



South Tahoe Public Utility District

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May 28, 2014

**Tahoe Valley South Sub-Basin (6-5.01)
Groundwater Management Plan
Stakeholders Advisory Group (SAG)**

Via Electronic Mail

Re: SAG Workshop No. 3 Materials

Dear Members:

Once again we thank you for your thoughtful *and* thought-provoking contributions to the Tahoe Valley South Sub-Basin Groundwater Management Plan. Your insights and ideas shared at the May 14 workshop have significantly informed our thinking pertaining to the plan document's contents. Meeting notes from this workshop are provided as part of the enclosed meeting materials package. In preparation for the upcoming workshop, we would appreciate your careful review and consideration of the information distilled in these meeting notes. These notes will be used by the project team to help update the GWMP. At the close of the May 14 Workshop Harold Singer requested "an indication as to what major topics will be talked about in the plan document and to what extent". Unfortunately, the project team was unable to turn-a-round an updated Draft Outline with a higher level of detail than was provided at Workshop No. 2. However, the project team does believe that the meeting notes from Workshop No. 2 provide a measure of the extent to which the updated document will incorporate topics of the Strategic Advisory Group Discussion to-date.

During Workshop No. 2 the project team heard from the SAG that the GWMP have a strong basis in risk management—the identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. The project team agrees with this principle and is taking this approach.

During Workshop No. 2, thoughts were shared about potential collaboration and leveraging opportunities in education. We have summarized these in Table A in the May 14 meeting notes.

Regarding land use planning, insights into the potential to update existing source water protections and to address private wells and source water system vulnerability were discussed. Some highlights of the group's education and land use planning thoughts are on pages 3-5 of the meeting notes.

At Workshop No. 2, you spontaneously generated a table summarizing monitoring currently performed in the Basin with potential relevance to source water. This table appears in page 5 of the meeting notes.

You also shared the assets and pitfalls of the TMDL-centered stormwater program in the Tahoe Basin with regard to groundwater protection. You pointed out how design features of individual stormwater BMPs can have a significant impact on reduction of pollutants of concern for drinking water. This highlighted the potential for high-level, strategic thinking to inform future stormwater design and maintenance as summarized in pages 6-7 of the meeting notes.

Regarding the fate of the District's Early Detection and Immediate Response element, your spontaneous reflections were very much appreciated. As you will notice on page 9 of the meeting notes, Brian Grey followed up in an email to the District underscoring the reality that "timely investigation and remediation are largely dependent on responsible party cooperation". Given this reality there is an apparent relationship between the need for a strict and prescriptive EDIR ordinance and collaborative capacity and willingness to reduce risk to groundwater. At what pace and to what degree can this Strategic Advisory Group (or its derivative) build interagency collaboration and willingness to reduce risk and, correspondingly, recommend simplification of the District's EDIR? These will be topics of discussion at the June 4th workshop.

GWMP Workshop No. 3
South Tahoe Public Utility District Boardroom
1275 Meadow Crest Drive, South Lake Tahoe, CA
Wednesday, June 14
9:00 a.m. – 12:00 p.m.

In preparation for our June 4th workshop, attached are items we believe you will find helpful:

- Agenda (Workshop No. 3, Wednesday, June 4th, 2014);
- Meeting Notes (Workshop No. 2, Wednesday, May 14, 2014); and
- A copy of the District's current GWMP, with the relevant sections pertaining to the Early Detection and Immediate Response (EDIR) element highlighted.

The highlighted version of the current GWMP is provided in preparation for discussion of the EDIR Program during Workshop No. 3

Our goal in this upcoming workshop is to clarify, through discussion, a plan of action for building collaborative capacity that can reduce risk to groundwater while expanding opportunities to protect groundwater.

Once again, we thank you for your participation in the SAG. Please feel free to contact Michelle (msweeney@progresswithclarity.com) or myself at any time through this process.

Sincerely,

Ivo Bergsohn, PG, CHg
Hydrogeologist

Enclosures

Cc: M. Sweeney, Allegro Communications
M. Maley, Kennedy Jenks Consultants
R. Solbrig
File

AGENDA

DATE	Wednesday, June 4, 2014, 9:00-12
LOCATION	South Tahoe Public Utility District Offices, Board Room, 1275 Meadow Crest Drive
STRATEGIC ADVISORY GROUP CORRESPONDENCE LIST	Robert Lauritzen (El Dorado County), Jason Burke (City of South Lake Tahoe), Scott Carroll (CA Tahoe Conservancy), Greg Daum (Meyers Chevron), Brian Grey and Tom Gavigan (Lahontan Regional Water Quality Control Board), Brian Judge and Paul Nielsen (TRPA), Jennifer Lukins (Lukins Water Co), Steve Morales (LT Unified School District), Harold Singer (Community Rate Payer), Rodney Wright (Barton Health), Greg Trischler (Tahoe Keys Water), John Thiel and Ivo Bergsohn (STPUD), Mike Maley (Kennedy/Jenks), Michelle Sweeney (Allegro Communications)
MEETING HOSTS	Ivo Bergsohn, John Thiel (STPUD), Mike Maley (Kennedy/Jenks)
FACILITATOR	Michelle Sweeney (Allegro Communications)

GROUNDWATER MANAGEMENT PLAN UPDATE GOALS

1. Update the Groundwater Management Plan to meet CA legislative requirements and DWR guidelines
2. Update the District ordinance for protecting and monitoring groundwater quality
3. Develop Groundwater Basin Management Objectives (BMOs) to provide a framework for maintaining a sustainable and reliable groundwater supply
4. Create a plan for collecting, compiling and reporting regional groundwater management data
5. Establish a stakeholder forum to host discussion about groundwater topics and facilitate collaborative action toward resolution of groundwater issues

JUNE 4 MEETING GOAL & OBJECTIVES

GOAL

Clarify through discussion, a plan of action for building collaborative capacity that can reduce risk to groundwater while expanding opportunities to protect groundwater.

OBJECTIVES

1. Discuss opportunities to better protect water supply
2. Describe and discuss a course of action regarding the District's Early Detection and Response Ordinance
3. Further refine discussion on the topic of coordinated land use planning and permitting
4. Consider potential projects that would realize SAG-recommended actions and Basin Management Objectives

JUNE 4 MEETING MATERIALS

- June 4 Meeting Agenda
- May 14 Meeting Notes
- GWMP – Section 7.9 Highlighted
- Related Agency Programs Spreadsheet*

*Distributed with April 16 meeting materials. Please bring to this meeting for reference.

JUNE 4 AGENDA

Time	Description	
9:00	Welcome and Meeting Orientation <ul style="list-style-type: none"> ▪ Meeting goal, objectives and agenda 	Bergsohn Maley Sweeney
9:10	Potential Risks to Groundwater Quality <ul style="list-style-type: none"> ▪ List of Risks ▪ STPUD DWSAP ▪ Potential Contaminating Activities and Rankings ▪ Are there potential threats to groundwater that we have not discussed? 	Maley
9:30	Discussion Opportunities to Better Protect Groundwater Quality <ul style="list-style-type: none"> ▪ Strengths/Weaknesses of existing groundwater protection programs ▪ Opportunities to complement existing programs ▪ Are there opportunities to better-protect groundwater that we have not discussed? 	Bergsohn Maley Sweeney
10:15	Break	
10:25	Discussion Groundwater Ordinance – Early Detection and Immediate Response (EDIR) Program <ul style="list-style-type: none"> ▪ Need for the EDIR Program ▪ Modifying the EDIR ▪ Collaboration and the EDIR 	Bergsohn
11:00	Discussion Implementation of Land Use Planning and Permitting Coordination <ul style="list-style-type: none"> ▪ What specific actions can we recommend in the GWMP? ▪ How should coordination be pursued? ▪ What are the key instruments? 	Bergsohn Maley Sweeney
11:30	Groundwater Management Actions and Potential Projects <ul style="list-style-type: none"> ▪ Basin Management Objectives with actions and potential projects 	Maley
11:50	Next Steps	Maley Sweeney
12:00	Adjourn	Bergsohn Sweeney

NB: GWMP Workshop #4 proposed meeting date – September 24, 2014, Wednesday, 9-12. The draft GWMP document will be distributed to the SAG for review and comment after Labor Day, on or about Tuesday, September 2nd, 2014.

MEETING NOTES

DATE	Wednesday, May 14, 2014, 9:00-12 with informal lunch 12:00-1:00
LOCATION	South Tahoe Public Utility District Offices, Board Room, 1275 Meadow Crest Drive
STRATEGIC ADVISORY GROUP CORRESPONDENCE LIST	Robert Lauritzen (El Dorado County), Jason Burke (City of South Lake Tahoe), Scott Carroll (CA Tahoe Conservancy), Brian Grey (Lahontan Regional Water Quality Control Board), Paul Nielsen (TRPA), Jennifer Lukins (Lukins Water Co), Steve Morales (LT Unified School District), Harold Singer (Community Rate Payer), John Thiel and Ivo Bergsohn (STPUD), Mike Maley (Kennedy/Jenks), Michelle Sweeney (Allegro Communications)
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MAY 14 MEETING GOAL & OBJECTIVES

GOAL

Generate potential draft content for the Groundwater Management Plan on the subjects of land use planning, education and monitoring and initiate discussion about stormwater management and the groundwater resource.

OBJECTIVES

1. Increase shared understanding of the current status of groundwater monitoring
2. Discuss potential approach to
 - Land use planning
 - Education
 - Monitoring
 implementation actions in the plan document
3. Identify collaboration opportunities in strategic topic areas within and outside of the Groundwater Strategic Advisory Group
4. Summarize findings of existing reports on stormwater-groundwater relationship

ACTION ITEMS AND CONSIDERATIONS IN ADVANCE OF JUNE 4 MEETING

1) ASSESS RISK 2) PRIORITIZE ACTION ACCORDING TO RISK

It has been brought forward by Strategic Advisory Group members in the course of workshops 1 (April 16) and 2 (May 14) that any work not already being performed in the service of providing ample and safe drinking water should be rooted in risk management—the identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.¹ The SAG and District staff have identified the following pertaining to risk:

QUANTITY

Near-term risk to water supply (quantity) is deemed low relative to other California systems given that the South Tahoe groundwater basin is a headwater system with a record of ample recharge. In this context the SAG recommends actions such as

1. Continuously strive to enhance understanding of the groundwater recharge system and dynamics at play in groundwater recharge
2. In context of the above, conduct a long-range, comprehensive groundwater supply risk assessment. Include in such assessment attention to
 - Climate change (models and management implications)
 - Coordination with the USFS Lake Tahoe Basin Management Unit to derive source water pertinent information from regional climate change and forest resource management studies
 - Investigation of the potential opportunity represented by District surface water rights under changing climate conditions
 - Attention to risk and opportunity implied by regional, state and national climate information and policy related to water supply

QUALITY

Near-term risk to water quality is deemed low relative to other California systems given that the South Tahoe groundwater basin is in a watershed where allowable land uses are tightly controlled and agricultural and industrial uses are at a minimum. Residential and commercial land uses are not expanding out of the current development “footprint” as these are tightly controlled by the Tahoe Regional Planning Agency and its congressional mandate to protect the Basin and its natural resources. In this context the SAG recommends actions including

1. Conduct a comprehensive groundwater quality risk assessment evaluating uncertainty related to threats in any of the following areas: infrastructure failure (of any kind, from any source), natural causes and disasters, deliberate attack, accidents, legal liabilities and financial and political systems.
2. Once a comprehensive risk assessment has identified all possible risk associated with source water quality then define where each risk lies on a spectrum from high-to-low risk based on a standard set of criteria.
3. Separately, define where each risk lies on a spectrum related to the District and partner agencies’ ability to mitigate risk based on a standard set of criteria.
4. Integrate the risk and feasibility spectrums (#2 and 3 immediately following) to derive a spectrum of prioritized risk management actions—actions that will result in cost-effective risk reduction.
5. Identify opportunities to better-protect groundwater

In this context Strategic Advisory Group members, District staff and consultants have identified the following

¹ Risk Management, source: Wikipedia, May 27, 2014

Potential risks associated with groundwater

- Gasoline – and additives current and future
- MTBE currently in the ground and select wells
- Private wells
- Sewer system
- Stormwater system – roads and stormwater collection system
- Monitoring wells?

Opportunities to better-protect groundwater

- Interagency collaboration (data and information exchange and capacity-building agreements)
- Land use – groundwater recharge management
- Education

SOURCE WATER EDUCATION

The Strategic Advisory Group in the April 16, 2014 meeting identified education as a priority action area to be addressed in the Groundwater Management Plan document. In this, May 14, meeting, the group reconvened discussion on the subject of education as it might be integrated into the Plan.

GROUNDWATER STRATEGIC ADVISORY GROUP | A ROLE IN THE FUTURE?

Members identified several opportunities to kickstart collaboration among the groups represented on the SAG. Bergsohn said, “I’m very hopeful that this [Advisory Group] will continue and as far as education I think that is going to be a very important goal of this group. Lukins added, “I think that after the plan is created we should continue to meet on an annual basis or something to meet and confer and see what the TRPA has been doing, to see what the CTC has been doing, see what the utilities have been doing in order to promote the groundwater protection and see if there are new ideas and programs that we could come up with and ways to educate and promote. I think also educating each other as to what each other is doing is a big part as well. Just maintaining the relationships after the plan is created is a critical part.”

Collaboration – Leverage existing programs

Singer underscored the opportunities inherent in leveraging existing programs both at the District and via collaboration with other agencies. He emphasized the opportunity inherent in using existing education vehicles to reach a variety of audiences. Singer pointed out too, the value of official collaboration between agencies with the suggestion, “get an MOU with another entity that does more frequent work [on individual properties]—where that entity can look out for things that are pertinent to your need for protecting the groundwater.” In this statement Nielsen provided an example of such opportunity, “As Harold points out, regulators show up on private property for a variety of business—whether to address an illicit discharge or NPDES inspection or BMP inspection or coverage verification—to leverage those interactions I agree is a great opportunity.”

John Thiel and Paul Nielsen identified two apparent opportunities to leverage existing programs and field visits as follows:

City and County Building Permits

Thiel: “When City and County inspectors go out and do building inspections for new construction and remodels [source water protection] could be a component— they could remind the contractor or the homeowner about [source water protection] opportunities.”

TRPA Standard Conditions Approval

Nielsen: “At TRPA we have Standard Conditions of Approval that are attached to different types of projects and we could amend those standard conditions of approval easily at staff level to include, ‘please don’t do this...’, ‘please be aware...’. We do it for idling restrictions, fugitive dust... We would be happy to amend those to talk about source water protection.”

TABLE A | POTENTIAL COLLABORATION AND LEVERAGING OPPORTUNITIES, EDUCATION

Table A summarizes other potential education collaboration and “leveraging” opportunities identified in the May 14 group discussion.

Resource type	Home Agency
STPUD	educators
County	household hazardous waste collection program
County	historic water education program
CTC	public outreach specialist
TRPA	contractors workshop
TRCD, NTCD	inspectors & garden advisors

Source Water Protection “Motto” and Materials

Sweeney offered this suggestion to the group—streamline your source water protection message: “I think part of what can come out of this discussion and can be integrated into the plan is your thinking in response to the question; What’s the groundwater or source water story in 2-4 words? What is the story that we want all of our educators across disciplines to carry with them into the field?”

A LAKE TAHOE BASIN-WIDE SOURCE WATER PROTECTION MAP

Bergsohn introduced the Source Water Protection Map as a tool for making risk-to-source-water evident, “I know in the GWMP we are going to have a source water protection map. If you could show that map and say your site is here, and this proximity to a drinking water source and you’re in a “red zone” (very close) or a “yellow zone”, or “blue zone”, it makes a difference as far as your heightened awareness. [Such a map could give an indication as to] the potential effect of various activities on our drinking water.” (p. 14 of 50)

In the course of the May 14 discussion the Source Water Protection Map became a frequent point of reference. Further discussion on this topic can be found in the Land Use Planning and Stormwater sections of these notes.

TABLE B | POTENTIAL EDUCATION APPROACHES AND TOPICS

Table B lists approaches and topics the Advisory Group offered for consideration in the Education element of the Groundwater Management Plan document

Concise motto and message for translation across platforms
The Why of Water Conservation
Water Conservation in a Sustainability context
Water Conservation as Ecosystem Service
Personal Responsibility and drinking water

LAND USE PLANNING

OPPORTUNITIES TO UPDATE EXISTING SOURCE WATER PROTECTIONS | LAND USE

The Tahoe Regional Planning Agency (TRPA) has an existing source water protection ordinance and associated map. The agency is willing to undertake an update of both, incorporating a new map that may come from the efforts being discussed by this SAG.

Nielsen - The (current TRPA) ordinance says that if you have a land use, redevelopment new use that meets certain criteria (in the ordinance) industrial, commercial, then that’s a trigger to contact the local water purveyor and get comments on proposed development and see if there are source water protection measures that need to be incorporated like spill plans or special containment facilities, and then incorporate that into our approvals. So our ordinance is really a trigger.

Singer - Now that’s TRPA...does that relate back to the City then too that they have the same obligation?

Nielsen - For those projects that they permit on our behalf through the delegation MOU, the answer is yes. So we would like to update those.

PRIVATE WELLS AND SOURCE WATER SYSTEM VULNERABILITY

The following bullet points summarize discussion on the topic of private wells as a source water risk

- While the District has a private well inventory it is incomplete
- The “inventory effort” would significantly benefit from interagency collaboration (example – TRPA site assessments might integrate private well evaluation; private well locations from Lukins’ jurisdiction; County data on private well applications and closures)
- A private well GIS layer combined with other source water maps would facilitate a risk evaluation associated with private wells
- Tailored risk-reducing actions could then be designed and implemented across the “private well landscape” correspondent to the level of risk posed by private wells
- A long-term, collaborative program to reduce risk from private wells could ensue

A LAKE TAHOE BASIN-WIDE SOURCE WATER PROTECTION MAP

The concept of a Lake Tahoe Basin-wide source water protection map arose in group discussion at several points during this workshop. At this interval it was discussed 1) as a tool in the context of mapping private well and associated water system vulnerability and 2) as a tool for triggering project review by water purveyors where re/development projects may have connectivity to source waters.

Private Wells Map Layer

Bergsohn - I think putting together a private well inventory is a great idea and I think we already have it. There are probably holes in it...it could be improved, that is definitely something for the future. I love the idea of TRPA including that in their property surveys. That would be great just to know that you have if there are other wells out there that we don't have to worry.

TRPA Source Water Protection Ordinance

Bergsohn to Nielsen - So do you think TRPA then would be open to incorporating or using our map as a basis for triggering your ordinance?

Nielsen - Yes. After the last meeting, I spoke to Joanne our Executive Director and told her what was happening. I said, best available information is what we need to use. Right now the maps are at I think the 500' radius around the well. (Whether that at the time was the best available information or model ordinances – I don't know what it was). I have to think that from a geologic standpoint there is a better way to do it now. Maybe it's polygons based on geology or soils or something.

NB: TRPA, having Lake Tahoe Basin-wide jurisdiction, would seek to have the full Tahoe Basin source water protection map updated.

SHARING INFORMATION, BUILDING COLLABORATION | GROUNDWATER MONITORING

The District requested that Strategic Advisory Group members provide an overview of who is doing what, where in terms of monitoring that may potentially be relevant to the source water resource. Bergsohn described that with this workshop segment "we would like to accomplish" two things 1) get to know what information everyone is collecting in order that 2) we can at a later time ascertain what can be done with that information in relation to the Plan document's Basin Management Objectives

MONITORING CURRENTLY PERFORMED IN THE BASIN WITH POTENTIAL RELEVANCE TO SOURCE WATER

This table summarizes Strategic Advisory Group response to the request for information

TRCD	Basinwide constituent runoff concentration
CalTrans	Road contribution to stormwater flow
CalTrans	Shallow groundwater levels
CTC	Shallow groundwater levels
TRPA	Project-specific data pertaining to SEZs
LTIMP	Stream flow data
LTUSD	Pumping volumes and water use data

County	Meyers landfill monitoring data
Lukins	pumping volumes and ...

The SAG discussed how funding for LTIMP stream monitoring is diminishing. There was some inquiry into how valuable this data might be in a source water context. In closing on this topic, it was suggested that if stream monitoring data is of value to understanding the source water resource it would be worthwhile to incorporate “advocacy for LTIMP stream monitoring” in the Groundwater Management Plan document.

GROUNDWATER QUALITY AND STORMWATER MANAGEMENT

The Lake Tahoe TMDL has led to a high degree of organization in the Tahoe Basin toward the objective of maintaining a high degree of integrity in the stormwater system. The TMDL indicated that integrity of the stormwater system and road surfaces was one of the highest priority actions that could be taken toward improving Lake Tahoe clarity. A key function of the TMDL is collecting and tracking nutrient and fine sediment data, particularly in those segments of the watershed with direct connectivity to the lake. This data feeds into the Lake Tahoe Crediting Program.

While source water constituents of concern differ from the constituents of concern in the TMDL Crediting Program there are important elements of the TMDL-initiated stormwater program that might be leveraged to benefit source water over the long term. Among these elements are: an existing regional approach to stormwater management, collaboration (between CalTrans, County, the City of South Lake Tahoe, Lahontan WQCB, TRPA, the Conservation Districts and environmental conservation entities) in the form of the long-standing SQWIC, data sharing protocols, interagency agreements, maps and monitoring and data collection organizational capacity.

The TMDL looks at water quality in receiving waters as well as constituent runoff concentrations (CRC). The CRC data may be of interest to the District (Tahoe Resource Conservation District, TRCD, collects the CRC data). TRCD also collects data that contributes to understanding BMP effectiveness.

A LAKE TAHOE BASIN-WIDE SOURCE WATER PROTECTION MAP

As discussed both in the education and land use segments of the meeting (referenced above in these notes) a Lake Tahoe Basin-wide source water protection map is viewed as an instrumental tool in kicking off discussion and focused thinking about coordinated source water protection.

NB: Bob Larsen at Lahontan WQCB is the point person with the state of CA for Tahoe’s stormwater program under the TMDL.

Burke - Note that there is in Tahoe, the Environmental Improvement Program (EIP) and in this context there has been a decade of investment in large scale water quality improvement projects which are distinct from the residential Best Management Practice program.

In considering potential risk from the interaction of surface stormwater infrastructure and groundwater here are some things to consider.

Stormwater BMPs have 1) a primary, pretreatment system and 2) a treatment infiltration system

Features of stormwater BMPs with source water risk reduction potential

Stormwater BMPs have been installed in the Basin over the course of several decades. Given that the design of BMP components has been continually improved over this time, BMP components and design are different throughout the Tahoe Basin. (The TMDL emphasizes BMP maintenance irregardless of this structural disparity.)

Certain features of the stormwater BMPs have implications for source water protection. For example, drop inlets with concrete bottoms facilitate removal of sewage and diesel spills before these contaminants get into the infiltration system. Some BMPs have concrete bottoms. Not all do.

Other features of stormwater BMPs that can have implications for source water protection include: sand oil separators, weirs, underground chambers, etc.

The City's stormwater infrastructure has many of these protective features throughout. However, in rural areas (such as the unincorporated County sections of the Tahoe Basin) CalTrans may have older infrastructure that does not necessarily have these risk-reducing features.

Maley - A variety of land uses will have a variety of associated risks. Stormwater from a residential area may pose less risk than that from a commercial/industrial area.

Source Water Protection Map overlaying land uses and stormwater infrastructure and maintenance

So an inventory of the stormwater system would be helpful to the source water protection cause. The source water protection map might feature the following:

- Well information
- Groundwater recharge and aquifer features
- Land use (commercial, industrial, residential, etc.)
- Stormwater infrastructure (location, components, maintenance, etc.)

Much of this information already exists. The source water protection initiative would be to bring the data and information from diverse agencies into focus on a source water protection map. From this could be derived source water best practices. The next step would involve integrating these best practices into MOUs and formal practice by the entities installing and maintaining stormwater infrastructure and creating a monitoring system to provide feedback on the effectiveness of these practices in reducing risk.

COLLABORATIVE PROBLEM-SOLVING OPPORTUNITIES PROJECTED TO EMERGE FROM BASIN-WIDE SOURCE WATER PROTECTION MAP

City/County and State Service Station Inspections

Bergsohn - "I know there are sites in town that have drywells for storm water collection that are right down slope from service stations. [A standard inspection visit] might be an opportunity right there to make the station operators aware of the potential problem/issue. That may go a long way to stop from contamination/gasoline running into a storm drain if there is some awareness that there is a potential problem. [When inspecting a site does Lahontan] make the operators aware of those types of potential environmental liabilities?" (p.12 of 50)

Singer – "It seems that the County has more interactions with those types of operations on a routine basis more than anybody else does because they are the regulative authority."

Lauritzen: "Our UST inspectors wouldn't recognize a drywell, probably, if they saw it. But if the County was aware of a drywell at a service station and it was a potential issue and somebody brought that to light to us I think we could bring some pressure to bear on the property owner."

SOUTH TAHOE PUBLIC UTILITY DISTRICT EARLY DETECTION ORDINANCE

The District is inviting the Strategic Advisory Group (SAG) to comment on the existing Groundwater Management Plan, in particular the Early Detection and Response sections. This will be an agenda topic in Workshop 3 on June 4. In order to familiarize the SAG with the topic and discussion questions Ivo Bergsohn provided an introduction and clarifying questions and discussion were exchanged. The following notes provide an overview of this preliminary exchange.

South Tahoe Public Utility District Groundwater Management Plan, EDIR sections

7.6.5	Findings Regarding Zones of Contribution Surrounding District Wells
7.9	Groundwater Monitoring
7.9.3-7.9.11	EDIR Monitoring Wells
7.10	Response to Contamination
7.11	Enforcement

The existing Groundwater Management Plan is the first such plan created by the District. The Plan was written during a time when the gasoline additive MTBE posed a significant threat to groundwater. The plan emphasized reducing future risk from MTBE or similar components of gasoline. At present, the threat of MTBE to groundwater supply is diminishing as the additive was outlawed more than a decade ago. Gasoline and additives to it are considered a persistent threat to groundwater though. And while significant barriers have been put in place to protect groundwater from exposure to contaminants from service stations, the bottom line is, there is no such thing as zero risk. In this context, the District is seeking expert opinion from SAG members regarding the level of protection provided by county and state programs from potential service station contaminant sources.

HIGHLIGHTS FROM MAY 16 STRATEGIC ADVISORY GROUP EDIR DISCUSSION

Bergsohn - The District has a groundwater monitoring program in the ordinance that says th District “may install wells in close proximity to active underground storage tanks”. The intent of the program was to allow the District to install early detection wells. In the event of a contaminant release coming out of the Underground storage tank the well would provide an early indication. Another component of the ordinance is an emergency response plan. This provision requires the service station to have a plan pre-negotiated with the County and Lahontan.

In the late 1990’s there was a long lag time between the identification of release, and... cleanup. The intent of the ordinance was to enable a service station operator to immediately initiate interim remediation measures.

Singer - I understand that the ordinance is intended to give the District a means to initiate protective action before there is a major problem. [Today you are asking us to consider] Is it a good use of District resources to implement the ordinance given the other protections in place?

The District has not implemented the program in the decade the ordinance has existed. Bergsohn cited cost-benefit considerations as the primary factor in the decision not to implement. However, he noted that should these elements of the ordinance not be removed in this plan update, then it would be because the benefit of having such provisions was deemed cost-effective and therefore implementation would begin.

ARE NON-DISTRICT PROTECTIVE MEASURES ADEQUATELY REDUCING RISK?

The SAG transitioned to discussion about existing protective measures outside of the EDIR elements of the District ordinance. The risk being discussed here is specifically the risk to groundwater from gasoline and gasoline-related potential contaminants.

Are non-district early detection and response programs adequate?

Lauritzen observed that double-walled storage tanks are highly-desirable for reducing risk. The County does not require that double-walled storage tanks replace single-wall tanks but does require that single wall tanks be lined and any new tanks installed be double-walled.

Thiel noted that the District has information on tank location but not construction. The District doesn't know which tanks are single vs double walled.

Grey offered that the state UST program includes a leak prevention component. Lauritzen added the County has an ongoing monitoring program.

Lauritzen noted that in the event of catastrophic failure to an underground tank the existing protection framework offers inadequate protection.

Is the District having its own early detection mechanism an irreplaceable asset? Is it as viable a protection mechanism as it was believed to be?

Are there changes to service station protocols and county and state programs that would provide adequate protection if the District were to eliminate the monitoring and emergency response plan requirements of the ordinance?

Singer – 1) ...Are the new systems and everything in place (not only the physical system but the monitoring systems, etc....) are they protective enough to negate the need for the sentry wells and even the response plan? 2) From a rate payer perspective, I guess the question really is, is that a good use of District resources to actually implement that ordinance given the other things that are in place?

Carroll - I can see the benefit of a mechanism that allows the District to trigger immediate response to a problem.

In closing the SAG left off with the above questions and the following considerations: 1) Are District early detection wells a unique (and therefore irreplaceable) asset in risk management 2) Is a District-required early response plan from the service stations a unique asset in risk management and one that the District can reasonably "enforce"?

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD MAY 27 CONTRIBUTION TO EDIR DISCUSSION

In response to an email from Ivo Bergsohn requesting Lahontan RWQCB comment on the existing District Early Detection ordinance Brian Grey sent this response:

May 27, 2014 Email from Brian Grey, SAG #2 Workshop Follow up
Engineering Geologist
Lahontan Water Board- Region 6
Direct: 530 542-5421
email: BGrey@waterboards.ca.gov

As a member of the SAG, Water Board staff welcome the opportunity to participate in this discussion. The questions you raise and the clarification of issues requested are important topics.

Below is some information regarding leaking underground storage tank and site cleanup program cases to provide context for clarifying the issues.

Leaking Underground Storage Tank Cases

- Seven UST cleanup cases remain open in the groundwater basin, two of which are identified as eligible for closure.
- 76 UST cases have been closed within the groundwater basin.
- Five new UST cleanup cases have been opened in the last 10 years, all of these cases have been closed with the exception of one case opened in 2012 (Midas Muffler).
- The remaining open UST cases have not identified significant remaining source areas or are undergoing some form of investigation or remediation.
- MTBE was completely phased out of gasoline in CA by 2006.
- The Low Threat Underground Storage Tank Case Closure Policy (LTCCP) has a 60-day public participation component which allows for stakeholder concerns to be submitted.

Site Cleanup Program Cases

- Lahontan Water Board currently has 7 open Site Cleanup Program (SCP) cases in the groundwater basin; five of the seven open SCP cases are associated with PCE contamination around the "Y" and Stateline areas.
- The remaining two SCP cases are the Meyers Landfill and the Berry Hinckley Bulk Fueling Facility on James. The latter is a petroleum site eligible for closure under the LTCCP.
- Timely investigation and remediation are largely dependent on responsible party cooperation as there is no insurance fund like the UST cleanup fund for these types of releases.

While Water Board Staff welcomes additional data and acknowledges the benefit from detecting releases as soon as possible, Water Board Staff believe the decision to implement the EDIR is a discussion topic for the SAG, and not a decision for any individual entity. The SAG should collectively discuss the issue and offer a consensus opinion to the District. To facilitate this discussion, please consider a few questions below that could be discussed at the next SAG meeting to help guide the decision-making process.

Questions:

1. Why hasn't EDIR been implemented before? Are there instances in the last 10 years where EDIR would have been useful?
2. Should EDIR be focused solely on gas stations and petroleum products? Should EDIR consider other constituents of concern and/or types of activities?
3. What is District's primary concern with respect to gasoline stations and groundwater? Is it the contamination that has been left in place or new releases? Would EDIR be focused on sites with historical contamination left in place or at active stations within sensitive areas?
4. Are there plans to add previously removed wells to service?
5. Is MTBE the primary constituent of concern for the District? What other gasoline or man-made constituents of concern have been detected in District wells historically? What are current concentrations?
6. Would District water quality information be available to public/stakeholders, such as by uploading data to the State Water Board's Geotracker database?
7. Are sections 7.4 and 7.6 of the GWMP going to be updated to reflect current conditions?

8. Is the confirmation sampling schedule reasonable? Should a clear method to distinguish natural variation of residual contamination from a new release be added? Or would wells be installed in only areas known to be free of chemicals of concern?

9. What happens if the District doesn't adhere to the Plan?

Since I didn't have all the SAG member contact info readily available, could you please distribute to the rest of the SAG? I look forward to participating in the discussion on the need for an EDIR system at the next workshop. In the meantime, please let me know if you have any questions.

SOUTH TAHOE PUBLIC UTILITY DISTRICT



GROUNDWATER MANAGEMENT PLAN
(California Water Code, §§ 10750 *et seq.*)

**ADDED AS
DIVISION 7, SECTIONS 7.1 THROUGH 7.13
TO THE ADMINISTRATIVE CODE PURSUANT
TO ORDINANCE NO. 477-00**

**DIVISION 7
OF THE
ADMINISTRATIVE CODE**

Section 7.1 Plan Authorization.

7.1.1 Purpose and policy. The District has developed this Plan to maintain Groundwater supplies and protect Groundwater quality. The purpose of this Plan is to regulate, manage, conserve and protect the Groundwater resources available to the District so that the Groundwater will remain a viable potable water resource and be available to be put to the most efficient and beneficial use by the District and its customers.

7.1.2 Authorization. The District is an authorized groundwater management agency within the meaning of California Water Code Section 10753(a) and assumes responsibility for managing the quantity and quality of the Groundwater resources within the Plan Area pursuant to this Plan.

7.1.3 Findings. Because the District obtains its water supply from the Basin Groundwater, and there is currently no regulatory program in place which is designed to protect and preserve the long-term viability of the District's Groundwater resources, the District finds it advisable and in the best interests of the District and all water users to develop and implement comprehensive groundwater management of the Groundwater resources within the Plan Area.

7.1.4 Administration. The District shall administer this Plan within the Plan Area. The District, acting by and through its Board of Directors, shall have jurisdiction over Groundwater within the Plan Area and shall have the powers provided by this Division or any other provision of law. The District shall adopt rules, regulations and procedures to implement and enforce this Plan pursuant to California Water Code Section 10753.8.

7.1.5 Coordination with Other Authorities. The District will make every reasonable effort to coordinate this Plan with other governmental agencies and authorities, including the El Dorado County Environmental Management Department, the Tahoe Regional Planning Agency and the California Regional Water Quality Control Board, Lahontan Region, in order to achieve comprehensive Groundwater management within the Plan Area without unnecessary duplication of effort and utilizing consistent standards, to the extent reasonably possible. The District may, in its discretion, request that other governmental agencies take actions parallel to the actions taken by the District pursuant to this Plan, although such governmental agencies exercise their independent discretion with respect to taking action within their jurisdiction.

7.1.6 Potential Impact on Business Activities. The District has considered the impacts of man-made contamination on the District and its customers and the potential impact of this Plan and its implementing rules, regulations and procedures on business activities. The District has, to the extent practicable and consistent with the protection of Groundwater resources, minimized any adverse impacts on those business activities. This Plan will provide benefits to municipal, industrial, agricultural and commercial uses which outweigh any economic impacts that may result to those that are subject to this Plan.

7.1.7 Water Quality Authority. Pursuant to California Water Code section 10754, the District may exercise the authority of a water replenishment district pursuant to Part 4 (commencing with section 60220) of Division 18 for the protection and preservation of the District's Groundwater resources.

Section 7.2 Definitions.

7.2.1 Action Level. Action Level shall mean the concentration of Contamination at which response action will be taken. The District shall set Action Levels as follows: 1) for an early detection immediate response Monitoring Well, the Action Level shall be the lower of either five (5) times the California Drinking Water Primary Maximum Contaminant Level, Secondary Maximum Contaminant Level or California Department of Health Services' Action Level; and 2) for a Point of Compliance Monitoring Well, the Action Level shall be the lower of either the California Drinking Water Primary, Secondary Maximum Contaminant Level or California Department of Health Services' Action Level.

7.2.2 Aquifer(s). Aquifer(s) shall mean a geologic formation or group of formations that transmits or stores water in sufficient quantities to supply the Extraction of water by Wells or springs.

7.2.3 Background Concentrations. Background Concentrations shall mean concentrations of naturally occurring Contaminants in the Groundwater, surface water, soil or sediment in an area in which the concentration is not anomalous.

7.2.4 Basin. Basin shall mean the South Lake Tahoe Groundwater Sub-basin as shown in Figure 1 of this Division. The Basin is defined by all water-bearing sediments south of the shoreline of Lake Tahoe and within the watersheds of all drainages entering Lake Tahoe between Tallac Creek and Burke Creek. The South Lake Tahoe Groundwater Sub-basin encompasses the Tahoe Valley-South Groundwater Basin (Basin No. 6-5.01) as originally established in California Division of Water Resources(DWR) Bulletins 118 and 118-80.

7.2.5 Contaminants. Contaminants shall mean naturally occurring or man-made substances in surface water, Groundwater, soil, sediment or upon the land in quantities that may result in an impairment of Groundwater quality within the Plan Area.

7.2.6 Contamination. Contamination shall mean the presence of naturally occurring or man-made substances in surface water, Groundwater, soil, sediment or upon the land in quantities that may result in an impairment of Groundwater quality within the Plan Area.

7.2.7 Continuous Monitoring. Continuous Monitoring shall mean a system using equipment which routinely performs the required monitoring on a periodic or cyclic basis throughout each day.

7.2.8 Destroyed Well. Destroyed Well shall mean a Well that is no longer useful and that has been completely filled in accordance with the procedures described in Section 23 of the California Well Standards, DWR Bulletins 74-81 and 74-90 (Supplement to Bulletin 74-81).

7.2.9 District. District shall mean the South Tahoe Public Utility District, acting by and through the District's Board of Directors or their duly authorized representatives.

7.2.10 Domestic Use. Domestic Use shall have the same meaning ascribed to it by California Code of Regulations, Title 23, section 660.

7.2.11 Extraction. Extraction shall mean the act of obtaining Groundwater by pumping or other controlled means.

7.2.12 Extraction Facility. Extraction Facility shall mean any device or method for the Extraction of Groundwater including a Well.

7.2.13 Groundwater. Groundwater shall mean the water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, whether or not flowing through known and defined channels.

7.2.14 Groundwater Basin. Groundwater Basin shall mean an Aquifer or system of Aquifers, that has reasonably well defined boundaries and more or less definite areas of Recharge and discharge.

7.2.15 Monitoring Well(s). Monitoring Well(s) shall mean a Well constructed with a surface seal and a sand filter pack in accordance with accepted design practices in order to provide for the collection of representative Groundwater samples for laboratory analysis. Such Wells may also be used to detect the presence of Contamination, to investigate the extent and monitor the movement of Groundwater Contamination, to monitor water quality or to collect water-level elevation data to aid in determining the direction of Groundwater flow.

7.2.16 Operator. Operator shall mean a Person who operates a Storage Facility which handles and/or stores Petroleum Products Chemicals of Concern. If the District is unable to determine who operates a particular Storage Facility, then Operator shall mean the Person to whom the Storage Facility is assessed by the County Assessor or, if not separately assessed, the Person who owns the Real Property upon which the Storage Facility is located.

7.2.17 Overdraft. Overdraft shall mean the condition of the Basin where the average annual amount of water extracted exceeds the annual supply of water to the Basin.

7.2.18 Person. Person shall mean any individual, firm, partnership, limited liability company, partnership, corporation, association or governmental agency. Governmental agency, as used in this Division, shall not include any local agency exempt from the application of this Division pursuant to state law.

7.2.19 Petroleum. Petroleum shall mean petroleum including crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which are 60 degrees Fahrenheit and 14.7 lbs. per square inch absolute.

7.2.20 Petroleum Products Chemicals of Concern. Petroleum Products Chemicals of Concern shall mean the constituents of Petroleum or Petroleum products including, but not limited to, fuel ether and alcohol oxygenates found in Petroleum products or fuel additives, which are the result of an unauthorized release of a Petroleum substance resulting from handling, storing or dispensing of Petroleum products.

7.2.21 Physical Barrier Effectiveness. Physical Barrier Effectiveness shall mean an estimate of the ability of the natural geological materials, hydraulic conditions and construction features of a Well or intake point to prevent the movement of contaminants to a drinking water source, determined in accordance with the DHS DWSAP program.

7.2.22 Plan. Plan shall mean this Groundwater Management Plan and its amendments, modifications, and/or supplements.

7.2.23 Plan Area. Plan Area shall mean the area designated in Section 7.3 of this Plan.

7.2.24 Plume(s). Plume(s) shall mean a concentration of Contaminants in soil or Groundwater extending from a point source(s) of release.

7.2.25 Radius of Influence. Radius of Influence shall mean the horizontal distance from the center of a Well to the limit of the cone of depression.

7.2.26 Real Property. Real Property shall mean the land and everything permanently fixed as a part of it.

7.2.27 Real Property Owner. Real Property Owner shall mean the Person that is vested with ownership, dominion or legal or rightful title to the Real Property.

7.2.28 Recharge. Recharge shall mean the natural or artificial Replenishment of Groundwater storage by percolation or injection of one or more sources of water.

7.2.29 Remediation. Remediation shall mean the clean-up or removal of Contamination from the soil or Groundwater, and any action taken to prevent or minimize the release and/or migration of Contamination into or within the Groundwater Basin.

7.2.30 Repair. Repair shall mean to restore a Storage Facility system component(s) that has caused a release of a hazardous substance from the Storage Facility.

7.2.31 Replenishment. Replenishment shall mean the spreading or injection of water for the purpose of enhancing Recharge to the Basin, or otherwise adding to the storage of Groundwater within the Basin.

7.2.32 Responsible Party. Responsible Party shall mean the Real Property Owner, the Operator and/or the discharger of Petroleum Products Chemicals of Concern.

7.2.33 Site or Petroleum Contamination Site. Site or Petroleum Contamination Site shall mean any contiguous land, surface water and Groundwater areas upon or into which there has occurred a discharge of Petroleum or Petroleum Products Chemicals of Concern.

7.2.34 Stakeholder Advisory Group. Stakeholder Advisory Group shall mean the *ad hoc* groundwater management advisory committee appointed pursuant to Section 7.4 of this Plan.

7.2.35 Storage Facility. Storage Facility shall mean any device or method for the handling, mixing, and/or storing of Petroleum or Petroleum Products Chemicals of Concern.

7.2.36 Well(s) or Water Well(s). Well(s) or Water Well(s) shall mean any artificial excavation constructed by any method for the purpose of extracting Groundwater. Well or Water Well shall not include:

- (1) Oil and gas wells, or geothermal wells constructed under the jurisdiction of the California State Department of Conservation, except those wells converted to use as Water Wells; or
- (2) Wells used for the purpose of:
 - (a) Dewatering excavation during construction, or
 - (b) Stabilizing hillsides or earth embankments.

7.2.37 Well Interference. Well Interference shall mean a substantial static water level decline in a short period of time in a localized area which is caused by pumping of Groundwater by Extraction Facilities.

7.2.38 Underground Storage Tank. Underground Storage Tank shall mean any one or combination of tanks, including pipes connected thereto, which is used for the storage of hazardous substances and which is substantially or totally beneath the surface of the ground. Underground Storage Tank does not include any of the following:

- (1) A tank with a capacity of 1,100 gallons or less which is located on a farm and which stores motor vehicle fuel used primarily for agricultural purposes and not for resale.
- (2) A tank which is located on a farm or at the residence of a person, which has a capacity of 1,100 gallons or less, and which stores home heating oil for consumptive uses on the premises where stored.
- (3) Structures, such as sumps, separators, storm drains, catch basins, oil field gathering lines, refinery pipelines, lagoons, evaporation ponds, well cellars, separation sumps, lined and unlined pits, sumps and lagoons. Sumps which are a part of a monitoring system required under Section 25291 or 25292 and sumps or other structures defined as underground storage tanks under the federal act are not exempted by this subparagraph.
- (4) A tank holding hydraulic fluid for a closed loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices.

7.2.39 Underground Storage Tank Basin. Underground Storage Tank Basin shall mean the location of one or more Underground Storage Tanks in a single excavation and within close proximity to one another if more than one Underground Storage Tank.

7.2.40 Zone of Contribution. Zone of Contribution shall mean those areas at the land surface adjacent to and surrounding a well in which the primary criterion is the time of travel (time for groundwater to travel from a point in the aquifer to a Well) in accordance with the California Department of Health Services (DHS) Drinking Water Source Assessment and Protection Program (DWSAP).

Section 7.3 Plan Area.

7.3.1 Plan Area. For the purposes of carrying out the goals and objectives established in this Plan, the boundaries of the Plan Area will include portions of El Dorado County, the City of South Lake Tahoe, the Community of Meyers and Christmas Valley situated within the South Lake Tahoe Groundwater Sub-basin to the extent that they lie within the El Dorado County portion of the District's service area as shown in Figure 1 of this Division.

7.3.2 Service Area. For the purposes of carrying out the goals and objectives established in this Plan, the Service Area shall include the El Dorado County portion of the District's service area as established by the El Dorado County Local Agency Formation Commission. The Service Area encompasses approximately 27,000 acres (42 square miles), the boundaries of which are shown in Figure 2 of this Division.

7.3.3 Groundwater Basin Hydrogeology. The Basin is a sedimentary Groundwater Basin within the south portion of the Lake Tahoe Hydrographic Area. The Basin occupies an area of approximately 29,000 acres within a structural valley or graben, that is between the main range of the Sierra Nevada on the west and the Carson Range on the east. Land surface elevations across the Basin range from approximately 6,230 feet above sea level (fasl), along the south shore of Lake Tahoe to more than 7,000 fasl, where glacial moraine deposits contact bedrock on the mid-slopes of the Sierra Nevada, along the west margins of the Basin. Principle surface water drainages within the Basin include the Upper Truckee River and Trout Creek.

Structurally, the Basin is a west-tilted asymmetric half-graben. The West Tahoe Fault Zone defines the west side of the graben and is believed to be an east-dipping normal fault, with east-side-down normal displacements. This fault zone trends northwest-southeast across the Basin, from Eagle Point toward the Celio Ranch. A second zone of faulting occurs near the east side of the graben. This east side fault zone trends in a northeast-southwest direction along the mountain front of the Carson Range, from Stateline toward Meyers. This east side fault zone is also believed to be an east-dipping normal fault, with northwest-side-down normal displacements.

For the purposes of this Plan, the geologic materials contained within the Basin are broadly subdivided into bedrock and basin-fill deposits. Bedrock consists of metamorphic, granitic and volcanic rocks. These rocks occur along the upper portions of the steep mountain slopes and peaks that surround the margins of the Basin and underlies the structural valley into which the basin-fill deposits lie. A smaller region of bedrock, composed of meta-sedimentary and granitic rocks, is exposed within the north-central portion of the Basin at Twin Peaks, the adjoining area of low lying hills northwest of Twin Peaks and at Tahoe Mountain. Bedrock is not a significant source of Groundwater within the Basin.

Basin-fill deposits, in general, consist of unconsolidated glacial, lake and stream sediments. These sedimentary deposits fill the lower reaches of the canyons that drain toward Lake Tahoe and underlie the relatively flat lying valley floors. Across the Basin, the thickness of these deposits are variable. In general, the basin-fill deposits are relatively thin toward the margins of the Basin and where they cover shallow bedrock areas exposed within the Basin. The basin-fill deposits typically thicken away from these bedrock areas to fill the deepest portions of the Basin, referred to as depocenters. Gravity survey and Well drilling information suggests that

at least two depocenters occur within the Basin. The largest of these depocenters underlies the City of South Lake Tahoe. The other depocenter is located north of Fallen Leaf Lake, underlying the present drainages of Baldwin and Taylor Creeks. Basin-fill deposits attain their maximum extent within these depocenters and may be on the order of 600 feet to more than 1,000 feet thick.

The principal source of Groundwater in the Basin are the basin-fill deposits. Glacial deposits form the majority of the Aquifers in the Basin. Valley glaciers advanced north toward Lake Tahoe through the Upper Truckee River Valley during at least three episodes of glaciation between 3 million and 12,000 years ago. As these glaciers advanced and receded they formed lateral moraines along the edges of the glaciers path and terminal moraines in front of the ends of the glaciers advance. These moraine deposits are typically jumbled deposits of clay to boulder size material, with moderate permeability. Sediment-laden melt-waters from the receding glaciers flowed in streams, in front of the terminal moraines, north toward Lake Tahoe. These streams dropped their sediment loads along their stream channels and in broad coalescing flood fans, referred to as outwash plains. These glacial outwash deposits are composed of layered beds of well sorted gravel, sand and silt size material, with moderate to high permeability. Where these glacial streams deposited sediment directly into Lake Tahoe, thick deltas were formed of interlayered sand and fine-grained silt and clay. These delta sequences grade laterally with: lakeshore deposits, consisting of moderately well sorted sand and gravel deposits with relatively high permeability; marsh deposits, consisting of fine-grained sand, silt and clay; and lake deposits, consisting of silt and clay. Both the marsh and lake deposits have relatively low permeability. The glacial outwash and delta deposits form excellent Groundwater reservoirs. The best of these reservoirs have been found in the north half of the Basin, beneath the present day Truckee Marsh.

Precipitation, predominantly in the form of snow, falling in the Basin watershed, ranges from nearly 25 inches to more than 60 inches per year, depending on location and altitude. Snowmelt is the primary source of Recharge to the Basin and generates, on average, more than 80 percent of the annual runoff within the watershed. Other sources of Groundwater Recharge include stream-flow seepage and Groundwater inflow from the surrounding bedrock.

Precipitation, streams draining exposed bedrock areas and stream seepage Recharges the Basin. Infiltrating waters continue their movement through the subsurface as Groundwater flow. In general, the movement of Groundwater through the Basin is south to north, toward Lake Tahoe, which is the dominant hydrologic feature in the Basin. Areas of Groundwater discharge within the Basin occur along the upper reaches of the Upper Truckee River and Trout Creek, in wetland areas situated near the south shore of Lake Tahoe and directly into Lake Tahoe, where basin-fill deposits intersect the shoreline. Additional sources of Groundwater discharge include Groundwater pumping, evapotranspiration and seepage to springs.

7.3.4 Business/Economic Dependence on Groundwater Basin. The District and its customers, including the business community and economic vitality of South Lake Tahoe, is almost entirely dependent on Groundwater. Only a small section of the community, Lakeside Park, is supplied water from a surface water source. Visitors to the south shore of Lake Tahoe often compliment on the drinking water of the south shore of Lake Tahoe for its quality and taste. Drinking water, coupled with the pristine quality and image of Lake Tahoe, is a major asset of the community.

The District has been significantly and adversely affected by the release of man-made contaminants into the Groundwater. The District has already spent several million dollars as a result of the loss of approximately one-third (1/3) of the District's Wells being contaminated by man-made contaminants. The District will be required to spend tens of millions of dollars in the future to fully address the impacts of man-made contaminants on the Groundwater in order to provide its customers with continued high quality drinking water of sufficient quantity to meet their needs.

The production and distribution of uncontaminated groundwater is much more cost effective and efficient than providing Groundwater that has been contaminated with man-made contaminants. The treatment of Groundwater can increase water supply costs significantly, which is currently estimated to be ten to twenty times the cost of supplying uncontaminated Groundwater. Groundwater that must be treated for man-made and/or natural contaminants typically costs several million dollars in capital improvement costs and millions of dollars in annual operating and maintenance. The treatment costs will vary depending upon the volume of water being treated and the logistics of the various treatment systems in the District's water supply system.

The cost of implementing this Plan is estimated to be significantly less than the cost of treating contaminated Groundwater. When the impacts to the District and its customers are compared to the cost of this Plan, the benefits of this Plan clearly outweigh the cost of implementation. Further, this Plan will assist the business community by identifying and cleaning-up future releases immediately and, as a result, substantially reduce costs for the assessment and long-term cleanup of contaminant plumes that might otherwise go undetected. As a result, the overall cost of operations to the District (minimizing treatment of contaminated Groundwater) and to the business community (minimizing the impacts of man-made contaminant releases by early detection and clean-up) will be reduced. The cost of this Plan when compared to the costs associated with continued release of man-made contaminants into the Groundwater, both to the business community and the District, clearly supports this Plan.

Section 7.4 Stakeholder Advisory Group.

7.4.1 Establishment of Committee. The District shall appoint a Stakeholder Advisory Group consisting of individual Persons who reside within the boundaries of the District or who represent a governmental agency, and who have demonstrated their commitment to protecting the Groundwater resources of the District. The purpose of the group is to enable citizens in the District and representatives of governmental agencies to provide meaningful input in the development and implementation of this Plan. The group will operate on principles of collaboration and consensus. Representation shall be balanced among the general interest categories as follows: California Regional Water Quality Control Board, Lahontan Region, El Dorado County, Tahoe Regional Planning Agency, City of South Lake Tahoe, a Real Property Owner, an Operator, a water purveyor, a business community rate payer, a non-business community rate payer and such other persons as the District deems desirable or advisable.

7.4.2 Meetings and Rules. The Stakeholder Advisory Group shall meet at least once each quarter for one (1) year after the effective date of the original adoption of this Plan and at least semi-annually afterwards. The Stakeholder Advisory Group may meet more frequently as decided by a majority of the group. The group shall comply with the Ralph M. Brown Act

(Chapter 9 (commencing with section 54950) of Part 1 of Division 2 of Title 5 of the Government Code.) The Stakeholder Advisory Group shall adopt procedural rules for the conduct of its business. A majority of the total group members shall constitute a quorum.

7.4.3 Chairperson. The members of the group shall elect a chairperson on an annual basis. The chairperson shall preside at all meetings of the group and perform duties consistent with the procedures adopted by the group.

7.4.4 Powers. The Stakeholder Advisory Group may advise the District on all matters included within the purposes and provisions of this Division and may comment on rules, regulations and procedures which may be considered for adoption by the Board pursuant to this Division.

Section 7.5 Public Education and Community Relations.

7.5.1 Findings. It is essential to involve the public and the commercial and industrial communities in the development and implementation of this Plan. Public education, public participation and community relations are an integral element to Groundwater management in the District.

7.5.2 Services. The District shall continue to provide Groundwater protection educational services to the public through public presentations, public informational items and references to Groundwater protection data available through other governmental agencies.

Section 7.6 Condition of Groundwater Basin.

7.6.1 Findings Regarding General Water Quality. Groundwater within the Basin has excellent chemical quality and is suitable for Domestic Use and public water supply. The dissolved solids content within the Groundwater is very low, with the concentrations of inorganic constituents correspondingly low. Based on total alkalinity, the Groundwater is moderately hard. For most constituents, Groundwater within the Basin meets all drinking water quality standards, including California Drinking Water Primary and Secondary Maximum Contaminant Levels (MCLs). However, there have been few instances where, either because of the presence of natural or man-made Contaminants, MCLs have been exceeded.

7.6.2 Findings Regarding Natural Contaminants. Natural Contaminants are defined as undesirable naturally occurring substances found in water or soil which may result in a degradation of Groundwater quality for those substances. Natural Contaminants which occur in the Basin include radiological substances (uranium, gross alpha activity and radon) and potentially arsenic, soluble iron and manganese.

Radiological substances include total soluble uranium, gross alpha activity and radon. Incidences of radiological substances exceeding the uranium MCL of 20 picocuries per liter (pCi/L) and/or the gross alpha MCL of 15 pCi/L have been found in the District's South Y Well and College Well. These Wells are generally situated in areas within the Basin believed to be proximal to shallow bedrock. The source of these radiological substances is believed to be due to the dissolution of uranium-bearing minerals present in the bedrock. On average, concentrations of radiological substances for all water samples collected from each respective District Well, with the exception of the South Y and College Wells, have been below MCLs.

Concentrations of radiological substances in water collected from other District Wells are typically 15 pCi/L or less for total uranium and 10 pCi/L or less for gross alpha.

Radon is found in Groundwater occurring throughout the Basin. The source of radon is from the radioactive decay of radium isotopes, which are themselves, disintegration products of uranium. Radon levels in water samples collected from District Wells have ranged from approximately 100 to more than 4,000 pCi/L. An MCL of 300 pCi/L has been proposed for this compound with an alternative MCL of 4,000 pCi/L. The majority of District Wells have average radon levels which are greater than the proposed MCL but less than the proposed alternative MCL.

Arsenic levels in water collected from District Wells is below the present MCL of 50 milligrams per liter (mg/L). However, this MCL may be lowered in the future to 10 mg/L or less. Incidences of arsenic greater than 10 mg/L have been found in the Airport Well, Bakersfield Well, Mountain View Well, South Upper Truckee Well #2, South Y Well, Sunset Well, and Tata Well #1. District Wells with water having average arsenic concentrations at or exceeding 10 mg/L include the Bakersfield Well and Tata #1 Well. Sources of arsenic in the Basin are believed to be derived from the weathering of exposed bedrock within and surrounding the Basin and/or the dissolution of arsenic-bearing materials within the basin-fill deposits.

Soluble iron concentrations in water from the Al Tahoe Well #1, Blackrock Well #1, Blackrock Well #2, Chris Avenue Well, College Well, Fountain Avenue Well, Glenwood Well #2, Helen Well #1, Helen Well #2, Mountain View Well, South Upper Truckee Well #1, South Upper Truckee Well #2, Tata Well #1, Tata Well #2, Tata Well #3 and Tata Well #4 all have had maximum occurrences exceeding the recommended secondary MCL of 0.300 mg/L. Sources of iron in these Wells may be attributed to natural processes (chemical reactions which occur when waters at varying oxidation states mix in the subsurface) and/or the development of biofilms or corrosion of metal casings within the Wells themselves. On average, soluble iron concentrations for all water samples collected from each respective District Well have been below MCLs, with the exception of the Helen Well #1. Soluble iron concentrations in water collected from other District Wells are typically 0.200 mg/L or less.

Soluble manganese concentrations in water from the Glenwood Well #2, Martin Avenue Well and the Tata #4 Well all have had maximum occurrences exceeding the recommended secondary MCL of 0.05 mg/L. These Wells are generally situated across the north-central portions of the Basin. Sources of manganese in these Wells are believed to be from similar sources as described for iron. On average, soluble manganese concentrations for all water samples collected from each respective District Well, with the exception of the Tata #4 Well, have been below MCLs, with the exception of the Martin Avenue Well and Tata #4 Well. Soluble manganese concentrations in water collected from other District Wells are typically 0.020 mg/L or less.

7.6.3 Findings Regarding Man-Made Contaminants. Man-made Contaminants are defined as undesirable substances not normally present in Groundwater which result in a degradation of Groundwater quality for those substances. Man-made Contaminants which occur most frequently in the Basin are volatile organic chemicals (VOCs) including: vinyl chloride (VC); 1,4-Dichlorobenzene (1,4-DCB); tetrachloroethene (PCE); 1,2-Dichloroethane(1,2-DCA); cis-1,2-Dichloroethene (1,2-DCE); Trichloroethene (TCE); Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); and Methyl Tert-Butyl Ether (MtBE). The first six listed VOCs are

collectively referred to as chlorinated hydrocarbon compounds (CHCs). These CHCs are most often used as industrial agents used for degreasing metals, cleaning electronic parts and dry cleaning fabrics. They are also contained in many household products such as oil-based paints, drain cleaners, spot removers, engine degreasers and paint removers. BTEX and MtBE are aromatic compounds and alkyl ethers, respectively, which occur in gasoline.

CHCs have been detected in Groundwater underlying the former Meyers Landfill facility in the east-central portion of the Basin and are also prevalent in the South Y Area, in the west central portion of the Basin and near Stateline, in the north-east portion of the Basin. CHCs have been detected in water from the District's Blackrock Well #1, Clement Well, Industrial Well #2, Julie Well, and the Tata Well #4. Contaminant levels in water from the Clement Well and the Julie Well have exceeded the MCL for PCE of 0.005 mg/L. Water from these Wells and the Tata Well #4 are treated to remove CHCs prior to water supply use. Levels of CHCs in the Industrial Well #2 and Blackrock Well #1 have not exceeded MCLs. Presently, the source of Contamination in these Wells are unknown. Investigations to identify potential sources of this Contamination are on-going.

The primary source of MtBE contamination in the Basin is from spills and releases associated with the operation of gasoline storage and fueling facilities. Most of these facilities are retail Petroleum outlets. At a majority of these facilities, MtBE has been detected in Groundwater underlying these Sites. Therefore, the distribution of this contamination closely corresponds to the locations of gasoline storage and fueling facilities, which are located primarily along the Highway 50 corridor from Stateline to Meyers. At many of these Sites, MtBE contaminant Plumes have impacted significant portions of the Basin and have degraded the water quality of water producing zones used by District Wells. Significant areas of MtBE Groundwater Contamination occur in the Meyers area, in the South Y Area, the lower portion of the Upper Truckee River, near the intersection of Highway 50 and the lower portion of Trout Creek near the intersection of Highway 50 and along Highway 50, near Stateline.

The District has removed twelve (12) Wells from service and reduced the operating rate of one (1) municipal water Well due to MtBE Groundwater Contamination. MtBE has been detected in water from the District's Arrowhead Well #1, Arrowhead Well #2, Arrowhead Well #3, Julie Well, South Y Well, Tata Well #1, Tata Well #2, Tata Well #3, and the Tata Well #4. Contaminant levels in water from the South Y Well and the Tata Well #4 have exceeded the secondary MCL for MtBE of 0.005 mg/L (equivalent to five (5) parts per billion). In portions of the Basin, the arrangement of Aquifers and confining layers and the construction of some District Wells is such that there is little, if any hydraulic separation between the uppermost portions of the water table Aquifer and the water producing zones used by most of those Wells. Therefore, additional District Wells have been removed from service to prevent the Contamination of neighboring District Wells and to inhibit the further spreading of MtBE Contamination within the Basin.

7.6.4 Findings Regarding Groundwater Levels. The basin-fill deposits consist of sequences of sand and gravels which are inter-layered with silts and clays. The sand and gravel deposits form the principal water-bearing reservoirs (Aquifers), while the silt and clay deposits form confining layers (aquitards) which retard the movement of Groundwater. Where these confining layers separate adjoining Aquifers, the water level elevations measured in these Aquifers may differ. As a result, Groundwater levels within the Basin vary with respect to location and construction of the Wells in which the water level is measured. Groundwater levels

within the Basin also fluctuate in response to seasonal Aquifer Recharge and discharge cycles and the hydraulic influences of pumping Wells.

Static water level elevations from the majority of District Wells provide water-level elevations for Aquifers occurring at depths from between 100 to 400 feet below ground surface. In general, static water level elevations in these Wells typically range from approximately 6220 feet above sea level (fasl), in the Al Tahoe area (at the north end of the Basin) to 6380 fasl in Christmas Valley (at the south end of the Basin) East of the Upper Truckee River, the general direction of Groundwater flow is to the north-east. West of the Upper Truckee River, Groundwater flow is to the north. The water-level elevation and ground-water flow information indicates that Groundwater from these relatively deep Aquifers discharges to Lake Tahoe.

Static water level elevations for the uppermost portion of the shallow water table Aquifer are routinely measured by shallow environmental Monitoring Wells. These Monitoring Wells are typically installed as a result of Contamination assessment investigations performed within the Basin. Static water level measurements from these Monitoring Wells suggests Groundwater is very shallow across the Basin and is typically encountered within twenty feet of land surface. In portions of the Basin, this shallow Groundwater may represent either a perched water horizon or the top of the water table Aquifer. Water table elevations typically range: from between 6240 fasl to 6250 fasl along the Highway 50 corridor (within the northeast quarter of the Basin); from between 6250 fasl to 6270 fasl in the South Y area (within the northwest quarter of the Basin); and from between 6315 fasl to 6325 fasl in the Meyers area (near the south end of the Basin).

Comparison of water level measurements collected from environmental Monitoring Wells and District Wells show that strong downward (negative) vertical hydraulic gradients are present in the Basin. Negative vertical gradients have been identified during investigations in the Meyers area, in the South Y area and along the Highway 50 corridor through the north-central portion of the Basin. Downward gradients typically occur in Recharge areas within a Groundwater Basin. The observed downward gradients are also believed to result from high Groundwater Recharge rates.

7.6.5 Findings Regarding Zones of Contribution Surrounding District Wells. In accordance with the DHS DWSAP, the Zones of Contribution (ZOC) shall be defined as follows:

Zone A is defined by the surface area overlying the portion of the Aquifer that contributes water to the Well within a two-year time-of-travel.

Zone B5 is defined by the surface area overlying the portion of the Aquifer that contributes water to the Well within a five-year time-of-travel.

Zone B10 is defined by the surface area overlying the portion of the Aquifer that contributes water to the Well within a ten-year time-of-travel.

These zones have been delineated for the District Wells occurring within the Plan Area using the modified calculated fixed radius method and are shown in Figure 3 of this Division. These ZOCs identify the surface and subsurface areas through which Contaminants are reasonably likely to reach a Well.

At present, there are twenty-five (25) Storage Facilities located in the Plan Area. Nineteen (19) of the Storage Facilities lie within ZOCs surrounding District Wells. Of the Storage Facilities identified within District ZOCs, sixteen (16) are actively used for gasoline storage. These Storage Facilities are distributed such that:

Seven (7) gasoline Storage Facilities, at present, lie within Zone A;
Six (6) gasoline Storage Facilities, at present, lie within Zone B5; and
Three (3) gasoline Storage Facilities, at present, lie within Zone B10.

Since 1997, the District has removed twelve (12) municipal water supply Wells from service as a result of man-made Contaminants in Groundwater, specifically MtBE. The source of this Contamination was associated with fuel delivery, storage or dispensing activities occurring at Storage Facilities. Because the District Wells have been found to be vulnerable to Contamination, the District intends to develop an Early Detection Immediate Response (EDIR) plan to monitor and assist interim remedial actions for the clean-up of potential spills and releases from Storage Facilities situated within District ZOCs.

If needed, the District may delineate and establish Buffer Zones to the defined ZOCs. The purpose of the Buffer Zones shall be to provide added protection for District Wells from activities that may be significant potential sources of Contamination within the Plan Area, but outside the designated ZOC. The Buffer Zone will be established based on the activities that occur outside of the ZOC, the presence of Contaminants and the vulnerability of District Wells to the identified Contamination.

Section 7.7 Studies, Investigations and Annual Report.

7.7.1 Data Collections and Investigations. The District may collect data and carry on technical and other investigations necessary to carry out this Division. All hydrogeological investigations and studies carried out by, or on behalf of, the District shall be conducted by, or under the supervision of, licensed engineers, hydrogeologists or other Persons qualified in hydrology or hydrogeology. The District and its authorized agents shall have the right to enter upon any property at any reasonable time within the District to the extent permitted by law.

7.7.2 Annual Report on Groundwater Conditions. The District shall prepare annually a report on Groundwater supplies and conditions in the Plan Area, including Groundwater management goals and objectives. The report shall identify and prioritize Groundwater quality problems in the Plan Area, propose specific actions and inter-governmental agency coordination and an implementation schedule along with an estimated budget including engineering, consultant and legal fees and expenses, and District overhead, and a summary of District enforcement actions, if any. The report may include such other information as the District determines applicable to Groundwater supplies, the Basin and the Plan Area.

7.7.3 Hearing. The District shall hold a public hearing regarding the annual report on Groundwater supplies and conditions. Upon completion of the hearing, the District shall make findings and shall by resolution determine the relative priority of those Groundwater quality problems in the Plan Area which pose the greatest threat to human health, the status of District water supplies, and the impacts on environment, the specific actions necessary and appropriate to address the prioritized problems, recommended inter-governmental agency

coordination, the schedule for implementing the actions and a budget allocating the necessary resources to address the prioritized problems.

Section 7.8 Establishment of Wellhead Protection Areas.

7.8.1 Water Source Assessment. The District shall establish wellhead protection areas in a manner which conforms to the methods contained in the DHS DWSAP Program. The District shall submit its wellhead protection plan and assessment map to DHS for purposes of the DWSAP Program and make every effort to obtain DHS approval of this Plan.

7.8.2 Locate Drinking Water Sources. The District shall identify the location of all of its Groundwater sources of drinking water (Wells) within the Plan Area using a global positioning system (GPS) unit with a sensitivity of 25 meters or less, in accordance with the DHS DWSAP Program. The location of all sources shall be shown on the assessment map.

7.8.3 Delineation. The District shall identify the protection area for each identified source. The protection area is comprised of the Aquifer and Recharge area. The District shall delineate zones for the protection areas using the modified calculated fixed radius method or other methods approved by DHS, in accordance with the DHS DWSAP Program. The protection areas and zones shall be shown on the assessment map.

7.8.4 Determination of Physical Barrier Effectiveness. The District shall compile information characterizing each source to determine the Physical Barrier Effectiveness of each source. The Physical Barrier Effectiveness and shall consider the degree of confinement of the Aquifer based on geologic and hydrologic data and each source shall be scored in accordance with the DHS DWSAP Program.

7.8.5 Possible Contaminating Activities. The District shall identify possible contaminating activities for each source, in accordance with the DHS DWSAP Program. Possible contaminating activities are potential origins of significant Contamination in the delineated source water protection area. The District shall identify possible contaminating activities for all Contaminants of concern listed in the DHS DWSAP Program and any other Contaminants of concern to the District. The location of the possible contaminating activities shall be shown on the assessment map. The possible contaminating activities shall be ranked based on potential risk to a water supply according to the DHS DWSAP Program.

7.8.6 Vulnerability Analysis. The District shall prioritize the vulnerability of each Groundwater source to develop a vulnerability analysis for each Groundwater source. The Groundwater sources shall be prioritized based on the Physical Barrier Effectiveness scores of each Groundwater source and the rankings for each possible contaminating activity performed in accordance with the DHS DWSAP Program.

7.8.7 Management Plan. Based on the priorities identified in the vulnerability analysis, the District shall develop and implement a management plan to prevent or minimize the impact of Contamination from the possible contaminating activities. This management plan shall conform to requirements of the DHS DWSAP Program.

Section 7.9 Groundwater Monitoring

7.9.1 Findings. The District finds that releases of Petroleum Products Chemicals of Concern are a cause of and continue to present a material risk of Contamination. The District finds it advisable and in the best interest of the District in protecting the quality and quantity of Groundwater in the Plan Area, to establish and implement a Basin monitoring program. The Basin monitoring program is intended to provide a means for the early detection of Petroleum Contamination, and allow for interim Remediation and prevention of future releases of Contamination. EDIR Groundwater monitoring is a crucial element of and integrated into the Basin monitoring program because it provides a non-visual means of monitoring for unauthorized releases of Petroleum Products Chemicals of Concern from Storage Facilities.

7.9.2 Basin Monitoring Program. The Basin monitoring program shall consist of the measures identified in this Plan and may be further implemented by the District's adoption of rules, regulations and procedures consistent with this Plan.

(1) **Real Property Owner and/or Operator Monitoring.** If the Real Property Owner and/or Operator performs the monitoring, whether voluntarily or at the direction of another governmental agency, that Person must substantially follow all District rules, regulations and procedures of the monitoring program. Failure to substantially perform the monitoring in accordance with the District rules, regulations, and procedures shall be a violation of this Division. Should the Real Property Owner and/or Operator fail to substantially perform the monitoring in accordance with District rules, regulations and guidelines, the District may take action to compel compliance, and/or the District may assume responsibility for the monitoring.

(2) **District Monitoring.** In the event that the Real Property Owner and/or Operator does not perform the required monitoring as described above, the District shall conduct all monitoring. The District shall implement the monitoring program in accordance with California Water Code §§ 10750, *et seq.*, California Public Utilities Code §§ 15501, *et seq.*, and any other provision of law applicable to the implementation of the monitoring program.

7.9.3 EDIR Monitoring Well Installation. The District may install EDIR Monitoring Wells within the Basin or utilize existing Monitoring Wells for the purpose of monitoring changes and measuring water quality conditions within the Basin. The number and location of the EDIR Monitoring Wells will be determined by the District exercising its discretion. The District shall install EDIR Monitoring Wells at its cost and expense.

7.9.4 Location of EDIR Monitoring Wells. Based on the District's wellhead protection plan and assessment, conducted in accordance with Section 7.8 of this Plan, the District shall identify the most beneficial locations for EDIR Monitoring Wells. The locations shall be established in the following manner:

(1) The District shall identify the location of wellhead protection areas and zones of influence;

(2) The District shall identify the location of existing Monitoring Wells and determine which are suitable for use as EDIR Monitoring Wells; and

(3) The District shall use its discretion to identify appropriate locations for new EDIR Monitoring Wells based on the following criteria:

(a) The information obtained in the wellhead protection assessment, conducted pursuant to Section 7.8;

(b) The relative location of potential Sites compared to existing Monitoring Wells;

(c) The characteristics of the potential Sites which create a potential for Contamination; and

(d) Any other factors that the District deems relevant to determine the appropriate locations for EDIR Monitoring Wells.

7.9.5 Groundwater Monitoring Requirements. Groundwater monitoring shall be performed at each EDIR Monitoring Well location by the District, the Operator or the Real Property Owner of the Real Property where the Monitoring Well is located, or both.

(1) The District, in its discretion, shall determine the sampling frequency for each EDIR Monitoring Well, taking into consideration the proximity to District's water, the risk of Contamination associated with the Storage Facility being monitored, the existence and frequency of any ongoing monitoring performed at the Storage Facility required by another governmental agency and any other criteria associated with the DHS DWSAP Program developed pursuant to Section 7.8 of this Plan.

(2) The District shall work with the Operator and/or Real Property Owner where such EDIR Monitoring Well(s) is to be located to determine the schedule and protocol for the EDIR Groundwater monitoring and, to the extent reasonably possible, minimize any duplication of monitoring being performed at the Storage Facility for or by other Governmental Agencies.

7.9.6 Monitoring. To protect and/or enhance the quality and quantity of water within the Basin, the District shall conduct a Basin Monitoring Program. The monitoring Program may consist of the measures identified in this Plan and will be implemented by the adoption of rules, regulations and procedures.

(1) *Existing Monitoring.* If the Operator and/or Real Property Owner is performing monitoring pursuant to the requirements of another governmental agency, the District may accept such monitoring schedule and results, provided they substantially conforms to the District's rules, regulations and procedures as related to the monitoring program.

(2) *District Monitoring.* The District shall perform all monitoring of new EDIR Monitoring Wells installed pursuant to this Plan and existing EDIR Monitoring Wells when there is no monitoring or the existing monitoring does not substantially conform to all the District's rules, regulations and procedures as related to the Monitoring Program.

7.9.7 New EDIR Monitoring Well Construction. EDIR Monitoring Wells installed pursuant to this Plan shall be drilled and installed in accordance with all applicable regulations contained in the El Dorado County Well Standards Ordinance, the California Underground Storage Tank Regulations (Section 2648 and 2649 of the California Code of Regulations (CCR) Title 23, Chapter 16), and the following Plan requirements:

(1) EDIR Monitoring Wells shall be located down-gradient, if possible, and as near as possible to each Underground Storage Tank Basin, as determined in the discretion of the District, within the boundaries of the Real Property encompassing the Storage Facility with the following minimum requirements:

(a) One or more Underground Storage Tanks - one EDIR Monitoring Well situated near the centerline of the Underground Storage Tank Basin, near the fill end of the tank.

(b) Pipelines - one EDIR Monitoring Well situated near the down-gradient margin of the fueling apron.

(c) The District shall have the discretion to require fewer or more EDIR Monitoring Wells.

(2) EDIR Monitoring Wells shall be capable of detecting releases of Petroleum Products Chemicals of Concern in Groundwater within the uppermost portion of the water table underlying the Storage Facility.

(3) EDIR Monitoring Wells shall be constructed to allow for the installation of a low flow dedicated sampling pump for the periodic collection of samples for laboratory analysis.

(4) EDIR Monitoring Wells shall be constructed to allow for the emergency installation of an Extraction pump capable of removing contaminated Groundwater at rates sufficient to capture and prevent the further migration of releases of Petroleum Products Chemicals of Concern from the most likely release points at the Storage Facility including, but not limited to, the Underground Storage Tank Basin(s), fueling dispenser island(s), satellite dispensers and underground piping used for Petroleum fuel conveyance.

(5) EDIR Monitoring Wells shall be clearly marked and locked to avoid unauthorized access and tampering. Copies of all Well keys shall be maintained in a secured place on-site at the Storage Facility and at the District headquarters. Copies shall also be made available to the El Dorado County Environmental Management Department and California Regional Water Quality Control Board, Lahontan Region, personnel, upon request.

(6) The locations of each EDIR Monitoring Well shall be surveyed using a global positioning system (GPS) unit with a sensitivity of 5 meters or less, and recorded in latitude and longitude decimal degrees.

(7) The ground surface and top of casing elevations for EDIR Monitoring Wells shall be surveyed by a California Registered Land Surveyor.

(8) The District shall be responsible for preparing and/or assembling the following information and providing copies to the El Dorado County Environmental Management Department and the California Regional Water Quality Control Board, Lahontan Region:

(a) A scaled map of the Storage Facility showing the locations of all fuel storage and dispensing facilities, including underground lines and identifying the locations of existing Monitoring Wells and EDIR Monitoring Wells based on information provided by the Real Property Owner and/or the Operator; and

(b) Copies of pertinent EDIR Monitoring Well information including completed Water Well Driller's Reports and geologic boring logs.

(c) Copies of EDIR Monitoring Well location information including the date the GPS location survey was conducted, the GPS Unit (manufacturer/model) used, the accuracy of the GPS unit (+/- feet), the recorded GPS Well location coordinates, in latitude and longitude decimal degrees, and the surveyed elevation information for each EDIR Monitoring Well.

7.9.8 Existing EDIR Monitoring Well Construction. In accordance with section 7.9.4 of this Plan, the District shall identify the location of existing Monitoring Wells to determine which are suitable for use as EDIR Monitoring Wells. The existing Monitoring Wells accepted by the District as EDIR Monitoring Wells shall substantially conform to the requirements of Section 7.9.7 for new EDIR Monitoring Well construction except that existing Monitoring Wells do not need to be constructed to allow emergency installation of an extraction pump for removing contaminated Groundwater. In the event an existing Monitoring Well no longer substantially conforms to the above requirements, the District may install a new EDIR Monitoring Well(s).

7.9.9 Monitoring Reports. The Real Property Owner and/or the Operator or both shall, for a period of five (5) years, maintain reports of all samples taken from EDIR Monitoring Wells. Reports of all samples maintained by the Real Property Owner and/or Operator shall be submitted to the District in an electronic format acceptable to the District within ten (10) business days of each sampling event.

7.9.10 Failure to Report. Failure to supply any monitoring report or falsification of any monitoring report shall constitute a violation of this Division.

7.9.11 Best Management Practices. The District shall adopt Best Management Practices with the goal of detecting and preventing releases of Petroleum Products Chemicals of Concern. The District shall coordinate its Best Management Practices with those of the Tahoe Regional Planning Agency. In addition to requiring compliance with the District's Best Management Practices, the District shall encourage real property Owners and/or Operators to comply with the Tahoe Regional Planning Agency's Best Management Practices.

Section 7.10 Response to Contamination.

7.10.1 Groundwater Release Prevention and Response Plan. Each Property Owner and/or Operator of a Storage Facility shall submit to the District a Groundwater Release Prevention and Response Plan (GRPRP) within two (2) months of the adoption of the Ordinance enacting this Division. A copy of the GRPRP shall also be provided to the El Dorado County Environmental Management Department and the California Region Water Quality Control Board, Lahontan Region, for Storage Facilities not yet in operation at the time of adoption of this ordinance, the GRPRP shall be submitted within two (2) months of beginning operations. Along

with the GRPRP, a copy of the El Dorado County Environmental Management Department approved Unauthorized Release Response Plan (or its equivalent) shall also be submitted to the District. The District, in cooperation with the Lahontan Regional Water Quality Control Board and El Dorado County Health Department, shall have the discretion to, modify the GRPRP as necessary to develop a comprehensive and specific interim Remediation action plan and regulate the migration of Contamination in the Groundwater. The GRPRP shall include a detailed and specific discussion of the interim Remediation action that will be taken to respond to and remediate any release of Petroleum Products Chemicals of Concern from Storage Facilities, including, but not limited to the following elements:

(1) A provision designating either the Real Property Owner or the Operator as the person or entity responsible (GRPRP Responsible Party) for implementing the GRPRP for the respective Storage Facility. The GRPRP shall include the written approval of both the Real Property Owner and the Operator of the Storage Facility of the designated GRPRP Responsible Party;

(2) A provision requiring the GRPRP Responsible Party to contact the District, the El Dorado County Environmental Management Department, and the California Regional Water Quality Control Board, Lahontan Region, within twenty-four (24) hours of a known release of Petroleum Products Chemicals of Concern;

(3) A description of the actions and a schedule for the actions to be taken by the GRPRP Responsible Party in the event of a known release of Petroleum Products Chemicals of Concern;

(4) A description of the actions and a schedule for the actions to be taken by the GRPRP Responsible Party in the event an EDIR Monitoring Well identifies a release of Petroleum Products Chemicals of Concern;

(5) A list of personnel, including name, address, and business phone number, who would be used to directly respond to a release of Petroleum Products Chemicals of Concern;

(6) A list of equipment and equipment vendors including contractor contact name, address, and business phone number, who would be used to directly respond to a release of Petroleum Products Chemicals of Concern;

(7) A provision for the GRPRP Responsible Party to submit follow-up reports to the District regarding the interim Remediation actions taken and results of that action as required by the California Regional Water Quality Control Board, Lahontan Region.

(8) A provision for the GRPRP Responsible Party to submit a final report upon completion of the interim Remediation actions to the District, the El Dorado County Environmental Management Department, and the California Regional Water Quality Control Board, Lahontan Region.

7.10.2 Confirmation Sampling. If any sample from any EDIR Monitoring Well detects concentrations of Petroleum Products Chemicals of Concern at or above the Action Level, a confirmation sample of that EDIR Monitoring Well shall be taken within one (1) business day of the initial detection. Samples shall be processed and results furnished to the

District within five (5) days of the sampling being taken from the EDIR Monitoring Well. If results of the confirmation sample do not confirm the results of the original sample, additional samples shall be taken until the District is satisfied with the accuracy of the sample results.

7.10.3 Interim Remediation. Within fifteen (15) days of the date that Petroleum Products Chemicals of Concern have been confirmed in an EDIR Monitoring Well, the Real Property Owner and/or Operator shall implement an interim Remediation action in conformance with the GRPRP. The primary goal of the interim Remediation action shall be to immediately remove the contaminant mass from the subsurface and control the spread of Groundwater Contamination. The interim Remediation action shall continue to be operated uninterrupted until the Contamination is fully remediated or an on-site Remediation system, as described in Section 7.10.4, is operating in compliance with all applicable governmental agencies with jurisdiction over the long-term remediation of the contamination, whichever occurs first.

7.10.4 Remediation Assessment and Plan. Within forty-five (45) days of the date that Petroleum Products Chemicals of Concern have been confirmed in an EDIR Monitoring Well in concentrations at or above an Action Level, the Real Property Owner and/or the Operator shall complete a Remediation assessment and submit an on-site Remediation plan to the Regional Water Quality Control Board, Lahontan Region, in accordance with its requirements. A copy of the on-site Remediation assessment and system plan shall also be provided to the District.

7.10.5 On-Site Remediation System. The Real Property Owner and/or Operator shall implement the on-site Remediation system plan in accordance with the California Regional Water Quality Control Board, Lahontan Region's requirements. The District may seek approval from the California Regional Water Quality Control Board, Lahontan Region, to alter the on-site Remediation system plan, if the District determines alternative or additional remediation is required to effectively clean-up or regulate the migration of Contamination in the Groundwater. The Real Property Owner's and/or Operator's failure to comply with the rules, regulations and requirements of the California Regional Water Quality Control Board, Lahontan Region, shall also constitute a violation of this Division, to the extent permitted by law.

7.10.6 Identification of Source of Release. Upon identifying a confirmed release of Petroleum Products Chemicals of Concern, the District shall contact the Real Property Owner and/or Operator where the release occurred and the El Dorado County Environmental Management Department to perform an inspection to confirm that all portions of the Storage Facility are operating properly and are not leaking. The Real Property Owner and/or Operator shall make every reasonable effort to promptly determine and correct the source of the release. During the Storage Systems Inspection, the El Dorado County Environmental Management Department shall be the agency responsible for directing all testing, as needed, of the pertinent Storage Facility components using the best available technology as determined by the El Dorado County Environmental Management Department. The Real Property Owner and/or Operator of the Storage Facility shall maintain copies of all El Dorado County Environmental Department Inspection Reports with respect to the release of petroleum products and chemicals of concern at the Storage Facility with copies provided to the District or made available to the District, upon request.

7.10.7 Evaluation of Report. Based on the findings of the Storage System Inspection, the Real Property Owner and/or Operator of the Storage Facility, in coordination with the El Dorado County Environmental Management Department, shall be the agency to determine the procedures to be taken to repair the Storage Facilities to prevent further and future releases of

Petroleum Products Chemicals of Concern. Based on the District's evaluation of the findings of the Storage System Inspection, conducted pursuant to Section 7.10.6, and the conditions of the Basin in the area of the release, the District may request that the El Dorado County Environmental Management Department take additional action to prevent further contamination or to facilitate repairs, including, but not limited to, issuing an order that the Storage Facility be temporarily shut-down.

7.10.8 Repair of Facilities. After the results of the Storage System Inspection, conducted pursuant to Section 7.10.6, have been reported to the District, and the source of the release has been identified, the Real Property Owner and/or the Operator shall repair the system in accordance with the El Dorado County Environmental Management Department requirements and procedures to prevent any future release of Petroleum Products Chemicals of Concern. The Real Property Owner and/or the Operator shall provide the District with a copy of the notice from the El Dorado County Environmental Management Department confirming that the required repairs have been completed and that the Storage Facility is fuel-tight.

7.10.9 Failure to Identify Source of Release. Should the Storage System Inspection pursuant to Section 7.10.6 fail to identify the source of the release, the District may request that the El Dorado County Environmental Management Department take such other action to prevent further contamination including, but not limited to, issuing an order to temporarily shut-down the Storage Facility. The Real Property Owner and/or Operator shall conduct follow-up inspections until the source of the release is identified. Upon identification of the source of release, the Real Property Owner and/or Operator shall notify the El Dorado County Environmental Management Department to inspect the identified source of release. Following visual inspection, the Real Property Owner and/or Operator shall complete the necessary Repairs.

7.10.10 Restart of Handling and/or Storage Facilities. The El Dorado County Environmental Management Department has the discretion to withdraw its prior issued order of temporary shut-down, and allow the Storage Facility to restart operations in accordance with its rules and regulations. The Real Property Owner and/or Operator shall notify the District when the Storage Facility operation is restarted.

7.10.11 Point of Compliance Well Installation. Point of compliance Monitoring Wells installed between the Site and the nearest District water supply Well shall be used to the fullest extent possible to ensure that Contamination from the Site does not migrate undetected from the Site or beyond the EDIR Monitoring Wells. The District shall provide criteria for the design and placement of the point of compliance Well(s).

7.10.12 Remediation Monitoring. The Remediation Responsible Party shall monitor the Remediation action as required by the California Regional Water Quality Control Board, Lahontan Region. The Real Property Owner and/or Operator shall provide the District with reasonable access to the point of compliance Well(s) to conduct its own monitoring. The Remediation Responsible Party shall submit copies of all reports to the District at each monitoring interval as required by the California Regional Water Quality Control Board, Lahontan Region. Based on the reports, or the results of the District's own monitoring, the District may seek modification of the Remediation action by the California Regional Water Quality Control Board, Lahontan Region, to ensure quick, efficient and thorough containment and Remediation of the Contamination, and to prevent Contamination from migrating to the District's Well(s).

Section 7.11 Enforcement.

7.11.1 Violation. Violation shall mean any act or omission, or an attempt, that contravenes any of the provisions of this Division or other provisions of law.

7.11.2 Cease and Desist Order. The District may issue an administrative order requiring any Responsible Party to cease and desist the activity which is causing or contributing to Groundwater contamination.

7.11.3 Court Ordered Restraining Order. The District may apply for a restraining order against any Person who violates any section of this Division. The application for restraining order shall comply with Code of Civil Procedure sections 513.010 and 525, *et seq.*, California Rules of Court Rule 359 and other laws, as applicable.

7.11.4 Administrative Hearing.

7.11.4.1 Administrative Hearing Request. Any Person who receives a cease and desist order or a notice that administrative fines and penalties are due may contest that there was a violation or that he or she is the Responsible Party, by completing a request for administrative hearing form and returning it to the District within twenty (20) days after the District gives notice of the cease and desist order or of the administrative fines and penalties. In the case of a request for an administrative hearing to review administrative fines and penalties, the requesting party shall make an advance deposit of the fine or penalty at the time of submitting the request for administrative hearing form.

7.11.4.2 Administrative Hearing Procedures. Upon receipt of a request for administrative hearing form and deposit, if applicable, the District shall hold an administrative hearing at the next regularly scheduled board meeting to determine whether the recipient of the notice of violation is responsible for a violation of this Division. The hearing shall be conducted pursuant to the United States Constitution and California Government Code section 11400, *et seq.*

7.11.5 Administrative Fines and Penalties. Any Person who violates any section of this Division shall be subject to administrative fines and penalties pursuant to Government Code section 53069.4. Each day's continuance of a violation of an ordinance shall constitute a separate and additional violation.

(1) Amount. The District may impose a fine or penalty not to exceed \$100 for a first violation, \$200 for a second violation of the same section of this Division within one year, and \$500 for each additional violation of the same section of this Division within one year.

(2) Notice. The District shall notify the Responsible Party responsible for a violation of this Division that administrative fines and penalties are due. Such notice shall be in writing, and shall be delivered by first-class mail addressed to the Responsible Party at the Responsible Party's last known address, and posted on the property where the violation occurred. Notice of an administrative fine or penalty shall contain the following information:

(a) The date of the violation;

- (b) The address or a definite description of the location where the violation occurred;
- (c) The section of this Division violated and a description of the violation;
- (d) The amount of the fine for the violation;
- (e) A description of the fine or penalty payment process, including a description of the time within which and the place to which the fine or penalty shall be paid;
- (f) An order prohibiting the continuation or repeated occurrence of the ordinance violation described in the notice; and
- (g) A description of the administrative review process, including the time within which the administrative fine or penalty may be contested and the place from which a request for hearing form to contest the administrative fine or penalty may be obtained.

(3) Payment. The fine or penalty shall be paid to the District within thirty (30) days after posting of the notice of violation. Any fine or penalty paid shall be refunded if it is determined, after a hearing, that the Person charged was not responsible for the violation or that there was no violation as charged.

(4) Collection. Remedies for collecting and enforcing fines and penalties for violation of this Division are cumulative and any and all may be used alternatively, and none of the remedies are exclusive. At its discretion, the District may employ the following mechanisms for the collection of fines and penalties:

(a) Fines and penalties imposed for violation of this Division may be added to and become part of the charges fixed by the District for commodities and services furnished to the Real Property where the violation occurred if the Real Property is owned, controlled, or in the possession of the same Person who owned, controlled, or was in possession of it during the time the violation occurred, pursuant to California Water Code § 10754.

(b) Fines and penalties imposed for violation of this Division may be added to and become part of the annual assessment levied upon the land where the violation occurred if the Real Property is owned, controlled, or in the possession of the same Person who owned, controlled, or was in possession of it during the time the violation occurred, pursuant to California Water Code § 10754, and in accordance with Public Utilities Code § 16469. Fines and penalties added to an assessment are a lien on the land, in accordance with Public Utilities Code § 16470.

(c) Fines and penalties imposed for violation of this Division may become a lien on the land where the violation occurred if the District records a certificate of the amount of fines and penalties due, pursuant to California Water Code § 10754 and Public Utilities Code § 16472.1.

(d) Fines and penalties may be collected in the same manner, by the same Persons, and at the same time together with the general taxes levied for the District, pursuant to California Water Code § 10754 and Public Utilities Code §§ 16641 *et seq.*

(e) Fines and penalties may be collected by an action in any court of competent jurisdiction against a Person or Persons who owned the Real Property where the violation occurred for the collection of all fines and penalties, pursuant to the provisions of the Public Utilities Code § 16647.

7.11.6 Judicial Review. Any Person aggrieved by the District's final administrative decision to impose fines and penalties for violation of this Division may obtain review of the administrative decision by filing an appeal to be heard by the appropriate court in El Dorado County in accordance with the timelines and provisions stated in California Government Code section 53069.4. Any Person aggrieved by the District's final administrative decision to issue fines and penalties may obtain review of the administrative decision by filing a petition for writ of mandate in the court in accordance with Government Code section 11523 and Code of Civil Procedure section 1094.5, *et seq.*

7.11.7 Liability. The Real Property Owner and the Operator shall be jointly and severally liable for compliance with the provisions of this Division. The Real Property Owner and Operator may allocate liability between themselves by contract or otherwise but any such allocation shall not effect compliance with this Division nor be binding upon the District. The District in pursuing its remedies may proceed against Real Property Owner, the Operator, or both, as determined by the District in its sole discretion.

7.11.8 Rules and Regulations. The District shall have the authority to promulgate rules, regulations and procedures to implement and carry out the intent and purpose of this Plan, provided such rules, regulations and procedures are consistent with this Plan and reasonably related to the intent and purpose of this Plan.

Section 7.12 Costs of Implementing Plan.

7.12.1 Findings. The District finds and declares that this Plan is necessary for the protection of Groundwater resources within the District, and that it is in the public interest and will benefit all Persons residing within the Plan Area. The District further finds and declares that specific categories of activities pose greater threats to Groundwater quality than others, and that Persons engaged in those activities should be responsible for a proportionate share of the costs of implementing this Plan based on the proportionate risk posed by their activities.

7.12.2 Charges. The District may include the costs associated with this Plan in the District's charges for commodities and services in accordance with Public Utilities Code section 16467 and the ordinances, rules and regulations of the District. The District may include the costs of this Plan in (1) general charges for commodities and services, and charge the costs uniformly to all District customers; (2) special charges for commodities and services, and charge the costs to a special class of customers engaged in activities which increase the potential for Groundwater Contamination; or (3) a combination of general and special charges.

7.12.3 Special Taxes. The District may assess special taxes to raise funds for carrying on its operations and paying its obligations, in accordance with Public Utilities Code section

16641, *et seq.* All special taxes assessed by the District must be applied uniformly to all taxpayers.

7.12.4 Replenishment Assessments. The District may impose Replenishment assessments for the collection of costs associated with the removal of Contaminants from the Groundwater supplies of the District, in accordance with California Water Code section 60300, *et seq.*

7.12.5 Groundwater Management Account. All monies collected by the District pursuant to this Division shall be placed in the District's Water Enterprise Fund.

Section 7.13 Amendment/Termination.

7.13.1 Amendment/Termination. This Plan may be amended by the District from time to time after its adoption, or may be terminated at any time by the District. Amendments or termination will be considered and approved, or disapproved, only at a noticed public hearing by the District.