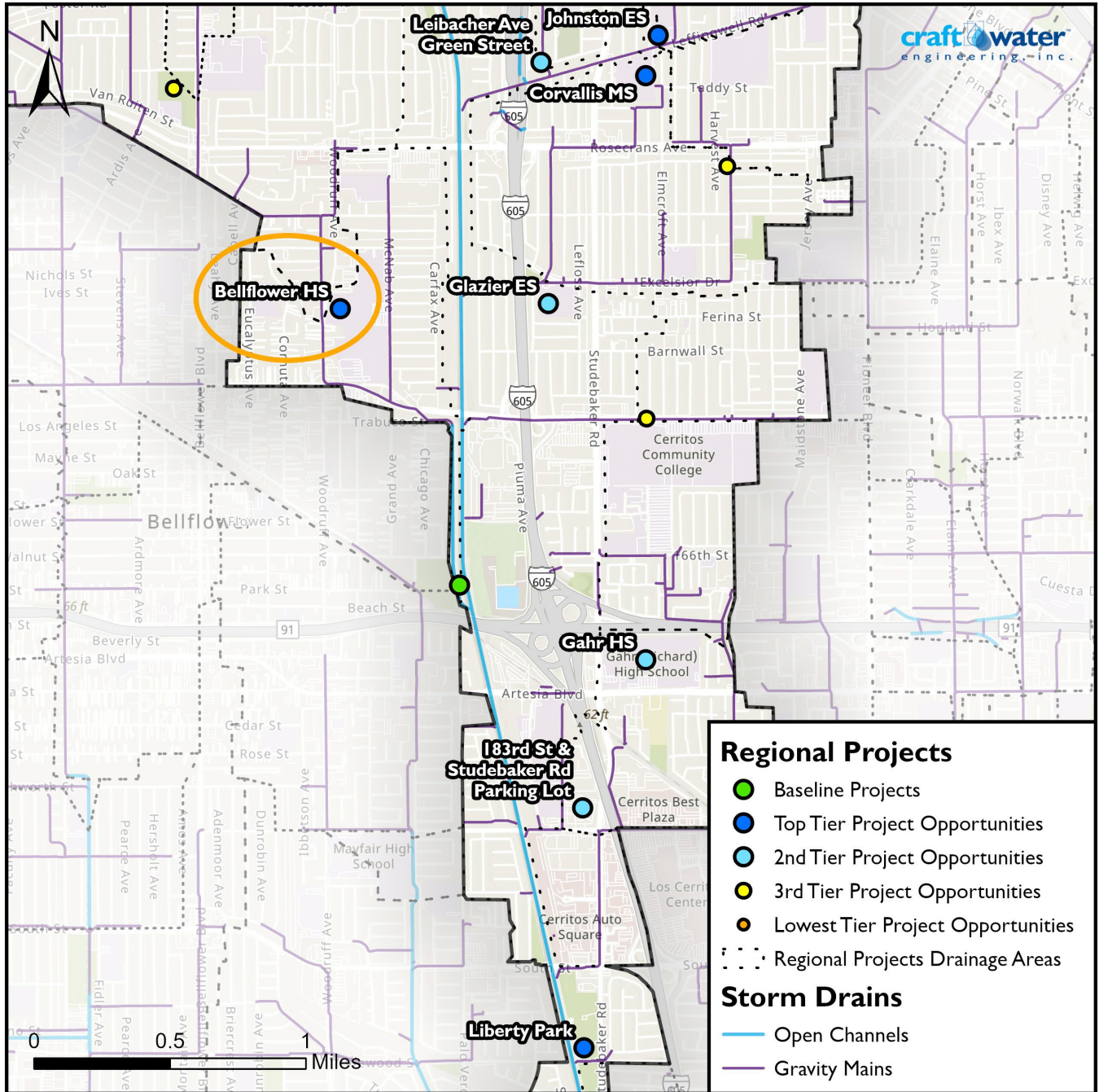


Figure 5-5. Map highlighting Regional Project Opportunities

5.3 Distributed Project Opportunities – Fill in the Gaps

In addition to existing and planned projects, potential surface capture projects were identified and added to the analysis. **Figure 5-6** illustrates that with the addition of these surface capture opportunities, two (2) out of four (4) additional performance targets could be met for the San Gabriel River assessment area beyond what is met by the baseline projects.

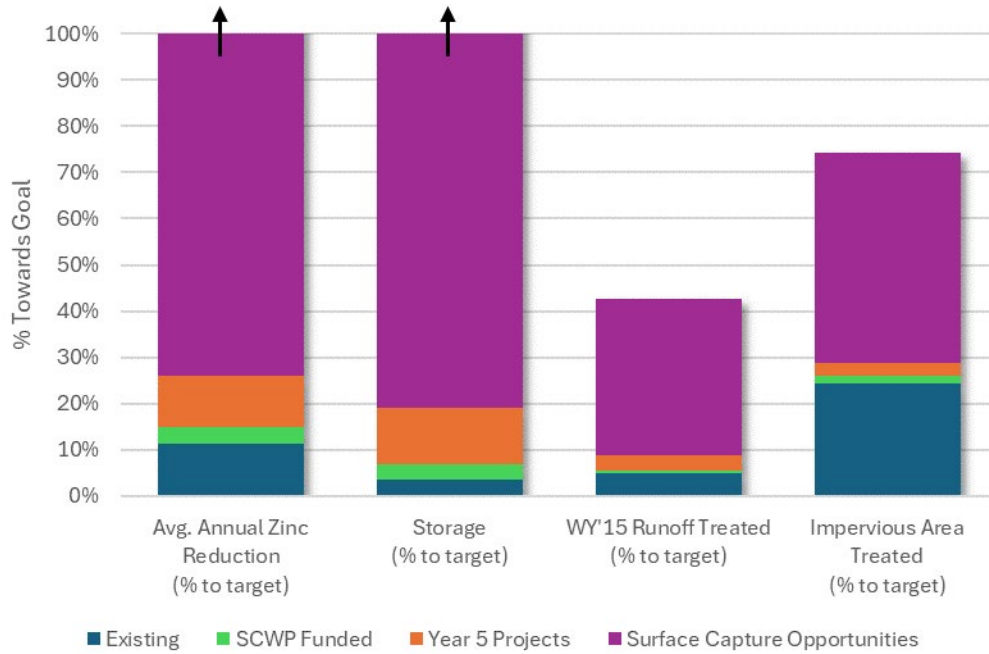


Figure 5-6. Plot indicating progress towards pollution reduction targets

The central section of the Coyote Creek assessment area could be a good place to start looking for Surface Capture Opportunities. **Figure 5-7** shows how there are a significant amount of project locations within this gap in regional project drainage areas that should be able to reduce larger amounts of Zinc. For further exploration, please see the Project Dashboard.

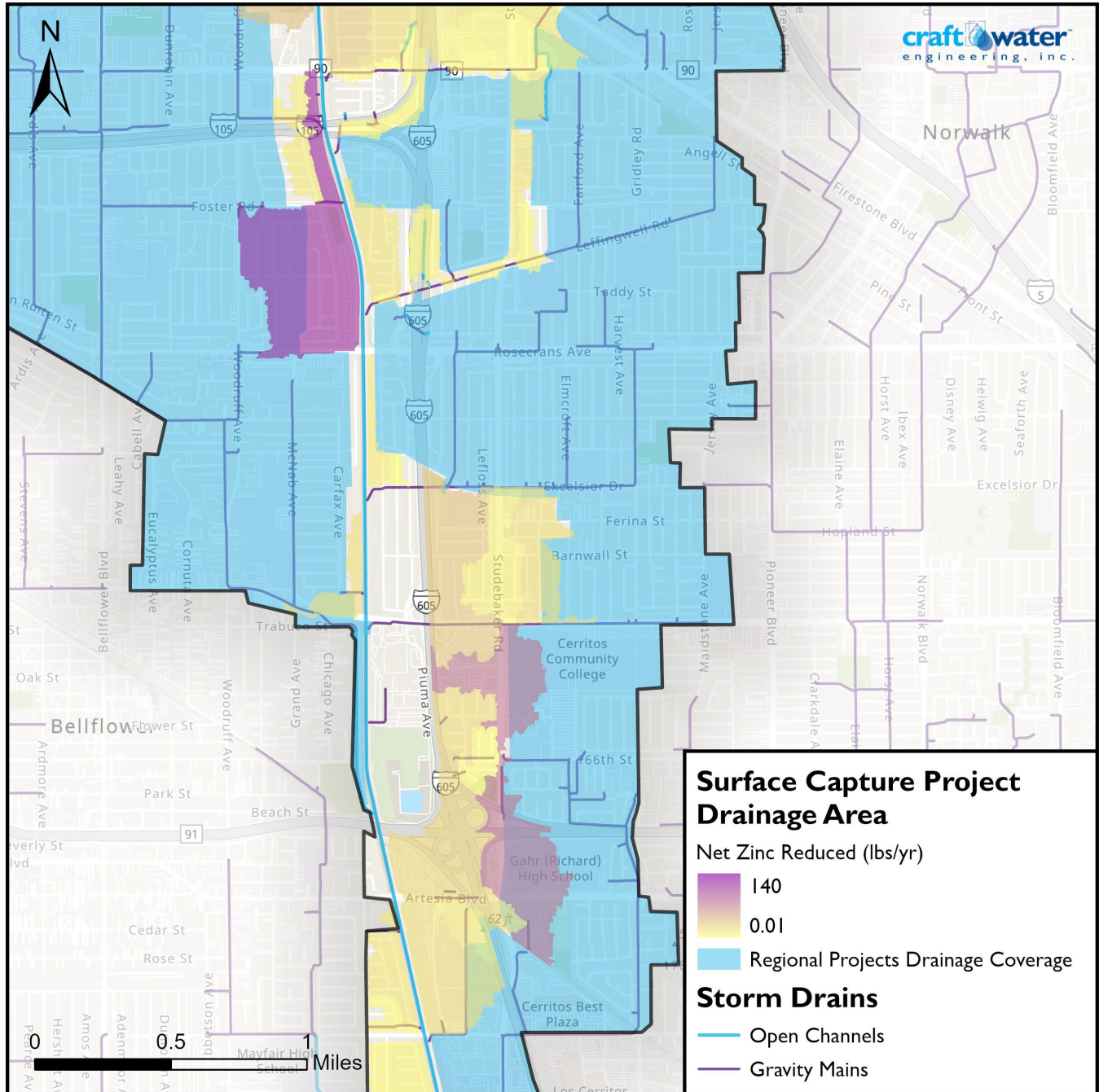


Figure 5-7. Map highlighting Surface Capture Opportunity Drainage Areas, colored by Net Zinc Reduced.

5.4 Planning Considerations

Based on the results of the Next Project Opportunity Analysis, the following considerations provide a tiered strategy to dynamically prioritize the most effective projects over time:

- Focus next regional project opportunities on those that perform best, are maintenance-friendly, and either downstream of or are in gaps between baseline regional project drainage areas
 - Beginning with maintenance-friendly options will provide the most efficient use of limited resources and prevent runaway future maintenance costs
 - Examples of these projects include but are not limited to: Telegraph Rd & Norwalk Blvd Park, Liberty Park, 183rd St & Studebaker Rd Parking Lot, Corvallis MS, Johnston ES, Dinsdale St & Downey Sanford Bridge Rd, East MS, Glazier ES, Gahr HS, Telegraph Rd Green Street, and Leibacher Ave Green Street
- Combine best performing, feasible regional projects with lumped distributed surface capture projects in drainage capture gaps (see initial 10% addition of regional opportunities in **Figure 5-8**)
 - A mix of some regional projects
 - Use Project Dashboard to explore opportunities
- As time progresses and projects come online, pursue remaining regional project opportunities for marginal progress towards targets (continued addition of regional opportunities shown in **Figure 5-8**)
 - Periodically evaluate the net effect of adding projects to the system

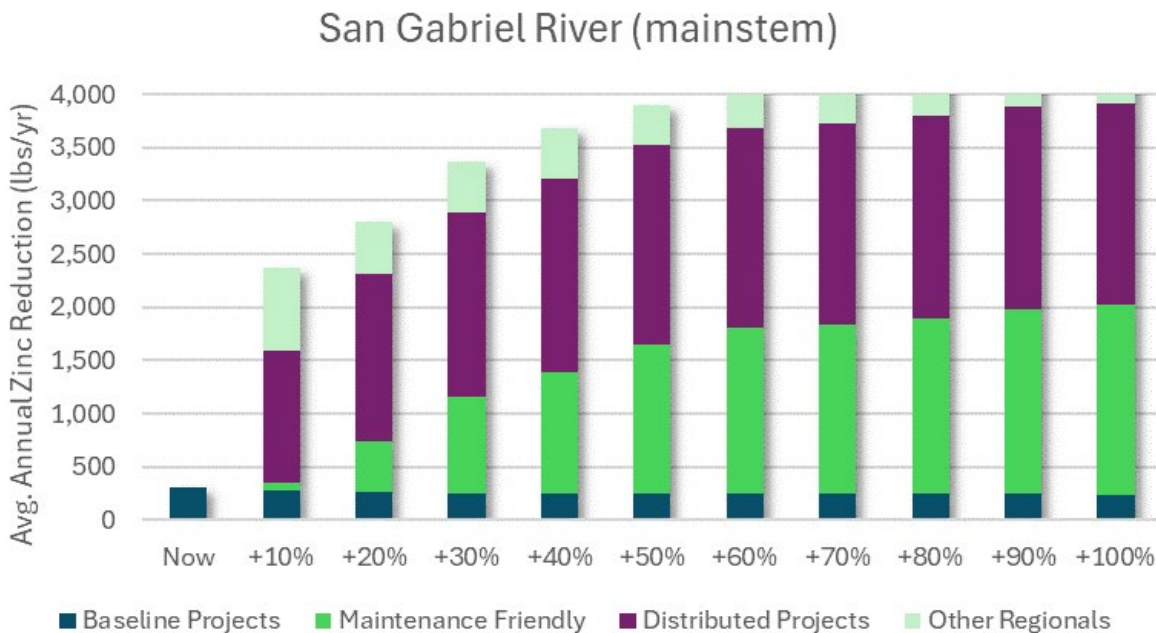


Figure 5-8. Plot of Average Annual Zinc Reduction as regional projects are incrementally added to the system.

NOTE: As more projects are implemented upstream of Baseline Projects, the overall performance of these Baseline Projects is expected to decline due to shared capture between all projects due to nested drainage coverage. However, any decline in baseline project contributions has been factored into the net benefits estimated for potential project options in accompanying Project Workbook and Dashboard to orient these metric values around **additions** to the overall watershed progress.

6.0 PROJECT OPPORTUNITY DASHBOARD

The Project dashboard from Phase 1 of the GAP study was updated in Phase 2 to reflect the evolving analysis and highlight the next potential projects to help developers find the options that might make sense to pursue and explore these spatially in the context of the areas they are focused on treating. A snapshot of the updated dashboard is below in **Figure 6-1** and some helpful use guidance is provided below to aid the user experience. The dashboard can be found at: www.gatewaywater.org.

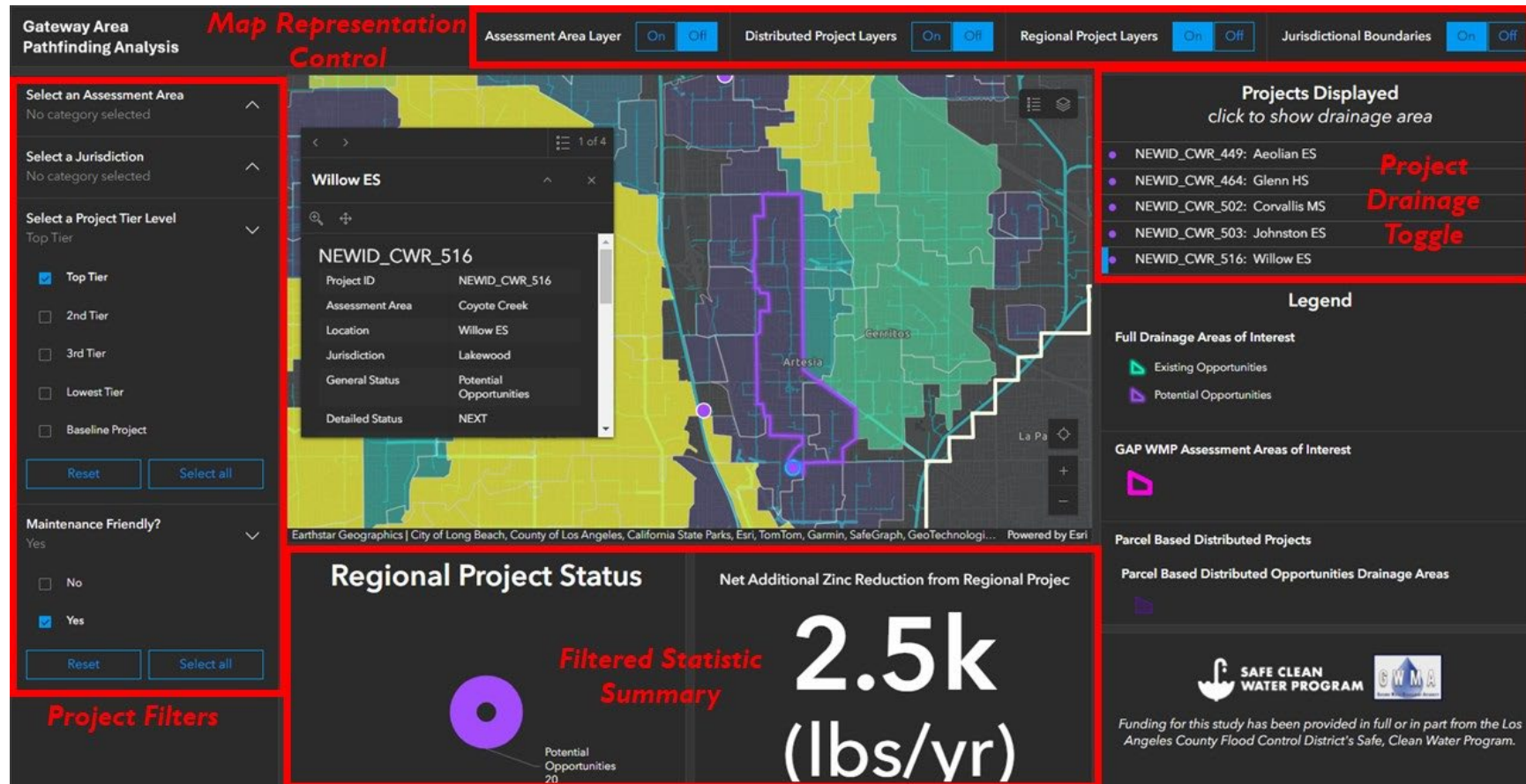


Figure 6-1. Snapshot of GAP Phase 2 project dashboard update with map viewing control and filters highlighted

The Project Opportunity Dashboard was developed to help different parties explore project options and focus on the areas of the watershed and the project options there that are most relevant to their needs and interests. This dashboard has four key features:

- ***Project Filters*** – Rapid focus on projects of interest is a key feature of this dashboard. Accessing the filter drop-down menus shows different filter options that when checked will reduce the display to only the appropriate project points in the map feature and also highlight relevant spatial boundaries where applicable. Filters applied can be easily “reset” by pressing that button in the drop-down menu to undo any filter selections. ***Filters have been provided for Assessment Areas, Jurisdictions, Project Tiers, and Maintenance Friendly Projects.*** Filters work together so that multiple criteria among the four different filter groups can be used to narrow the field of projects displayed and aid in exploring what matters to different users.
- ***Map Representation Control*** – Toggle switches have been provided to include or remove certain data from the map viewing window as desired for targeted viewing and exploration of what matters. These ***controls provide the use the ability to turn on or off the data associated with Assessment Areas, Distributed Project Layers, Regional Project Layers, and Jurisdictional Boundaries.***
- ***Filtered Statistic Summary*** – Summary statistics are provided at the bottom of the dashboard to quickly understand the sum of regional project sets that are filtered while using the dashboard. ***These react to the Project Filters and update accordingly as filters are applied,*** summarizing:
 - Regional Projects by Status (Existing or Potential), and
 - Net Additional Zinc Reduction expected from filtered projects.
- ***Project Drainage Toggle*** – Baseline Project drainage areas have been colored in the basemap to highlight the degree of treatment that exists for these. However, it is useful to layer on top of that the estimated project drainage areas for other projects of interest to see differences in coverage to help in decision-making. As projects are filtered, the list of corresponding projects is highlighted in the Project Drainage Toggle list accordingly (identified by ID and Name/Location). Full drainage areas to these opportunities can be toggled on or off by clicking on the projects in this list, and the corresponding drainage areas will be highlighted in the map viewer (see the example of the potential project at Willow E.S. in ***Figure 6-1***).

Clicking on any regional project point in the map viewer provides a summary of the underlying datasets provided in the Filterable Project Workbook for easy reference. Distributed Project options also have performance data attached as the user zooms in, and potential parcel-based footprints and capture potential by catch basin drainage area become visible at the scale of these opportunities when zoomed in close enough.

Using this dashboard in conjunction with the findings of this memo and the accompanying Filterable Project Workbook can make the results of this Memo really come alive to help users explore the data and tailor their understanding of how different project options fit into the overall watershed areas and can work together to provide the clean water goals that local managers and stakeholders are working so hard to achieve.