

Sustainable Management Criteria

IWVGA TAC Meeting: 08/01/19

Agenda Item 3c



Sustainable Management Criteria Review

- 6 Sustainability Indicators:
 - Chronic Lowering of Groundwater Levels
 - Reduction of Groundwater Storage
 - Seawater Intrusion
 - Degraded Water Quality
 - Land Subsidence
 - Depletion of Interconnected Surface Water

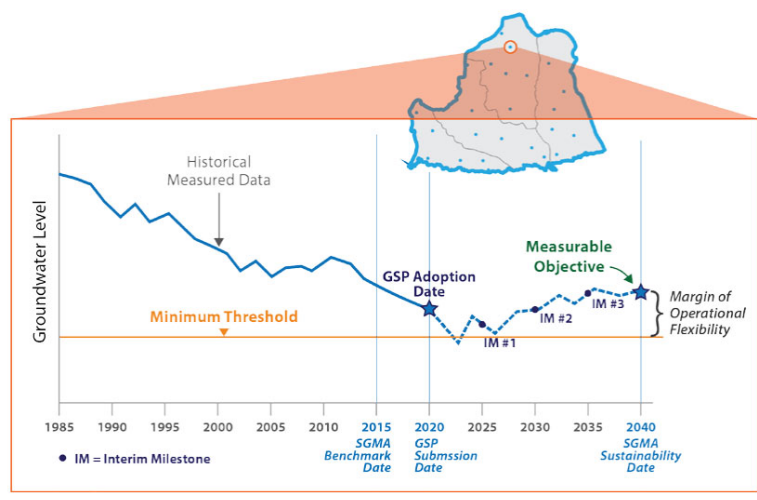


Sustainable Management Criteria Review

- Sustainable Management Criteria
 - Undesirable Results: Occurs when any of the 6 Sustainability Indicators become “significant and unreasonable”
 - Minimum Thresholds: Quantitative limit where exceedances produce undesirable results
 - Interim Milestones: Quantitative goals set in five-year increments at each representative monitoring site
 - Measurable Objectives: Quantitative goals that reflect the basin’s desired groundwater conditions
 - Sustainability Goal: Qualitative description of how Undesirable Results are avoided and the basin is operated within its sustainable yield



Relationship between Criteria



Source: DWR



Undesirable Results

- GSP Requirements for Description:
 - Cause of groundwater conditions that would or have led to undesirable results
 - Criteria used to defined when/where sustainability indicator conditions cause undesirable results
 - Potential Impacts to beneficial uses/users, land uses, property interests



Minimum Thresholds

- GSP Requirements for Description:
 - Information/Criteria used to establish and justify thresholds
 - Relationship between minimum thresholds and each sustainability indicator
 - How minimum thresholds avoids impacting adjacent basins
 - Potential Impacts to beneficial uses/users, land uses, property interests
 - Relationship with state, federal, local standards
 - Method of quantitative measurement



Minimum Thresholds: Metrics

Sustainability Indicators						
	Lowering GW Levels	Reduction of Storage	Seawater Intrusion	Degraded Quality	Land Subsidence	Surface Water Depletion
Metric(s) Defined in GSP Regulations	Groundwater Elevation	Total Volume	Chloride concentration isocontour	- Migration of Plumes - Number of supply wells - Volume - Location of isocontour	Rate and Extent of Land Subsidence	Volume or rate of surface water depletion

Source: DWR



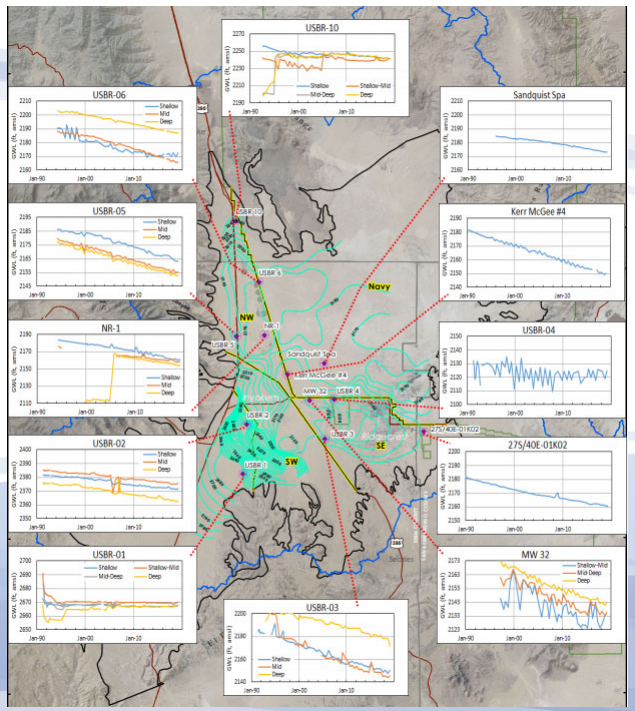
Minimum Thresholds: Groundwater Levels as Proxy

- Groundwater elevations can be used as a proxy metric for any (or potentially all) of the sustainability indicators when setting minimum thresholds
- Significant correlation between groundwater levels and the other metrics must be demonstrated
- Two Options:
 - Demonstrate that setting a groundwater level minimum threshold satisfies the minimum threshold requirements for both chronic lowering of groundwater levels and other sustainability indicators at a given site.
 - Use a groundwater level minimum threshold solely for establishing a threshold for another sustainability indicator, but not to satisfy the minimum threshold requirements for chronic lowering of groundwater.



Proposed Monitoring Network for Sustainable Management Criteria

- Figure shows monitoring network discussed at TAC on 06/27/19
- Proposed Changes to Network:
 - Add Well 32L1 in the South West Zone;
 - Add another well in the Navy Zone (TBD)
 - Remove USBR-01 and USBR-10
- All wells will continue to be monitored
- “Key Wells” (where Sustainable Management Criteria are set) will be re-evaluated during GSP updates



Undesirable Results and Proposed Project/Management Actions

Sustainability Indicator	Historical/Current Undesirable Results	Future Undesirable Results without GSP Implementation (Baseline)	Proposed Projects/Management Actions
Chronic Lowering of Groundwater Levels	Yes	Yes	Imported Water Recycled Water Water Conservation Pumping Allocations Pumping Optimization Shallow Well Mitigation Others?
Reduction of Groundwater Storage	Yes	Yes	Imported Water Recycled Water Water Conservation Pumping Allocations Pumping Optimization Shallow Well Mitigation Others?
Seawater Intrusion	Not Applicable	Not Applicable	Not Applicable
Degraded Water Quality	Yes	Yes	GWL/Storage projects
Land Subsidence	No	Yes	GWL/Storage projects
Depletion of Interconnected Surface Water	No	Undetermined	GWL/Storage projects

Approach for Setting Criteria

- Available water in storage is the main consideration influencing project/management actions and sustainable management criteria
- Things to consider when defining a “significant and unreasonable” loss of storage
 - Groundwater resources are deemed the primary encroachment concern/issue for the NAWA China Lake
 - Costs to mitigate secondary impacts related to loss of storage (shallow wells going dry, relocation of wells due to water quality issues, etc)
 - Beneficial uses
 - Uncertainties
 - General Basin and Model Uncertainties
 - Future Expansion of Navy Mission (potential major conflict)
 - Climate Change Impacts
 - Imported Water Availability and Timeline (Model Runs currently assume Imported Water is available in year 2035)
 - Impacts to Groundwater Dependent Ecosystems

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Approach for Setting Criteria

- Minimum thresholds for chronic lowering of groundwater levels and reduction of groundwater in storage will be set based on the maximum acceptable amount of water from storage that can be removed while still allowing for a reasonable margin of operational flexibility to account for hydrologic cycles/droughts
- Criteria for degraded water quality may also be set using groundwater levels as a proxy
- Approaches for land subsidence and depletion of interconnected surface water are still being determined
 - Groundwater levels may be used as a proxy

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