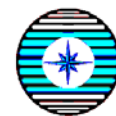Data Management • GIS • Graphics • Internet

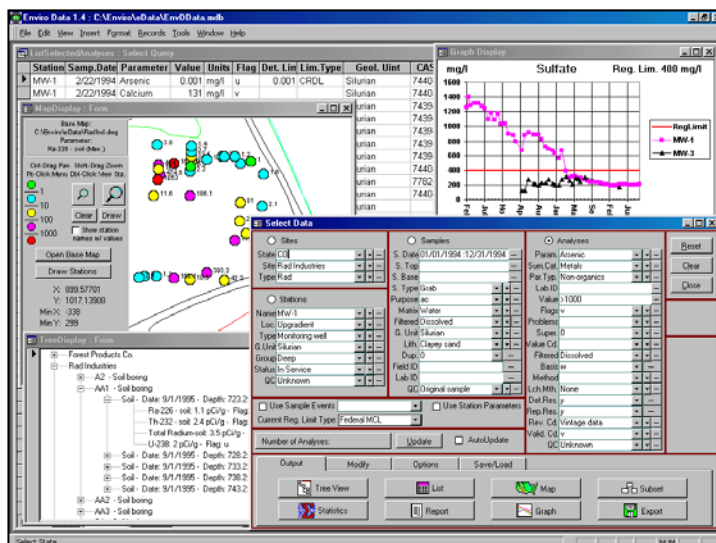## Enviro Data®

Calculating the Return on Your Investment

Enviro Spāse©

Implementing an environmental data management system (EDMS) or a geographic information system (GIS) is a business decision that will provide both tangible financial benefits as well as intangible technical and subjective benefits. This document highlights some of the benefits that our clients have seen from implementing Enviro Data and Enviro Spase. We will first report specific cost savings that have been reported by clients, and apply these financial benefits to several scenarios. We will then discuss the intangible benefits, both technical and subjective, of installing an EDMS or GIS system. Finally, we will help you calculate the specific financial benefits for your company, and provide thoughts about recovering the cost.

Specific Cost Savings for Enviro Data Implementation

One Enviro Data user at a large industrial company reported that her time to process electronic deliverables from laboratories decreased from 30 minutes to 5 minutes per file after they implemented and enforced a data transfer standard and a closed-loop reference file system so that the laboratories delivered clean data. Since the data administrator was handling about 300 files a year, this translates to 125 hours per year saved, for cost savings of almost $6,000 per year just for that one task. Additional savings were realized in increased efficiency in selecting and reporting data. Another client told Geotech that using Enviro Data for his reporting saves him 4-6 hours per day. He spends about half of his time doing data reporting, and bills at the rate of $80 per hour, so the software is saving him 650 hours per year, or $52,000 of project cost.

A second type of cost saving occurs when the data management work can be transferred to a less expensive employee after implementation of an easy-to-use data management system like Enviro Data. For example, one of our clients was able to transfer much of the data management work for a complex project from a high priced project manager to more economic tech and clerical staff members. This resulted in average savings of $25 per hour on about 40 hours per month, resulting in savings of $12,000 per year on a lump-sum project.

A third type of cost saving, and one that can provide the greatest value, is in using the database to justify cost savings on the project beyond the database system. One Enviro Data client routinely uses the EDMS to review their groundwater monitoring wells to identify ones where concentrations are consistently below regulatory limits. With a database of several hundred wells, they are able to identify about two wells per quarter that can safely be monitored less often. Each well that can be sampled annually instead

of quarterly saves them about $3,000, and the database provides the documentation to take their case to the regulators. If they are successful on half of their requests, they can save $12,000 per year for the four wells, and these savings are cumulative from year to year.

Financial Benefits from Enviro Data - Small Project

This example is based on feedback from several Geotech clients. Assuming 10 wells, quarterly monitoring, and 25 analytes, the time estimate for data management with spreadsheets and similar tools is likely to be about three days per monitoring event for data importing and reporting, or a cost of $7,680. As discussed above, using Enviro Data has been shown to reduce the time to import an electronic data deliverable from 30 minutes to 5 minutes, a factor of 6. The time savings for reporting data has been reported to be as high as 50 to 75%. Using estimated overall project time savings of 50% of the data management time, this results in a dollar savings of $3,840 per year. If the cost to purchase the software and maintenance over a three year period is $6,400 ($4000 for software and $2400 for maintenance), the payback would be a factor of 1.8:1, and the investment would be paid back in the second year.

Another client at a top 20 consulting company who purchased Enviro Data for large projects reported extreme timesavings on her small projects as well. For each data deliverable she needs to import the data, do basic data checking (verification but not a full CLP-like validation), and generate a regulatory report with comparison to multiple limits. Prior to Enviro Data it took her about a day to do each deliverable at a project cost of $680. With Enviro Data, once the database is set up for each project, each sample event now takes her one hour, at a cost of $85, a savings of $595 per event. She does about 10 of these per month, which saves more than the cost of one Enviro Data license per month. As they do a lot of lump sum projects, these savings go right to the bottom line.

A recent support incident shows how Enviro Data can help your project. One of our tribal clients called Geotech's help desk. He said "My EPA project manager wants me to graph all my data, almost 1,000 graphs. Last year this took me three months." In ten minutes on the phone we helped him create the graphs, about 100 pages, up to nine graphs to a page. Six of those pages are shown to the right. From three months to ten minutes. That's what a full-featured data management system can do for your efficiency.
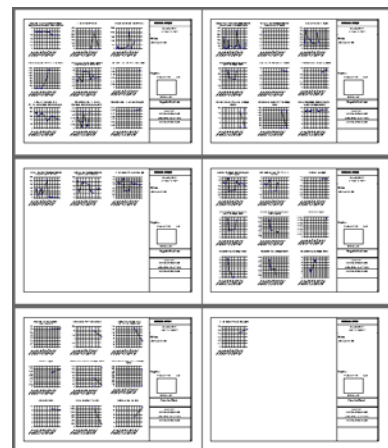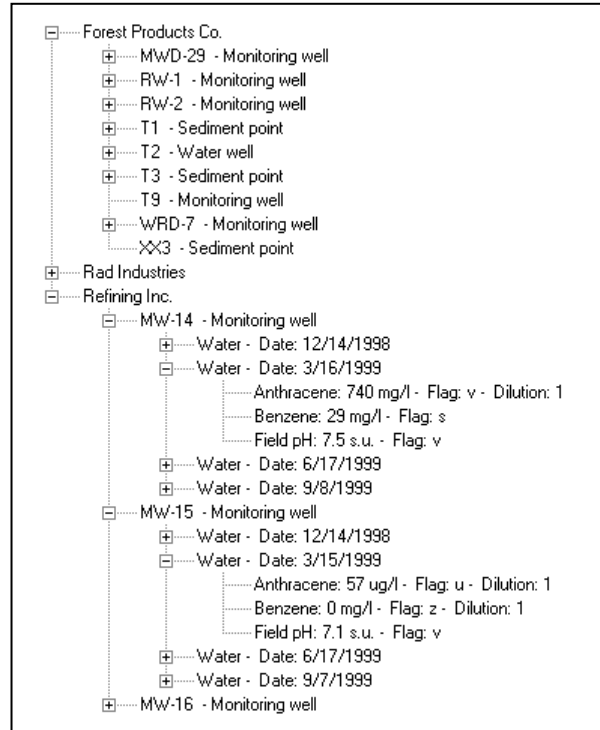
## Financial benefits from Enviro Data - Large Project

A recent study performed by a Geotech client documented data management cost savings for a typical large Department of Defense project. They compared their estimated budget, based on their prior projects using previous methods, against actual costs after implementing Enviro Data and the field data module. The project had two staff members sampling 60 surface water sample locations, two samples per location, and 187 analytes, for a total of 22,400 results. Tasks for the project included pre-field sample preparation, field sample collection, post-field sample tracking and completeness check, incorporation of data validation flags, and database import and table formatting. Their estimated budget for the whole project was $56,520, and their actual cost was $25,728, a savings of $30,792 or 54%. The savings on one task, the database import and table formatting, was even more dramatic, with a decrease from $15,926 to $2,632, a savings of 83%. Including in the cost $5,000 for software, still resulted in a savings of 46%.

Financial benefits from Enviro Data - Large Corporate Solution

The calculation for a large corporate solution is based on a 40-office Enviro Data client company with about 100 large database projects. As discussed above, the data management cost for a large project is about $31,000 per year, of which $5,812 per year can be saved through data management. This results in an annual savings of $518,000 per year for 100 projects. The cost to implement a corporate system for 40 offices can be estimated based on the following cost items: software ($400,000, one time), maintenance ($80,000 per year) , training ($40,000 one time), data conversion ($60,000 one time), and customization ($50,000 one time) for a total of $950,000 over five years. This comes to $190,000 per year, which is $4,750 per office or $1,900 per project. The cost saving results in a payback of 2.72:1. This result should scale linearly to smaller or larger implementations, as both the cost and the return vary directly with the number of offices and projects.

Specific Cost Savings for Enviro Spase Implementation

A client reported the following results from implementing Enviro Spase, using data from Enviro Data. Once all analytical results had been received, it was necessary to post all detections and exceedences spatially in order to meet state agency and project requirements. Due to the size of the project site, the number of samples (almost 300), and the more than 5,000 detections needing to be shown spatially, a total of 16 E-sized maps were created. Typically, a single map can take as long as two days using traditional CAD drafting methods, due to the level of calculations and the amount of QA required. Using
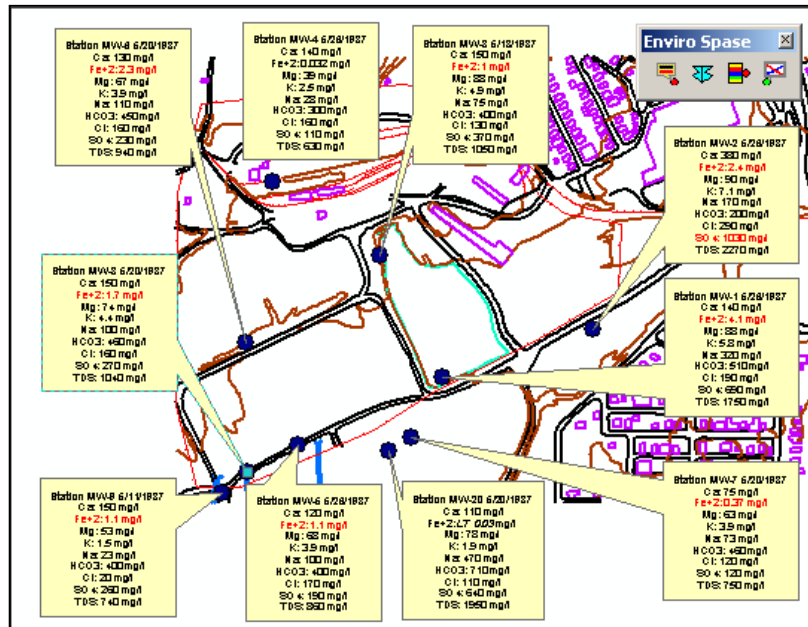
older internally-written GIS tools in the older version of ArcView 3, each map would have taken approximately 4 hours when all of the setup time is factored in. With the Enviro Spase tool, since the

setup time and final QA needed is significantly less, each map took approximately 1 hour to complete. The savings of 16 maps and 15 hours per map totals 240 hours saved on that one project, easily enough to justify the cost of the software and learning curve.

Intangible Technical Benefits

While the dollars usually drive the purchase decision, the technical benefits are often the greatest contributors to the success of an EDMS or GIS implementation project. Building a comprehensive, centralized open database, and automating map display, can generate improved technical results in a variety of ways. The biggest technical benefit is the improved quality that results from removal of database fragmentation and excessive data handling. With an integrated system, people are always using the best data available, not an outdated piece of data, or data that was thrown together to answer a different question than the one they are currently answering. Related to this is improved communication on the project, because everyone is looking at the same data. This results in increased confidence in the data and in the decision making process for the project.

Another technical benefit is the ability to analyze the project better. Having a comprehensive database integrated with your GIS opens the door for better visualization and analysis, which can lead to a better understanding of the project, and a better ability to anticipate and remove problems before they become critical. This results in a process where projects are managed by the team, rather than the project managing the team with a series of crises and fire drills.

Implementing a standardized corporate solution has benefits beyond a single project. All offices are using the same tool, minimizing training time, reducing software costs, and allowing sharing of work between offices.

The impact of these technical benefits on those outside the project, such as clients, upper management, and especially regulators, can be significant. If others develop confidence that the project team is staying on top of issues at the site, the result can be less scrutiny, and consequently less aggravation, for the project team. If they are finding and reliably dealing with issues as they come up, the project goes more smoothly for everyone.

Intangible Subjective Benefits

Some benefits derived from improved data management and display are subjective, but still contribute significantly to the overall success of the project. Data management and display can be the most tedious component of a project. Implementing an efficient system such as Enviro Data and Enviro Spase can significantly improve morale, which results in improved quality of output, less staff dissatisfaction and turnover, and in general a happier and more productive project team and client. There can also be expanded business development opportunities resulting from offering the best technology.

Evaluating Your Benefits

What really matters is the cost savings for your company. Here is a conservative example of how you might calculate your savings:

Cost Items	Example	Your company
Software - 1 eData Single Use	$4,000	_____
Maintenance, 3 years	2,400	_____
GCS training, one day	1,200	_____
Staff learning curve, 3 days	2,400	_____
Total Cost	**$10,000**	
Cost Savings		
Data loading - 180 hours @ $100/hour	$18,000	_____
Analysis - 180 hours	18,000	_____
Reporting - 180 hours	18,000	_____
Total Savings	**$54,000**	
Payback $54,000 ÷ 10,000	5.4:1	_____
Plus intangibles		
Work quality		_____
Client satisfaction		_____
Staff morale		_____

Assumptions

Basic implementation (shown): One user, Access back end. Software use 10 hours/week at @100 per hour gives a return of 5.4:1.

Comprehensive implementation: Three administrative users plus five read-only project staff, similar assumptions, gives a return of 6.9:1.

Recovering Your Investment

As a consulting company, you have several options for recovering your investment. The money saved by projects could be kept, contributing directly to your bottom line. Or, some or all of the savings could be passed on to clients, making your company more competitive. For industrial companies or government agencies, all of the cost savings go to your bottom line.

A challenge in many companies is how to pay for software that will be used on projects. The software can be purchased either with project dollars or overhead dollars. Using project dollars is usually easy to justify based on the numbers above, but requires implementation on a project-by-project basis.

The Billable Hours Problem

A philosophy in many companies is that they make their money by billing hours, and buying and implementing new technology that decreases billed hours, is perceived as decreasing revenue, which is a bad thing. So a new database implementation faces two obstacles: it costs money to implement the system, and then billed hours go down because of the increased efficiency provided by the software. The usual conclusion is that implementing this new system is a bad business decision.

Let's look at this technology model from a revenue-generating point-of-view. First, if your cost to deliver services to your client is higher than your competitor's cost (some of whom are already using

Enviro Data and Enviro Spase, and cutting client costs), your client will use your competitor instead of you. Second, many of your clients are going to a unit cost basis for many types of work, such as routine monitoring tasks, so decreasing your internal cost goes directly to increasing your bottom line. Either way, increasing your efficiency improves revenue, client satisfaction, and employee performance, rather than hurting it. So if your company responds to suggestions of improving technology with the "billable hours" philosophy, it should be suggested to them that if they don't stay current with database technology and cut client costs, their competitors will, and revenue, clients, and employees may all be lost.

Buy vs. Build

Another issue that sometimes comes up is the decision of whether to buy a database system off the shelf, or build one internally. At first it may seem attractive to try to find a client to pay to build a system that you can then use on all your projects. You get the billable hours for doing the work, and don't have to pay license fees on the software. And you have control over the functionality that is developed. The attractiveness of this solution falls apart when you try to use the software for an extended period of time, or on other projects. Features developed specifically for one project may need to be rewritten for other projects, or as the needs of the original project evolve. And it is often difficult to find the time and money to find and fix bugs after the initial development has been done. This problem is compounded if the person or team that developed the software is no longer available.

Commercial software like Enviro Data, on the other hand, has been developed from the ground up to support a wide variety of project requirements. Capabilities have been added over years of use by hundreds of clients so the software satisfies a much broader suite of needs than any in-house product could ever handle. Once you have purchased the software, a modest annual maintenance fee covers bug fixes and enhancements much more cheaply than you could do it with in-house staff. With concurrent use licensing, the software can be made available to many users at a surprisingly low cost. And with extensive support from laboratories around the county and a full set of exports for various purposes, project data will flow smoothly from start to finish.

When it comes to buy vs. build, Enviro Data is the best of both worlds. You get the extensive and tested functionality of an off-the-shelf product, but, with our Access user interface, the configurability of a custom program. You also get a staff of seasoned developers and support technicians to help you make sure the software performs smoothly on your projects. Enviro Data is the low-risk solution to your data management needs.

Looking at the numbers confirms this. Geotech has about 25 programmer years in writing the software code, and over 10 years learning about and satisfying project needs. At an estimated overhead-loaded programmer cost of $60,000 per year, this comes to $1.5 million of programming time. The program has close to 600 named features, counting imports, exports, reports, editing forms, and so on. A typical client will use maybe a quarter of these, so your cost to create a program with the functionality your projects need would be about $375,000, assuming you can find a programmer with the industry experience necessary to do the development efficiently, and it will take you over six years to do it. For a lot less money you can have a fully workable, tested, industry-accepted solution now.

Conclusion

Each company's situation is different, but the time and cost savings from implementing Enviro Data or Enviro Spase will, in many cases, provide a monetary payback in a short period of time, along with the many intangible benefits from using the best tool. We will be glad to answer any questions you may have about specific benefits to your company. Contact Geotech at the numbers above, or toll-free at 877-740-

1999, or visit our website at www.geotech.com, for more information on how our software can help improve your projects, and your company.