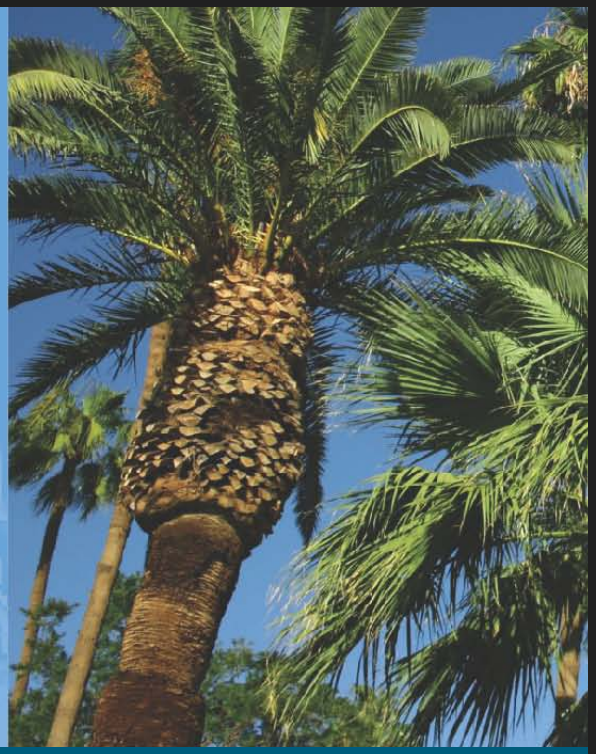


Los Angeles Gateway Region
Integrated Water Management Joint Powers Authority

Development of the

Integrated Regional Water Management Plan

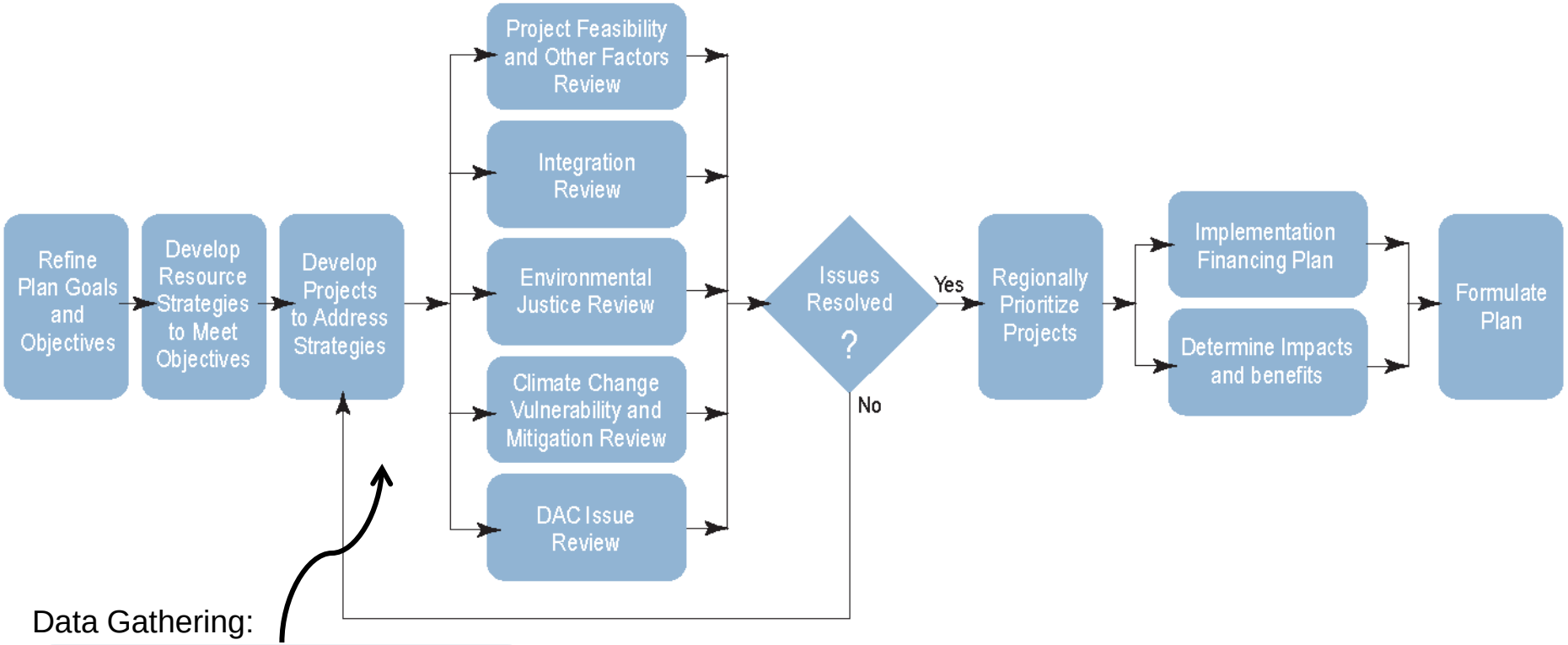
September 2012

GEI Consultants

Stakeholder Meeting Agenda

1. Introductions
2. Climate Change Considerations
3. Status of Project Submittals
4. Additional Project Needs?
5. In-kind Accounting Reminder
6. Next Steps
7. Questions

IRWMP Development Process:



Data Gathering:

Water balance
Storm water Issues
Water quality data
Review groundwater monitoring

Climate Change Considerations

1. Overview of Climate Change Study
2. Methodology for Climate Change Analysis
3. Predictions for Gateway Region Climate Change
4. Predictions for Sea-Level Rise and Water Imports
5. Methodology for GreenHouse Gas (GHG) Analysis
6. Methodology for Evaluating Adaptation Projects

Components of Climate Change Analysis

Gateway Region Climate Change

Quantitative Assessment of Climate Model Results

Climate Change & Water Imports

Review of State Water Project and Colorado River Studies

Projected Sea-Level Rise

Review of Historical and Future Global and California Estimates

Vulnerability to Climate Change

Qualitative Assessment of Adaptation Projects

Methodology for Climate Change Analysis

Gauge Estimates of Historical Baseline Climate

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Percentage change in Global Climate Model (GCM) simulations

=

Gauge Predictions of Future Climate

Percentage change in Global Climate Model (GCM) simulations

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GCM Grid-Cell Predictions of Future Climatology

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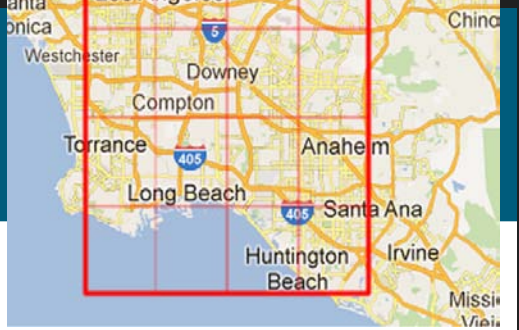
GCM Grid-Cell Estimates of Baseline Climatology

Inputs to Gateway Climate Analysis



Global Climate Model Predictions of Monthly Change

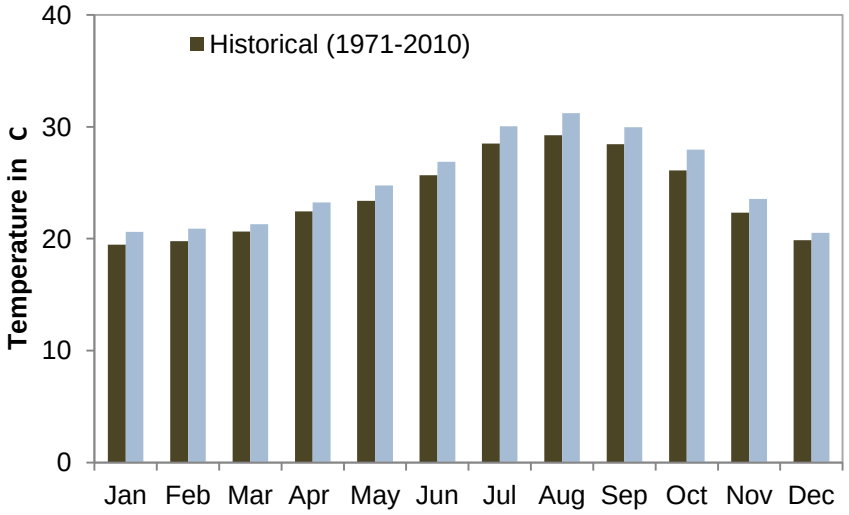
- Output data from monthly GFDL GCM runs obtained from LLNL
  - Historical GCM climatology for 1971-2010
  - Future GCM climatology for 2011-2050 with mid-century parameterization
- Climate variables used in analysis
  - evapotranspiration, temperature, precipitation, wind speed and runoff
  - % change in the intensity of climate variables computed for every season

Global Climate Model Predictions of Daily Change

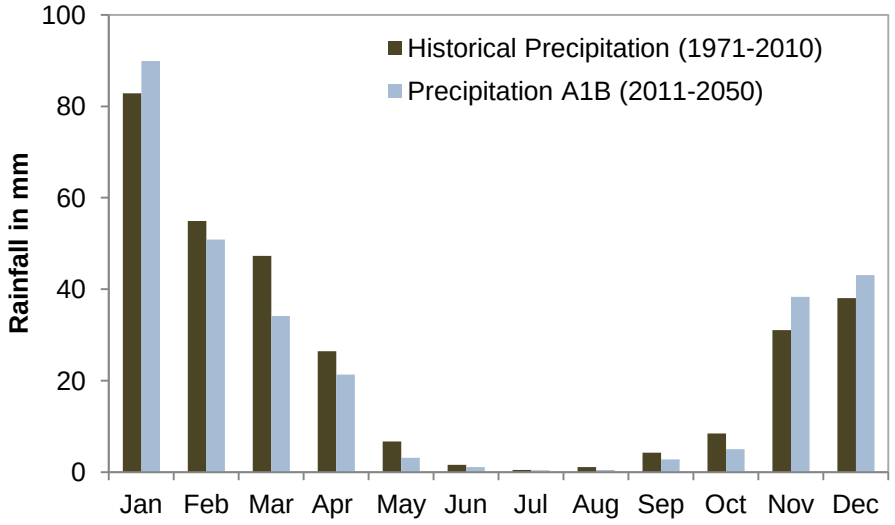
- Output data from daily GFDL GCM runs obtained from LLNL
  - Historical GCM climatology for 1981-2000
  - Future GCM climatology for 2046-2065
- Climate indices used in analysis
  - heating degree days (HDD) and cooling degree days (CDD)
  - % change in indices quantified for every season

Results of Climate Change Analysis

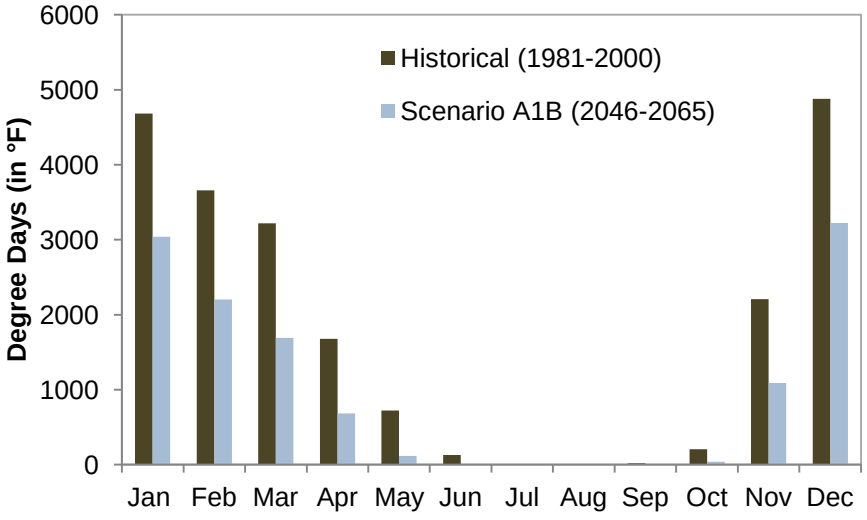
Average Monthly Max Temperature



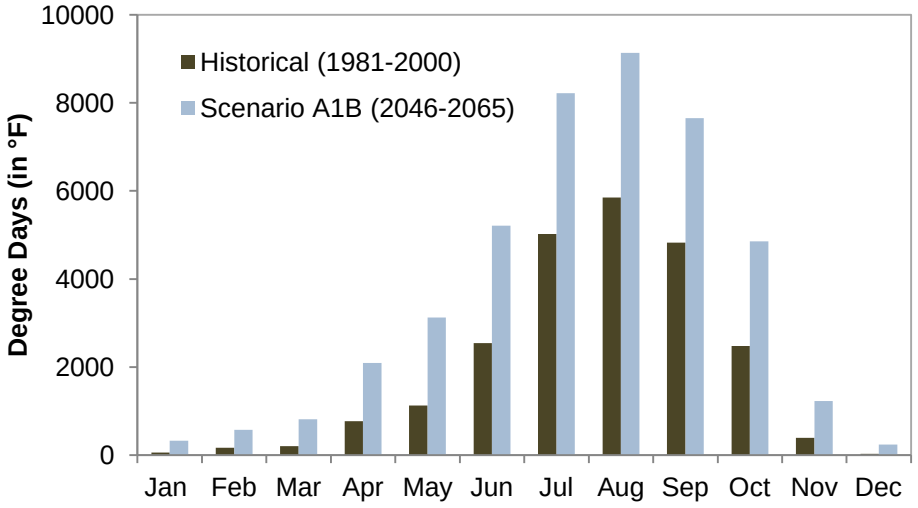
Average Monthly Rainfall



Total Heating Degree Days



Total Cooling Degree Days



Climate Change Predictions for Gateway Region

SPRING

- Precipitation decreases up to -27%
- Evapotranspiration increases up to 5%
- Runoff decreases up to -22%

- SUMMER
- Evapotranspiration increases up to 5%
- Summer runoff decreases by up to -11%

WINTER

- Precipitation increases up to 16%
- Runoff increases up to 27%

FALL

- Precipitation increases up to 47%
- Variability changes in runoff ranging between -12.44% to 28.35%

ALL SEASONS

- Increase in monthly average maximum temperatures between 4%-6% (in °C)
- Increase in monthly average minimum temperatures between 6%-10% (in °C)
- Increased Cooling Degree Days (in °F) with annual increases of about 48-85%
- Decreased Heating Degree Days (in °F) with annual decreases of about -27% to -43%

Review of Predicted Climate Impacts on Water Imports

- California Energy Commission, 2009, Using Future Climate Projections to Support Water Resources Decision Making in California. CEC-500-2009-052-F.

  Increased vulnerability of SWP and CVP with water shortages worse than the 1977 drought (when runoff Statewide was about 22% of normal) is estimated to occur **once** every **6 - 8 years by mid-century.**

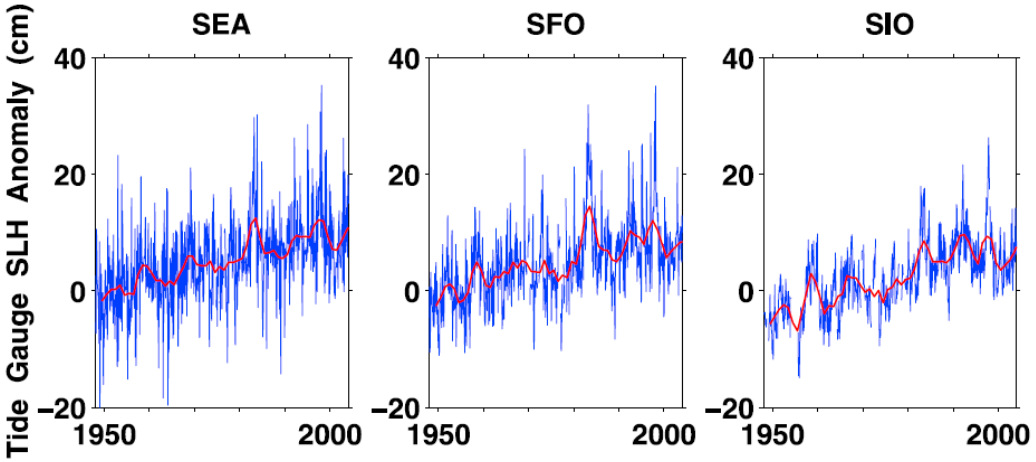
- Association of California Water Agencies, 2005, Colorado River Basin Climate: Paleo, Present, Future

  Supplies from Colorado River to California less likely to be affected as the Law of River requires upper states to deliver 7.5MAF of water. Although the likelihood of a perfect drought has been examined in which case water supply from the Colorado River could be affected.

Review of Historical and Predicted for Sea Level Rise

- Bromirski, et al., 2011, J. Geophysical Research, 116, C07005

  During the 20th century, sea level along the California coast rose by about 2 mm yr−1 compared to 3 mm yr−1 globally. Since 1980, California coast show no rise while western Pacific rose 6 mm yr−1. Further rise expected as wind patterns change.



- National Academies Press, 2012, ISBN 978-0-309-25594-3:

  Sea level along the California coast is predicted to rise

  0.04m - 0.3m by 2030 and 0.12m - 0.61m by 2050.

Key Climate Change Vulnerabilities in the Water Sector

Flood management

- Operation of flood control infrastructure must be adapted to altered timing and intensity of runoff peaks, particularly due to change in timing of snow-melt season
- Urban stormwater infrastructure must be adapted to increased uncertainty of extreme events

Water

- Increased water use in the power sector resulting from increased power consumption in warmer summer months as well as increased power transmission losses with temperatures
- Increased domestic water use particularly for outdoor uses
- Reduced imported water supplies as SWP modifies operations including, for example, lowering water levels to minimize threat of levee overtopping

Environmental

- Increased risk of wildfire which can destroy vegetation, damage recharge areas and degrade water quality
- Changes in water quality of water bodies due to effects of changing air temperatures on water temperature, pH levels, and mixing cycles
- Increased risk of groundwater contamination due to salt water intrusion into groundwater

Approach for GHG Analysis and Project Review

Prepare baseline GHG emissions for each water use

Apply baseline emissions to proposed projects to predict future emissions

Ranking proposed projects based on future emissions and vulnerability reduction

Establishing a GHG Emissions Baseline

- Identify water use activities such as water transmission, water treatment, groundwater pumping, wastewater treatment
- Select water-energy intensity for each activity in kWh/acre-ft of water
  - Estimates for each water use activity from volume of water and electricity used
  - Embedded Water-Energy Study (GEI, 2009)
  - California Energy Commission regional estimates
- Select emissions factor in lbs of CO2e emitted per kWh of power
  - Emissions reports based on energy use at individual water agencies
  - Climate Registry for Public Utility Protocol (PUP) reports from power generators
  - EPA eGRID (Emissions & Generation Resource Integrated Database) values for Western Electricity Coordinating Council (WECC) region
- Compute water-emissions intensity in lbs of CO2e emitted per acre-ft of water

Baseline GHG Emission Computations

Agency	Water Use Activity	Water-Energy Intensity (kWh/AF)	Power Source	Emissions factor of power source (lbsCO2/kWh)	Emissions per unit of water use (lbsCO2/AF)
Water Agency 1	Activity-X Pumping Groundwater	X	Provider-Y1	Y1	X*Y1
Water Agency 2	Activity-X Pumping Groundwater	X	Provider-Y2	Y2	X*Y2
…..					
….					

Comparing Emissions from Proposed Projects

- Identify proposed projects in regional water plan including
  - Water use activity description
  - Water quantity used for the activity
  - Facility from which required energy is sourced if known
- Estimate emissions for each project
  - Apply baseline emissions efficiency of water (lbs of CO_2e per acre-ft) to water use quantity
  - Apply facility emissions factor and water-energy intensity to water use quantity
- Rank projects by emissions

Potential GHG Emissions for Proposed Projects

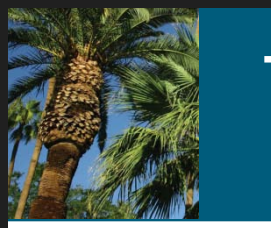
Sample Project Alternative	Volume of Water (AF)	Power Source Emissions efficiency (lbsCO2/kWh)	Applicable Water Energy Intensity (kWh/AF)	Projected GHG Emissions (lbsCO2)	GHG Reduction Score
Treat and reuse wastewater					
Bank and pump groundwater					
…..					
….					

Qualitative Climate Vulnerability Reduction Score

SCORES:
0 = Zero to Minimal beneficial effect in reducing vulnerability
1 = Mild to Moderate beneficial effect in reducing vulnerability
2 = Extremely beneficial in reducing vulnerability

Example Projects	Project increases water supply	Project reduces water demand	Project improves water quality?	Project reduces flood risk?	Project reduces salt-water intrusion?	Total Score
Injecting 50AF of recycled water into sea water barrier	1	0	2	0	2	5
New well for extracting 20AF of groundwater	2	0	0	0	0	2
Retiring 100 acres of irrigated land	0	2	1	0	0	3

Climate Change Questions?



Water Management Issues…..

Refine Plan Goals and Objectives

Develop Resource Strategies to Meet Objectives

Develop Projects to Address Strategies

Project Feasibility and Other Factors Review

Integration Review

Environmental Justice Review

Climate Change Vulnerability and Mitigation Review

DAC Issue Review

Project Information Form

Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority

Integrated Regional Water Management Plan

Project Information Form

http://www.gatewayirwmp.org/

PURPOSE

The Project Information Form is to be used by project sponsors to submit proposed projects to the Los Angeles Gateway Region Integrated Water Management Joint Powers Authority (GWMA) to be considered for inclusion in the Gateway Region Integrated Regional Water Management Plan (IRWMP). Submitted Projects should help the Region meet the IRWMP goals and objectives. Projects that may seek funding from Proposition 84, Proposition 1E, or other State sources must be included in the Gateway Region IRWMP to qualify for grant funding.

INTRODUCTION

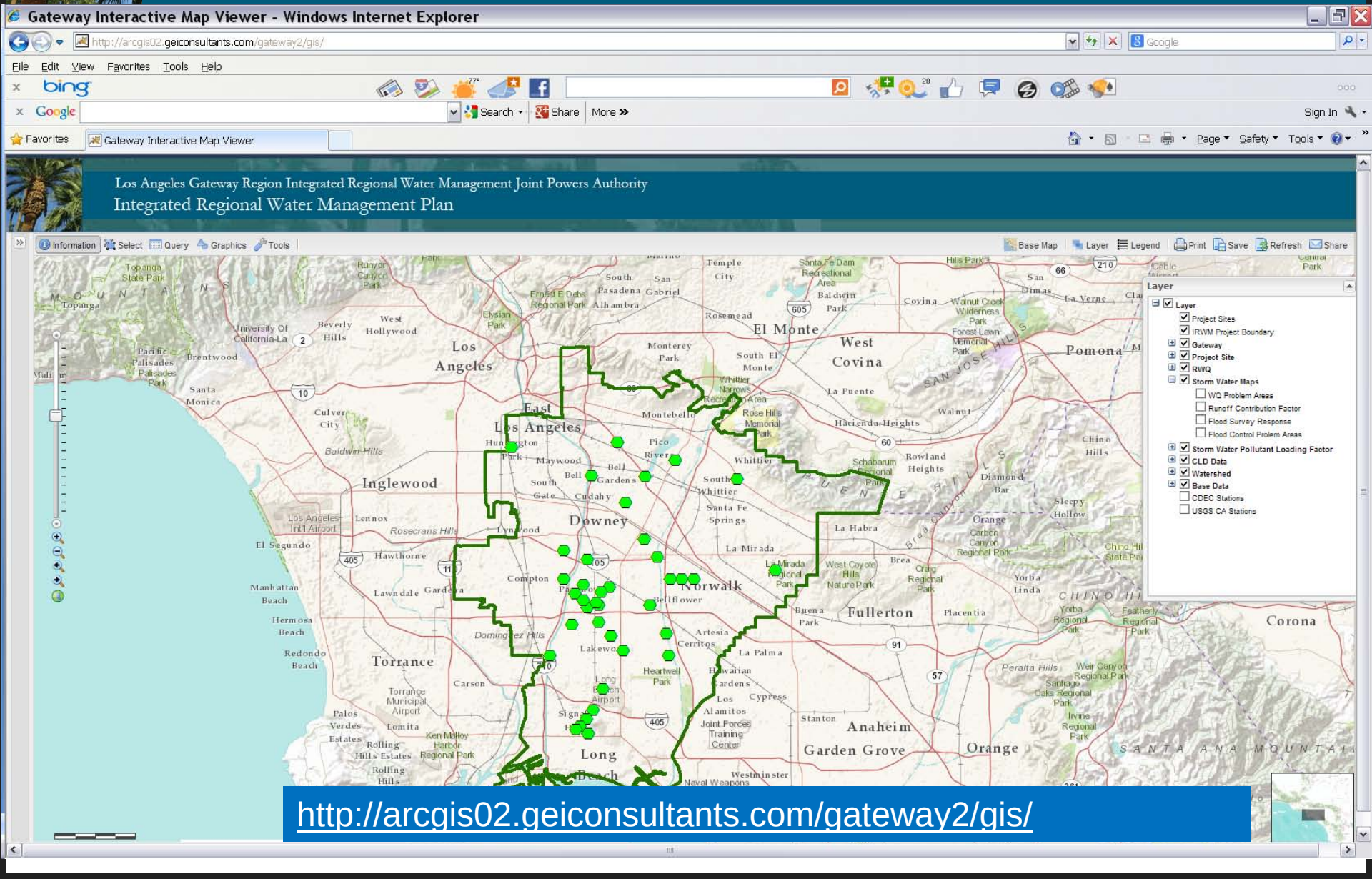
To submit a project for inclusion into the Gateway IRWMP, please complete this form and submit (button on top of this page) or send it as an e-mail attachment to GatewayIRWMP@geiconsultants.com. It is recommended that you print a copy of this form for reference as you complete the document. Project sponsors may find it helpful to first prepare the responses using word processing software, then cut and paste final responses into this form. Please note, anyone with the free Adobe Reader (located at: http://get.adobe.com/reader/) or Adobe Acrobat Version 8.1 or later can fill out, save, and submit this form.

1. Each proposed project requires a separate form.

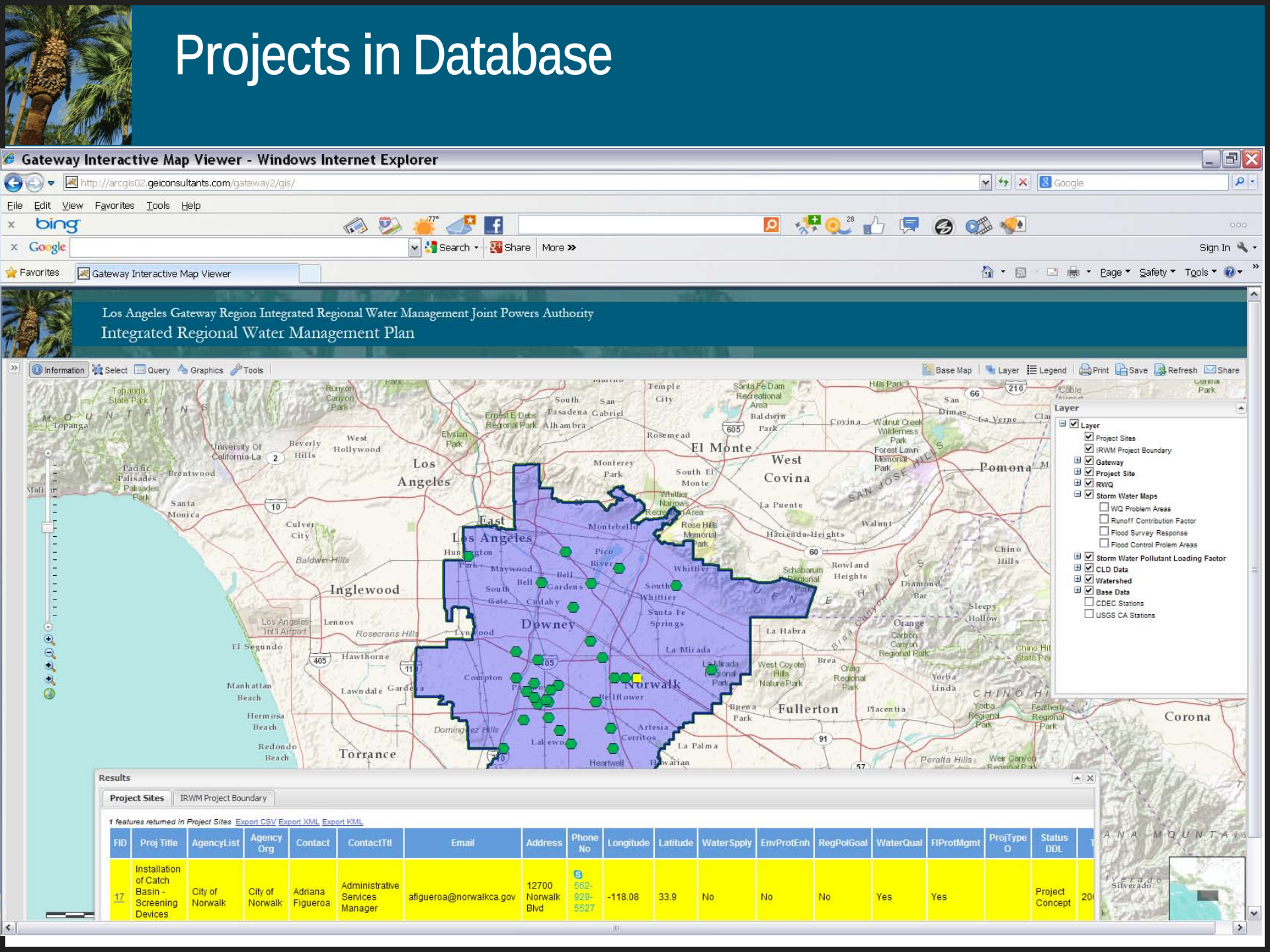
2. If the fields of the form are not highlighted, please click on the "Highlight Fields" button on the upper right hand corner of the form. This will highlight all fields to be filled out. *Please note, fields outlined in red must be completed to submit the form.* You can either click on the field to enter data or use the Tab button to tab through the form.

3. To fill out a text field (i.e., a paragraph descriptor or address information), click the cursor in the field and type the necessary information. Some text is highlighted in **red**; these indicate questions that have further instruction. Place the cursor over the question and a box will pop up with that instruction. Help information is also listed at the back of this form.

Data Base Tool – Web GIS



Projects in Database



FID	Proj Title	AgencyList	Agency Org	Contact	ContactTtl	Email	Address	Phone No	Longitude	Latitude	WaterSpply	EnvProtEnh	RegPolGoal	WaterQual	FlProtMgmt	ProjType O	Status DDL
17	Installation of Catch Basin - Screening Devices	City of Norwalk	City of Norwalk	Adriana Figueroa	Administrative Services Manager	afigueroa@norwalkca.gov	12700 Norwalk Blvd	562-929-5527	-118.08	33.9	No	No	No	Yes	Yes		Project Concept

Status of Project Submittals

- 43 Projects were submitted

City/Agency	No. of Projects
Central Basin Municipal Water District	2
City of Pico Rivera	2
City of Bellflower	1
City of Bellflower Municipal Water System	1
City of Downey	5
City of La Mirada	1
City of Lakewood	1
City of Lynwood	1
City of Norwalk	7
City of Paramount	9
City of Signal Hill	7
City of Vernon	1
GEOSCIENCE Support Services, Inc.	4
Long Beach Water Department	1

Status of Project Submittals

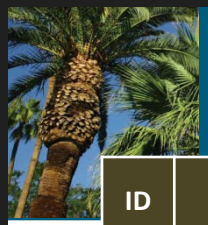
- Project Types Submitted

Project Type	No. of Projects
Water Supply	24
Regional Policy Goals	2
Environmental Protection and Enhancement	16
Water Quality	19
Flood Protection and Surface Water Management	12
Other	2

*Projects may have more than one type

Status of Project Submittals

- Total Estimated Costs
  - 9 Projects did not provide total cost estimates
    - Maximum Total Estimated Cost provided: $15M
    - Minimum Total Estimated Cost provided: $70K
    - Average Total Estimated Cost provided: $3.3M
    - Total Estimated Cost: $110,863,000
  - 70% of projects are estimated to cost less than $4M



Status of Project Submittals—Project Listing

ID	Project Title	Partnering Agencies	Submitting Agency
22	Small System Infrastructure Rehabilitation Project	CBMWD and local retail water cities and agencies in DAC areas	Central Basin Municipal Water District
37	Disadvantaged Communities Schools Retrofit Program	CBMWD and MWD, local cities, retail agencies and various school districts.	Central Basin Municipal Water District
24	Bellflower NPDES Permit and TMDL Compliance Stormwater Improvements	City of Bellflower	City of Bellflower
13	Bellflower Municipal Water Distribution System Reconstruction		City of Bellflower Municipal Water System
3	Furman Park/Rio Hondo Elementary School Recycled Water Main Extension and Irrigation System Improvement Project		City of Downey
11	New Groundwater Well		City of Downey
17	Outfall Monitoring	Cerritos, Downey, Hawaiian Gardens, Norwalk, Signal Hill, South Gate	City of Downey
21	Shallow Wells Abandonment		City of Downey
33	Catch Basin Trash Inserts and Face Plate Screens	Downey, Norwalk, Hawaiian Gardens	City of Downey
30	Storm Drain Improvements in the City of La Mirada		City of La Mirada
32	West San Gabriel River Parkway Phase 3 Development	City of Lakewood, Southern California Edison Company and L.A. County Public Works	City of Lakewood
39	Fernwood Water Improvement Park	City of Lynwood	City of Lynwood
5	Hermosillo Park Well - Well No. 9 and water mains	City of Norwalk	City of Norwalk

Status of Project Submittals—Project Listing

ID	Project Title	Partnering Agencies	Submitting Agency
6	Installation of Catch Basin - Screening Devices (ARS/CPS)	City of Norwalk	City of Norwalk
15	Norwalk Park Reservoir and Booster Pump Station	City of Norwalk - could expand to City of Bellflower/Santa Fe Springs	City of Norwalk
16	Norwalk Water Main/Meter Replacements - Gridley to Maidstone	City of Norwalk	City of Norwalk
19	Potable Water Interconnections- Bloomfield x Hayford and Pioneer x Lakeland	City of Norwalk	City of Norwalk
23	Splash Pad/Spray and Wading Pool Retrofit	Other agencies may participate including the Water Replenishment District	City of Norwalk
36	Coyote Creek Irrigation Runoff Reduction Program	City of Norwalk, City of Lakewood, and City of Bellflower	City of Norwalk
10	MWD West Coast Feeder Connection and Transmission Main	City of Paramount	City of Paramount
12	New Water Well	City of Paramount	City of Paramount
14	New Water Well	City of Paramount	City of Paramount
25	Storm Drain Improvement Project Zone 4	City of Paramount	City of Paramount
26	Storm Drain Improvement Project Zone 2	City of Paramount	City of Paramount
27	Storm Drain Improvement Project Zone 3	City of Paramount	City of Paramount
28	Storm Drain Improvement Project Zone 6	City of Paramount	City of Paramount
29	Storm Drain Improvement Project Zone 7	City of Paramount	City of Paramount

Status of Project Submittals—Project Listing

ID	Project Title	Partnering Agencies	Submitting Agency
38	Emergency Water Connection Improvements	City of Paramount	City of Paramount
1	Pico Rivera Emergency Intertie	Pico Water District	City of Pico Rivera
20	SCADA and Automation	City of Pico Rivera	City of Pico Rivera
2	Advance Groundwater Wellhead Treatment Facility		City of Signal Hill
4	Groundwater Well Supple Reliability Project		City of Signal Hill
7	Los Angeles River Estuary Bacteria TMDL - Southeast Area Low Flow Diversion		City of Signal Hill
8	Los Angeles River Estuary Bacteria TMDL - Southwest Area Low Flow Diversion		City of Signal Hill
9	Los Cerritos Channel Metals TMDL - Low Flow Diversion		City of Signal Hill
34	Cha'wot Open Space Preservation and Stormwater Runoff Reduction		City of Signal Hill
35	City of Signal Hill Recycled Water System		City of Signal Hill
31	Well 21 Conversion Project		City of Vernon
40	Monitoring of Activities Surrounding the Omega Chemical Corporation Superfund Site		GEOSCIENCE Support Services, Inc.
41	Addition and/or Expansion of Arsenic Treatment for Ground Water Extracted from the Pressure Zone of the Central Basin		GEOSCIENCE Support Services, Inc.

Status of Project Submittals—Project Listing

ID	Project Title	Partnering Agencies	Submitting Agency
42	Addition and/or Expansion of Color Treatment for Ground Water Extracted from the Pressure Zone of the Central Basin		GEOSCIENCE Support Services, Inc.
43	Addition of 1,4-Dioxane Treatment for Ground Water Extracted from the Central Basin		GEOSCIENCE Support Services, Inc.
18	Pilot Plant for Treatment of Los Angeles River Water	Long Beach Water Department	Long Beach Water Department

Additional Project Needs?

- What's missing??
  - Infrastructure 3
  - Conservation 3
  - Water Quality 15 (4 Geoscience)
  - Recycling 2
  - Wells 6
  - Flood/storm drains 6 (Paramount 5)
  - Interties 4
  - Parks 3
  - Storage 1

In-kind Work Accounting

GWMA In-Kind Expense Rate Certification

Date: _____

Name: _____

Title: _____

Organization: _____

Address: _____

Phone: _____

Email: _____

I hereby certify that I am a paid employee of _____
actively represent that organization in the Gateway IRWMP pr
participation for that organization would constitute In-Kind expe
development.

My hourly charge rate for that organization, including related o

_____

My electronic signature is _____

Signature:_____ Date:_____

Gateway IRWMP In-Kind Timesheet

Name:_____

Organization:_____

Period:_____

Date	Hours*	Task	Description of Work**
TOTAL IN-KIND HOURS	0		

*nearest 1/2 hour
**if meeting, give purpose

I certify this accounting as true and correct,

_____
Signature

Note: Electronic signature must be on file

Need Agency Letterhead !!

In-Kind Accounting

- Fill out the “GWMA In-Kind Expense Rate Certification” form.
- Provide a copy of your pay stub or other evidence that authenticates your hourly pay rate that you provided in the rate certification form above. This too only needs to be done once. Please block out and obscure any social security numbers, etc. not needed to verify your pay rate.
- Fill out the “Gateway IRWMP In-kind Timesheet” Task numbers and corresponding descriptions of those tasks are provided with the timesheet. Timesheets can be submitted monthly but not less than once every quarter
- Send all three items above to Bill:
  - Scanning and e-mailing them to *GatewayIRWMP@geiconsultants.com*
  - Mailing them to GEI Consultants, Inc., 2868 Prospect Park Drive, Suite 400, Rancho Cordova, CA 95670
  - Or bringing them to any Stakeholder Meeting.

Need Agency Letterhead !!

Next Steps

- Continue to refine Project Concepts
- Complete Project Review and Ranking
- Adopt Project List
- Follow-up on In-Kind Timesheets
- Financing Options

- Next Stakeholders Meeting October 11

Shortcut to Gateway IRWMP Project Information Form_distributed.pdf.lnk

Questions?